

**Race Evasion and Race Cognizance in Elementary Math Teaching:  
A Study of White Teacher Candidates' Learning, Discourse, and Early Practice**

by

Rosalie Ann DeFino

A dissertation submitted in partial fulfillment  
of the requirements for the degree of  
Doctor of Philosophy  
(Educational Studies)  
in the University of Michigan  
2022

Doctoral Committee:

Professor Deborah Loewenberg Ball, Chair  
Professor Hyman Bass  
Assistant Professor Maisie Gholson  
Professor Chauncey Monte-Sano

Rosalie A. DeFino

rdefino@umich.edu

ORCID iD: 0000-0002-6902-5957

© Rosalie A. DeFino 2022

## **Acknowledgements**

This dissertation was made possible through the support, encouragement, and teaching of many people. From sharing articles and books that sparked my thinking, to puzzling through transcripts together, to bringing fresh coffee, my friends, family, colleagues, and teachers have fueled and sustained this work. I am immensely grateful, and hope that I can pay forward your many kindnesses and insights.

First and foremost, I want to thank Dr. Deborah Ball for making a place for me at Michigan and for guiding me through these past six years. It is a rare and wonderful thing to find a mentor who simultaneously brings an incredible wealth of knowledge and experience and an ongoing openness to challenging their own thinking, especially when it comes to thinking about race, racism, and whiteness. Deborah, I have learned so much from you, with your deep respect for the work of teaching and your continual questioning and willingness to try new things in your own practice. Thank you for your care, your serious consideration of ideas, and your faith in my ability to learn to work through uncertainty.

I also want to thank the members of my committee: Dr. Hyman Bass, Dr. Maisie Gholson, and Dr. Chauncey Monte-Sano. You have each supported me along this journey in important ways. Hy, you have helped me think about the specifically mathematical aspects of race cognizant math teaching and how different classroom constructions of mathematics can open up or foreclose possibilities for countering racialized patterns and inequities. Thank you for your genuine curiosity and careful consideration of this work. Maisie, you have pushed my thinking in so many ways, from the particulars of qualitative research to the larger questions

about race, social justice, and math teaching that are at the heart of this dissertation. Thank you for handing me the right book at the right time, and for your constant efforts to foster and inform critical conversations about race in the School of Education. I have learned so much from you and the scholars you've introduced me to, whether through readings, guest visits, seminars, or courses. Chauncey, your leadership in the elementary teacher education program helped me to think beyond the space of individual courses and consider the bigger picture. Your suggestions and insights about interviewing teachers were also instrumental in shaping my data collection. Thank you for your openness and enthusiasm for taking on this project.

During my time at Michigan, I have been fortunate to work with and learn from many amazing scholars and teachers. Within the elementary teacher education program, I have been especially grateful to learn from Dr. Debi Khasnabis, Katie Robertson, Dr. Melissa Stull, Meri Tenney Muirhead, and Mariella Ortiz-Reyes. Thank you for modeling such caring, serious, and reflexive work on the injustices and inequities that impact children, families, teachers, and schools. Thank you also for your willingness to share your practice and to work as thought partners. Debi, you set a crucial and inspiring example as chair of the program; thank you for your leadership, and for including me in work on the justice framework and priorities. In the larger School of Education community, I have learned a great deal from Dr. Simona Goldin, particularly through the TeachingWorks streaming seminar series. Thank you, Simona, for bringing in such inspiring scholars and for posing questions that resonate so strongly, centering issues of justice and teaching. I am also indebted to Drs. Tim Boerst, Meghan Shaughnessy, and Merrie Blunk and the team members of the Assessing Teaching Practice project, especially Dr. Xueying Prawat and Dr. D'Anna Pynes. Your innovative work with teaching simulations helped me appreciate the complexity of learning and studying teaching *practice*, looking beyond

surveys of knowledge and dispositions. Thank you for inducting me into the world of teacher education research, and for your thoughtful mentorship and support.

In addition, I want to recognize instructors who were pivotal in shaping my thinking and approach to teaching and research. I had the privilege of learning from Dr. Camille Wilson across multiple courses, including an introduction to qualitative research, a course on critical race methodologies, and a course on cultural studies and education. Dr. Wilson, you are a phenomenal teacher, and I am so grateful for the many ways that you challenged and stretched my thinking. Dr. Leah Bricker taught a course on theories of learning and teaching that was absolutely foundational to how I understand learning. Thank you, Leah, for your always detailed comments and questions and for helping me understand the lineages and relationships between different theories and perspectives. The late Dr. David Cohen, along with then-graduate students Dr. Kim Ransom and Dr. Tonya Kneff-Chang, taught a course on the social foundations of education that pushed me and members of my doctoral cohort to grapple with the structural nature of racism in the history of U.S. schooling. Thank you, David, Kim, and Tonya, for thoughtfully and ardently keeping the salience of race and racism central as I first ventured into the world of graduate school and educational studies. Finally, Dr. Maren Oberman developed and taught a course on pedagogies of diversity, inclusion, justice, and equity that offered an important bridge between my personal and political beliefs and my early experiences as a math teacher educator. I thank you, Maren, for providing space to grapple with the implications and entailments of serious commitments to equity and justice in community with like-minded people.

I also want to acknowledge the huge impact of friends, teachers, and colleagues prior to my doctoral work. From the University of Chicago Urban Teacher Education Program (UTEP), thank you to my teachers, coaches, and mentors, Dr. Marv Hoffman, Dr. Kavita Kapadia

Matsko, Amy Millikan, Dr. Bill Kennedy, Laura Meili, Dr. Andy Isaacs, Debbie Leslie, Michelle Cooney, Sheri Roedel, Clare Donovan-Scane, Esther Ohito, and the late Dale Ray; my cohort-mates, especially Laura Gluckman, Ashley Haywood, and Patti Buckland; and the Math Alumni Inquiry Group, especially Lindsey Mann, Deena Heller, and Luke Carman, for shaping me into the teacher that I am. You all continue to inspire me. From my time teaching at North Kenwood / Oakland, thank you to Toi Smith for your steadfast support as I struggled to teach math for understanding in way that was also rooted in care and relationships. From LEARN Campbell, thank you to my fantastic grade-level partner and fellow UTEP alumna, Lindsey Olson, and to Rebecca Hendrickson, who offered much needed suggestions and honest feedback during a difficult time. From the Summer Links internship program, thank you to Trudi Langendorf and Jeanne Di Domenico, who opened my eyes to teaching as an avenue of working for social justice. Trudi especially taught me a great deal about the vital importance of building relationships, critical self-awareness, and centering community aims and impact over my own intentions.

Returning to my time in graduate school, I want to express my deep appreciation for the friends and colleagues who led the way and brought joy to the work. To my cohort, especially Dr. Jacqueline Handley, Dr. Carolyn Hetrick, Martha Epperson, Maggie Hanna, Ashley Jackson, Dr. Amber Davis, Matt Dahlgren, Emanuele Bardelli, and Kathryn Gabriele — I could not have done this without you all. Special thanks to Jacquie for checking in on me throughout the pandemic, for always being willing to share your experience and give me feedback, and for telling me you're proud of me. I am so lucky to have you as a friend. To Dr. Ebony Perouse-Harvey and Dr. Laura-Ann Jacobs, you quite literally showed me the way. I am so glad that the graduate student conference brought us together — I have learned so much from both of you.

From the logistics of applying for a Rackham research grant and IRB approval to the immensely difficult and important work of coalition-building for intersectional justice, you readily shared your thought processes and insights. I aspire to follow your examples.

To my fellow DB advisees, especially Lindsey Mann, Dr. Charles Wilkes, Dr. Amber Willis, Dr. Lauren Hickman McMahon, Dr. Emily Theriault-Kimmey, Allie Sherman, Darrius Robinson, Karen Ahn, Elena Crosley, Gaby Bernal, Mimi Owusu, and Karin Brown — it has been wonderful to think with and learn from you all. I hope that the cruise line keeps running, and that we stay connected moving forward. Special thanks to Lauren for making this last year of writing so much less lonely. Our daily check-ins kept me going. Thanks also to Gaby, for your continual support and care. In addition to the people I've already named, I want to recognize SOE graduates whose dissertations served as important mentor texts during this process: Dr. Blake Noel, Dr. Susanna Owens Farmer, Dr. Rebecca Gadd, and Dr. Alaina Neal-Jackson.

I also want to thank the people who have contributed to this dissertation by way of being awesome friends, offering encouragement, and making me a happier person: Laura Gluckman, Nate Durning & Laura Smith, Claire Sandahl & Luke McGuire, Deena Heller & David Polsky, Ayoung Lee, Jane Peng, Shelley Yang, Jane Li, Jared Gasman, Hannah Weinberger-Beder, Aliza Levine, Steve Kregel & Gauri Pawar, Elizabeth Tacke, Jessica Votava, and Katy Caraballo.

I must also share my deepest gratitude to my family for their unconditional love and support. To my mother, Mary Lou DeFino: Thank you for planting the activist seed, for listening, and for empathizing with my struggle to write concisely. To my father, Nick DeFino: Thank you for fostering our family's love of numbers and for your unquestioning confidence in my ability to do whatever I set my mind to. To my sister, Mia DeFino: Thank you for blazing the trail into academic pursuits, from high school to college and beyond — I only knew these things

were possible because I watched you excel in them. To my brother, Louis DeFino: Thank you for reminding me to embrace the joys in life, from good food to warm weather to the best lines from the *Sopranos*. To my Aunt Marlene: Thank you for cultivating and maintaining such a special relationship across time and great distance; knowing that you are rooting for me has meant so much. To Aunt Janice and Uncle Bill: Thank you for being a refuge in the woods, for sharing great books and music, and for your wonderful hugs. Finally, to my husband, Tony Letourneau: Thank you for your incredible patience as I've taken on this project, for always keeping me well fed, and for making me smile. I love you.

Last, but not least, I want to thank the teacher candidates who participated in this study. Thank you for trusting me with your ideas, experiences, and first forays into math teaching. You have taught me a great deal, and I wish you the best in your ongoing journeys.



## Table of Contents

Acknowledgements.....	ii
List of Tables .....	xiii
List of Figures .....	xiv
List of Appendices .....	xv
Abstract.....	xvi
Chapter 1 Introduction .....	1
1.1 Situating the Study .....	3
1.2 Focusing on White Teacher Candidates .....	7
1.3 Study Overview .....	8
1.4 Organization of the Dissertation.....	10
Chapter 2 Conceptual Framework and Literature Review .....	11
2.1 Defining Race and Racism.....	12
2.2 Modes of “Thinking Through Race” .....	16
2.2.1 Essentialist Racism.....	19
2.2.2 Race Evasiveness .....	20
2.2.3 Race Cognizance .....	22
2.2.4 Additional Patterns from the Literature.....	23
2.3 The Work of Elementary Mathematics Teaching .....	36
2.3.1 Navigating Demands Placed on the Teaching Position.....	37
2.3.2 Naming Teaching Practices .....	39
2.3.3 Connecting Thinking and Doing: Pedagogical Reasoning and Action .....	41

2.4 Race Cognizant Math Teaching .....	45
2.5 On Learning and Learning to Teach.....	56
2.6 Considering Identity .....	60
Chapter 3 Methods .....	65
3.1 Study Design .....	66
3.1.1 Research Questions .....	67
3.1.2 Case Selection .....	68
3.2 Research Context.....	69
3.2.1 Program Background.....	70
3.2.2 COVID-19 Pandemic .....	73
3.2.3 Black Lives Matter Protests .....	75
3.2.4 Course 1: Sensemakers.....	77
3.2.5 Course 2: Math Methods .....	83
3.3 Participants .....	87
3.3.1 Sampling Strategy .....	87
3.3.2 Representativeness of the Sample .....	89
3.3.3 Focal Participants .....	91
3.4 Researcher Reflexivity .....	99
3.4.1 Researcher Identity.....	100
3.4.2 Positionality in Course Context.....	103
3.4.3 Navigating My Role as a Researcher .....	104
3.5 Data Collection.....	109
3.5.1 Interviews .....	110
3.5.2 Course Assignments.....	114
3.5.3 Class Sessions.....	114

3.5.4 Pandemic Limitations .....	117
3.6 Data Analysis .....	118
3.6.1 Analysis During Data Collection .....	118
3.6.2 Cycles of Engaging with Data and Writing Memos.....	121
3.7 Methodological Dilemmas .....	138
3.7.1 Social Desirability .....	140
3.7.2 Problem of Inference .....	144
3.7.3 Facilitating Race Evasion through My Own Whiteness .....	148
3.8 Organization of Findings.....	151
Chapter 4 Findings Part 1: Uptake of Race Cognizant Course Emphases .....	155
4.1 Background and Context.....	159
4.1.1 Defining Acknowledging Competence .....	159
4.1.2 Work on Acknowledging Competence Across the Course Sequence.....	162
4.2 Initial Uptake of Acknowledging Competence .....	166
4.2.1 Embracing General Equity-Oriented Goals.....	166
4.2.2 Varying Uptake of Race Cognizant Purposes .....	179
4.2.3 Distortion of the Course Construct.....	193
4.3 Trajectories of Uptake of Acknowledging Competence Over Time.....	198
4.3.1 Flattened Uptake Over Time .....	199
4.3.2 Aligned Uptake with Obstacles in Enactment.....	212
4.4 Summary of Uptake Patterns with Acknowledging Competence .....	223
4.5 Deliberate Efforts in Early Enactments of Math Teaching .....	226
4.5.1 Course Work on Distributing Turns and Promoting Equitable Participation .....	228
4.5.2 Paying Attention to Who Gets Called On .....	230
4.5.3 Using Calling-On Strategies and Reflecting on Participation Patterns .....	236

4.5.4 Summary of Focal Participants’ Efforts to Promote Equitable Participation.....	241
4.6 Overarching Patterns of Uptake .....	242
Chapter 5 Findings Part 2: Patterns in Race Discourse .....	249
5.1 Background and Context.....	252
5.1.1 Defining “Race Talk” .....	252
5.1.2 The Toni and Aniyah Video .....	255
5.2 Co-Existence of Race Evasion and Glimpses of Race Cognizance .....	266
5.2.1 Categories for Characterizing Types of Cases .....	269
5.2.2 An Anchor Representation .....	270
5.3 Examining Language and Different Forms of Race Talk .....	273
5.3.1 Indirect Race Talk .....	275
5.3.2 General Equity- and Justice-Oriented Language.....	289
5.3.3 Direct Race Talk.....	300
5.3.4 Summary: Discursive Patterns in Race Talk .....	319
5.4 Examining Ideological Implications of Race Talk .....	322
5.4.1 Racial Analyses and Conceptions of Racism .....	323
5.4.2 Ideological Ambiguity of Social Justice Discourse .....	335
5.4.3 Reflexivity and Orientation to Further Learning.....	339
5.4.4 Self-Positioning in Relation to Anti-Racist Projects .....	347
5.4.5 Summary: Ideological Patterns in Race Talk .....	359
5.5 Chapter Summary .....	361
Chapter 6 Discussion .....	365
6.1 Insights into Possibilities and Challenges of Race Cognizant Learning .....	366
6.1.1 Attending to the Discursive and Ideological Dimensions of Race Evasion .....	367
6.1.2 The Ambiguity of Language as a Window into Ideology and Practice .....	369

6.1.3 Challenges of Assimilation in Race Cognizant Learning.....	373
6.1.4 The Multidimensionality of Learning Race Cognizant Math Teaching.....	378
6.1.5 Recognizing and Leveraging Teacher Candidates’ Strengths.....	386
6.2 Implications .....	390
6.2.1 Implications for Teacher Education .....	390
6.2.2 Implications for Research.....	397
6.3 Limitations.....	400
6.4 Directions for Future Work .....	403
6.5 Closing Thoughts .....	406
Appendices.....	409
References.....	442

## **List of Tables**

Table 1: Demographic Information for Focal Participants .....	92
Table 2: Work on Acknowledging Competence in Sensemakers 2020.....	162
Table 3: Progress Towards Race Cognizant Math Teaching.....	247
Table 4: Overview of Work with the Toni and Aniyah Video .....	263

## List of Figures

Figure 1: Timeline of Data Collection .....	109
Figure 2: Interview Reflection Template .....	111
Figure 3: Analytic Memo Template.....	134
Figure 4: Timeline of Data Analysis.....	136
Figure 5: Concept Map of Dissertation Claims and Findings.....	138
Figure 6: The Mathematics Task Featured in the Toni and Aniyah Video .....	256
Figure 7: Slide Highlighting Discretionary Spaces in the Short Toni and Aniyah Clip.....	261
Figure 8: Teacher Candidates' Ideological and Discursive Patterns .....	271

## **List of Appendices**

Appendix A: Early Ideas about Race Cognizant Math Teaching .....	410
Appendix B: Round 1 Interview Protocol .....	414
Appendix C: Round 2 Interview Protocol .....	419
Appendix D: Round 3 Interview Protocol .....	423
Appendix E: Round 4 Interview Protocol – Stimulated Recall of Math Discussion.....	427
Appendix F: Table of Sample Codes .....	433
Appendix G: Transcript of the “Toni and Aniyah Video” .....	436



## Abstract

Within teacher education, work on mathematics teaching often occurs separately from work on issues of race and racism. Typically, mathematics content and methods courses tackle subject matter-specific concepts and teaching practices, while the history and current dynamics of racial inequity in education, if addressed at all, tend to be the domain of social foundations or multicultural education courses (Cochran-Smith et al., 2015). Challenging this separation, this dissertation offers a vision of teaching that can serve as a guiding framework in mathematics teacher education: *race cognizant math teaching*, or acting on the critical race ideology of *race cognizance* (Frankenberg, 1993) within the teaching of mathematics.

Set in a two-course elementary teacher education sequence that advances a version of race cognizant math teaching, this study explores the learning, discourse, and early practice of six white teacher candidates across those courses. Qualitative case study methods are used to pursue three research questions. First, how do focal teacher candidates take up course ideas and practices that have the potential to support race cognizant mathematics teaching, and what trajectories characterize this uptake? Second, what uptake of course ideas and practices is evident in focal teacher candidates' early enactments of mathematics teaching? Third, how do focal teacher candidates engage with issues of race and racism in their talk and writing, and what does this reveal about their learning? Data sources consist of submitted course assignments (including video records of math teaching enactments), observation of class sessions, and four rounds of semi-structured interviews with focal participants.

This study's findings both confirm and complicate existing research on white teacher candidates' engagement with issues of race and racism. On the one hand, focal participants exhibited anticipated patterns of race evasion. Findings include patterns of generalized and flattened uptake of race cognizant course constructs, indirect and ambiguous race talk, and alignment with aspects of color-blind ideology (Bonilla-Silva, 2018). On the other hand, however, patterns of race evasion were not uniform, nor were they mutually exclusive with evidence of race cognizant uptake and discourse. For instance, in their early math teaching enactments, several participants made deliberate efforts to act on race cognizant aims and rationales, even though they were not explicit about their attention to race until pressed. In addition, even teacher candidates who were relatively consistent in demonstrating race evasive thinking and uptake of course emphases also had moments where they indicated that they were grappling with the pervasive and persistent nature of racism and its impact on mathematics teaching and learning.

An important conclusion of this study is that teacher candidates' talk and writing about race and racism did not necessarily indicate a transparent or simple alignment with either race cognizant or race evasive ideology. Additionally, teacher candidates' shifts towards race cognizant math teaching were not straightforward; progress was complicated by obstacles of enactment and conflicting ideas about race, racism, and mathematics teaching and learning. One implication is that teacher educators must combine consideration of teacher candidates' language with careful attention to their practice and the ideological implications of how teacher candidates are understanding race, racism, and their roles and responsibilities as teachers. Teacher educators should also expect complexity, ambiguity, and shifts over time, rather than a binary or static division between race evasive and race cognizant learning and practice.

## **Chapter 1 Introduction**

As an elementary teacher and graduate student in mathematics education, I have taken part in two ongoing conversations about mathematics teaching and teacher education. In one conversation, my colleagues and I delve into the minutiae of the work of teaching elementary mathematics, including tradeoffs between mathematical representations and manipulatives, the wording of questions, the arrangement of tables for a math discussion, and different interpretations of how a child seems to be understanding the meaning of the denominator in their written work. In this conversation, I bring expertise from five years of elementary teaching, extensive participation in math-focused professional development, and a year of writing lessons for a widely used elementary mathematics curriculum. This is the conversation that people generally expect in mathematics education, and it is a necessary conversation for practically supporting the day to day work that teachers do, as well as for preparing future teachers of elementary mathematics.

In the second conversation, race and racism are central concerns. Here, the driving question is how to interrupt and contend with the harm and racial inequity that permeate normalized schooling and teaching practices. This conversation is the reason that I became a teacher — to be an agent of change, to pursue social justice. Having been educated in racially diverse urban public schools that were the product of desegregation initiatives, I have been interested in race for a long time. In college, I wrote a senior thesis considering how educators might understand and address race-related inequalities using principles from John Dewey's philosophy of education. In graduate school, I attended talks, took courses, and participated in

student groups to learn more about critical race perspectives and about my own positionality in a racialized and racist society. In this conversation, I think about my own whiteness and the harm that I contributed to for the Black children and families that I worked with as an elementary teacher, despite my “best intentions” (Lewis & Diamond, 2015). I also think about ways that the systems and structures of schooling made that harm routine and almost inevitable — teacher evaluations prized students’ standardized test scores above all else, administrators monitored classrooms for compliance with dress codes, behavior management systems, and public charting of students’ progress towards testing goals. In this conversation, I connect with and learn from teacher educators who tackle issues of race and racism head on. We work to envision experiences, courses, and a teacher education program that will support new teachers, many of whom are white women, to grapple with their own identities and the realities of racial injustice and to develop a teaching practice that seeks to avert harm and work towards equity and justice.

There are certainly people who are active participants in both of these conversations, who take seriously the demands of teaching mathematics as well as the imperative to confront issues of race and racism. However, in my experience, these conversations often take place in what feels like two separate worlds. There’s a world where the math and teaching practices come first, and a world where recognizing the reality of racism frames everything else. This dissertation stems from a want and a need to bring these worlds and conversations together, to consider the possibilities and challenges of *simultaneously* addressing the specific work of elementary math teaching *and* the reality of racism. What would it mean to think critically and deliberately about race and racism while attending to the concrete details of teaching practice and elementary mathematics? What might it look like to learn to teach mathematics in a way that is explicitly and consistently oriented towards disrupting racism and also supportive of children’s

mathematical learning? In this dissertation, I conceptualize and explore teacher candidates' learning of what I call *race cognizant mathematics teaching*. Set in a context where math teacher educators prioritize addressing issues of race and racism and support a version of race cognizant math teaching, this study investigates how six white teacher candidates make sense of and take up the version of race cognizant math teaching made available to them. My hope is that this work illustrates the possibility, and demonstrates the necessity, of deliberately and seriously addressing race and racism in the context of mathematics teacher education.

### 1.1 Situating the Study

Contrary to perspectives that the United States has progressed to a being a fair and “color-blind” society, Omi and Winant (1994) argue that “race will *always* be at the center of the American experience” (p. 5). Even a cursory glance at current news lends credence to this point. From vast racial disparities in the impact of the COVID-19 pandemic (CDC, 2020) to controversies about teaching “critical race theory” schools (e.g., Walker, 2021), it is clear that race has ongoing, though hotly debated, significance in the United States. Much of this contentiousness is tied to how people understand the impact of race and racism in U.S. history, including the role and responsibility of white<sup>1</sup> people in constructing and maintaining racial

---

<sup>1</sup> There is an important and ongoing debate about whether to capitalize “white” along with other racial group labels, like “Black” and “Latinx” (see Appiah, 2020; Daniszewski, 2020; Dumas, 2016; Ewing, 2020; Lanham & Liu, 2019; Perry, 2022). Over the course of writing this dissertation, my own thinking on this question has shifted multiple times. On the one hand, I agree that it is important to call attention to Whiteness *as a racial identity*; capitalizing “White” counters the invisibility of Whiteness and presses on White people’s discomfort with seeing themselves as racialized beings in a racialized social system (Appiah, 2020; Ewing, 2020). On the other hand, I also recognize that writing “white” in lowercase distinguishes the common experiences of white people (namely, “acts of colonization and terror,” Dumas, 2016, p. 13) from the “specific set of histories, cultural processes, and imagined and performed kinships” (Dumas, 2016, pp. 12–13) shared by Black people and other racial groups. There is also the concern that white supremacist groups capitalize “white,” and therefore doing so could signal alignment with white supremacist ideology (Appiah, 2020). At this point in time, it is my own uneasiness with capitalizing “white” in relation to white supremacy and whiteness as an ideology that leads me to write “white” in lowercase. In lieu of capitalizing “white,” I try to make clear that I view white people as racialized and bound up in systems of racial oppression and domination through the substance of my arguments and analysis. When quoting other sources, I follow their capitalization choices.

inequity (DiAngelo, 2018; Hogeland, 2021; Joseph et al., 2021; Wilson & Kumar, 2017). As journalist Nikole Hannah-Jones (2019) argues, people still have largely failed to reckon with the long and brutal history of chattel slavery and systemic racism in the United States.

In the field of teacher education, supporting teacher candidates to grapple with issues of race and racism is central goal for many instructors (K. D. Brown, 2013; King, 1991; Milner & Laughter, 2015; Picower & Kohli, 2017; C. Sleeter, 2001, 2016; Solorzano & Yosso, 2001). Often, work on the history of racial inequity and on racial identity takes place in dedicated courses, such as courses on the social foundations of education, multicultural education, or diversity in education (e.g., Case & Hemmings, 2005; Flynn, 2015; Goldin et al., 2021; Hayes & Fasching-Varner, 2015; Khasnabis et al., 2019; Lawrence, 1997; Ohito, 2016; Picower, 2009; Ullucci & Battey, 2011). It is much less common, however, for instructors of subject-specific teacher education courses, such as math content and methods courses, to prioritize and take on issues of race and racism as their responsibility and domain (e.g., Shah & Coles, 2020; Sheth, 2019). In this division of labor between social foundations courses and subject-specific content and methods courses, there is an implicit assumption that teacher candidates will take what they have learned about issues of race, racism, and educational inequities from foundations courses and *apply that knowledge* in their teaching of specific subject matter.

However, existing scholarship on race-focused teacher education and anti-racist education offers several reasons to be skeptical that teacher candidates will unproblematically take up and apply learning about race and racism in specific teaching situations. For one, discussions of race and racism are, in and of themselves, extremely challenging to facilitate productively. Despite evidence of the long-standing and continuing import of race and racism in the United States, pivotal and deep-seated differences in how people conceive of race and racism

make efforts to address racism contentious and fraught (DiAngelo, 2018; Marx, 2006; Sensoy & DiAngelo, 2017; Tatum, 1997). For example, as DiAngelo (2018) explains, most white people have been socialized to equate racism with being a bad person and intentionally disliking or discriminating against others because of their race. This can lead to white resistance, defensiveness, denial, and disengagement in conversations about race and the possibility of white complicity with racism (DiAngelo, 2018; Haviland, 2008; Marx, 2006; McIntyre, 1997; Picower, 2009; Solomon et al., 2005; Vaught & Castagno, 2008). It can also lead to people of color experiencing frustration, marginalization, and other forms of harm, such as microaggressions, when participating in discussions about race and racism, particularly in predominantly white settings (Amos, 2016; Haddix, 2016; Picower & Kohli, 2017). In addition, research shows that in spite of efforts to build critical understanding of racism as a structural, pervasive, and persistent problem, white teachers and teacher candidates often maintain and enact “color-blind” ideologies (Bonilla-Silva, 2018) that minimize the continuing salience of race and racism (Cross, 2005; Jupp et al., 2019; C. Sleeter, 1992; Viesca et al., 2013; Yoon, 2012). Teachers’ enactments of these ideologies can, in turn, inflict and perpetuate racial harm in schools (Lewis & Diamond, 2015; Love, 2019; Martin et al., 2019; Marx, 2006; Rolón-Dow, 2005; Ullucci & Battey, 2011).

Given the challenges that have been documented by race-focused teacher educators, there is good reason to question how teacher candidates engage with and reason about issues of race and racism within the context of learning to teach a specific subject matter, such as mathematics. Considering prior research documenting the resistance of white teachers in particular to engaging with issues of race and racism, it is possible that many teacher candidates may not reach the point of *trying* to act on learning about race and racism because they reject the premise that race and racism have meaningful impact on the teaching and learning of the subject matter. In other

words, it might be the case that teacher candidates meet teacher education efforts to make explicit connections between issues of race and racism and subject-specific teaching practice with skepticism and resistance, and therefore default to teaching practices learned informally through their own school experiences (Ball, 1988b; Britzman, 2003; Lortie, 1975; Menter, 1989). This suggests a need to explore whether and how teacher candidates' resistance to the topics of race and racism per se might impede or complicate teacher education efforts to explicitly tie consideration of race and racism to the work of teaching specific subject matter.

Although resistance is one possible response, it is also plausible that teacher candidates might agree with the proposition that teachers have enormous power to either perpetuate or disrupt patterns of racism and other forms of oppression in school (Ball, 2018). Teacher candidates may, therefore, display interest in learning what they might do differently in their own practice (McDonald, 2005; Pollock, Deckman, Mira, & Shalaby, 2010). If teacher candidates take seriously the idea that racism is endemic in U.S. society, and therefore pervades teaching and learning of all subjects, how might that idea shape their early forays into teaching? Recent studies in teacher education offer insights into how understandings of race, racism, and racialization, along with related ideas about social justice, might surface in teacher candidates' enactment of particular practices. For example, there are studies examining teacher candidates' enactments of partnering with families through parent-teacher conferences (Goldin et al., 2018; Khasnabis et al., 2018, 2019), leading interactive writing lessons (Dutro & Cartun, 2016), facilitating text-based discussions (Kavanagh & Danielson, 2019), and teaching about race in social studies (Martell, 2017).

Compared to work in literacy and social studies teacher education, however, there has been less investigation into how consideration of race and racism might shape teacher



candidates' practice in the area of teaching mathematics. In mathematics, there is a strong tradition of scholarship exploring teacher candidates' beliefs and dispositions regarding mathematics as a discipline (e.g., Ambrose, 2004; Clark et al., 2014; Cooney, Shealy, & Arvold, 1998; Stipek, Givvin, Salmon, & MacGyvers, 2001). A subset of this scholarship includes a focus on how mathematics teachers' beliefs, orientations, and goals relate to equitable teaching for children of color (Foote et al., 2013; Sztajn, 2003; E. E. Turner et al., 2012) and/or pursuing social justice through math teaching (e.g., Bartell, 2013; Felton-Koestler, 2017; Leonard & Evans, 2012; Simic-Muller, Fernandes, & Felton-Koestler, 2015). Yet, while there are scholars who consider race and racism in the context of mathematics education, there are few examples of studies that explicitly examine *teacher candidates' thinking and practice* with respect to race and racism *inside of math teaching*; Shah and Coles (2020) and Harper, Maher, and Jung (2021) offer notable exceptions. Thus, there is a need for more research on mathematics teacher candidates' development that is squarely focused on race and racism. Moreover, the field needs to know more about how ideas about race or racism can inform what teachers actually *do* in specific teaching situations, not just what teachers believe, know, or intend (Cochran-Smith et al., 2015; Leonard & Moore, 2014).

## **1.2 Focusing on White Teacher Candidates**

White teachers make up the majority of the U.S. K-12 workforce, and white teacher candidates predominate in teacher education programs (C. Sleeter, 2001; U.S. Department of Education, 2016). Many have called for pointed efforts to diversify teaching and teacher education, including increased scholarly attention to the experiences of teachers and teacher candidates of color and the factors that influence their recruitment and persistence (e.g., Carter Andrews et al., 2019; Frank et al., 2021; Gomez, 2014; Haddix, 2016, 2010; J. G. Irizarry, 2007;

Kohli, 2009; Navarro et al., 2019; Souto-Manning & Emdin, 2020; Woodson & Bristol, 2020). I view such efforts as vitally important and necessary. At the same time, I recognize the need for insights and knowledge that could support the race-focused preparation of teachers *right now*. The reality is that this means working on issues of race and racism with a substantial number of white teacher candidates. Given this, I approached this study by drawing on literature and concepts from critical whiteness studies (such as *race cognizance* from Frankenberg, 1993), which informed my decision to focus on white teacher candidates. In addition, focusing on white teacher candidates reflects my belief that dismantling racist structures is the work and responsibility of white people. Further knowledge of what it takes to seed and support genuinely impactful white anti-racist efforts in K-12 classrooms is sorely needed. As I discuss in the closing chapter, I think that additional research is required to explore the specific learning, experiences, and developing practice of elementary teacher candidates of color.

### **1.3 Study Overview**

This study investigates how white elementary teacher candidates engage with issues of race and racism within mathematics teacher education coursework. Specifically, this study explores the learning, discourse, and early practice of six teacher candidates as they progress through two courses focused on teaching children mathematics. Utilizing a qualitative case study approach (Merriam, 2001), I purposefully selected a mathematics teacher education context where issues of race and racism were explicitly addressed and course instructors supported a form of race cognizant math teaching. As I conceptualize it, race cognizant math teaching involves enacting *race cognizance* (Frankenberg, 1993), a racial ideology stemming from critical whiteness studies, within the space of mathematics teaching. In the context of this particular two-course sequence on mathematics teaching, I pursue three research questions:

1. How do focal teacher candidates take up course ideas and practices that have the potential to support race cognizant mathematics teaching? What trajectories characterize this uptake?
2. What uptake of course ideas and practices is evident in focal teacher candidates' early enactments of mathematics teaching?
3. How do focal teacher candidates engage with issues of race and racism in their talk and writing, and what does this reveal about their learning?

The first two research questions focus on ideas and practices emphasized in the math teaching course sequence that have the potential to support race cognizant math teaching. I draw on observations of class sessions, submitted course assignments (including video records of math teaching enactments), and interviews to explore focal teacher candidates' uptake of course emphases and alignment with race cognizance (Frankenberg, 1993). In the process, I describe opportunities to learn about and act on ideas about race and racism that were provided by the two courses on mathematics teaching. However, my primary purpose is to examine and characterize how a sample of white teacher candidates made sense of and responded to those ideas and practices, not to make claims about the teacher education pedagogies that were used.

The third research question focuses on teacher candidates' talk and writing about issues of race and racism across their course assignments and interviews. This includes both implicit and explicit references to race and racism. I consider teacher candidates' discourse in relation to recognized ways of thinking through race, including race evasiveness and race cognizance (Frankenberg, 1993; Jupp et al., 2019). This analysis provides insight into ways that teacher candidates conceptualize and reason about race and racism in relation to elementary math teaching. By investigating focal teacher candidates' learning, discourse, and early practice, I aim

to draw conclusions about what is possible and what is challenging in efforts to promote critical attention to race and racism within math teaching. I hope to inform ongoing efforts in teacher education to support new teachers to meaningfully reckon with the ongoing salience of race and racism and to act on anti-racist commitments in their everyday teaching practice.

#### **1.4 Organization of the Dissertation**

This first chapter has introduced the focus of this dissertation and situated the study in relation to race-focused and mathematics teacher education. In Chapter 2, I present my conceptual framework, which draws on critical race perspectives, insights from critical whiteness studies, and a set of assumptions about the work of teaching and learning to teach. I explain what I mean by race cognizant math teaching, and also review relevant literature on white people's engagement with issues of race and racism. Chapter 3 describes the methods used in this study and includes an introduction to the research context and focal participants. I then present my findings in two parts. Part 1 (Chapter 4) addresses my first two research questions about teacher candidates' uptake of course ideas and practices that have the potential to support race cognizant math teaching. Part 2 (Chapter 5) tackles the third research question about teacher candidates' engagement in with issues of race and racism through their talk and writing. The dissertation concludes with Chapter 6, which includes a discussion of key findings and arguments, implications for teacher education and research, and closing comments.

## Chapter 2 Conceptual Framework and Literature Review

My approach to this study draws on concepts from scholarship both within and beyond mathematics teacher education. In this chapter, I identify and define the concepts that were central to my framing of this inquiry, my study design, and my interpretation of data. I also articulate basic stances that pervade the research. As I discuss in Chapter 3, this conceptual framework functioned as a starting point and a flexible set of tools for making sense of the study context and teacher candidates' talk, writing, and early enactments of mathematics teaching; it shifted and evolved as I combined concepts from literature with ideas that emerged inductively from the data. What I present here reflects my thinking at the end of the study.

This chapter is organized into six sections. Each section articulates a key aspect of my conceptual framing, citing relevant literature that informs and shapes my perspective. First, drawing on critical race perspectives, I explain how I understand and define race and racism. Second, I describe patterned ways that prior research has shown that white people, teachers, and teacher candidates tend to talk and think about race and racism in the United States following the Civil Rights movement. Third, I articulate key assumptions and stances that undergird my understanding of the work of elementary mathematics teaching. Fourth, I introduce the concept of *race cognizant math teaching* and describe ways that I see issues of race and racism as intertwined with math teaching and learning. Fifth, I articulate my perspective on learning and learning to teach. Finally, I discuss my assumptions about how the identities of teacher candidates, course instructors, and myself as a researcher matter in this study.

## 2.1 Defining Race and Racism

My own understanding of race and racism draws from critical race perspectives. Specifically, I understand *race* to be a socially constructed category that has been used in ways that are inextricably tied to systems of power (Taylor, 2004). While racial categories are not “real” in a biological sense, the construct of race, along with associated beliefs and ideologies of white supremacy, has very real material consequences in people’s lives (Frankenberg, 1993; C. I. Harris, 1993; Ladson-Billings, 1999, 2018; Omi & Winant, 1994). I understand *racism* to be a historically rooted, pervasive, and persistent social *system* that, in the United States as elsewhere, advantages, elevates, and centers white people while oppressing and marginalizing people of color (Bonilla-Silva, 2001, 2015). Although racism shifts and changes form across time and contexts (K. D. Brown, 2018; Omi & Winant, 1994), it is *endemic* and *permanent* in U.S. society, deeply ingrained in everyday life, including in education (D. Bell, 1992; Ladson-Billings & Tate, 1995; Milner, 2017). This understanding is based on core tenets of critical race theory.

Defining racism as systemic and structural means that racism *includes* but also *goes beyond* individual prejudice and discrimination (Bonilla-Silva, 2001). I recognize the reality and impact of interpersonal racism that takes place between individual people, such as the use of racial slurs, stereotypes, and differential treatment. However, interpersonal dynamics are not isolated or random events — they are shaped and patterned by cultural, historical, and institutional contexts as well as by individuals’ positions within power structures (Bonilla-Silva, 2001; Golash-Boza, 2016; Omi & Winant, 1994). For example, consider the history of residential segregation by race. As Massey and Denton (1993) illustrate, the creation of Black “ghettos” in U.S. cities during the first half of the 20<sup>th</sup> century was fueled by the combination of individual actions (e.g., an individual white realtor not showing a particular property to a Black

family), group actions (e.g., mob violence against Black families and homes; the formation of white neighborhood “improvement” associations), and institutional and governmental policies (e.g., redlining specific areas as “high risk” for loans; restrictive covenants preventing the racial mixing of neighborhoods). While there were individual people involved in renting, buying, selling, and financing homes who acted in racially prejudiced and discriminatory ways, these actions were *made possible* and rendered logical and socially acceptable by the larger social, cultural, political, economic, and institutional context (this is also made clear by Rothstein, 2017). Moreover, the impact of individual prejudicial beliefs and actions differs depending on social position (Sensoy & DiAngelo, 2017). While anyone can personally hold prejudices and act in discriminatory ways, access and proximity to power significantly shapes the consequences of those individual beliefs and actions in relation to broader racial structures. I mean this in both a literal sense (e.g., a person holding government office, such as a U.S. Senate seat, can directly influence policy, such as protections for voting rights) and in an indirect sense. For instance, the racist assumptions and actions of three white men in Georgia resulted in their murder of Ahmaud Arbery, a 25-year-old Black man who had been out for a run. Although these white men did not hold *official* positions of power, their confidence that people would accept and believe their claims of acting in self-defense demonstrates the *effective* power of their position as white men in a society structured by endemic racism and white supremacy (Andone et al., 2022).

To be clear, racism and racial inequality are not the direct result of any one person’s actions, but individuals necessarily contribute to, participate in, and help maintain systems of racism (Bonilla-Silva, 2001). Understanding racism as systemic means that while racism is certainly reinforced and perpetuated through individual interactions, those interactions are structured and patterned; individual people have agency to choose among different courses of

action, but that agency is shaped by context and social position (Barker & Jane, 2016). Thus, taking a systemic view of racism requires considering individual beliefs and actions in relation to social contexts, histories, and power structures. In this, I adopt Bonilla-Silva's (1997, 2001) stance of emphasizing and examining racial *ideology* over the racial *attitudes* of individuals. Bonilla-Silva (2001) defines ideology as the "broad mental and moral frameworks, or 'grids' that social groups use to make sense of the world, to decide what is right and wrong, true or false, important or unimportant" (p. 62). *Racial* ideology, then, consists of broad frameworks used by social groups for making sense of the racial status quo (Bonilla-Silva, 2001). In my analysis of teacher candidates' ways of thinking and talking about race and racism, I speak to ways that individual participants align with and depart from existing racial ideologies. This allows me to connect ideas and ways of reasoning about race *conveyed by individuals* to patterns of thought that are prominent and impactful in the broader *social context*.

Moreover, following critical race theorists, I recognize that "racism is normal or ordinary, not aberrant, in US society" (Ladson-Billings, 2013, p. 37). In other words, racism pervades everyday life in the U.S. — it is the default rather than the exception. This includes the idea that racism can manifest in ways that seem innocuous or well-intentioned. For example, as Lewis and Diamond (2015) describe in their study of a suburban high school, white parents publicly expressed commitments to diversity and equal opportunity while simultaneously pursuing and protecting privileges for their own children, such as leniency with disciplinary policies and placement in honors or advanced classes. These parents' actions protected the existing racial order and contributed to systemic racism, even if that was not their intent. While contacting a principal to challenge a disciplinary decision may seem "normal" and may be carried out without racial malice, what matters from a critical race perspective is that such an action can reinforce



racial hierarchies and further existing inequities. In this example, the white parent's actions may increase pressure for teachers to be more lenient on white students when implementing discipline policies and thereby contribute to the disproportionate punishment of students of color (Lewis & Diamond, 2015). One does not need to hold extreme white supremacist views to enact and reinforce patterns of systemic racism.

In addition, I think it is important to make explicit that race and racism are not concepts or phenomena that are solely relevant to people of color. As Harris (1993), Frankenberg (1993), DiAngelo (2018), and numerous other critical scholars of whiteness argue, "white" is a socially constructed racial category that, embedded within systems of racism and white supremacy, confers rights, privileges, and material advantages to members of the white racial group, regardless of whether individual white people consciously hold racist beliefs<sup>2</sup> or embrace racist ideologies. For example, there are countless unearned privileges conferred to people with light skin (people who are raced as white), such as presumed innocence and credibility in everyday settings like making purchases at a store (McIntosh, 1989). In other words, being perceived as white in a racist society *does* have an impact on a person's lived experiences and opportunities in the form of unearned advantages *whether or not* that person desires or approves of those

---

<sup>2</sup> In referring to individual people *consciously holding* racist beliefs, I mean to distinguish the beliefs that a person acknowledges and endorses from the beliefs that a person may reject outright but are still implied by their words and actions. For example, one might espouse a belief in the inherent equality of all people and reject overtly racist statements about people of color being deficient in character, comportment, and intelligence (Darby & Rury, 2018), but still act in ways that are racially biased, such as interacting with greater warmth and immediacy when interviewing a white job applicant compared to a Black job applicant (Word et al., 1974). In other words, people can act in ways that reinforce racial hierarchies and inequalities even if they do not endorse prototypically racist beliefs (Rudman & Ashmore, 2007). I recognize that there is ongoing debate as to whether individuals can truly be *unconscious* of biases, and I do not intend to imply that people are not responsible for biased actions that contradict their expressed beliefs. My point here is that by virtue of living in a society that is structured by racism, white people can (and inevitably do) both receive racial advantages and reinforce racial inequities without necessarily subscribing to overtly racist ideas.

advantages (how white people *use* or *react* to unearned advantages is another matter). Thus, although the experiences and outcomes are quite different, white people's lives are just as much shaped by race and racism as the lives of people of color (Frankenberg, 1993).

Finally, I want to make clear that I do not believe that race and racism explain all inequities, nor do I believe that all people within the same racial category experience racism in the same ways. As Solórzano and Yosso (2002) write, "A critical race methodology in education also acknowledges the intercentricity of racialized oppression—the layers of subordination based on race, gender, class, immigration status, surname, phenotype, accent, and sexuality" (p.25). Thus, in drawing on critical race perspectives to conceptualize race and racism, I recognize that racism intersects with and is compounded by other forms of oppression (Collins, 1998; Crenshaw, 1989). Without seeking to diminish the reality or importance of understanding and fighting intersectional oppression, I choose to focus explicitly on race and racism in mathematics teaching and teacher education. I do this because, as Martin (2003, 2009a, 2009b, 2015, 2019) and others (e.g., Diversity in Mathematics Education Center, 2007; Rousseau & Tate, 2003; Shah & Coles, 2020) have repeatedly argued, there is insufficient attention to and conceptualization of race, racialization, and racism within mainstream mathematics education research.

## **2.2 Modes of "Thinking Through Race"**

Given that the concept of race and systems of racism are socially constructed, the ways that people *think* about race and racism also have social roots (Bonilla-Silva, 2001; Gee, 2012; Omi & Winant, 1994; Sensoy & DiAngelo, 2017; C. Sleeter, 1992; Tatum, 1997). As Tatum (1997) and DiAngelo (2018) document, starting very early in life, people receive constant messages, both implicit and explicit, about race from their families, peers, and communities, as well as from popular media. Sensoy and DiAngelo (2017) describe this ongoing messaging as

part of how people are *socialized* into racial membership as well as into society at large. Gee (2012) similarly asserts that people are socialized into primary discourses that imply ideological perspectives, values, and ways of being. Gee (2012) defines discourses (which he denotes with a capital D, as Discourses) as “ways of behaving, interacting, valuing, thinking, believing, speaking, and often reading and writing, that are accepted as instantiations of particular identities... by specific groups” (p. 3). Thus, while discourses, following Gee’s (2012) conception, include uses of language such as written and spoken texts, they also involve ideas about what it means to be a particular kind of person. Gee (2012) writes, “[Discourses] are socially situated identities. They are, thus, always and everywhere social products of social histories” (p. 3). It is well established that, broadly speaking, white people and people of color are socialized to think about race and racism quite differently (DiAngelo, 2018; Sensoy & DiAngelo, 2017; Tatum, 1997). This suggests that, because of their social histories, white people are brought into particular discourses, and therefore particular situated identities, with regard to race and racism. Thus, to make sense of how white teacher candidates might think about race and racism in connection to teaching elementary mathematics, it is necessary to consider how teacher candidates relate to and interact with existing discourses about race and racism. This section will describe such discourses, as well as other patterned ways of thinking about race and racism that white teacher candidates might reflect.

To frame my analysis of teacher candidates’ ways of engaging with issues of race and racism, I primarily draw on Frankenberg’s (1993) articulation of three main discourses or “modes of thinking” about racial difference, which she terms *essentialist racism*, *color evasiveness and power evasiveness*, and *race cognizance* (pp. 14–15). These three discourses

emerged from Frankenberg's expansive interview-based study with 30 white women living in the United States in the 1980s.

Given Frankenberg's focus on white *women*, one might wonder whether her conceptualization of these discourses is relevant to white people who are not women. However, as Leonardo and Boas (2013) argue:

The significance of the interview data is that Frankenberg discovers White discursive moves and use of language to apprehend race. The fact that her participants happen to be women does not change fundamentally the analysis. It is their whiteness that matters in the end, not their White womanness. (p. 317)

In other words, there is reason to interpret Frankenberg's analysis of white women's discourse about race as findings about *whiteness* rather than about *gender-specific* ways of thinking about racial difference. Given that other scholars have identified and documented similar discourses across gender lines (e.g., Bonilla-Silva, 2002, 2018; Jupp et al., 2019; Lewis, 2004), I use Frankenberg's discourse categories as applicable to white teacher candidates of all genders.

The discourses of essentialist racism, color evasiveness and power evasiveness, and race cognizance are not *unique* to white people, but as Frankenberg's (1993) work illustrates, they feature prominently in the ways that white people make sense of and engage with issues of race and racism. Frankenberg (1993) characterization of these three discourses as modes of "thinking through race" (p. 137) emphasizes that the ways people think about race shape how they interpret and reinterpret their lived experiences, which also influences their actions moving forward. In other words, modes of thinking through race are interrelated with acting in the world and making meaning of experiences. Frankenberg (1993) also points out that her participants drew on elements of these different discourses as part of their "discursive repertoires," reflecting "the way

in which strategies for thinking through race were learned, drawn upon, and enacted, repetitively but not automatically or by rote, chosen but by no means freely so” (p. 16). In other words, there is not a direct line between the discourses people are exposed to and the elements of discourses that people actually take up and enact, but there are recognizable connections between individuals’ discursive repertoires and broader discourses. In the sub-sections that follow, I summarize key ideas from Frankenberg (1993). I then briefly review a selection of literature on other patterned ways that white people and white teachers and teacher candidates tend to engage with issues of race and racism.

### ***2.2.1 Essentialist Racism***

Frankenberg (1993) characterizes *essentialist racism* as the perspective that racial difference reflects inherent biological inequality and hierarchy. This corresponds with what some refer to as *scientific racism*, or attempts to give biological meaning to racial categories (Davis & Martin, 2008; Kendi, 2019; Omi & Winant, 1994; Taylor, 2004). The term “essentialist” refers to the process of *essentializing* members of a given racial group, or assuming that group members share *essential* or inherent characteristics and therefore think, act, and believe in similar ways. This is in direct opposition to the notion of anti-essentialism in critical race perspectives (Ladson-Billings, 2013). Essentialist racism reflects what might be considered “old-fashioned” or Jim-Crow era racism, which, although it is no longer the dominant, socially-accepted discourse in the United States, lives on with groups like the Ku Klux Klan, neo-Nazis, and the Alt-Right (Bonilla-Silva, 2019). Frankenberg (1993) argues that essentialist racism has ongoing influence as a set of ideas that people are for or against, as well as in allowing people to reserve the label of “racist” for extreme and overt instances of racial bigotry.

### 2.2.2 Race Evasiveness

A second discourse, which Frankenberg (1993) calls *color evasiveness and power evasiveness*, posits that “we are all the same under the skin” (p. 14) and that people have equal chances in U.S. society. Commonly referred to as *color-blindness* (e.g., Lewis, 2004; Ullucci & Battey, 2011) and *color-blind racism* (Bonilla-Silva, 2002, 2015, 2018), this mode of thinking about race is “organized around an effort to not ‘see,’ or at any rate not to acknowledge, race differences” (Frankenberg, 1993, p. 142). As Frankenberg (1993) points out, color evasiveness is often deployed as a reaction to essentialist racism, a seemingly anti-racist response to overtly bigoted ways of seeing race difference. A prime example of this is the way that many people embrace the sentence, “I have a dream my four little children will one day live in a nation where they will not be judged by the color of their skin but by the content of their character” from Dr. Martin Luther King, Jr.’s March on Washington speech as the epitome of anti-racism (King, Jr., 1963; R. Turner, 1996). Color evasive discourse takes Dr. King’s words to mean that people should *look past* skin color, to see people as equal *regardless* of race; this ignores Dr. King’s race consciousness and fervent calls to action in dismantling structural and systemic racial inequities (R. Turner, 1996). Moreover, seeking to “not see color” while also evading recognition of the existing racial power structure leads people “back into complicity with structural and institutional dimensions of inequality” (Frankenberg, 1993, p. 143). Thus, within the discourse of color- and power-evasiveness, people may view themselves as anti-racist even as they effectively contribute to and reinforce the racial status quo.

In her analysis of white women’s use of this discourse, Frankenberg (1993) highlights that participants generally equated “seeing race” with being racist and “bad.” This reflects what DiAngelo (2018) calls the “good/bad binary,” which frames being a good person as mutually

exclusive with being racist. In other words, because being racist is bad, “a person who is good cannot by definition be racist” (Frankenberg, 1993, p. 147). This view elevates the importance of people’s *intentions* in interactions across racial difference, as “good intentions” preclude racism within the color- and power-evasive way of thinking. Because seeing race is closely associated with racism and badness, within this discourse people tend to treat race as a taboo topic and often conflate the act of *naming race* with being racist (DiAngelo, 2018; Marx, 2006; Tatum, 1997). Consequently, people often use euphemisms (e.g., describing Black people as “colorful”) to talk about racial difference while avoiding questions of power (Frankenberg, 1993, p. 149). Like Bonilla-Silva (2015, 2018, 2019), Frankenberg (1993) characterizes color- and power-evasiveness as the dominant public discourse about race in the contemporary United States.

Frankenberg (1993) explains that she uses the term “evasiveness” rather than “blindness” because blindness “places a value judgment on a physical disability” and because her interviews with white women suggest that people are *avoiding* acknowledgment of racial difference and positions of power, rather than literally not seeing (p. 268). Annamma and colleagues (2017) echo this stance, further arguing from a Dis/ability Critical Race Theory perspective that the term “color-blindness” is ableist in using a dis/ability as a metaphor for lacking knowledge and understanding. I agree with this rationale. I also think that the term “race,” as I have defined it, carries the connection between skin color and systems of power, so I refer to this discourse as *race evasiveness*.<sup>3</sup>

---

<sup>3</sup> As I applied the concept of race evasiveness in my data analysis, I came to make a distinction between the evasion of race *words* and the evasion of particular *ideas* regarding the continuing salience of race and racism. I discuss this distinction between discursive and ideological race evasiveness at greater length in my methods, findings, and discussion chapters. Relevant here is that, to clarify my meaning, I often draw on Bonilla-Silva’s work describing the linguistic style, frames, and storylines of color-blind racism. When I do so, I use Bonilla-Silva’s language (i.e., referring to color-blind ideology or color-blind racism).

### 2.2.3 Race Cognizance

In contrast to the dominant discourse of color- and power-evasiveness, Frankenberg (1993) characterizes *race cognizance* as a critical perspective departing from the status quo and raising questions about how to take anti-racist action. She writes:

Race cognizance articulates explicitly the contradiction that racism represents: on the one hand, it acknowledges the existence of racial inequality and white privilege and, on the other, does not lean on ontological or essential difference in order to justify inequality or explain it away. (By contrast, the color- and power-evasive repertoire is organized around the effort to repress or evade this contradiction). Race cognizance in this sense generate[s] a range of political and existential questions about white complicity with racism. (Frankenberg, 1993, p. 160)

In other words, race cognizance involves *direct naming* of racial inequality and grappling with social structures that (re)produce it, including individuals' complicity in larger systems.

From my perspective, race cognizance represents the mode of thinking through race that is most aligned with critical race conceptions of race and racism. For instance, race cognizance frames race as a social construct (not an “ontological or essential difference”) that is tied to very real inequalities and white privilege. In addition, race cognizance, like critical race theory, is committed to confronting the continuing reality of racism, rather than trying to “explain it away” (DeCuir & Dixson, 2004; López, 2003; Parker & Lynn, 2002). In generating “political and existential questions about white complicity with racism,” race cognizance also entails anti-racist commitments and *critical reflexivity*, or active reflection on one's own racial location and participation in systems of racial oppression (labeled as *reflexive race cognizance* in O'Brien, 2000). Thus, white people demonstrating race cognizance recognize their own whiteness and,



based on an understanding of racism as structural and system, grapple with how they can resist and help to dismantle racial hierarchy and inequalities.

As I discuss in the section on race cognizant math teaching below, one contribution of this dissertation is to conceptualize what it might mean to engage in elementary math teaching from a race cognizant standpoint.

#### ***2.2.4 Additional Patterns from the Literature***

Beyond Frankenberg's (1993) concepts of essentialist racism, color- and power-evasiveness, and race cognizance, I also drew on other literature about how white people — and white teachers and teacher candidates in particular — tend to engage with issues of race and racism. The bulk of this literature emphasizes and illustrates white people's tendencies to evade sustained and critical consideration of race. This helped me to recognize and interpret different forms of race evasion in study data. In this section, I provide a selective review of this literature, focusing on findings and arguments that shaped my expectations for teacher candidates' engagement with issues of race and racism going into this study. I want to be clear that my purpose here is not to provide a historical or comprehensive account of critical whiteness studies or white teacher identity studies but instead to highlight specific concepts and patterns that informed my thinking.

Following Jupp et al. (2019) and Twine and Gallagher (2008), I recognize that African American scholarship and intellectual traditions, and the work of W.E.B. Du Bois in particular, led the way in theorizing and developing critical understandings of white identity and whiteness. I also recognize the interrelationship between critical whiteness studies and critical race theory, which was originally conceived by African American legal scholars (Jupp et al., 2019; Leonardo,

2013; Twine & Gallagher, 2008). Much of the literature that I draw upon stems from and builds upon this lineage of African American scholarship, though that is not often made explicit.

I organize this review into three categories: (a) work focused on how white people engage in and respond to *talk* about race and racism, (b) work focused on how white people *conceptualize* and make sense of race and racism, and (c) work focused on how white teachers and teacher candidates can and often do *maintain and enact dominant racial ideologies* (i.e., race evasiveness and whiteness) in and through their practice, despite their “good” intentions.

**Engaging in and Responding to Talk about Race and Racism.** Prior research shows that white people are often reluctant to engage in direct discussions about race or racism (DiAngelo, 2018; Marx, 2006; McIntyre, 1997; Picower & Kohli, 2017; Pollock, 2004). This reluctance can manifest in several different ways. For instance, proving that one is *not racist* can become an over-riding concern, impeding critical discussion of racial issues (Bonilla-Silva, 2002; Oluo, 2019). As Bonilla-Silva (2001, 2002, 2018) documents in his analyses of interview and survey data from studies in 1997 and 1998, white people use several rhetorical strategies to “safely” express their racial views without appearing racist. These strategies include using disclaimers such as, “I am not prejudiced, but...,” suggesting ambivalence (e.g., “Yes and no, but...”), using diminutives (e.g., “I am a little bit against affirmative action”), and projecting racism onto people of color (Bonilla-Silva, 2002). Another tactic is attributing racial inequalities to “anything but race,” instead pointing to alternative explanations, such as class or economic disparities (Bonilla-Silva, 2002). Additionally, when talking about racial issues, white people often exhibit some degree of incoherence, including digressions, long pauses, repetition, and self-corrections (Bonilla-Silva, 2002). Bonilla-Silva (2002) describes these moves and patterns as the *linguistic style* of color-blind racism, emphasizing that the appearance of ambivalence is a

feature of talking about race in a society that contends that race does not matter.

Other researchers have also documented ways that white people avoid and disengage from critical talk about race and racism. For example, Haviland (2008) describes patterns of “glossing over” issues of race, racism, and white supremacy by white teachers and students in predominantly white settings. Haviland’s participants “spoke, behaved, interacted, and thought about race, racism, and White supremacy in ways that were powerful yet power-evasive,” doing things like avoiding words that might offend others, speaking with numerous false starts, and sticking with “safe” self-critiques, such as pointing to mistakes made in the past (Haviland, 2008, p. 44). Participants also asserted ignorance or uncertainty, let others off the hook, cited authority, remained silent, and changed the topic (Haviland, 2008). In addition, Haviland (2008) found that participants maintained the power of whiteness by using discourse moves “focused on creating feelings of closeness, comfort, safety, encouragement, and sameness” (p. 47). This echoes findings from McIntyre (1997), who noted that the white student teachers in her study often met the realities of racism with “a set of affective strategies that minimized the consequences of racism for people of color and maximized the ‘feeling realm’ of the participants” (p. 69). In other words, in settings presumably dedicated to talking about issues of race, racism, and whiteness, white participants often responded in ways that avoided taking responsibility for racism and that prioritized their own feelings and comfort.

Similarly, Case and Hemmings (2005) described white women teacher candidates as “backing away” from discussions focused on race and racism in a course on social inequities, using “distancing strategies” like silence, social disassociation, and separation from responsibility. For example, participants described retreating into silence when friends or family members engaged in overtly racist talk to avoid social disapproval or confrontation; they also did

not participate in class discussions about race and racism (Case & Hemmings, 2005). In addition, participants disassociated themselves from white racism by insisting that they were not racist, suppressing ideas or actions that could be interpreted as racist, positioning themselves as color-blind, and by paying more attention to culture than race (Case & Hemmings, 2005). In a similar vein, Castagno (2008) documents how white teachers at two middle schools resisted and silenced discussion of race and racism by relying on racially coded language (e.g., using language and refugee status as signifiers for race), ignoring students' race talk, actively silencing student race talk, and engaging in discursive patterns that "conflate culture with race, equality with equity, and difference with deficit" (p. 320). This echoes Pollock's (2004) finding that people at a California high school routinely engaged in *colormuteness*, or purposeful silencing of talk about race and racial inequality.

A consistent theme in this literature is that white people often try to show that they are "good whites" (in contrast to the "bad whites," who are racist) while simultaneously avoiding meaningful consideration of the realities of racism, the experiences of people of color, and their own responsibility in maintaining the racial status quo. This stance of trying to prove oneself as not racist and good often corresponds with defensiveness and resistance to further discussion about race or racism (Case & Hemmings, 2005; Castagno, 2008; DiAngelo, 2018; Oluo, 2019; Picower, 2009). DiAngelo (2018) describes this as the phenomenon of "white fragility," in which white people perceive and respond to challenges to their racial views or attention to white advantages as a personal attack, becoming angry, defensive, argumentative, withdrawn, or publicly emotional (e.g., crying). As DiAngelo (2018) explains, "these responses work to reinstate white equilibrium as they repel the challenge, return our racial comfort, and maintain our dominance within the racial hierarchy" (p. 2). In other words, when people exhibit white

fragility, they shift the focus of the conversation *away* from understanding racism to center on their own feelings and sense of righteousness. As DiAngelo (2018) and many others have pointed out, this reaction serves to protect the racial status quo and prevent meaningful critique.

In a teacher education context, Picower (2009) similarly describes how white teacher candidates used emotional, ideological, and performative “tools of Whiteness” to resist learning in a multicultural education course and to maintain their prior “hegemonic understandings,” such as deficit-oriented constructions of urban schools, students, and families and a view of white people as victims. Picower (2009) characterizes teacher candidates’ response as using tools of whiteness, rather than mere resistance, because “these tools are not simply a passive resistance to but much more *active protection* of their hegemonic stories and White supremacy” (pp. 204–205). Relatedly, Evans-Winter and Twyman Hoff (2011) detail ways that white teacher candidates resisted and derailed efforts to support their learning about systems of oppression in social foundations courses. Specifically, white teacher candidates used end of the year teaching evaluations to push back against anti-racist philosophies and express racist views, including racist comments about their Black female professors. Evans-Winter and Twyman Hoff (2011) argue that the university’s unquestioning use of student feedback institutionalized white teacher candidates’ cultural hegemony. Taken together, this literature illustrates white people’s tendencies to evade and resist direct and critical talk about issues of race, racism, and whiteness.

**Conceptualizing Race and Racism.** There is another subset of literature that speaks to how white people tend to understand race and racism. These understandings undergird people’s sensemaking about what “counts” as racism and their own roles and responsibilities with respect to racism. In other words, conceptions of race and racism are central components of racial ideologies, which is a major focus of this dissertation. Literature on racial conceptions and

ideologies shows that, in general, white people tend to conceive of racism as an *individual* rather than a systemic problem. In addition, many white people do not see themselves as racialized (i.e., they don't consider whiteness to be part of race) and therefore resist reckoning with the privileges and advantages that whiteness affords. This individual focus and evasion of the implications of whiteness aligns with and supports what Bonilla-Silva (2015, 2018) calls the *central frames*, or established paths for interpreting information, of color-blind racism.

White people's tendency to focus on individuals in their thinking about racism has been documented by scholars in multiple fields. For example, social scientists have found that white Millennials (born post-1980) commonly define racism as requiring intent and are uncomfortable labeling entire systems as "racist" (Apollon, 2011). In other words, this research showed that white Millennials thought about racism in terms of individual people *intentionally* using racial slurs or engaging in hate crimes or racial violence, which leaves out racism occurring within institutions through policies and practices that reproduce racial inequities, as well as structural racism compounding over time and across society (Apollon, 2011). In experimental social psychology, Unzueta and Lowery (2008) found connections between white Americans' self-image and their willingness to conceive of racism as an individual or institutional phenomenon. When study participants received a *self-affirmation* manipulation, they were *more* likely to conceive of racism in institutional terms, but when participants experienced a *self-image threat* manipulation, they were *less* likely to conceive of racism in institutional terms. Unzueta and Lowery (2008) note that self-image manipulations did *not* affect individual conceptions of racism and therefore argue that it may be psychologically "safer" for white Americans to conceive of racism in individual terms. In their words, "White Americans may be motivated to avoid conceiving of racism as an institutional phenomenon because this conception is associated

with an increased awareness of the advantages associated with belonging to the dominant social group” (Unzueta & Lowery, 2008, p. 1491). This provides a social psychological explanation for white people’s tendency to embrace individual conceptions of racism.

Working in the context of anti-racism courses for white audiences, DiAngelo (2010) argues that the “Discourse of Individualism” is a primary barrier to white people fully understanding racism. DiAngelo (2010) defines the Discourse of Individualism as a set of ideas, words, symbols, and metaphors “that creates, communicates, reproduces, and reinforces the concept that *each of us are unique individuals* and that our group memberships, such as our race, class, or gender, are not important or relevant to our opportunities (Flax, 1999)” (The Discourse of Individualism section, emphasis added). In other words, DiAngelo (2010) suggests that white people prefer to think about themselves *as individuals* who are not defined by their social identities, such as being white. This reinforces Unzueta and Lowery’s (2008) point that recognizing and reckoning with the unearned advantages of being white may be threatening to white people’s positive self-image and sense of having good intentions. Wilson and Kumar’s (2017) finding that a majority of teacher candidates in a large survey-based study viewed racism as “long ago” and “far away” further illustrates how white people tend to disassociate themselves as individuals from racism, ignoring the historical and systemic nature of racism.

Similarly, Young (2011) found that in the context of anti-racist trainings at an elementary school (with 5 of 8 participants being white), “Many of the teachers saw racism as a phenomenon that only incriminated the conscious perpetrators, such as those who made racist jokes and stereotypical remarks based on first impressions” (p. 1444). While Young’s (2011) participants recognized that racism could be manifest through unconscious or unintentional acts and ways of thinking, “they nonetheless regarded racism as acts of *individual perpetration* rather

than as a system of privilege” (p. 1445, emphasis added). In the case of Young’s (2011) study, participants’ sense of themselves as activists committed to cultural diversity and advocating on behalf of students from oppressed groups actually impeded their recognition of their own culpability and role in racism. Relatedly, Flynn (2015) describes the phenomenon of “white fatigue” in which people “disengage from or assume they no longer need to continue learning about how racism and/or White privilege function *due to a simplistic understanding of racism as primarily individual* (i.e., prejudice and discrimination)” (p. 117, emphasis added). In other words, white people often cut short their learning about racism at the level of individual racism (Flynn, 2015). Likewise, Vaught and Castagno (2008) found that teachers viewed racial inequities in school outcomes as “the isolated struggles of individual teachers working with ‘different’ students,” which obscured “the racialized structural barriers that informed, maintained, and entrenched individual practice” (p, 103). In other words, an individualistic, rather than a structural or systemic, understanding of racism made it easier for white teachers to deflect responsibility for racially disparate outcomes.

In addition, the phenomenon of white people not seeing themselves as racialized is well documented (e.g., Lewis, 2004; Marx, 2006; Michael et al., 2017; Picower, 2021; Sleeter, 1992). As Marx (2006) describes, when asked about their white identity, white women teacher candidates alternately conveyed that whiteness was “invisible” to them (i.e., they didn’t see themselves as having a race or culture) or characterized whiteness as neutral and normal (e.g., the “All-American” experience). Similarly, Lewis (2004) points to white people’s tendency to think that race is just about people of color, and Black people in particular, and to resist thinking about whites as a collective group. Sleeter (2008; 2011) further highlights that white people often gravitate towards the concepts of ethnicity, culture, and nationality in lieu of race, identifying



with European national and ethnic groups (e.g., as German American) while viewing whiteness as cultureless.

Given these findings showing that recognition of one's own whiteness is a common hurdle, it is not surprising that white teachers and teacher candidates would struggle to reckon with the implications of their white identity in their work as teachers. As multiple scholars show, when learning about white privilege, white teachers and teacher candidates often evade critical consideration of how they benefit from and enable the continuation of such privileges (Gillespie et al., 2002; Leonardo, 2004; McIntyre, 1997; Solomon et al., 2005; Ullucci & Battey, 2011; Vaught & Castagno, 2008). For example, Solomon et al. (2005) characterize white teacher candidates as responding to Peggy McIntosh's (1989) article on white privilege with a "discourse of denial." This discourse included liberalist notions of individualism and meritocracy, which hold that success or failure is "inexorably linked to individual effort and agency" (Solomon et al., 2005, p. 160). Thus, white teacher candidates justified and normalized existing racial inequalities, feeling that they worked hard for their position and should not have to give anything up (this was also evident in McIntyre, 1997). Moreover, some white teacher candidates expressly denied the existence of white privilege and its associated material benefits (Solomon et al., 2005). While some respond to this denial by designing courses and activities to make white teachers and teacher candidates *aware* of their white identity and privileges, others (e.g., Leonardo, 2004; Vaught & Castagno, 2008) argue that there is an inherent tension on seeking to address the structural problem of white supremacy through a focus on transforming individuals' awareness and understanding of race, racism, and whiteness. Thus, some educators call for more direct study of white racial domination to support white people in understanding how white privilege has been historically constructed, maintained, and protected (e.g., Leonardo, 2004).

Many of the themes already highlighted in literature on white people's conceptions of race and racism align with the four central frames of color-blind racism described by Bonilla-Silva (2001, 2018): (a) abstract liberalism, (b) naturalization of racism, (c) cultural racism (or the biologization of culture), and (d) minimization of racism. Bonilla-Silva (2018) characterizes these central frames as an "intellectual road map" for white people navigating life as the dominant racial group in a racialized social system. This is to say, although every white person will not necessarily employ these ideas, they are regular and predictable ways that white people make sense of racial issues from the perspective of color-blind or race evasive ideology. To unpack these frames a bit, *abstract liberalism* involves using ideas from political and economic liberalism, such as viewing each person as an individual with free choices, to explain and interpret racial matters (Bonilla-Silva, 2018). The "abstract" component is that white people can express agreement with abstract ideals like "equal opportunity" while simultaneously opposing practical measures to achieve those ideals and address racial inequalities, such as affirmative action. This ties into the frame of *naturalization*, as white people explain away racial issues, like residential and school segregation, as natural occurrences or just "the way things are" (Bonilla-Silva, 2018, p. 56). The frame of *cultural racism* or the *biologization of culture* points to cultural explanations for racial inequalities (Bonilla-Silva, 2001, 2018). For instance, the stereotypical idea that "Black students do not try as hard as other students" biologizes and generalizes what is arguably a personal or cultural behavior to provide a justification for racially disparate school outcomes (Solorzano & Yosso, 2001). Finally, *minimization of racism* frames racial discrimination as "limited, sporadic, and declining in significance," denying the structural character of racism (Bonilla-Silva, 2001, p. 142). This coincides with only recognizing overt acts of discrimination and bigotry as racism and suggesting that racism is no longer a central factor

affecting the life chances of marginalized racial groups (Bonilla-Silva, 2018). Together, these central frames enable white people to interpret racial matters in ways that evade the continuing salience of racism and that renounce responsibility for changing the racial status quo.

**Maintaining and Enacting Dominant Racial Ideologies.** Given the predominance of color-blind racism (Bonilla-Silva, 2018) and related ways of reasoning about race, racism, and whiteness, it is not surprising that white teachers and teacher candidates would teach in ways that reflect and maintain such ideologies. Addressing this, there is a body of scholarship that makes use of critical race theory to uncover ways that white educators reinforce and reproduce racism through their enactment of dominant racial ideologies. By “dominant racial ideologies,” I mean ideologies like “color-blindness” or *race evasiveness* that reflect mainstream public discourse and the perspectives of the dominant (white) group within the racialized social system. Within the category of dominant racial ideologies, some scholars also include *whiteness* as the ideology that is used to maintain white supremacy (e.g., Picower, 2021). In either the case, the general argument is that *what* and *how* teachers teach is informed by their broader racial ideologies, and when teachers act on dominant racial ideologies, their practice serves to protect and maintain the racial status quo (Picower, 2021).

For example, Picower (2021) describes seven “curricular Tools of Whiteness” that teachers both consciously and unconsciously use to “preserve the idea of Whiteness as good, superior, and ever present” (p. 26). These tools range from not including people of color in the curriculum to requiring students to reenact historical racism through role-plays, skits, games, and simulations, inflicting curricular violence and racial harm in multiple ways (Picower, 2021). Other scholars, such as Yoon (2012) and Viesca et al. (2013), emphasize paradoxes and contradictions in teachers’ professed commitments and their enacted teaching practice. For

instance, analyzing the discourse of a group of white women educators, Yoon (2012) found that even though the educators were members of a school equity team and expressed beliefs and intentions that seemed to align with anti-racism, their actions in classrooms emphasized politeness and deflected critical consideration of race. The group also “drew unspoken boundaries around what kind of feedback they gave, focusing on affirmation rather than considering the implications of their actions and alternative strategies for the classroom based on these implications” (Yoon, 2012, p. 607). In other words, there was disconnect between teachers’ equity-oriented *intentions* and their *practice*, which reinforced and reproduced race evasiveness and whiteness. Yoon (2012) labels these contradictions “whiteness-at-work.” Similarly, Viesca et al. (2013) describe how the subject of a longitudinal case study, a white woman teacher, expressed commitments to social justice but *operationalized* those commitments in ways that centered notions of individualism and meritocracy (or abstract liberalism, in the words of Bonilla-Silva, 2018) and ultimately rejected the salience of race and racism. Together, this literature underscores that white teachers and teacher candidates can enact practice that maintains ideologies of race evasiveness and whiteness, even when they articulate commitments to equity and social justice.

Considering that much of the literature on white teachers and teacher candidates emphasizes tendencies to evade race and maintain dominant racial ideologies, there are questions as to whether teacher education *can* effectively intervene on and disrupt this pattern, and if so, what that teacher education would entail. As Brown and Brown’s (2019) commentary suggests, teacher educators can agree that teacher education has the potential to change the status quo, but still vary widely in what they emphasize and how they go about their work. The question of how different teacher educators understand and tackle the challenge of changing white teachers’ racial

ideologies and enacted practice is much larger and more complicated than this limited review can address. Thus, I acknowledge that this is a complex problem space and offer a few brief examples.

Several scholars take the stance that changing white teacher's racial ideologies and enacted practice is possible *if* issues of race and racism are centered in teacher education. For example, Sheth (2019) proposes that science teacher education should frame and work on "grappling with racism" as a science teaching practice. Similarly, Shah and Coles (2020) argue that "race-focused teacher education centered on noticing the impact of race and racism in learning settings can make the practice of anti-racist teaching more tractable for preservice teachers" (p. 1). At the program level, Picower (2021) calls for teacher educators to make explicit commitments to racial justice and coordinate all aspects of programs to align with and support those commitments. Relatedly, Berchini (2016) and Mason (2016) point to possibilities for supporting white teachers to move from race-evasiveness to race-consciousness through close consideration of teaching contexts and building relationships over time. Berchini and Mason's work is emblematic of "second wave white teacher identity studies," which shifts from a "first wave" focus on white teachers denying and evading the significance of race and white privilege to highlighting nuances and complexities of white racial identities (Jupp & Lensmire, 2016). Though there are certainly scholars who are skeptical of this positive framing and optimism about the possibility of change for white teachers, these examples illustrate that there is a race-focused sub-field of teacher education that is actively wrestling with the challenge of shifting white teachers' racial ideologies and related classroom practice. This sub-field of race-focused teacher education is one audience that this dissertation seeks to connect with and speak to.

### 2.3 The Work of Elementary Mathematics Teaching

This study is motivated by a desire to trace ideas about race and racism writ large into the day-to-day, practical work of elementary mathematics teaching. However, as many scholars have argued and illustrated, historically there has been a lack of shared language and meanings when it comes to describing the work of teaching (Ball & Forzani, 2009; Cohen, 2011; Grossman & McDonald, 2008; Horn & Kane, 2019; Kennedy, 2016; Lampert, 2010; Lortie, 1975). Therefore, it is necessary to make clear how I am conceptualizing the work of elementary mathematics teaching. First, a few quick clarifications: For one, I am primarily concerned with the work of people who are hired by schools to lead elementary classrooms, or people who would describe their profession as “elementary teacher.” This is not to suggest that other adults, such as teaching assistants, facilitators of extracurricular activities, parents, or caregivers, are *not* doing important teaching work, but instead an effort to be transparent about my frame of reference. Second, recognizing that *elementary* can include a range of grade bands and classroom structures, I use *elementary* to mean Kindergarten through Grade 8. While some teachers working in elementary schools may specialize in teaching mathematics (e.g., in a departmentalized or semi-departmentalized structure), I operate under the assumption that many (if not most) elementary teachers are responsible for teaching children in multiple subject areas. Thus, part of the work of teaching elementary mathematics is coordinating subject-specific considerations with aspects of teaching that may cut across subjects and times of the school day (e.g., building relationships with students). I now turn to more substantive consideration of what I mean by “the work of elementary mathematics teaching.”

### 2.3.1 *Navigating Demands Placed on the Teaching Position*

I think about the work of teaching elementary mathematics as what teachers do to navigate and meet the demands that are tied to the job of teaching elementary mathematics. For example, a central demand placed on teachers is to help students learn (Ball & Forzani, 2009; Cohen, 2011; Grossman, 2018). Setting aside the issue that there are many ways to conceptualize what it means for students to learn and how a teacher might enable learning, if a teacher is doing something, like making a list of materials, *in service of* supporting student learning (e.g., when planning or preparing for a particular class activity that will precipitate discussion of a particular concept), then that action is part of the work of teaching. Thus, I define the work of elementary mathematics teaching as *what teachers do in efforts to meet the demands posed by their professional position*. Built into this definition is the assumption that there are many possible ways for teachers to address any given demand, so the work of teaching can be earnestly taken up in a variety of ways.

The demands placed on elementary teachers of mathematics are themselves up for debate and can be framed in countless ways, at many different grain sizes, and with a host of underlying assumptions and ideologies (D. K. Cohen, 2011; M. Kennedy, 2016). What's more, teachers inevitably perceive the demands of their position differently depending on their own identities, beliefs, goals, knowledge, personal experiences, and school contexts, as well as sociocultural and historical contexts (D. K. Cohen, 1990; de Freitas, 2008; Foote & Gau Bartell, 2011; Stigler & Hiebert, 1999; Wager, 2010). Teachers' construction and negotiation of personal and professional identities<sup>4</sup> within particular sociocultural and institutional contexts can motivate and

---

<sup>4</sup> By professional identity, I mean how a person understands their professional work as a teacher, including "how to be," "how to act," and "how to understand" (Sachs, 2005, p. 15 as cited in Beauchamp & Thomas, 2009, p. 178). As Alsup (2006) and Britzman (2003) illustrate, constructing a professional identity as a teacher is not a straightforward process, but rather involves negotiation of one's personal identity and navigation of competing discourses. While a

organize teachers' ways of interpreting and responding to perceived demands (Alsup, 2006; Britzman, 2003). In other words, how teachers view themselves and their work in a given context matters for what individual teachers recognize as demands of their position. For example, a teacher who views themselves as an agent of social change would be more likely to take up a demand to raise students' sociopolitical consciousness (Ladson-Billings, 1994) than a teacher whose professional identity rests on their ability to raise students' scores on standardized tests.

Whether the demands perceived by teachers are "real" in the sense that there is hard evidence that an administrator or another stakeholder has set an expectation and is holding teachers accountable for meeting it is not my concern; I think that the *perception* of a demand on teachers suffices to motivate and undergird efforts that constitute the work of teaching. My point is more so that *what* one recognizes as a demand, as well as *how* that demand is interpreted and articulated, necessarily reflects a particular standpoint and ideological perspective (Gee, 2012; N. L. Louie, 2018). Accordingly, teachers navigate the demands of their position in a variety of ways, and have many moments of forms of discretion in their day-to-day work (Ball, 2018). While there are definite and deeply ingrained patterns of normalized teaching practice (Britzman, 2003; Lortie, 1975), there is also room for teachers to exercise agency and navigate the work of teaching in ways that reflect particular ideological commitments, such as race cognizance.

Having established that the specific demands that individual teachers perceive, and respond are contingent on a number of factors, I think it is useful to articulate my own assumptions about what is involved in the work of elementary teaching. I see the following as a central set of demands that elementary teachers of mathematics will likely encounter:

---

personal identity such as being a social justice activist will certainly influence one's construction of a professional identity, tensions in lived experiences can also lead a person to develop a professional identity that is at odds with or separate from other aspects of their personal identity (Alsup, 2006; Britzman, 2003).



- Support student learning of mathematics, including procedural fluency, conceptual understanding, and engagement in mathematical practices (National Council of Teachers of Mathematics, 2014; National Research Council, 2001)
- Support students to construct positive mathematics identities, or a sense of self as a doer of mathematics (Aguirre, Mayfield-Ingram, et al., 2013; Varelas et al., 2012)
- Foster a learning environment that respects the humanity and dignity of everyone in the classroom community (Darby & Rury, 2018; Gutiérrez, 2018)
- Challenge persistent educational inequities and forms of oppression (Ball, 2018; T. G. Bartell, 2011; Love, 2019)

Inevitably, some elementary teachers of mathematics would not recognize these demands as relevant to their position, particularly the final demand of challenging persistent inequities and forms of oppression. My argument here is that while teachers can certainly interpret and respond to these demands in a range of ways (including rejecting a demand or refusing to invest time and energy in meeting a demand), contemporary discourses in mathematics education *do* seem to require teachers to take stances on these issues. For example, while a teacher may not feel compelled to take on forms of oppression that are reproduced in mathematics classrooms, frequent emphasis on equity and “mathematics for all” in mainstream mathematics education discourse (e.g., Martin, 2003, 2019; National Council of Teachers of Mathematics, 2014) suggests that teachers are expected to be aware of and address inequities in some manner.

### **2.3.2 Naming Teaching Practices**

Speaking of teachers’ efforts to meet particular demands is still relatively abstract, and my goal is to get *inside* of the specific work that elementary teachers of mathematics do on a daily basis to see where connections to ideas about race and racism might be made. So, how do

elementary teachers of mathematics tend to go about addressing demands on their position? What tasks do teachers routinely engage in to support student learning, positive identity construction, and humane, respectful, and equitable learning environments? Identifying tasks and practices central to teaching is not a new project — several waves of scholarship across many decades have sought to describe teachers’ activities and practices (Zeichner, 2012). Recently, scholarship in practice-based teacher education (e.g., Ball & Forzani, 2009; Duto & Cartun, 2016; Forzani, 2014; Grossman, 2018; TeachingWorks, 2019) has sought to identify practices that are particularly central and consequential to teachers’ work, labeling these *core practices* or *high leverage practices*. For example, Ball and Forzani (2009), define the work of teaching as “the core tasks that teachers must execute to help pupils learn. These include activities carried on both inside and beyond the classroom...” (p. 497). In other words, the work of teaching is made up of tasks and activities that teachers routinely carry out in service of meeting the demands of their position; one approach to specifying the work of teaching is to describe and label these component tasks and practices.

As with naming demands placed on the teaching position, identifying and labeling the core tasks of teaching can be done in countless ways, for a variety of purposes, and from a range of perspectives (Grossman, 2018; M. Kennedy, 2016). While some scholars have critiqued conceptions and uses of “core practices” for being overly prescriptive and neglecting larger sociopolitical concerns (e.g., Philip et al., 2019), I follow Duto and Cartun (2016) in maintaining that teacher educators can simultaneously make use of things called “core practices” *and* continuously trouble and question divisions between what is “core” and “peripheral” in the work of teaching. That is, I view the labeling of teaching practices as something that is temporary and operational, something that is pragmatically useful to facilitate collaborative work

on teaching (Grossman, 2018; Grossman & Pupik Dean, 2019), but by no means absolute or universal. Therefore, when I refer to teaching practices such as *leading a whole-group discussion*, I recognize that those practices represent just one possible way of parsing the work of teaching (M. Kennedy, 2016). I also recognize that the use of named practices in any given context carries a particular orientation towards the aims and nature of the work of teaching, such as the viewing disciplinary learning as a central purpose (cf. Grossman, 2018). When I refer to specific teaching practices in this dissertation, my main purpose is to reflect the language used in the teacher education program under investigation.

### ***2.3.3 Connecting Thinking and Doing: Pedagogical Reasoning and Action***

Describing the work of teaching in terms of routine tasks, activities, and practices emphasizes the actions that teachers take, what teachers *do* both in and out of the classroom to address demands on the teaching position. Some might see attention to teachers' actions as evoking the tradition of scholarship on teacher behavior and correlations between teaching *processes* (e.g., correcting student errors) and educational *products*, such as student performance on tests (Shulman, 1986; Zeichner, 2012). Such research on teacher behavior can be contrasted with scholarship that focuses on teacher cognition and decision-making (Shulman, 1986). However, rather than align myself with either of these research traditions, I aim to attend to *both* what teachers think about and what they do, as well as the interrelations between thought and action. In particular, I am concerned with how thinking about race and racism might relate to decisions and actions that teacher candidates make inside of elementary mathematics teaching. I think it is essential to attend to both what teachers think and what teachers do because teaching is complex work — no defined set of practices on their own will ever be sufficient for preparing teachers to navigate every context and dilemma, so teachers must be positioned to reason about

particular situations (Lampert, 1998). I draw on Shulman's (1987) model of pedagogical reasoning and action as an entry point for conceptualizing the relationship between thought and action in the work of teaching.

Although Shulman's (1987) conception of pedagogical reasoning may stem from an emphasis on teacher knowledge and cognition, I find it useful for considering how teachers' thinking can relate to their actions. For one, Shulman (1987) emphasizes that processes of pedagogical reasoning are necessary for teachers to transform knowledge so that *it is usable* for purposes of supporting the learning and understanding of their actual students. In other words, there is intellectual work underlying teacher actions (e.g., launching a discussion of math problem) and this intellectual work involves considering the specific children involved in the teaching interaction. I think that Shulman's (1987) notion of transforming knowledge can be extended to make two important points: (1) teaching is always situated in a particular context and therefore requires adaptation to and negotiation of the demands of that context, and (2) deciding *what to do* in a teaching situation (even if decisions are made tacitly or in the moment) involves reasoning and consideration of purposes rather than straightforward application of knowledge. These points are reinforced by several scholars who characterize the work of teaching as requiring teachers to grapple with disciplinary and moral ideas to navigate the dilemmas that arise in day-to-day classroom interactions (Ball, 1993; Ball et al., 2001, 2008; Ball & Wilson, 1996; Lampert, 1985, 1990, 1998; J. N. Price & Ball, 1998).

Navigating dilemmas in teaching will inevitably involve thinking and reasoning that is not immediately visible or accessible to an observer. That is, pedagogical actions can be thoughtful and deliberate in ways that are invisible to outsiders. At the same token, observers can project or infer intentions that do *not* reflect a teacher's pedagogical reasoning. In the context of

this study, this suggests that teacher candidates may reason about issues of race and racism and enact moves and practices in light of that reasoning, but this may not be immediately observable in their teaching enactments. Additionally, as a researcher, I may observe particular teaching actions and infer that a teacher candidate was reasoning about race or racism when they were not, or perhaps reasoning in ways I did not expect. Therefore, in my study design (described in detail in Chapter 3), I have incorporated research methods that elicit teacher candidates' pedagogical reasoning in connection with records of their practice, including video-stimulated recall interviews (e.g., Consuegra, Engels, & Willegems, 2016; Gazdag, Nagy, & Szivák, 2019; Rowe, 2009; van Tartwijk, den Brok, Veldman, & Wubbels, 2009).

In addition, Shulman's (1987) emphasis on transforming knowledge as a key component of pedagogical reasoning suggests that having knowledge or understanding of race and racism is not the same as *using* that understanding in the context of teaching elementary mathematics. For instance, knowing that racially segregated neighborhoods were actively constructed by individuals, groups, and institutions in the early half of the 20<sup>th</sup> century (Massey & Denton, 1993; Rothstein, 2017) does not necessarily lead to a particular approach or specific decisions in teaching elementary mathematics. That is, having knowledge of race and racism does not necessarily implicate particular ideas or practices inside of mathematics teaching. In terms of research methods, then, I saw it as insufficient to elicit teacher candidates' views and understandings about race and racism *per se*. Instead, I aimed to probe how teacher candidates transformed and acted on their thinking about race and racism *within* the work of elementary mathematics teaching. This provided additional rationale for grounding interviews with teacher candidates in videos and other artifacts of teaching practice.

Another insight from Shulman's (1987) model of pedagogical reasoning and action is the idea that teachers' thinking and acting, deciding and doing, are not straightforward or unidirectional processes, but are instead cyclical. Shulman (1987) describes the thinking that teachers do as being intertwined with pedagogical action: teachers reason about what to do, they transform subject matter ideas and enact instruction, and they reflect on how well their instructional actions have accomplished their goals. I do not view thinking and action as *discrete stages* of a teaching cycle or necessarily following a set progression; instead, I hold that teachers' thinking and action *mutually inform* each other. On this point, Shulman (1987) points to the role of reflection on practice, writing:

This is what a teacher does when he or she looks back at the teaching and learning that has occurred, and reconstructs, reenacts, and/or recaptures the events, the emotions, and the accomplishments. *It is that set of processes through which a professional learns from experience.* (p.19, emphasis added)

In other words, reflective reasoning about teaching, including reflecting on the emotional aspects of interactions (Zembylas, 2003), can spur new interpretations of the experience and new understanding. As Britzman (2003) makes clear, simply *having an experience* (e.g., teaching a small group math lesson in a teacher education course) does *not* mean that experience will be educative or will provoke new learning; rather, it is the interpretation and reinterpretation of experiences through the lens of alternative discourses that spurs new realizations. I take this to mean that learning from reflection on teaching is not automatic and cannot be taken for granted; I cannot assume, for instance, that teacher candidates are learning by virtue of completing course assignments that elicit reflections. I also draw the implication that by stimulating recall of teaching and eliciting the reasoning of teacher candidates, the interviews I conducted for this

study may have contributed to teacher candidates' developing new understandings, trying out different practices, or otherwise learning from their experiences.

I have turned to Shulman's (1987) model of pedagogical reasoning and action in order to bridge attention to teacher thinking with attention to teachers' actions. Recalling my larger purpose to specifically explore teacher thinking *about issues of race and racism* in the context of elementary math teaching, I next move to articulating my own conceptual contribution: race cognizant math teaching.

## **2.4 Race Cognizant Math Teaching**

As Frankenberg's (1993) work shows, there are multiple patterned ways that white people can understand and think through issues of race and racism, including essentialist racism, race evasiveness, and race cognizance. Thus far, there is ample research demonstrating that white teachers can and do enact race evasive ideologies in and through their teaching (see above). Yet, what would it mean for white teachers to teach in ways that reflect race cognizant ideology? And what would race cognizance mean in the specific context of teaching elementary mathematics? In this section, I address these questions and explain how I have conceptualized race cognizant math teaching, building on Frankenberg's (1993) concept of race cognizance.

Put simply, I envision *race cognizant math teaching* as acting on the central ideas, premises, and commitments of race cognizance (Frankenberg, 1993) within the space of mathematics teaching. In my mind, this means that a teacher would hold and reflect an understanding of race as a social construct with real, material consequences, as well as an understanding of racism as structural, pervasive, and persistent. This also means recognizing whiteness and white people as bound up in systems of racial oppression, as well as acknowledging that while race and racism shape everyone's lives, the impact is very different

depending on people's specific social and racial locations. Additionally, race cognizance involves reflexivity about one's own complicity with racism, as well as commitments to anti-racist action (Frankenberg, 1993). In the specific context of teaching mathematics, I see race cognizance as requiring (a) *active consideration* of how race and racism are relevant to mathematics teaching and learning at multiple levels (e.g., in terms of student and teacher identities, interpersonal interactions, local status hierarchies, and larger systems and structures) and (b) *taking action* towards dismantling racism in and through mathematics teaching. In other words, race cognizant math teachers deliberately think about race and racism and pursue teaching moves and practices to disrupt the status quo of racialized harm and inequity.

I view race cognizance as having several entailments for thinking about how race and racism impact teaching and learning in general, and mathematics teaching in particular. First, race cognizance entails seeing schools and classrooms as racialized spaces that are structured and shaped by the history and continuing impact of racism. There is a tendency in mathematics education to focus on interactions between students, teachers, and mathematics content *without* contending with social and political context (Weissglass, 2002). In contrast, a race cognizant stance entails viewing mathematics teaching and learning as socially situated and influenced (Bishop, 1988), just like every other form of education. In fact, scholars have argued that whiteness pervades mathematics education, constituting a white institutional space (Battey & Leyva, 2016.; D. B. Martin, 2015). Thus, when people omit mentions of race or present a teaching scenario as universal, they are reinforcing an assumption that whiteness is the norm (Sensoy & DiAngelo, 2017), which ignores the fact that whiteness is a racial construct and inherently invokes racial structures — whiteness is not the absence of race or racism (Frankenberg, 1993; Omi & Winant, 1994). Accepting race cognizant premises requires



recognizing that, whenever<sup>5</sup> and wherever teaching and learning are taking place (about mathematics or any other subject matter), the people involved *have racial identities* (as well as identities along other dimensions, such as gender, language, ethnicity, class, etc.) and are interacting *in a racialized social context* tied to histories, policies, power structures, and norms of behavior (Darby & Rury, 2018). Following the critical race theory notion that racism is endemic and pervasive in U.S. society (Ladson-Billings, 2013; Ladson-Billings & Tate, 1995), a race cognizant view implies that histories and structures of racism and the socially constructed meanings of race are *always* relevant to contemporary teaching and learning, including in elementary mathematics.

Another entailment of race cognizance is recognizing that *racially unjust patterns* pervade and shape typical school experiences. This is tied to understanding that race and racism are deeply implicated in the history and structure of U.S. schooling, which has led to racial patterns in who teaches whom and what type of teaching is typical (Clotfelter et al., 2005; Davis & Martin, 2008; Guin, 2004; Love, 2019). For example, despite the legal end to racial segregation in schools with the 1954 *Brown v. Board of Education* decision, in practice, children in the U.S. still attend highly segregated schools (Coughlan, 2018; Foley, 2018; Orfield et al., 2016). In addition, while the population of K-12 students is increasingly made up of children of color, the teaching force is overwhelmingly white (U.S. Department of Education, 2016). This raises several issues. For one, children of color are less likely than white students to have teachers who share their racial identities. While the issue of racial matching is complex, research on teacher-student interactions in math classrooms has shown that children of color with white teachers are more likely to experience an *intensely negative* focus on their behavior and ability

---

<sup>5</sup> Given that the modern construct of race stems from European imperialism and colonization from the 15<sup>th</sup> century onward (Kendi, 2016; Omi & Winant, 1994; Taylor, 2004), I mean “whenever” following that time.

(Battey et al., 2018). In addition, recent school reform efforts, particularly those in urban schools with predominantly Black and Latinx populations, have emphasized improving standardized test scores and often result in highly procedural and rote mathematics teaching (Davis & Martin, 2008). This suggests that children of color are systematically provided less access to conceptual and discussion-based mathematics instruction than white children (Battey & Leyva, 2018; Davis & Martin, 2008). In other words, racial patterns in which schools children attend, who teaches in those schools, and the accountability pressures that schools experience contribute to racialized patterns in the nature of typical mathematics teaching, with white children being more likely to be supported in developing conceptual understanding and critical problem-solving capabilities.

Another racially unjust pattern in typical school experiences (which race cognizance would entail attending to) has to do with how teachers establish and enforce behavioral norms. Classroom management, as an area of teaching, raises critical issues about power, authority, and control (Britzman, 2003; D. K. Cohen, 2011; Ferguson, 2001). As proponents of culturally responsive classroom management argue (e.g., Milner, Cunningham, Delale-O'Connor, & Kestenberg, 2019; Weinstein, Curran, & Tomlinson-Clarke, 2003), teachers' assumptions about what constitutes "good behavior" in schools stem from how teachers themselves have been socialized, and are therefore racialized, gendered, classed, and culturally-specific. For example, a white middle-class woman may have been socialized to view overlapping talk as rude or disrespectful; this could conflict with a Black child's experience of overlapping talk as a regular form of participation and an expression of interest (Lee, 2007). Teachers may be more or less aware of the racialized nature of their expectations, which could contribute to tension and misunderstandings between teachers and students. Additionally, research has shown that school discipline policies are applied in racially disproportionate ways, and that this disproportionality

is linked to teachers' subjective decisions (Girvan et al., 2017; Skiba et al., 2002; Smolkowski et al., 2016). For instance, Black students are more likely than white students to be punished for infractions like "disrespect" and "excessive noise" that are relatively open to teacher interpretation and subjective definition (Skiba et al., 2002; Smolkowski et al., 2016). Furthermore, within classrooms, common practices of behavior management often position boys and children of color as "troublemakers" (Ferguson, 2001; Monroe, 2005; Shalaby, 2017). These are examples of scenarios where a teacher might react in racially biased ways even if the teacher does not consciously endorse racist stereotypes about criminality and violence (Simson, 2014). Thus, both the behavioral expectations that teachers set and teachers' ways of enforcing those expectations are racialized and have the potential to reproduce racial inequities. Enacting race cognizance in the space of teaching and learning would require active consideration of these points, as well as deliberate efforts to disrupt and change racially inequitable patterns of practice.

In the specific area of teaching mathematics, I think that race cognizance entails reckoning with ways that race and racism are embedded in notions of intelligence and mathematical ability. By this I mean that *who* is considered or positioned as intelligent and mathematically competent is deeply racialized, as well as gendered (Hottinger, 2016). As Martin (2009b) argues, dominant discourses construct "a racial hierarchy of mathematics ability that positions those who are identified as African American, Latino, and Native Americans at the bottom" (p. 297). The implied top of the racial hierarchy of mathematics ability are white and Asian people, particularly white and Asian men. This hierarchy can play out in mathematics teaching through deficit-oriented assumptions about children from racial groups that are marginalized in mathematics, as well as through lowered expectations of what mathematics those children are capable of learning (Battey & Franke, 2015; Battey & Leyva, 2018). Additionally,

Shah and colleagues (Nasir & Shah, 2011; Shah, 2017; Shah & Leonardo, 2016) have demonstrated that learners actively negotiate and work to make sense of their own identities in relation to stereotypes and discourses that link race and mathematics ability, such as the familiar stereotype that Asian people are good at math.

Relatedly, Martin (2006, 2012) characterizes mathematics learning as a racialized form of experience, meaning that racial identity is salient as one works to learn mathematics. Thus, for students, conceiving of oneself as intelligent and competent in mathematics classrooms is related to negotiation of racial identity (Varelas et al., 2012). Teachers contribute to learners' perceptions of mathematical competence with who they choose to represent and acknowledge as making mathematical contributions, both in terms of the historical production of knowledge (e.g., famous mathematicians, attending to the cultural nature of mathematics) and in terms of classroom interactions (e.g., highlighting that a given student has shared an important mathematical idea). Consequently, teachers can be more or less conscientious and deliberate about structuring opportunities and engaging in interactions that position people with marginalized identities as mathematically competent and making valuable mathematical contributions (Featherstone et al., 2011). Race cognizant math teachers would recognize their own role in shaping students' ideas about what mathematical competence looks like, understand that students' racial identities and experiences interact with their mathematics identities and content learning, and make purposeful efforts to structure and facilitate classroom interactions in ways that demolish the racial hierarchy of mathematics ability.

So far, my discussion of race cognizant math teaching has remained at the level of broad understandings and commitments. I now offer some more concrete examples of what race cognizance could mean within the work of elementary math teaching. First, to be transparent, I

had initially generated potential examples of race cognizant math teaching using Shulman’s (1987) model of pedagogical reasoning and action, thinking about where and how a teacher might consider racialized patterns that manifest in math classrooms (these early ideas are represented in a table in Appendix A). However, over the course of this study, I came to think more flexibly about ways that race cognizant ideology and commitments might be threaded through one’s math teaching practice. Rather than tying race cognizant questions and ideas to specific components of Shulman’s (1987) model, I thought more broadly about ways that race cognizance might inform and shape *all* dimensions of teachers’ work. Thus, I want to be clear that the examples that I offer here are not meant to be exhaustive — this is just an illustrative sample of what I mean by enacting race cognizance in and through math teaching.

Imagine a white elementary teacher is working in an urban public school with a large population of Black and Latinx students and students impacted by poverty. When preparing for the school year, this teacher must determine how they will structure their “math block,” the daily time dedicated to work on mathematics. In this school context, there is frequent pressure from administrators to raise students’ scores on standardized tests, and many teachers at the school respond by organizing their instruction around test topics and skills (Au, 2016; Berliner, 2011; Davis & Martin, 2008; Wells, 2019). Many teachers group their students based on test scores and teach mathematics to these “leveled” small groups, forgoing whole class instruction and discussions. Recognizing that (a) ability-grouping and tracking in mathematics is harmful for students’ identity construction and can exacerbate disparities in learning (e.g., Boaler, 2002; Huinker, 2020; Jackson, 2009; Oakes et al., 1997) and (b) these patterns of math instruction are tied to structural and historically rooted racial inequities and injustices (Davis & Martin, 2008), our imagined teacher decides to resist test-related pressures. To counter racialized patterns in the

math teaching students typically experience, the teacher purposefully designs their math block to include regular opportunities for students to work on open-ended problems and engage in whole class math discussions. Recognizing that simply changing classroom structures will not erase or undo children's prior ideas and experiences about what it means to learn, do, and be good at mathematics, the teacher also plans to construct more deliberately inclusive norms and expectations for the classroom, as well as a broadened notion of mathematical competence (Aguirre, Mayfield-Ingram, et al., 2013; Boaler, 2016; Featherstone et al., 2011; Hiebert et al., 1997; Huinker, 2020; Lampert, 2001; Yeh et al., 2017). In making these decisions, this teacher has actively reasoned about and made an effort to disrupt racially unjust patterns in mathematics teaching.

Now imagine that the school year has begun. The teacher has posed a mathematics problem that students are working on at their seats. The teacher circulates, checking in at different tables as students work (i.e., "monitoring" student work, Smith & Stein, 2018). As the teacher moves around, they look at student's written work, sometimes asking students questions to further elicit or to advance their thinking. The teacher engages in formative assessment, making inferences about what students seem to know, understand, and be able to do as a basis for determining a next instructional move (Boerst et al., 2020; V. R. Jacobs et al., 2011; Smith & Stein, 2018). While this is happening, the teacher considers what they are *noticing* about particular students and reflect on any patterns tied to students' social identities, including race and gender (V. R. Jacobs et al., 2010; Jilk, 2016; Kalinec-Craig et al., 2021; N. Louie et al., 2021; N. L. Louie, 2018; van Es et al., 2017; Wager, 2014). Recognizing the prevalence of deficit framing surrounding students of color in mathematics (Battey & Franke, 2015; Martin, 2009b; Solorzano & Yosso, 2001), this teacher intends to actively look for and focus on what

students of color know, and understand, and can do. However, despite their intentions, the teacher realizes that they have been dwelling on the behavior of some students of color rather than eliciting their mathematical thinking, and that they've fallen into a pattern of noticing these students' deficits rather than strengths. Although this is hard to admit, the teacher recognizes that their good intentions do not mean that they are free from racism or immune to the deficit discourses that are deeply ingrained in normalized teaching. The teacher resolves to prioritize eliciting and noticing what this particular set of children of color are doing and understanding mathematically and plans to highlight these children's mathematical competence at the next opportunity. In critically reflecting on their own practice and being open to the possibility that they are contributing to racially unjust patterns, this teacher demonstrates awareness of their own embeddedness in systems of racial oppression as well as an commitment to continually work towards anti-racist aims.

What I hope to illustrate with these imagined math teaching scenarios is that race cognizant math teaching is about considering race and racism in *all* the parts of one's work as a teacher of mathematics. In this sense, race cognizant math teaching includes and goes beyond Shah and Coles' (2020) construct of racial noticing, which "concerns perceiving, making sense of, and reacting to moments where race and racism are salient" (p. 3). Shah and Coles' (2020) apply their racial noticing framework in an elementary math methods course. Much like my notion that race cognizant math teaching involves actively considering how race and racism are relevant to math teaching and learning at multiple levels, Shah and Coles (2020) conceptualize racial noticing as involving attention to race in three broad categories: (a) students' and teachers' identity and positionality, (b) classroom-level social interactions, and (c) structural practices, artifacts (e.g., representations of people of color in curriculum), and norms. Where race

cognizant math teaching builds from racial noticing is in expanding the scope of what might be considered “responding” to racial phenomena as a teacher. In addition to the verbal responses (e.g., conversations about racial incidents) and practice-based responses (e.g., modifying teaching practices to position racially minoritized students as competent) that Shah and Coles (2020) outline, I envision teachers shifting their ways of attending to and making sense of race and racism in math classrooms more broadly. This could include recognizing that race and racism are salient in mathematics teaching and learning even when there is not a clear racial incident, such as students revoicing racial stereotypes about math ability. It could also include *anticipating* and *planning to avert* racialized patterns that might be reproduced by a given classroom structure or activity (e.g., anticipating that white students may dominate a class discussion if the teacher only calls on volunteers, planning to use other participation structures). I think that Shah and Coles’ (2020) racial noticing framework offers an incredibly useful starting point, and my intent is that the concept of race cognizant math teaching functions as a sort of umbrella that encompasses a broader meaning of attending to race and racism across the many dimensions of teaching.

In clarifying my conceptualization, I want to emphasize that there is a great deal of space and flexibility within the construct of race cognizant math teaching. The essential piece is operating from a race cognizant standpoint, threading critical consideration of race and racism throughout the work of math teaching. This does not necessitate a particular approach to mathematics teaching, such as a reform-oriented or traditional model of math instruction (Munter et al., 2015). Instead, race cognizant math teaching requires considering how race and racism might be operating *within* any given approach to math instruction. Put differently, race cognizant math teaching can include and incorporate aims, principles, and practice from other existing



pedagogical approaches, as long as they align with race cognizant premises and commitments. This means, for instance, that one could pursue teaching mathematics for social justice (e.g., Gutstein, 2003, 2006; Koestler, 2012; Larnell et al., 2016; Leonard & Moore, 2014), culturally responsive mathematics teaching (e.g., Aguirre et al., 2012; Averill et al., 2009; Leonard et al., 2014), or anti-racist mathematics (e.g., TODOS, 2020) while also engaging in race cognizant math teaching. Where race cognizant math teaching differs is in its specificity as a *critical way of thinking through race* that has been shown to be possible for white people (Frankenberg, 1993; O'Brien, 2000).

In the realm of research on teaching and teacher education, there are very few models of how white teachers specifically might meaningfully take on and contribute to anti-racist efforts. I see this construct of race cognizant (math)<sup>6</sup> teaching as contributing a vision of practice (Goodwin, 1994) and way of thinking through race *in teaching* that white teachers could aspire to and work towards. In other words, given the prevalence and pervasiveness of race evasive ideology in normalized teaching practice, I view race cognizant math teaching as an *alternative discourse*, with incumbent commitments and ways of reasoning and acting, that teachers and teacher candidates can be introduced to and supported to take up (Britzman, 2003). In this study, I use the construct of race cognizant math teaching to characterize some of the ideas and practices emphasized in the teacher education courses under investigation, and to analyze focal teacher candidates' uptake of those ideas and practices.

---

<sup>6</sup> I use parentheses here to signal that the construct of race cognizant math teaching has useful implications that are not math specific. That is, a teacher could act on race cognizant ideas, premises, and commitments when teaching any subject matter, not just mathematics.

## 2.5 On Learning and Learning to Teach

This study is, at its core, a study of teacher candidates' learning. I explore teacher candidates' learning in multiple ways — examining how teacher candidates take up specific course ideas and practices that could support race cognizant math teaching, considering what evidence of course emphases I see in teacher candidates' early enactments of math teaching, and investigating teacher candidates' discourse about race and racism over time. I approach this inquiry with certain assumptions about learning and learning to teach. In this section, I articulate these assumptions, making connections to existing theories of learning and scholarship on learning to teach.

A primary assumption that I make is that learning involves connecting *new* ideas, practices, and ways of thinking and doing to *existing* ideas, practices, and ways of thinking and doing. In other words, people use what they already know, think, do, and believe to make sense of and incorporate new things (Dewey, 1938; National Research Council, 2000). This reflects a basic stance of constructivist learning theory, that “learners construct knowledge for themselves – each learner individually (and socially) constructs meaning – as he or she learns” (Hein, 1991). One implication of viewing learning as the construction of meaning is that learners are key participants in the process of learning; they are not empty vessels for teachers to fill with knowledge and skills (D. K. Cohen, 2011). This means that different people can construct different meanings and learn different things from the same experience. It also means that what a teacher *intends* for a student to learn does not guarantee that the student will construct that meaning or learn what was intended. In the context of this study, this stance means that I expect variation in how teacher candidates engage with ideas and practices that could support race

cognizant teaching. I also do not equate course instructors' intentions and representations of race cognizant math teaching with teacher candidates' learning.

Constructing meaning as one learns is not without tension. As Britzman (2003) makes clear, exposure to new ways of thinking and doing can result in clashes of values, beliefs, ideas, investments, and practices. This is especially true in learning about politically and morally fraught topics like race and racism, as anti-racist educators can attest (Case & Hemmings, 2005; DiAngelo, 2010, 2018; Picower, 2009; Williams & Evans-Winters, 2005). This is also true of learning to teach, as teacher candidates bring a host of ideas about what constitutes good teaching based on their "apprenticeship of observation" through their own schooling and socialization, and those ideas are often at odds with the aims and perspectives of teacher educators (Ball, 1988b, 1989; Britzman, 2003; Lortie, 1975). Thus, learners often grapple with and negotiate conflicting views and practices. This can result in learners holding fast to what they already thought, believed, and did; it can also result in learners making shifts towards new ways of thinking and doing. For this study, this means that learning to engage in race cognizant math teaching will likely require teacher candidates to grapple with tensions and conflicts between their prior ways of thinking and doing with respect to race, racism, and mathematics teaching, and the race cognizant ideas and practices emphasized by course instructors.

Another key aspect of how I think about learning is that it is socially, culturally, historically, and politically situated. This means that social groups, social interactions, and sociocultural norms, artifacts, tools, and practices *influence* and *are part of* learning processes (Lave & Wenger, 1991; Moll & Greenberg, 1990; Rogoff, 1995; Vygotsky, 1978; Wertsch & Tulviste, 1992). For the purposes of this study, this stance is a reminder to view teacher candidates as people being socialized into particular groups and identities in the context of a

specific set of social, political, and historical conditions (namely, white people becoming elementary teachers in 2020, amidst national discourse about the Black Lives Matter movement and racism). It is also a reminder that teacher candidates influence each other's learning, and that teacher candidates' interactions with course instructors and with me as a researcher also impact the meaning that they make of their course experiences. This is, in part, why I make a point of attending to my own identity and positionality and to the issue of social desirability in my analysis of teacher candidates' discourse and learning (see Chapter 3).

Some might view constructivist theories of learning as at odds with sociocultural and situated theories of learning. However, I follow Sfard (1998) in seeing these views of learning as offering distinct but equally important insights. Sfard (1998) argues that educational research is caught between two primary metaphors for learning: *learning as acquisition* (which includes acquiring concepts through the construction of meaning) and *learning as participation* (which focuses on social action and activity). After discussing the advantages and troubles of each metaphor, Sfard (1998) makes the case that is essential that educational researchers live with and make use of both metaphors, as "Each has something to offer that the other cannot provide" (p. 10). In this study, I attempt to take up Sfard's (1998) point by examining teacher candidates' learning from multiple angles. In Chapter 4, I first describe my analysis of teacher candidates' *acquisition* (or uptake) of course ideas and practices that have the potential to support race cognizant math teaching. I then shift my focus to evidence of teacher candidates' learning in their early math teaching practice, which reflects the participation metaphor's emphasis on *what learners do* in the context of social activities (like leading a math discussion). Chapter 5, which focuses on teacher candidates' talk and writing about race and racism in course assignments and in interviews, offers a hybrid view of learning. In one sense, one can think of teacher candidates

as learning to *participate* in race cognizant discourse and practice, taking on the language, orientations, values, commitments, and actions of race cognizance (Frankenberg, 1993). In another sense, one can think of teacher candidates as *acquiring* a new discourse, learning concepts and language that are part of race cognizant math teaching (Sfard, 2001). I consider teacher candidates' learning in both senses, alternately emphasizing how teacher candidates seem to be *making sense* of given ideas and how they *make use of* and engage in existing discourses, such as race evasiveness and race cognizance.

Learning in all forms is complex; learning to teach is especially so. As scholars of teaching and teacher education have argued, learning to teach involves developing and coordinating specific bodies of knowledge, dispositions, commitments, and skills (Ball et al., 2008; Ball & Cohen, 1999; Ball & Forzani, 2009; Feiman-Nemser, 2012; Feiman-Nemser & Remillard, 1005; Grossman, Hammerness, et al., 2009; Shulman, 1987). This takes time and considerable practice, even assuming that novices have bought into the vision and direction of their preparation (e.g., Grossman, Compton, et al., 2009). When teacher education promotes a vision of teaching that goes “against the grain” (Cochran-Smith, 1991) of typical practice, such as race cognizant math teaching, the complexity of learning to teach only deepens. In exploring the possibilities and challenges of supporting white teacher candidates to learn to engage in race cognizant math teaching, I assume that teacher candidates' learning trajectories will reflect this complexity. That is, I do not anticipate easy stage-like progressions towards race cognizant math teaching. Moreover, I want to make explicit that when I refer to “learning race cognizant math teaching” or “learning race cognizance,” I do not view this learning as an on-off switch (i.e., someone has learned it or not) or as a point of arrival where no further learning is necessary. Teaching is work that people can learn to engage in with greater “know-how,” fluency,

flexibility, and skill, but it also inherently requires navigating dilemmas and problems that are particular to the people and contexts involved (Ball, 1993; Ball & Wilson, 1996; D. K. Cohen, 2011; Lampert, 1985, 1990, 2001). What's more, *race cognizant* teaching entails ongoing critical attention to one's own role and relationship to systems and patterns of racial oppression; given the endemic and persistent nature of racism, there is no point at which a white teacher would be "free" of racism. Thus, what I am looking for as evidence of learning race cognizant math teaching is ideological alignment with race cognizant premises and commitments, as well as *ongoing efforts* to attend to the salience of race and racism and to disrupt harmful racialized patterns in one's teaching practice.

## **2.6 Considering Identity**

I hold that identity is of critical importance in the work of teaching, learning, and research. Therefore, even though this study is not a study of identity per se, I see it as essential to consider how the identities and positions of the teacher candidates, course instructors, and myself as a researcher impact this inquiry. It is beyond the scope of this work to delve into the theoretical dilemmas of defining identity (Beauchamp & Thomas, 2009), but my basic stance is that identity is socially situated, dynamic, and complex, and it involves both how individuals view and understand themselves and how others position them (Holland et al., 1998). This understanding of identity draws on both poststructural and sociocultural perspectives (Beauchamp & Thomas, 2009; Gee, 2012; Holland et al., 1998; Lave & Wenger, 1991; Neumayer-Depiper, 2013). When I speak to the identities of the teacher candidates, the course instructor, and myself as a researcher, I am primarily referring to social aspects of our identities — how our social positions impacted what I looked for and found in this research. For instance, I am white woman conducting a study focused on ideas about race and racism in the context of a

teacher education program where the majority of teacher candidates are white women, and the lead instructor of the courses in question is also a white woman. However, recognizing that the identities that people construct for themselves, both personally and professionally, entail beliefs, values, ideologies, and ways of being (Alsup, 2006; Gee, 2012), I also consider how teacher candidates' personal identities might inform their sensemaking and responses to course efforts to connect ideas about race and racism to teaching elementary math. My comments here are focused on how considering identity shapes my conceptual framing of this study; I go into further detail in a later section on researcher reflexivity (in Chapter 3) about how I took my identity into account in the study design.

First, what does it mean for me, a white woman, to be posing questions about connecting ideas about race and racism to elementary mathematics teaching? As Martin (2009a, 2009b) has demonstrated, there is a long tradition of mathematics education research — in large part carried out by white scholars — of minimizing the importance of race in mathematics teaching and learning, of superficially addressing race as a categorical variable, and of operating from deficit frames that, by default, position white learners as the norm and standard for comparison. Further, there is a deeply-rooted and ongoing legacy of exploitation of marginalized communities in the production of social science research (Ladson-Billings, 2000; McCarty et al., 2013; Milner, 2007; Stovall, 2014; Tuck & Yang, 2014). Given that I, as a white person, have not experienced racism in the ways that people of color have and do, there is a real risk that I might approach race and racism as abstract, intellectual issues, rather than as matters of great urgency with serious material consequences. Being aware of these risks and legacies, I have attempted to avoid them. In particular, I have endeavored to keep myself grounded in the purpose of building knowledge to support white elementary teacher candidates to teach mathematics in ways that are race

cognizant and anti-racist *for the benefit of the children that they work with*. I have also tried be open and honest about challenges and tensions I have grappled with, describing dilemmas that arose during the research process in Chapter 3.

As for the teacher candidates involved in this study, it is essential to acknowledge that their racial identities and experiences substantively affect how they think through and connect issues of race and racism to teaching elementary mathematics. This study focuses on white teacher candidates at a predominantly white institution. Following Frankenberg (1997), Lewis (2004), and “second wave” white teacher identity studies (Jupp & Lensmire, 2016), I recognize that white racial identity is not monolithic and that whiteness does not have a singular meaning. Still, as discussed in the literature review above, there are common patterns in how white people are socialized to think about race and racism that are relevant to my interpretation of teacher candidates’ learning, discourse, and early practice. For example, white teacher candidates are likely to enter teacher education with minimal fluency and experience in critically thinking and talking about race and racism (e.g., R. DiAngelo, 2018; Marx, 2006; McIntyre, 1997; Picower & Kohli, 2017; Sherman, 2017). What is more, white teacher candidates may evade and resist engaging with issues of race and racism, especially in the context of courses on math teaching (e.g., Case & Hemmings, 2005; Gillespie et al., 2002; Picower, 2009; Solomon et al., 2005; Ullucci & Battey, 2011; Vaught & Castagno, 2008). In that sense, critically reasoning about issues of race and racism inside of math teaching may require some teacher candidates to *unlearn* or significantly change their beliefs about race, racism, and the work that elementary teachers of mathematics do (Ball, 1988b; Cochran-Smith, 2000; Marx, 2006; Meiners, 2002). Changing teachers’ beliefs in ways that last and that actually affect teachers’ practice is a perennial problem in teacher education, both when it comes to beliefs about race and beliefs



about mathematics and teaching (Ambrose, 2004; Bobis et al., 2016; Charalambous, 2015; Leonard & Evans, 2012; Marx, 2006; Reeder et al., 2009; Richardson, 2003).

Given that this study is situated in a predominantly white institution, it was likely inevitable that a great deal of energy and resources were focused on the expectations, experiences, and feedback of white teacher candidates (Haddix, 2016; Sleeter, 2016). I want to acknowledge that the teacher education program in question is largely structured to center white interests and perspectives. While this orientation is troubling, it is unfortunately the norm in teacher education (Sleeter, 2001). The predominantly white nature and structure of the teacher education program necessarily shaped what I had the opportunity to observe and analyze through this study; I would undoubtedly have systematically different opportunities and findings if I were studying teacher candidates at a historically Black college or university (HBCU) or at schools that primarily serve Latinx or other racially minoritized populations (i.e., Hispanic Serving or Minority Serving Institutions). Though my focus in this dissertation is on the learning, discourse, and practice of white teacher candidates, I aimed to deliberately consider the insights, knowledge, and experiences of teacher candidates of color in the cohort by initially examining course assignments from the full cohort and by interviewing teacher candidates of color who volunteered for the study (Haddix, 2016; Navarro et al., 2019). In addition, I was invested in anticipating and taking a critical stance towards racialized tropes and problematic ideas that have been embedded in and fostered by the teacher education context, such as teachers viewing themselves as “saving” children of color (Martin, 2007; Matias, 2013; Meiners, 2002).

The fact that the lead instructor for the two teacher education courses in question is a white woman poses both risks and opportunities for this study. As is also true for my own understanding of how race and racism are embedded in elementary math teaching, being a white

woman inevitably limits the perspective of the course instructor on such topics. Moreover, our shared whiteness may impede seeing particular ideas or practices as problematic or as complicit in maintaining systems of domination (Cochran-Smith, 2000). That said, having a white instructor place explicit emphasis on race and racism within teacher education coursework could disrupt patterns of leaving anti-racist work to people of color and convey that race and racism *are* concerns for white people (DiAngelo, 2018; Love, 2019). White teacher candidates may also be more amenable to discussing race and racism with a white instructor, as research has shown that instructors of color addressing race are often negatively perceived and evaluated (DiAngelo, 2018; Williams & Evans-Winters, 2005). In sum, I approached this study with a commitment to continually consider and question how the identities of participants, course instructors, and myself might be mattering.

### **Chapter 3 Methods**

This dissertation uses qualitative case study methods to explore the possibilities and challenges of supporting white elementary teacher candidates to engage in race cognizant math teaching. The objectives of this study are to characterize teacher candidates' learning, practice, and discourse tied to a specific course sequence on mathematics teaching that promotes understanding of racialized patterns and provides principles and strategies towards disrupting those patterns in teaching interactions. My purpose in this dissertation is not to analyze or assess the approach of the teacher educators involved in this course sequence, but rather to identify patterns and themes in teacher candidates' engagement with course ideas and practices that might transfer to and inform teacher education efforts in multiple contexts.

As is customary in qualitative work, I approach this study with a commitment to reflexivity and transparency about my own subjectivity (Peshkin, 1988). As Merriam (2001) writes, "Because the primary instrument in qualitative research is human, all observations and analyses are filtered through that human being's worldview, values, and perspective" (p. 22). Thus, I name pertinent aspects of my subjectivity below. In addition, I bring a specific commitment to being cognizant of the impacts of my white racial identity and positionality (Milner, 2007; Twine, 2000). Accordingly, reasoning about my own whiteness informed both the design and my navigation of methodological dilemmas in this study.

In this chapter, I describe and explain the study design, including my selection of the research context and focal participants. I also share my approach to data collection and analysis. I describe the research context in detail, emphasizing aspects of the math teaching course

sequence that pertain my research questions and the possibility of race cognizant math teaching. I also introduce and describe the six focal participants, providing background on their upbringings and initial perspectives on race and racism. I then discuss my positionality as a researcher and detail my processes of data collection and analysis, noting limitations given the COVID-19 pandemic. Finally, I share methodological dilemmas that arose as a result of the study's focus on issues of race and racism with participants (and a researcher) who have been socialized to avoid direct discussion about race. I close by briefly orienting readers to the organization of the findings.

### **3.1 Study Design**

This is an interpretive, qualitative investigation into the learning, discourse, and initial practice of teacher candidates (Erickson, 1986; Hesse-Biber & Leavy, 2011). Because this study is situated within the bounded system of a particular two-course sequence on mathematics teaching, it constitutes a qualitative case study (Merriam, 2001; Merriam & Tisdell, 2016). As such, this research involves the in-depth collection of data from multiple sources over time. Moreover, like other forms of qualitative research, a case study entails a “search for meaning and understanding, the researcher as the primary instrument of data collection and analysis, an inductive investigative strategy, and the end product being richly descriptive” (Merriam & Tisdell, 2016, p. 37). I aim to build understanding of a complex phenomenon — white teacher candidates learning to engage in race cognizant math teaching — by closely studying an instance of that phenomenon in a specific context. I further bound the study by focusing on six teacher candidates from a cohort of twenty-six.

### ***3.1.1 Research Questions***

Within the context of a two-course sequence on mathematics teaching that emphasizes working to disrupt patterns of racism and oppression through teaching interactions, I pursue the following research questions:

1. How do focal teacher candidates take up course ideas and practices that have the potential to support race cognizant mathematics teaching? What trajectories characterize this uptake?
2. What uptake of course ideas and practices is evident in focal teacher candidates' early enactments of mathematics teaching?
3. How do focal teacher candidates engage with issues of race and racism in their talk and writing, and what does this reveal about their learning?

To answer these questions, I collected data from three main sources: interviews with focal participants, observation of class sessions, and submitted course assignments. There were four rounds of interviews, with one round taking place at the beginning and end of each course. I attended<sup>7</sup> each class session for the two courses in question, taking focused field notes and collecting artifacts. I also gathered teacher candidates' submitted course assignments, which included written plans and analyses (e.g., analyzing participation in a video episode of mathematics teaching) as well as video records of their early math teaching experiences.

Because I am investigating teacher candidates' uptake of course ideas and practices over time (Research Question 1), I employ methods of longitudinal analysis (Grossoehme & Lipstein,

---

<sup>7</sup>Class sessions shifted to asynchronous online modules in March 2020 due to the COVID-19 pandemic. Following this shift, I still took field notes in modified form. Rather than taking notes during live instruction, I took notes as I engaged with each component of the posted modules (e.g., read through slides, watched videos of a course instructor explaining the work for the week). I also took notes on teacher candidates' responses to activities and discussion threads within each module.

2016; Saldaña, 2002) alongside methods of thematic analysis (Braun & Clarke, 2006, 2012). To characterize focal teacher candidates' uptake of relevant course ideas and practices in their initial approximations of mathematics teaching (Research Question 2), I make use of interpretive video analysis approaches (Erickson, 2006). Analyzing teacher candidates' discourse (Research Question 3) involves examining both implicit and explicit references to race and racism within and in relation to the math teaching coursework. Grounded in the perspectives of Gee (2012), Britzman (2003), and Frankenberg (1993), I assume that teacher candidates' engagement with issues of race and racism is influenced by multiple dimensions of their identities, their socialization, and negotiation of competing discourses about race, racism, mathematics, teaching, learning, and so on. Therefore, my analysis across this study involves interpretation of what might underlie themes and patterns in teacher candidates' uptake of course ideas and practices and engagement with issues of race and racism during coursework on mathematics teaching.

### ***3.1.2 Case Selection***

Central to a qualitative case study is focusing one's attention through construction of the case (Dyson & Genishi, 2005). As Merriam (2001) explains, "the bounded system, or case, might be selected because it is an instance of some concern, issue, or hypothesis" (p. 28). For this dissertation, I chose to situate the study in a specific teacher education context because it is an instance of mathematics teacher education coursework prioritizing and addressing issues of race and racism. Centering race is not typical in mathematics teacher education (Shah & Coles, 2020), so this context offered an invaluable opportunity to explore and better understand the complexities of race-focused work in mathematics. Additionally, I had insight into the aims and approach of course instructors due to my prior involvement in the planning and teaching of the courses in question.

My selection of the research site is based on the course instructors' expressed intentions and prior efforts with respect to addressing issues of race and racism in and through elementary mathematics teaching. This study is *not* premised on claims about the effectiveness of the instructional team's particular approach to supporting teacher candidates to disrupt racialized patterns. In fact, the situation is quite the opposite: This study explores and closely analyzes what occurred in the 2020 iteration of the course sequence. What teacher candidates took away from this teacher education experience is the empirical question that drives this study. In the following section, I describe the research context in greater detail.

### **3.2 Research Context**

This study is situated in an undergraduate elementary teacher education program at a large public university in the midwestern United States. The research focuses on teacher candidates' work and experiences in a two-course sequence on mathematics teaching that took place between February and December 2020. These two courses occur in the second and third semesters, respectively, of a four-semester program. A senior faculty member was the lead instructor for both courses in the year 2020. This faculty member collaborated with multiple graduate students and a post-doctoral fellow to plan and teach the courses. I purposely chose to situate this study within this program and these specific courses because of how issues of race and racism had been prioritized in recent course efforts. I elaborate on the nature of these efforts below. While the design and pedagogy of these courses is not the focus of this dissertation, the substance of the courses is important for contextualizing and interpreting teacher candidates' thinking about race, racism, and mathematics teaching over time. I do not mean to suggest that these courses *caused* particular learning on the part of teacher candidates, but rather to document

the discourses and practices made available to teacher candidates as resources for their own sensemaking and teaching.

Additionally, the eruption of the COVID-19 pandemic and mass racial justice protests dramatically impacted the sociopolitical context and practical conditions of this study. The outbreak of COVID-19 in March 2020 led to an abrupt shift in the format of teacher education coursework, as well as in the day-to-day lives of teacher candidates and everyone involved in the course. Soon after, the killing of George Floyd on May 25, 2020 brought national attention to widespread and sustained protests against racial injustice. I next describe the significance of conducting this research in the year 2020 in terms of the design of the courses in question, the COVID-19 pandemic, and the questions about race and racism that became salient in popular discourse with new waves of Black Lives Matter protests. Following this general orientation to the context, I provide more detail on the central themes of each course, including how each course addressed issues of race and racism in relation to math teaching.

### ***3.2.1 Program Background***

In the early 2010s, the teacher education program was systematically restructured and redesigned around the goal of preparing teacher candidates to *do* the work of teaching, reflecting a practice-based approach (Ball & Forzani, 2009; Grossman, Hammerness, et al., 2009). As a result, each course in the program was designed to develop teacher candidates' skill with select high-leverage teaching practices (Grossman, 2018). For example, the first course in the math teaching sequence emphasized eliciting and interpreting student thinking and the second course centered on leading whole-class discussions. The 2020 lead instructor, an experienced elementary teacher and teacher educator, had taught early versions of courses in the math teaching sequence, as well as early versions of a course on developing the learning environment.



After a several year hiatus, the lead instructor resumed responsibility for teaching the first course in the math teaching sequence, which I refer to as Sensemakers, in the winter term of 2016. In doing so, she began a process of integrating more explicit attention to issues of equity and justice, including consideration of race and racism. For example, she started prompting teacher candidates to notice patterns in normalized practice with respect to how children with various identities are typically positioned relative to the mathematics and each other (e.g., good at math, smart, fast, struggling, etc.) and introduced the practice of *acknowledging competence*, a status intervention by a teacher involving publicly highlighting instances of mathematical competence (see Chapter 4 for a detailed explanation of this practice). In the fall of 2018, the lead instructor also took on the second course in the sequence (Math Methods), again working to integrate a more deliberate focus on equity and justice. For example, teacher candidates explored the limitations and affordances of different strategies for calling on children during a whole-class mathematics discussion with an eye towards fostering broad participation and disrupting patterns of who typically gets recognized as smart in mathematics.

As part of these efforts, the lead instructor solicited the input of a group of graduate students concentrating in math education or teaching and teacher education, as well as a post-doc in mathematics education, in the context of a collaborative math methods planning group (MMPG). With weekly meetings, the MMPG structure enabled the lead instructor to draw on group members' varying experiences, identities, and expertise. The group was diverse with respect to race, age, and prior teaching experience. For instance, one graduate student brought a wealth of experience in K-12 special education; other MMPG members drew on their prior experience in elementary teaching, mathematics as a discipline, teacher education, and/or working with white people on issues of racial justice. Between 2018 and 2020, MMPG members

included two Black men, two Black women, one woman who identifies as Chicana, an Asian woman, and seven white women, counting myself. I raise this to emphasize that course design was not just determined by the lead instructor, a white woman faculty member; instead, course planning and teaching was a collaborative process that reflected multiple perspectives and racialized experiences.

My involvement in MMPG over the course of several years, including the span of this study, provided an important window into course aims and designs. I regularly took notes during MMPG meetings, which I reviewed to ground my comments here. In MMPG meetings from 2018 onwards, there were two recurring ideas that are particularly relevant for characterizing the context of this study. First, MMPG members often discussed that the elementary teacher candidates enrolled in the program, most of whom were white women in their early twenties from (upper) middle-class families, tended to resist direct discussion of race and racism and instead had gravitated towards issues they were more comfortable discussing, such as sexism. As a result, the group strategized about *how to keep race and racism in view* while engaging in work on mathematics teaching. Reflecting the practice-based roots of the teacher education program, a second recurring idea was that ultimately, the challenge was not just to develop teacher candidates' *knowledge* of or beliefs about inequities and injustices, but to develop their ability to *do* things in their mathematics teaching that could interrupt the default patterns of practice which reflect and reinforce racism and other forms of oppression. Thus, MMPG actively worked to connect *awareness* of injustices (such as the disproportionate punishment of Black children in schools, Skiba et al., 2002), to what teacher candidates might learn to *do* in their own developing practice (e.g., use mathematical questions and varied participation structures to bring children into the mathematical work, pre-empting exclusionary discipline). As recurring considerations in

MMPG conversations, these two ideas actively shaped the learning opportunities made available to teacher candidates in the 2020 iterations of Sensemakers and Math Methods. I pursued studying teacher candidates' work in these two courses because these efforts seemed to present an important opportunity to investigate the interplay between explicit attention to race and racism and learning to teach elementary mathematics.

### ***3.2.2 COVID-19 Pandemic***

The COVID-19 pandemic significantly impacted the format and content of both courses in the math teaching sequence, and undoubtedly affected teacher candidates' lives and experiences in the teacher education program. The first course in the sequence, Sensemakers, had three of eight class sessions in person before the pandemic prompted state-wide orders to shelter-in-place and close K-12 schools. As a result, the remaining five class sessions took place online, via Canvas, a learning management system. The university-wide transition to online coursework was announced in early March, leaving only a few days to adapt the Sensemakers course content for Class 4. In addition, because of uncertainty about students' internet connections and concerns about equitable access, the elementary teacher education program decided to shift to asynchronous modules rather than hold synchronous class sessions via a videoconferencing platform. Consequently, there was a significant amount of redesign work that took place in a short period of time. The MMPG met frequently around the transition to online coursework, and several MMPG members (including me) helped to create segments of online modules. Thus, the Sensemakers course began as it historically been offered — as a face-to-face teacher education course with some embedded field experiences — but, as a result of COVID-19, had to pivot mid-stream to asynchronous online instruction.

In contrast to the abrupt change to the format of Sensemakers, there were several months to adjust to life amidst the pandemic prior to the Math Methods course. However, throughout the summer of 2020, there was a great deal of uncertainty regarding whether and how the university might be able to resume in-person classes in the fall. For example, there was discussion of prioritizing teacher education courses for returning to in-person instruction and setting up classroom spaces to maintain six-foot social distancing to reduce transmission of the virus. The status of K-12 schools added further uncertainty, as many teacher education courses (including Math Methods) included field-based assignments. Thus, while there was more time to plan for the possibility of teaching Math Methods online or in some hybrid form, there were many open questions and contingencies that complicated preparation and redesign efforts. Ultimately, the Math Methods course took place via synchronous virtual class sessions. This allowed for live discussions and approximations of practice (e.g., using representational materials to model addition and subtraction algorithms), but also represented a significant change in instructional approach compared to previous course iterations. Additionally, acknowledging the stresses on students' lives and the personal and emotional demands of being on Zoom for hours at a time, the program leadership made a decision to reduce class time for all courses. Weekly class sessions were two hours in length, rather than three, and one of the nine class sessions was canceled for the 2020 Election. Teacher candidates still had field placements, but these were held entirely virtually and for less time (one day a week rather than one and half). This meant that teacher candidates had fewer opportunities to lead instruction in their placement classrooms (Math Methods course assignments had typically required teacher candidates to lead four math discussions; for a number of reasons, this was reduced to one discussion in 2020).

Beyond the obvious impact on the format of coursework, the COVID-19 pandemic also affected the content of the math teaching course sequence. News of stark racial disparities in infection and death rates brought to the fore existing structural inequities, such as unequal access to health care and jobs with paid sick leave (CDC, 2020). The closure of schools and businesses and dramatic increases in unemployment exposed the precariousness of many people's economic survival. Thus, the COVID-19 pandemic was an impetus to examine existing racial and economic inequalities more closely. Further, in the context of the math teaching courses, the pandemic brought attention to what children and families were experiencing and how those experiences were shaped by social locations and systems. In this way, the COVID-19 pandemic and its impact on the ideas explored in math teaching course sequence was not unrelated to the national conversations about race and racism sparked by widespread Black Lives Matter protests.

### ***3.2.3 Black Lives Matter Protests***

In 2020, protests against police violence and in support of Black lives took place in every state in the U.S. (Haseman et al., 2020) and in many countries across the globe for months (Cineas, 2020; Here & Now, 2020). This is not trivial in the context of this study. As I sought to understand how teacher candidates, particularly white teacher candidates, thought about issues of race and racism as they learned to teach mathematics, the rise of a national conversation about racial justice was significant. In June of 2020, books about race and racism suddenly dominated bestseller lists, as many people sought to understand and respond to the moment (E. A. Harris, 2020; Ward, 2020). Countless articles, podcasts, television programs, and social media posts probed and exposed racism and racial inequality in the United States, examining topics from the history of policing and mass incarceration to medical racism and the racial disparities laid bare by the COVID-19 pandemic. Corporations and a wide variety of organizations released official

statements of support for the Black Lives Matter movement. People compiled and shared anti-racist reading lists. Critiques of people's responses to the moment, including the widespread embrace of texts like *White Fragility* (DiAngelo, 2018), abounded. Though there was certainly no consensus, race and racism became a focus of conversation and debate for many.

Reflecting this rising interest in thinking seriously about race and racism, several of the teacher candidates in the program participated in optional virtual discussions with teacher educators over the summer months of 2020. Teacher candidates raised questions about how to talk about race and racism with children and about what they might do in efforts to be anti-racist as they entered their field placements in the fall. Granted, purchasing books, posing questions, and having conversations about race and racism was no guarantee that anyone would come to critical understandings or act according to anti-racist commitments moving forward.

Nonetheless, there was a definite shift in mainstream attention to race and racism during the summer of 2020. From my perspective, this shift added tangible urgency to issues of race and racism in elementary math teaching, lessening the need for course instructors to actively bring issues of race and racism to teacher candidates' attention. In other words, the widespread protests around racial justice and concomitant conversations about race and racism set the stage for the second course in the math teaching sequence to address issues of race and racism more directly than might otherwise have been the case. In addition, I adapted interview protocols for the fall term to probe participants' thinking about Black Lives Matter protests and explore how the shifting national discourse might be impacting participants' ideas and perspectives on race and racism in general and in connection to their work as beginning elementary teachers.

### 3.2.4 Course 1: Sensemakers

In this section, I describe the content of first course in the math teaching sequence, which I am referring to as Sensemakers. Here, I provide an overview of the course as whole; in Chapters 4 and 5, I offer more detailed discussion of the specific sites of coursework featured in my findings.

In the original practice-based design of the course, the central aims of Sensemakers were to develop teacher candidates' skill with eliciting students' mathematical thinking and explaining core content (specifically, fractions). Several class sessions were embedded in an elementary school, giving teacher candidates the opportunity to work with fifth-grade students. Interacting with children around fraction tasks and formatively assessing what those children seemed to know, understand, and be able to do mathematically served to develop teacher candidates' curiosity about children's thinking and to challenge the notion that children are "blank slates." The course included study of common misconceptions and emphasized that wrong answers often have a logical basis. Overall, Sensemakers as a course underscored that children come to school with important ideas and understandings that teachers can extend and build on.

In recent redesign efforts, the lead instructor prioritized disrupting deficit views of children, particularly children of color and multilingual children. For example, the lead instructor gradually shifted away from framing patterns in children's mathematical thinking as in terms of misconceptions or "errors," emphasizing instead that teachers can deliberately choose to look for what *does* make sense in children's work and responses. In each iteration of the course, the lead instructor revised the math teaching that teacher candidates engaged in, shifting from one-on-one interviews with children to small group work co-led by a pair of teacher candidates. This shift presented greater opportunities for teacher candidates to think about the social dimensions of

math teaching and learning and to attend to how children were positioned relative to one another and the mathematics (e.g., Featherstone et al., 2011; Langer-Osuna, 2011; Wood, 2013). In addition, the lead instructor and several members of the MMPG (including myself) have been in conversation with other instructors in the elementary teacher education program, seeking to increase explicit attention to educational injustices and to build more programmatic coherence around teaching to advance justice. As a result, recent iterations of Sensemakers have sought to connect more directly to what teacher candidates learn in a parallel foundations course in the program that focuses on issues in multicultural education, including racial literacy. One example of this effort is that in a survey sent out just prior to the first class meeting, the lead instructor framed Sensemakers as building on work teacher candidates did in the multicultural education course and asked teacher candidates to share take-aways from the multicultural education course that might be relevant to their work in Sensemakers. The lead instructor's explicit mentions of race and racism throughout the course also aim to pick up on the multicultural education course's emphasis on racial literacy.

The COVID-19 pandemic and concomitant move from in-person class sessions to online modules prompted several changes in Sensemakers course content. For one, the pandemic meant that teacher candidates were only able to meet once in person with their small groups at a partner elementary school. Previously, two of the major assignments in the course had been a teaching self-appraisal based on analyzing videos of the small group enactments and a memo to the classroom teachers describing children's mathematical learning and growth across three small group sessions. Considerable class time was also dedicated to preparing for and debriefing small group teaching experiences. With these assignments and experiences no longer feasible, the lead instructor and the MMPG made two main changes to the course content: (1) instructors replaced



work on the memo to teachers with a segment on communicating with families in light of the pandemic, and (2) instructors moved up a strand of work that would otherwise have occurred in Math Methods on disrupting patterns of racism, oppression, and marginalization that can be reproduced in math teaching.

Given the influences of the original course design, justice-focused redesign efforts, and the COVID-19 pandemic, the 2020 iteration of Sensemakers ultimately included four main strands of work:

- Acknowledging competence (instructors’ reframing of what is called “assigning competence” in literature on complex instruction, such as Featherstone et al., 2011)
- Knowing mathematics for teaching (Ball et al., 2008): Explaining and representing core fraction concepts, eliciting and interpreting children’s thinking about fractions
- Disrupting patterns of marginalization and oppression pertaining to multilingual students and the construct of “ability” in math classrooms
- Communicating with families in light of the COVID-19 pandemic

Wrapped up in each of these strands are multiple interconnected ideas and practices. For example, in introducing the practice of strategically highlighting a child’s competence (acknowledging competence), course instructors<sup>8</sup> also brought attention to common messages about what it means to be “smart” in (e.g., being quick, getting correct answers) and racialized and gendered patterns in who is typically positioned as being competent in mathematics. The idea of broadening the meaning of mathematical competence also extended into work on eliciting and interpreting children’s mathematical thinking, as teacher candidates were

---

<sup>8</sup> The instructor of record (the one faculty member in MMPG) took the lead in enacting instruction. However, other members of MMPG with roles of “teaching apprentice” and graduate student instructor also led segments of class sessions.

encouraged to deliberately look for what competence children demonstrated beyond arriving at correct answers. Similarly, the lead instructor's framing of how patterns of marginalization and oppression are often reinforced and reproduced in classroom interactions utilized the concept of *discretionary spaces* (Ball, 2018). This is the notion that teaching is dense with opportunities for teachers to exercise discretion and make choices that cannot be pre-determined by administrators, curriculum, or policy. Though instructors introduced discretionary spaces within the "disrupting patterns" strand, they also connected the concept to the practice of acknowledging competence in written feedback on student work. Thus, while these strands of work served to organize class sessions and online modules, they also worked in tandem to advance a view of mathematics teaching as work in which social identities and dynamics matter, children's sensemaking and understanding is valued, and teachers have considerable power and agency to either reinforce or try to disrupt broader patterns of oppression and marginalization.

During Sensemakers in 2020, course instructors repeatedly talked about race and racism in connection with the work of math teaching. For example, when framing the focus of the course in the first class session, the lead instructor said:

We're really trying to be explicit about talking about systemic issues of racism and oppression, and our goal is to connect those things directly – large historical patterns and structures in our society that prevail, to show that they have a lot to do with what we do every day in our classrooms. (Sensemakers Class 1 Field notes, 2/17/20)

These comments illustrate the lead instructor's messaging to teacher candidates that mathematics teaching is situated in and affected by broader social issues, such as a systemic racism and other forms of oppression.

This overarching aim of attending to issues of racism surfaced in a few ways across the course. For one, the lead instructor often drew attention to the racial identities of children in mathematics classrooms and prompted teacher candidates to consider how their own biases and assumptions might impact how they, as teachers, “read” or interpret and respond to specific children. For example, during a discussion of a video clip from a class of rising fifth grade students, a teacher candidate (a white woman) shared that she had initially read a Black girl in the video as being rude to a student presenting at the board, but upon reflection, the teacher candidate attributed her interpretation to her own shyness and how she would have felt as the presenting student. The lead instructor noted that while the teacher candidate framed her reactions as not being about race, it probably *was* about race, given how white women learn to view appropriate ways of talking in school. In another class session, the lead instructor framed the practice of acknowledging competence as a strategic intervention to interrupt racialized (and gendered) hierarchies and inequities in who typically gets recognized as contributing mathematical ideas and demonstrating mathematical competence. Thus, the lead instructor again connected children’s racial identities to patterns in how children are seen in math classrooms by their peers and teachers. An underlying theme in instructors’ attention to children’s racial identities was that while teacher candidates cannot escape the stereotypes and assumptions they’ve absorbed by virtue of living in a racist society, they *can* work to become more aware of their own assumptions, make deliberate efforts to explore multiple interpretations of children’s contributions and actions, and choose to read children in asset-based ways.

Another way that race and racism were addressed in Sensemakers in 2020 was through the frame of “disrupting patterns.” As mentioned above, instructors introduced the idea that classroom teachers have significant discretion in their practice, e.g., in their planning, in their

interpretations of students, and in their day-to-day interactions with children. Made explicit repeatedly was that teachers' actions in those discretionary spaces (Ball, 2018) can either reproduce or disrupt broader patterns of marginalization and oppression. In several instances, the patterns that the lead instructor identified as things to be aware of and to try to disrupt were described as "patterns of racism" or included patterns tied to the racial identities of children and families. For instance, one of the patterns raised was that of racial disparities in student assignment to gifted and talented programs and to special education. Instructors connected these racial disparities in ability labels to both macro-level ideas (namely, the history of scientific racism and intelligence testing) and micro-level interactions between students and teachers, such as a teacher interpreting a child's math work through racialized and gendered deficit frames or dominant assumptions related to class or language. Thus, instructors communicated that there are racialized and oppressive patterns in mathematics teaching and learning that teacher candidates should work to be aware of and to try to disrupt in their own practice.

Across Sensemakers class sessions, the bulk of explicit attention to race and racism came from the lead instructor's talk and from a few assigned readings (e.g., selections from Aguirre et al., 2013; Delpit, 2012; and Featherstone et al., 2011; also Skinner et al., 2019). Aside from facilitated discussions during the three in-person class sessions, teacher candidates were not typically asked directly to articulate their own thoughts or questions about issues of race and racism in connection to math teaching. Thus, one unintended consequence of Sensemakers shifting from face-to-face class sessions to online asynchronous modules due to the COVID-19 pandemic is that there were fewer opportunities for live interaction between instructors and teacher candidates around issues of race and racism in math teaching. That said, course assignments (including tasks embedded in online modules) did regularly prompt teacher

candidates to notice and comment on children’s mathematical competence, how children seem to be positioned by themselves, peers, and the teacher, and teacher moves to acknowledge children’s competence. Instructors also used video examples with a high proportion of Black students and students of color and prompted teacher candidates to consider children’s identities. Given that instructors framed acknowledging competence and positioning as spaces to consider the impact of racial identities and broader racial patterns, prompts using these terms left space for — but did not require — teacher candidates to explicitly address race or racism in their responses. I say this to acknowledge that while the course conveyed a set of ideas about race, racism, and math teaching, it is quite possible that teacher candidates could complete the course without investing much time or thought in considering or responding to those ideas.

### ***3.2.5 Course 2: Math Methods***

In the third semester of the teacher education program, teacher candidates take a 9-week math methods course. Historically, this course has focused on the instructional practices of leading whole-class discussions and representing and explaining core content, using place value and whole number operations as mathematical context. These foci have remained as the course has evolved to integrate justice-oriented priorities and to adjust to a virtual format in a pandemic. Because such work on central topics in elementary mathematics is fairly typical in math methods courses, I focus here on the aspects of the course that made it distinct in terms of prioritizing issues of race and racism.

As with Sensemakers, recent redesign efforts in Math Methods have led to an increasing focus on disrupting patterns of marginalization and oppression, especially with respect to race, through discretionary spaces inside of mathematics teaching. The Fall 2020 iteration of Math Methods included a review of the concept of discretionary spaces using a touchstone example,

the “Toni and Aniyah video.” Course instructors again emphasized that individual teachers have considerable agency and power to disrupt broader patterns of racism and other forms of oppression. Because Math Methods centers on whole-class math discussions, instructors have highlighted unjust and inequitable patterns that are commonly reproduced in “managing” groups of children (Milner et al., 2019). For example, course instructors assigned readings and presented data that document the disproportionate punishment of children of color, and Black children in particular, in school (Monroe, 2005; Shalaby, 2017). Through class discussions, these racialized patterns in school suspensions and expulsions were connected to the subjective decisions teachers make in interpreting and responding children’s behavior.

Course instructors also introduced a concept called “the distraction principle” (Noel, 2018) to support teacher candidates in navigating the discretionary spaces of orchestrating work and conversation with a group of children. The thrust of the distraction principle is that often, what a teacher perceives and responds to as a distraction from class work is actually only a distraction to the teacher, not to students themselves; thus, teachers should work to develop a habit of pausing and considering whether they have evidence that a student is actually distracting themselves or other students before intervening (Noel, 2018). This principle builds on the premise that the ways that teachers “read” and respond to children are inherently impacted by teachers’ identities and worldviews (e.g., being socialized as a middle-class white woman in the United States). For example, notions of what it means for a student to “be distracted” are rooted in dominant white feminized ideas about what attention and respect look like (Hancock & Warren, 2017; Meiners, 2002). The idea is that breaking habits of instinctively reacting to children’s behavior will provide space for teachers to be conscious of how they might be making unwarranted assumptions and enacting bias (especially racial bias), then to actively pursue a

course of action that departs from and disrupts racialized patterns of punishment (Noel, 2018). Course instructors created opportunities for teacher candidates to practice employing the distraction principle in the context of math discussions, such as with watching and analyzing video clips of different math discussion launches. Building on earlier work on patterns of who is and is not typically seen as mathematically competent, this work on disrupting patterns of punishment via the distraction principle was a primary site for tackling issues of race and racism in Math Methods.

In addition, Math Methods course instructors pursued a strand of work supporting teacher candidates' identity development with an emphasis on racial self-awareness. This involved identity-focused prompts for reflection and discussion at multiple points across the course. For example, during the first class, teacher candidates were given time to write about their social and personal identities, then prompted to consider how their identities shape their interpretations, experiences, actions, and knowledge, including in mathematics and teaching contexts. Another example is an online discussion prompt from Math Methods Class 6 tied to reading *Troublemakers* by Carla Shalaby (2017). Teacher candidates were asked:

Now that you have finished reading *Troublemakers*, and almost finished another semester of coursework and student teaching, how has your understanding of race, racism, culture, and your identities shifted in terms of how people perceive your teacher identity? Which of your specific identities (across all three: personal, social, and teacher) will you foreground? How will you ensure you are considering the “active political work, cultural work” (p. 153) of teaching, especially when engaging with children and families that challenge whiteness and its power inequities? (Math Methods Class 6 Discussion Thread)

Evident here is course instructors' explicit attention to race and racism in the space of supporting teacher identity development. While this strand of work was largely reflective in nature (as opposed to looking ahead to the enactment of teaching practices), course instructors made pointed references to ways that teachers' identities could impact their interactions with children within math discussions. For example, when framing a class discussion about discretionary spaces in a video episode of math teaching, the lead course instructor emphasized that questions of the mathematics content, "classroom management," and identity needed to be thought about together, rather than separately (Math Methods Class 5 Field Notes, 11/10/20). Thus, course instructors sought to interweave work on teacher identity with work on mathematics content and teaching practices as well as work on disrupting inequitable patterns.

As with Sensemakers, course instructors and course materials in Math Methods made consistent use of direct racial language. For instance, it was not uncommon for segments of class to be explicitly framed as being about race or racism, as with "Focus on How Content Instruction and Racism Interact inside of Practice" (Math Methods Class 5 Slides, 11/10/20). In contrast to Sensemakers, course assignments in Math Methods included more direct prompts for teacher candidates to express their thinking about race, racism, and math teaching (this was partly a result of insights from my preliminary analysis of data collected during Sensemakers). For example, a graded video-analysis assignment required teacher candidates to "Explain which patterns of racism, sexism, and ableism are reproduced or interrupted and how, based on the video" (Analyzing Participation Assignment, Math Methods 2020). While again, there was no guarantee that teacher candidates would take up direct racial language or race cognizant ideas, it was a consistent feature of the learning context.



### 3.3 Participants

Within a qualitative case study, there are multiple levels of sampling. Beyond initially identifying the case (i.e., selecting a setting), case study research requires purposeful decisions within the case about what to observe, which artifacts to analyze, and which people to interview (Merriam, 2001). In this section, I discuss my selection of study participants.

#### 3.3.1 *Sampling Strategy*

I used a combination of criterion-based, purposive sampling and convenience sampling to identify focal teacher candidates (Hesse-Biber & Leavy, 2011; Merriam, 2001). My first criterion was that teacher candidates were enrolled in the undergraduate elementary teacher education program as part of the cohort taking the math teaching course sequence in 2020. For context, at the outset of data collection in February 2020, there were 26 students in this cohort. Of these 26 students, one person identified<sup>9</sup> as a man, one person identified as non-binary/genderqueer, and 24 people identified as women. In terms of race, two students identified as Black/African American, two students identified as Asian, one student identified as Mexican American, and the remaining 21 students identified as white. As a standard part of enrolling in the teacher education program, all teacher candidates made a general declaration regarding their willingness to be contacted for research beyond regular program activities. Thus, my second criterion for study participants was that they had indicated their willingness to be involved in research.

---

<sup>9</sup> These data are primarily drawn from an online survey sent out by course instructors prior to the first Sensemakers class session and therefore mostly reflect students' self-identifications. Twenty-two of the 26 students responded to the survey. For two of the students who did not respond to the survey, I was able to elicit their self-identifications for race and gender during Round 1 interviews. I inferred race and gender for the remaining two students based on their self-presentations during class sessions.

I then turned to convenience sampling by soliciting volunteers from the group of teacher candidates who met these two criteria. I announced the study during the first session of the math teaching course sequence, then sent a recruitment email only to teacher candidates who had indicated interest in additional research. I made clear that teacher candidates' participation in the study would have no bearing on their performance or grades in the course, that their participation was completely voluntary, and that they could withdraw at any time. To help motivate participation, financial incentives of \$30 per interview were advertised. I also emphasized that teacher candidates would be contributing to improvements in the field of teacher education by sharing their perspectives and experiences through the study. I pursued interviews with all teacher candidates who volunteered to participate in the study (including both white teacher candidates and teacher candidates of color). Eleven teacher candidates initially indicated interest in participating, but one person withdrew prior to initial interviews due to scheduling challenges. Two other participants withdrew over the course of the study, likely due to changing circumstances with the COVID-19 pandemic. Thus, the sample of interviewees ranged from ten people in Round 1 to eight people in Rounds 2 through 4.

I decided to interview a racially diverse sample for a few reasons. For one, I wanted to hear from people with a range of perspectives and experiences related to race and racism. Analytically, gaining a sense of variation across the cohort better enabled me to notice what was recurring or distinct with individual participants. White people and people of color are likely to have different perspectives and experiences related to race and racism given their different locations in existing social structures (Bonilla-Silva, 2018; Frankenberg, 1993), so interviewing students of multiple racial identities was a way to gain insight into the range of perspectives in the cohort. For example, coursework that feels supportive and helpful from the perspective of a

white teacher candidate may feel harmful from the perspective of a teacher candidate of color (Amos, 2016; Haddix, 2016; Picower & Kohli, 2017). Furthermore, as Haddix (2016) points out, the demographic dominance of white women in teaching and teacher education means that the perspectives and experiences of people of color are often overlooked. Thus, in the process of studying the sensemaking and practice of white teacher candidates and drawing implications for teacher education, I wanted to keep the perspectives and experiences of teacher candidates of color in view. Additionally, interviews with participants of color supported qualifications and attenuations of findings, as with the observation that the use of race evasive discourse is not exclusive to white participants and may be encouraged by unspoken norms and expectations in predominantly white spaces.

My final round of sampling occurred in the later stages of analysis. My initial passes through the data included assignments from the entire cohort and interviews with teacher candidates of color. I included insights and questions inspired by this larger data set in my reflections and memos. However, when it came to claim-building and articulating answers to my research questions, I narrowed my focus to white interviewees. This was purposeful and predicated on my conceptual framing of the study, which is grounded in ideas from critical whiteness scholarship. My final sample consists of six white focal participants.

### ***3.3.2 Representativeness of the Sample***

Two likely questions about my sample of six white teacher candidates are (1) whether the sample is representative of the cohort and (2) whether the sample is representative of white teacher candidates more broadly, particularly with respect to teacher candidates' racial beliefs and attitudes. I did not use any standardized survey instruments to collect data on teacher candidates' racial beliefs or attitudes, so I cannot make definitive claims about the sample's

representativeness in that regard. That said, I made deliberate efforts in my recruitment of volunteers to invite a variety of racial viewpoints. To encourage teacher candidates who were unsure or skeptical of how race and racism might matter in math teaching to consider participating, I explicitly stated that I was interested in talking to students with a range of perspectives about race and racism. I also consciously shared minimal information about my own racial viewpoint when describing the study.

Nonetheless, the process of self-selection likely attracted people who saw race and racism as important considerations in teaching and learning, more so than those who embraced race evasive ideologies. As a result, my sample probably underrepresents teacher candidates resistant to discussions of race and racism. That said, I was able to draw on data sources outside of interviews, such as written assignments submitted by the whole cohort, to access some responses of more skeptical and resistant teacher candidates. I considered responses from the broader cohort as a way of noticing similar or distinct features in data from focal participants, but discrepant responses from non-focal participants are beyond the scope of this study.

Given my reliance on volunteers, I was not able to purposefully form a representative sample of white elementary teacher candidates across views of race and racism. However, this does not prevent meaningful findings. The purpose of this case study is not to generalize empirical findings to the larger population of white elementary teacher candidates, but rather to describe these participants' ideas and practices *in depth* so that readers can discern for themselves which themes and concepts might be transferrable to other teacher education contexts (Hesse-Biber & Leavy, 2011). Even if this sample of focal teacher candidates overrepresents racially progressive or race cognizant perspectives, there is still a great deal to learn concerning

the thinking and practice of teacher candidates who *do* wish to actively consider race and work towards disrupting racism through their math teaching.

### ***3.3.3 Focal Participants***

Of the ten participants I interviewed over the course of this study, I focus my claims and arguments on the six participants who identified as white. In this section, I introduce these six people, providing some background on where each participant comes from and their experiences with thinking and talking about race and racism prior to the teacher education program.

First, some general orienting information: All participants enrolled in the teacher education program in question beginning in the fall term of 2019. The program is two years in length (typically the final two years of undergraduate studies), and teacher candidates had to apply specifically to the school of education in order to enroll. For one participant (Rachael), this was a continuation of undergraduate studies at the same university. The other five focal participants entered the teacher education program after transferring from other institutions, including community colleges and four-year universities. Two focal participants (Alex and Stacey) were returning to school after spending several years in the workforce and were parenting young children while they were enrolled in the teacher education program. I raise this to signal that while there are many parallels across focal participants' identities and experiences, there is also important variation.

Part of this variation pertains to focal participants' generation and the salient events that they have lived through. People define generations in varying ways, but broadly speaking, Generation Y (Millennials) includes people born from 1980 to the mid-to-late 1990s and Generation Z (Gen Z) includes people born from the mid-to-late 1990s into the 2000s (Apollon, 2011; Atkins, 2020; G. Brown, 2017; C. J. Cohen et al., 2017). This means that four of the focal

participants fall into Gen Z and two are Millennials. While I do not place stock in ideas that one’s generation *determines* their views, beliefs, or patterns of behavior, I agree with K. Brown (2018) that “there is something to learn from looking closely at the perspectives, experiences, or knowledge held by people socialized during the same generational timespace” (p. 107). For example, in making sense of how teacher candidates engage with issues of race and racism in a math teaching course sequence in 2020, it seems relevant that two focal participants were old enough to vote in the 2008 presidential election and to experience — as adults — popular discourse about Barack Obama’s presidency marking a “post-racial” era in the U.S. (Apollon, 2011). The other four focal participants were children in elementary or middle school during that same period. It also noteworthy that, because members of Gen Z are just now becoming adults, enrolling in college, and entering the workforce, less is known about patterns in their ways of being, thinking, and acting, including with respect to issues of race and racism.

Table 1 shows demographic information for focal participants (all names are pseudonyms). The data in Table 1 were self-reported by participants on a questionnaire administered during Round 1 interviews.

**Table 1**

*Demographic Information for Focal Participants*

Participant	Age at R1 Interview	Gender	Race	Class / Socioeconomic Status
Alex	34	Non-binary	White	Middle class, first generation college student
Evelyn	21	Female	White	Middle class
Jason	23	Male	White	Middle class
Margaret	22	Female	White	Middle class
Rachael	21	Female	White	Middle / Upper-middle
Stacey	32	Female	White	Middle to Lower

*Note:* The demographic questionnaire used to elicit this information was open response. I report interviewees’ self-generated responses here.

I turn next to providing more context for these characterizations as I describe each focal participant in turn, drawing on data from Round 1 interviews.

**Alex.** At the outset of this study, Alex was 34 years old, which makes them a Millennial. Alex had enrolled in the teacher education program after transferring from a nearby community college. Prior to this, Alex had had considerable experience as a retail manager and had also worked briefly as a paraprofessional in a nearby school district. Alex explained their interest in this study as being tied to a desire to disrupt cycles of oppression in teaching, as well as to a love of mathematics. As a person, Alex seemed strongly committed to social justice. For example, Alex relayed participating in efforts promoting same-sex marriage rights in the 2010s. They also talked about having to advocate for themselves and their children in terms of accommodations for ADHD and other learning needs. During our first interview, Alex opted to not disclose their gender and asked that I use gender neutral pronouns in my work. However, over the course of the study, Alex shifted to publicly identifying as non-binary; my writing reflects this shift.

Alex grew up in a predominantly white small town in the upper Midwest. Alex shared that their mother talked about and encouraged color-blindness, while their great-grandmother, an important role model for Alex, espoused and taught Alex racist ideas, such as that “if you walk by a Black person, you hold your breath” (Alex, Round 1 Interview, 2/21/20). Thus, growing up, Alex was exposed to both discourses of essentialist racism and race evasiveness (Frankenberg, 1993). Alex’s own thinking about race was significantly impacted by their first-grade teacher, who talked with Alex about race after Alex had said “go back to Africa” to a classmate. Alex also learned about race and cultural difference by talking with their employees in different retail settings. Alex seems to have gained a more formalized “big-picture” understanding of race, class, and things like the school-to-prison pipeline through a college history course and the

multicultural education course in the teacher education program. Alex's school experiences and work as a paraprofessional also seem to ground Alex's reasoning about how white teachers can differentially perceive and respond to the behavior of Black students. As a future teacher, Alex seems oriented to making change. Yet, similar to other focal participants, Alex's socialization around race (in Alex's case, into race evasive discourse and essentialist racism) likely presented tensions for Alex in working on issues of race and racism in math teaching.

**Evelyn.** Evelyn came to the teacher education program in question after two and a half years of undergraduate work at another four-year state university. At that university, she had been part of a global educator's cohort, majoring in elementary education and minoring in math. Evelyn had become interested in teaching after participating in a cadet teaching program during high school. Evelyn switched universities so that she could live at home and save money on room and board. Throughout the study, Evelyn also worked part time at a local café. She explained her interest in this study as stemming from her interest in math and curiosity about how racism and social justice might be addressed in math. She was 21 at the outset of the study, making her a member of Gen Z.

Evelyn grew up in a predominantly white small town not far from the university that is the context for this study. Growing up, Evelyn was not very aware of issues of race or racism (she described herself as "kind of oblivious" and "ignorant," Round 1 Interview, 2/19/20), but she did pay attention to unfair treatment based on gender. Evelyn described herself as a "tomboy" who played a lot of sports and resisted her mother and grandmother's admonitions to dress more "lady-like." A field trip to Dearborn through her first university and multicultural education coursework seem to have been impactful experiences for Evelyn, raising her awareness of race, racism, and cultural differences. Evelyn shared feeling strongly that people



should have experiences that challenge their ways of thinking. Evelyn's entry points into thinking about issues of race, racism, and math teaching seem to be her own belief in the capability of women and girls in the face of sexist expectations and policies and making connections between learning from the multicultural education course and observations of resource disparities in her field placements.

**Jason.** Twenty-three at the outset of the study, Jason is a member of Gen Z (though some might argue he is on the tail end of Gen Y, the Millennials). He enrolled in the teacher education program after transferring from a nearby community college. Jason was born in the United States to American parents, but he primarily grew up in Greece and attended an international school until the age of 14. Jason became interested in teaching after being placed in a first-grade classroom as part of a high school internship program. He loved interacting with children. Jason shared that he volunteered for this study because he had participated in research studies before and was curious about current work being done in education. He was also motivated by the monetary incentives for interviews.

Due to Jason's upbringing in Greece, his prior experiences with race and racism were quite different from those of other focal participants. Jason identified with Greek culture and characterized himself as a lover of languages, cultures, and diversity. The students at the school he attended were largely the children of diplomats, so Jason experienced a more racially and internationally diverse school environment than other focal participants. Jason recognized that nationalism, bias against immigrants, and racism were issues in Greece, but he seemed to view racism more as uncommon, outlying incidents rather than part of everyday life. He said that his family did not really discuss race or racism when he was growing up. Jason began learning more about race and racism in the U.S. (including the concept of white privilege) through his college

and teacher education coursework. As a future teacher, Jason seemed motivated to build relationships with students. He hoped to work with young children and potentially teach in an international school when he finished the teacher education program.

**Margaret.** Margaret enrolled in the teacher education program after two years at a flagship university in a neighboring state. At that university, Margaret had been exploring a career in fashion and retail. However, she “realized it wasn't for me, and I kind of developed a mindset where I wanted to impact lives and not impact sales” (Margaret, Round 1 Interview, 3/4/20). Twenty-two at the outset of the study, Margaret is a member of Gen Z. Margaret has had the unique experience of being a quadruplet, growing up with three sisters of the exact same age, as well as one older sister. Margaret explained her interest in this study as stemming from a desire to learn about her own experiences with race, about race and teaching, and about being a PhD student in education. Margaret expressed interest in getting a graduate degree in the future.

Margaret grew up in a small, predominantly white town near the university. She had some interactions across racial difference, but these interactions tended to involve a power imbalance (as in Frankenberg, 1993), where her family went into a nearby city to help African American families on Christmas. In coming to college, Margaret developed an international friend group through her roommates, residential learning community, and involvement in the ballroom dance team. Margaret started to recognize some ways that her perceptions of places like India and Africa were “single stories” of people needing to be saved (Adichie, 2009). Growing up, Margaret did not really talk or think deeply about race, she thought “that’s just how it was” (Round 1 Interview, 3/4/20). Education courses seem to have been an important entry point for Margaret in realizing the whiteness and privilege of her hometown and thinking more about race in general.

**Rachael.** Twenty-one at the outset of this study, Rachael is a member of Gen Z. She volunteered to participate because she was “very gung-ho” about the teacher education program and would do “anything to help out someone who wants to make it better” (Rachael, Round 1 Interview, 2/21/20). Rachael had originally planned to go to a smaller Christian college and play volleyball but changed her mind because “my values don't really align, really, with some of the values that smaller religious colleges may have” (Round 1 Interview, 2/21/20). Growing up, Rachael was inspired by a family friend’s work with a homeless shelter for women and girls. This spurred her desire to go into nonprofit management. However, when Rachael took a cross-listed course focused on teaching English as a second language to migrant workers, she “fell in love with teaching” and decided to pursue teaching certification (Round 1 Interview, 2/21/20).

Rachael grew up in a predominantly white small town in the same state as the study setting. From our first interactions, Rachael expressed a strong interest in social justice and helping people. This seemed to stem in part from her identification as a Christian and the belief that all people are created equal, even though they are not treated equally in society. Rachael was aware that she grew up in a small-town “bubble” and pointedly sought out a college experience that would help her learn and grow. Experiences in contrasting field placements, discussions about racial disparities in field seminar, and thinking about the life experiences of friends of color seemed to function as entry points for Rachael’s thinking about race and racism at the outset of the math teaching sequence.

**Stacey.** Stacey became interested in teaching through her experience working as a paraprofessional in her daughter’s school. She started this work when her daughter was in Kindergarten and continued for four years. Stacey then enrolled in a local community college, transferring to the university in question for the teacher education program. Thirty-two at the

outset of the study, Stacey is a Millennial. She was motivated to participate in the study both by the interview incentives and by her interest in learning more about race. Stacey explained:

Ever since I started the program, it's really made me start to think about my identity and stuff and I've always like, I don't know, I've never really ever thought of race, and I've never really ever talked about it, and it just, I don't know, I've just kinda seen myself noticing these things about myself, and I just wanna be more open to new things, so.

(Stacey, Round 1 Interview, 2/28/20)

Stacey grew up in predominantly white towns in the same state as the study setting, first a smaller “farm town” and then another town near the university. Stacey recalls having a few interactions across racial or cultural difference growing up. She said that she was taught to “not see color” and did not really talk about race with family members (Round 1 Interview, 2/28/20). Stacey shared positive experiences building relationships with students as a paraprofessional in her daughter’s school, which was a public charter school in a neighboring town. Stacey relayed having very positive experiences in the teacher education program. Her main entry point into thinking about race and racism seemed to be through the multicultural education course. Stacey’s work experience as a paraprofessional could be a resource for her in reasoning about teacher-student interactions. At the same time, thinking about race and racism, and issues of justice more broadly seemed relatively new for Stacey.

**Characterizing Focal Participants as a Group.** Five of the six focal participants grew up in small predominantly white towns in the Midwest. Most of their families did not talk much about race or racism, and their first substantive learning about race and racism seemed to occur through college experiences and coursework, including the multicultural education course in the teacher education program. Alex may be an exception to this, as they reported learning about

race from a first-grade teacher and from people of color working in retail contexts prior to the teacher education program. Several focal participants explicitly said they were taught to be “color-blind,” which I see as signaling the dominance of race evasiveness in their upbringings. In contrast to some prior research on white people’s beliefs and attitudes related to race (Bonilla-Silva, 2018; C. J. Cohen et al., 2017; DiAngelo, 2018), these participants did *not* frame themselves or other white people as targets of racism or discrimination. That is, when asked open-ended questions about prior experiences thinking and talking about race and racism, none of the focal participants brought up central storylines of color-blind racism, such as that a white friend or family member was denied a job or opportunity because of affirmative action or “reverse racism” (Bonilla-Silva, 2018).

Entry points and resources for thinking about race and racism in connection to math teaching included noticing disparities between field placements in different school districts, religious and personal convictions to pursue social justice, critical awareness of other forms of injustice (e.g., sexism, exclusion of LGBTQ people), exposure to international contexts and friends, and the desire to challenge oneself and grow as a person (e.g., recognizing small town upbringing as a limitation). A challenge that seems relevant across focal participants is the relative newness of critical engagement with issues of race and racism.

### **3.4 Researcher Reflexivity**

An essential question in any research study, but especially in an interpretive study addressing race and racism, is how the researcher’s identity and past experiences might shape the research (Milner, 2007; Peshkin, 1988). As McIntyre (1997) writes regarding her study of how white teacher candidates made meaning of whiteness, “A recurring question for me the, was: ‘And how does *my* race, gender, class, status, and self-interest position me within this process?’”

(p. 29). I take up this question in the following sections, describing my identity and positionality and how I have thought about my own impact on the study.

### ***3.4.1 Researcher Identity***

I identify as a middle-class white woman. I grew up in the city of Milwaukee, Wisconsin and attended public schools from Kindergarten through 12<sup>th</sup> grade. Given the histories of residential and school segregation as well as desegregation efforts (Bonds et al., 2009; Massey & Denton, 1993; Orfield & Lee, 2005; Rothstein, 2017), this meant that I attended schools with sizeable Black, Latinx, and Hmong populations; white students were a minority, which is an atypical schooling experience for white people in the United States. I have pursued interests in race and education since college, taking a course on the history of Black Chicago, participating in a structured internship program focused on public service and activism in Chicago, and enrolling in a social-justice-oriented urban teacher education program. I taught for five years in predominantly Black, low-income elementary schools in Chicago. I have also attended prestigious universities and am currently pursuing a doctoral degree.

I name these aspects of my identity and experience for two main reasons: (1) participants may have been more or less willing to speak openly with me based on perceived shared identities (Frankenberg, 1993; Kenny, 2000; Twine, 2000), and (2) my subjectivities (including my racialized, gendered, classed frames of reference) undoubtedly shaped my questions and interpretations of data (Peshkin, 1988), which in turn shaped the outcomes and potential impact of this study (Milner, 2007). However, as Twine (2000) cautions, gaining access to and doing ethical research within a particular community is not as simple as “matching” the (racial) identities of the researcher and the researched. For instance, while being a white woman made me an “insider” relative to many of the teacher candidates enrolled in the elementary teacher

education program in this study, my age, educational attainment, and past experiences attending racially diverse schools and formally learning about race and racism made me more of an “outsider” compared to teacher candidates who grew up in predominantly white towns and were newly encountering explicit discussions of race and racism in college. Thus, my identity posed both affordances and challenges in this research (Twine, 2000).

One affordance of my identity as a white woman is that white participants likely felt less anxious or worried about discussing race and racism with me than they might with a person of color (Frankenberg, 1993; Sherman, 2017). That is, if interviewed by a person of color about race and racism, white participants might have worried that they would say the “wrong thing” and therefore hesitate in sharing their thoughts (DiAngelo, 2018; Oluo, 2019). On the other hand, the perception that I share a racial perspective with interviewees may have led white participants to speak in coded ways that implied or assumed shared meaning (Kenny, 2000). Moreover, as McIntyre (1997) points out, racial sameness can be seductive and lead to moments of unspoken connection between researcher and participants. Reflecting on such moments in her own research, McIntyre writes:

Although this type of connection felt ‘comfortable’ at times, it also worked to divert my attention away from challenging very problematic race talk—what I refer to as white talk: talk that serves to insulate white people from examining their / our individual and collective role(s) in the perpetuation of racism. (McIntyre, 1997, p. 31)

In other words, a sense of collegiality and familiarity in a white-on-white research context made it harder to press for critical examination of ways that white people contribute to the perpetuation of racism. While I took a different stance than McIntyre in my study (namely, I did not adopt the role of calling out and challenging racist talk in interviews), her point remains relevant — it is

easy for white people to jointly opt for more comfortable talk that diverts attention from issues of race and racism or that leaves racial meanings implicit and unquestioned. Thus, one challenge I had to navigate was pressing for further explanation during interviews when ideas about race and racism were implied rather than stated explicitly (I discuss this further in the section on methodological dilemmas below).

Another way that my identity impacted this research is that my motivations for pursuing the study come with certain ethical commitments. Namely, my motivation was not just intellectual. While I do aim to contribute knowledge to the field of mathematics teacher education, I did not have a dispassionate stance towards the outcomes of this study (Madison, 2012). I pursued this research because I ultimately want to help support elementary teachers to think about race and racism in ways that lead to less harmful and more humane experiences for children of color in math classrooms, which, I believe, calls for fleshing out the meaning of race cognizance in elementary math teaching. In that sense, my aims were to engage in thick description of participants' thinking and practice *in service of broader social change* (Cho & Trent, 2006). This entails critical reflexivity and active consideration of ways that my enactment of this research could reinforce, reproduce, challenge, or disrupt existing racial injustices in education and educational research (Cho & Trent, 2006). In the section on navigating my role as a researcher below, I discuss how my commitments to racial justice made me question my removed stance in light of Black Lives Matter protests during the summer of 2020. I also speak to ways that my investment in teacher candidates' learning made it challenging to limit my participation in class sessions when describing my processes of data collection. A related challenge was that I needed to routinely remind myself to withhold judgment and to work to understand participants' perspectives.



### *3.4.2 Positionality in Course Context*

I believe that my longstanding involvement in the teaching and planning of Sensemakers and Math Methods was an important asset in this work. Because of my participation in the math methods planning group, I was quite familiar with the goals, activities, and recurring dilemmas of each course. I also had insights into the planning and redesign processes that alerted me to possible entry points and challenges for teacher candidates in making connections between ideas about race and racism and elementary mathematics teaching. I drew on my experiences in this specific course context in framing the problem space for this study, as I recognized that there is substantial intellectual and practical work to be done for teachers to transform knowledge of racism and racial inequality into concrete actions in math teaching.

At the same time, there were some risks in bringing my experiences to bear in this context. For one, my closeness to the redesign of this course sequence could have led me to overlook assumptions being made. For instance, another teacher education program might approach promoting race cognizance by focusing on integrating social justice issues into the mathematics tasks that teacher candidates explore with children (e.g., conducting mathematical investigations of racial justice issues as in Gutstein, 2003, 2006). However, based on my familiarity with the current context, I knew from the outset that curricular explorations of mathematics and social justice were unlikely to occur in the teacher education courses in question. I kept in mind that this instructional decision likely affected how teacher candidates made connections between issues of race and racism and the work of elementary math teaching, but it is still possible that I overlooked other such assumptions and instructional decisions.

In addition, the fact that I had previously served as an instructor in the teacher education program I studied (though not for the teacher candidates in question) could have blurred the

boundaries between my positions as researcher and teacher educator, potentially creating a perception that I was assessing and evaluating study participants. Given this concern, I made the decision to pointedly position myself as a researcher, rather than as an instructor of the math teaching course sequence. In other words, I introduced myself to teacher candidates as someone familiar with the courses who was conducting research; I made clear that I was not involved in grading or giving feedback on assignments. In adopting this researcher role, I also decided that my purpose was to elicit teacher candidates' perspectives and explore their learning, rather than to change their minds or intervene on their practice. This contrasts with the stances that Marx (2006) and McIntyre (1997) took in their respective studies of white teacher candidates' sensemaking around racism and whiteness.

### ***3.4.3 Navigating My Role as a Researcher***

In discussing my identity and positionality above, I named several challenges that I encountered in the research process. Here, I take a deeper dive into one recurring challenge: navigating and reconciling my role as a researcher given my personal commitments to racial justice and the preparation of future teachers. This manifested in a range of ways, some small and some large. One of the smaller instances was having to remind myself not to respond in a teacherly manner when teacher candidates asked questions about course concepts or teaching strategies during interviews. For example, when I asked Stacey whether she had any questions for me at the end of her Round 1 interview, she said, "Yeah, I guess it is kind of a question about this math class that we're going into. How can you be explicit about different cultures and stuff like that in math? I don't know" (Stacey, Round 1 Interview, 2/28/20). In this example, Stacey was inviting me to share my own ideas and expertise about teaching math with attention to different cultures and "stuff like that." However, in order to build a rapport where Stacey felt

comfortable (and not judged) sharing her own thinking about race, racism, and math teaching, it was important that I positioned myself as not having all of the answers. Thus, I reframed Stacey's question as reflecting a key reason I was engaging in the study. I shared that, in my own experience in teacher education, work on multicultural education and teaching for social justice often felt really separate from work on math teaching, so I was excited to see what people might learn from classes like Sensemakers and Math Methods that sought to bring those areas of work together. I made an effort to maintain this sort of open and curious stance (as opposed to an expert stance) across interviews.

Another way that my personal commitments created challenges in the research process was that I sometimes had strong emotional responses to teacher candidates' comments that complicated my analysis. When a teacher candidate wrote or said something that I found troubling or perceived as racist, making sense of the data excerpt and organizing my thoughts in a memo often took me more considerably more time. For example, Alex sent a follow-up email after their Round 2 interview that required some deliberate bracketing of my initial reaction. Alex had used technology to record mathematical explanations for the Sensemakers course in ways that "eliminate[d] 'white hands' in the video" and reflected:

When I did this (for both assignments) I realized that I can provide students with an opportunity to "see themselves" in the work because they are not "not seeing themselves" in the teacher. With respect to race and racism, I wonder how the elimination of race as a visual reminder of difference could encourage or promote learning. (Alex, Email Following Round 2 Interview, 4/14/20).

While I recognized that Alex was actively trying to engage with issues of race and racism in the context of math teaching, I was frustrated by what I saw as superficial thinking about what it

means to “see yourself” in mathematical work and to be reminded of difference. I wrote the following in a reflection:

Does Alex think that not seeing white hands removes race from the situation? It seems like Alex is thinking about mathematics content and representations as racially neutral or non-racialized. While I can see the point that a number line doesn’t immediately or obviously evoke race, it feels like this misses a huge point about patterns in how people of color have historically and continue to be positioned as intellectually inferior and less-capable of doing and creating mathematics. From my perspective, a teacher narrating an explanation with a number line can just as easily be condescending or position students as needing remediation without visual evidence of the teacher’s presence and racial identity; tone, language, and message still matter a lot.

Additionally, Alex’s suggestion that “the elimination of race” in not showing the teacher’s hands could “encourage or promote learning” implies that acknowledging race or racial difference might hinder learning. This seems like a quintessential race evasive idea, positioning the problem or impediment to learning in the identification of race rather than in racist practices or structures. To be sure, constantly having white teachers could get frustrating for children of color, but I highly doubt that the impact of racial difference will be lessened or forgotten by using a video with a disembodied voice rather than the teacher’s hands. Clearly, I have some strong feelings about what Alex wrote. I tried not to convey my thoughts in my email response (I basically just thanked Alex for sharing more of their thinking). I considered posing a follow-up question (e.g., are you imagining a situation in which you are the teacher and the students are predominantly students of color?), but couldn’t think of anything that felt particularly productive. I want

to acknowledge that I feel frustrated with the ideas that Alex shared, but also remind myself that my job right now is to elicit and probe interns' thinking, not to evaluate or judge them. (Reflection on Alex's Round 2 Interview, 4/14/20).

As this excerpt from my reflection makes clear, I had to work to sort out my personal reactions from my analytical observations. Because I was committed to keeping track of ways that my perspective and subjectivities were surfacing as I collected and analyzed data (Peshkin, 1988), I structured my reflection and memo templates so that I would have a dedicated space to document my immediate thoughts and reactions before pushing myself to address analytical questions in a focused manner.

A larger way that my personal commitments to racial justice and preparing future teachers impacted this research was with leading me to question the aims and design of my study during the summer of 2020. As people were marching in the streets, being arrested, and demanding action on issues of racial injustice, I was sitting safely at home, working on analyzing data from the first phase of my study. In comparison with the direct action I was seeing, hearing, and reading about on the news, my research felt pointless and difficult to reconcile with my beliefs. I wrote the following on June 4, 2020:

Today I talked with [my advisor] about some of the angst that I've been feeling as protests against systemic racism and police violence have been happening around the country, and I've been at home reading and thinking and trying to write. [My advisor] helped to name that the social isolation due to COVID-19 seems to be amplifying my feeling that I'm not doing enough, which also stems from part of who am I / who I want to be as a person who is genuinely committed to and moved by anti-racism and justice work. While I've been thinking a lot about activism around policing, [my advisor] shared

that she sees her work as being in conversations with white friends and family members and within the space of trying to transform teaching and teacher education – looking at ways teaching and teacher education are oppressive and racist systems and trying to disrupt those systems... In talking to [my advisor], I realized that part of my angst is really about the long-term, incremental, hands-off nature of research in general and how I've designed my dissertation study thus far in particular. What good does it do anyone for me to analyze white teacher candidates' thinking about racism without having ways to support their sensemaking and push their thinking forward? (Reflections on Researcher Positionality, 6/4/20)

This impatience that I felt with conducting research led to two main decisions. First, taking up a suggestion from my advisor, I decided to work with her and other teacher educators in the program to informally reach out to teacher candidates and provide a virtual space to think about racial justice protests and what they could mean for teacher candidates' work in classrooms. I thought about this as separate from my dissertation study, as it was not specific to my participants, nor was it tied to participation incentives. These informal meetings provided a way for me to feel responsive to the political and racial justice issues of the moment without abandoning my dissertation work or drastically changing the study design mid-stream.

The second decision was to formally probe focal participants' thinking and sensemaking around racial justice protests in my next round of interviews (Round 3). This created a way to explore the significance of race-related events in the summer of 2020 in connection to my research questions, which helped me to see how my study could contribute useful knowledge to teacher educators engaged in racial justice work. Thus, while I still felt tension between my

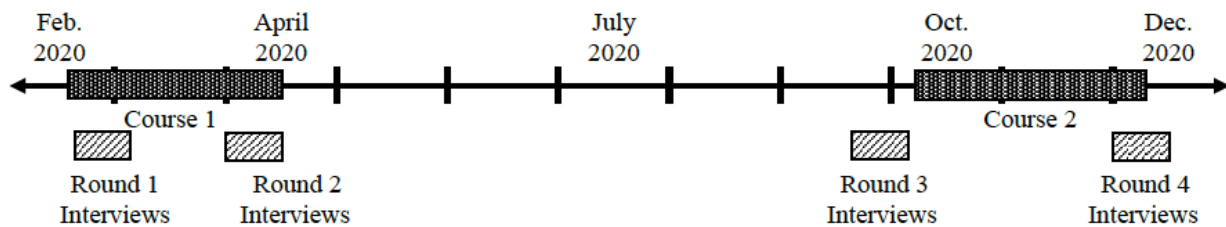
personal convictions and the role that I had adopted as a researcher, I made some changes to my approach that allowed me to move forward.

### 3.5 Data Collection

Data collection took place across the 2020 iteration of the math teaching course sequence (the first course took place in the Winter 2020 term, the second course in the Fall 2020 term). Three main forms of data were collected: (1) interviews (2) teacher candidates' course assignments (both informal and graded), and (3) field notes and artifacts from class sessions. Interviews occurred in four rounds, bookending each course of the math teaching sequence. There was a 5-month hiatus between the end of the first course in April 2020 and the beginning of the second in October 2020. During this hiatus, I engaged in a first pass of data analysis that informed revisions to my data collection procedures for the second course. Figure 1 illustrates this timeline of data collection. I next provide more detail about my methods for conducting interviews, collecting assignments, and documenting class sessions.

**Figure 1**

*Timeline of Data Collection*



### **3.5.1 Interviews**

Interviews with teacher candidates are a primary data source for this study. Each of the four rounds of interviews served distinct purposes. Namely:

- **Round 1:** These baseline interviews served to elicit background information about teacher candidates' identities and experiences and to elicit their ideas about race and racism in relation to math teaching at the outset of the course sequence.
- **Round 2:** These interviews were reflective in nature, probing teacher candidates' learning and lingering questions at the end of the Sensemakers.
- **Round 3:** These interviews explored teacher candidates' sensemaking around racial justice protests that occurred during the summer of 2020, including connections to the work of elementary teaching in general, and math teaching in particular.
- **Round 4:** These interviews included a stimulated-recall segment to elicit teacher candidates' reasoning about and reflections on an early math teaching experience (an assignment to lead a math discussion during Math Methods) as well as a reflective segment to probe learning and shifts in thinking with respect to race, racism, and math teaching.

With one exception in Round 3, I interviewed each of the six focal participants for all four rounds. The first round of interviews took place face-to-face; the remaining rounds took place virtually due to the COVID-19 pandemic. In person interviews were audio recorded. Virtual interviews were video recorded. All interviews were transcribed from the audio. For Round 4 interviews, video records were referenced to interpret talk about aspects of lesson plans or recordings of math discussion enactments that were shared on the screen.

Interviews were semi-structured (Hesse-Biber & Leavy, 2011) and lasted from 50 to 90 minutes. For each round, I developed an interview protocol with questions that I posed to each



interviewee (protocols are included in Appendices B – E). I also posed follow-up questions in the moment based on interviewee responses, making notes about prompts and phrasing that seemed more or less productive. As a routine part of conducting interviews, I documented my impressions and initial analytic thoughts using a reflection template, which is shown in Figure 2.

## Figure 2

### *Interview Reflection Template*

Date of Interview:  
Date of Reflection:  
Participant:  
Interview Protocol:

#### **Free-write**

- **What stood out during the interview?**
- **Is there anything that happened or that I noticed that feels potentially meaningful and won't be captured in the audio (e.g., facial expressions, tone, etc.)**

#### **Process Reflection**

- **What did I notice about the process of interviewing?**
- **Did I notice anything about how the participant reacted to particular questions?**
- **Were there any questions that were difficult to ask?**
- **Did I notice doing or saying anything differently for this interview compared to other interviews?**
- **Are there any changes I want to make to the interview protocol (e.g., probing participants' thinking about something others have said)?**

#### **Emerging Themes**

- **What am I noticing about how teacher candidates seem to be thinking about race and racism?**
- **What am I noticing about how teacher candidates seem to be connecting ideas about race and racism to math teaching?**
- **What else am I noticing or wondering that might be worth exploring further?**

Based on my notes and written reflections following each interview, I made small adjustments to the protocol over the course of each round. For example, in an early Round 2 interview, I realized that teacher candidates were unsure how much I knew about their course work, likely because of the shift to online modules at the onset of the COVID-19 pandemic. In

response, I revised my protocol to state up front that I was working my way through the asynchronous modules just as teacher candidates were. The protocols included in the Appendices are the final versions, reflecting all revisions made in the course of interviewing.

During interviews, I aimed to establish a non-evaluative conversational tone to encourage participants to be open and honest about their thinking (Marx, 2006). A particular challenge in planning for these interviews was that I wanted to elicit participants' thinking about race and racism but anticipated that participants would be operating from race-evasive perspectives and/or might use coded language to allude to ideas about race and racism. My plan was to ask probing questions to press participants to elaborate on what they meant and to clarify how their responses related to race and racism. Another consideration was that my questions could influence participants' thinking by introducing language and ideas about race and racism. My response to this issue was twofold. First, I was deliberate about timing direct questions related to race and racism, making a point to first give participants opportunities to independently introduce racial terms and ideas. Second, I made sure consistently pose questions in direct racial terms to all participants. Thus, I could examine *how* different participants responded to given prompts to talk about race and racism. To be clear, my purpose for interviewing participants was *not* to intervene on or actively try to change their modes of thinking through race; I did not design interviews to surface discrepant views or conflicting ideals (cf. Marx, 2006). I recognized that the process of interviewing would inevitably influence participants' thinking and learning in some form, but my purpose was primarily to *elicit* and *probe* teacher candidates' perspectives, not to shift them.

Round 4 interviews were distinct from other rounds in that they included a stimulated recall component. In these interviews, I used artifacts from participants' own teaching as a starting point and grounding for the conversation. Specifically, I focused on teacher candidates'

experiences leading a math discussion during the second course in the sequence. My rationale was that there would be a gap of several weeks between teacher candidates' planning and enactment of their discussions and the timepoint at which I interviewed them. I anticipated that without using stimulated-recall techniques, participants would likely forget or gloss over details.

To get inside the particulars of the math discussion experience, I first prompted participants to explain and elaborate on aspects of their written plans. The assigned planning template included sections that connected to course emphases on working to disrupt patterns of injustice, such as anticipating patterns of marginalization that could be reproduced in the enactment. Thus, I used the planning prompts as an entry point for probing participants' thinking about issues of race and racism in the context of their math discussion. After talking through the participant's plan, we watched and discussed video of their enacted math discussion. In this use of video stimulated recall (Consuegra et al., 2016; Gazdag et al., 2019; Rowe, 2009; van Tartwijk et al., 2009), I instructed the participant to pause the video when they wanted to narrate something they were thinking about in that moment or to share a reflection (informed by H. Ghousseini & E. Kazemi, personal communication, November 20, 2019). In framing this interview segment, I was purposeful in inviting participants to pause the video to share thinking about issues of race and racism without foreclosing other commentary. For example, I acknowledged that it might be the case that teacher candidates weren't thinking about race or racism in the moment of their teaching enactment but realized in retrospect that something was happening that had racialized implications. After viewing and discussing the video, I asked some overarching questions about the participant's reflections on their teaching enactment.

### ***3.5.2 Course Assignments***

During each course, I regularly downloaded and organized teacher candidates' assignment from course websites. Because course assignments are considered a regular part of participation in the teacher education program (i.e., not additional research), my research permissions allowed for collecting assignments from the full cohort of teacher candidates. I kept track of assignments using a spreadsheet, including both informal assignments, like online discussion posts, and graded assignments, such as written analyses of video episodes. I organized assignments into folders for easy navigation. Though course assignments differed in their relevance to my research questions (e.g., some assignments were focused on explaining and representing mathematical concepts without consideration of teacher or student identities), I erred on the side of collecting more data than necessary to leave open the possibility of pursuing emergent questions.

### ***3.5.3 Class Sessions***

Although my research focus is not on the pedagogy or interactions within teacher education coursework, it was essential that I build a nuanced understanding of the research context to pursue the aims of a qualitative case study. Thus, I observed and took notes for all class sessions in the math teaching course sequence. I developed a field note template to focus my observations and began the study using that template. However, as already discussed, when the COVID-19 pandemic began, Sensemakers abruptly moved from in-person class sessions to asynchronous online modules. This changed the possibilities and meaning of “observing” class sessions. As a result, I shifted to a document analysis approach (Merriam, 2001). I developed two separate templates, one for notes about the content of the class modules and one for notes on teacher candidates' responses to the modules via informal assignments (e.g., comments in

collaborative documents, discussion posts). I found this approach useful and continued to take notes separately on the class session and teacher candidates' informal assignments through Math Methods, even though class sessions returned to a synchronous format. In summary, for all of the class sessions that took place in person or that were held "live" online (the first three sessions of Sensemakers and all eight sessions of Math Methods), I attended as a participant observer and took field notes (Hesse-Biber & Leavy, 2011). For class sessions in the form of asynchronous online modules, I engaged with the module components and took notes that functioned like field notes. In addition, for all class sessions I collected electronic copies of relevant artifacts, such as slides and handouts.

In taking notes on each class session, I used the following questions to focus my observations: *What discourses about race and racism are evident? How are race and racism being connected to the work of elementary math teaching by the course instructors? How are teacher candidates responding to or taking up ideas and practices related to race and racism? What are the notable moments of agreement, silence, or pushback?* I kept the main text of my notes descriptive in nature and bracketed my interpretations, questions, and reactions in a separate column. After each "live" class session, I elaborated on the notes I took in the moment to capture any details that seemed important for later interpretation. I was able to draw on video recordings of most class sessions (either from built-in recording technology in campus classrooms or from Zoom) to fill in things I had missed, such as specific comments in whole group discussions. In addition, following each class, I wrote reflective and analytic notes with my research questions in mind.

In terms of my role in the class setting, I strove for limited involvement. In line with what Hesse-Biber and Leavy (2011) call being an "observer-as-participant," I was transparent about

the fact that I was conducting research, but kept my participation in class activities and discussions to a minimum. Specifically, I tried to refrain taking on a teacher educator role during practice activities like run-throughs and rehearsals. I adopted this stance for two main reasons. First, my involvement, especially if I were providing feedback on teaching, could have signaled my alignment and association with the instructional team, which might have led teacher candidates to prioritize saying and doing what they imagined instructors wanted to hear and see. Second, depending on the nature of my contributions, I could risk revealing my own perspectives on race and racism, which could again discourage teacher candidates from being forthright, particularly during interviews.

Minimizing my involvement became particularly challenging for me during Math Methods. Several of the class sessions included small group run-throughs of different aspects of leading math discussions (e.g., representing mathematical ideas, calling on students, launching the discussion, etc.). With the synchronous virtual format, I ended up in breakout rooms with a handful of teacher candidates. When I tried to observe and not participate, I felt tension between my inclination to support teacher candidates' learning and my decision to remain fairly detached from class activities. This became especially acute when it seemed like teacher candidates were missing opportunities to practice the work of leading math discussions. Time for run-throughs and rehearsals was extremely limited, so I felt compelled to help maximize such opportunities when they were available.

This tension between my commitments as a researcher and as a teacher educator also manifested when teacher candidates did not understand the task and/or started engaging in conversation that missed the instructional point. For example, during Math Methods Class 6, teacher candidates were put in small groups to practice launching and orchestrating a math

discussion around a given problem (finding equations for ten). The teacher candidates in the small group I was in immediately started discussing the mathematics, exploring ways that they could prove there are infinitely many equations for ten, without anyone taking on the role of facilitating the discussion. I intervened to clarify that the goal was to practice leading the discussion. Participating in this way positioned me as a teacher educator setting tasks for teacher candidates, rather than as an impartial observer. I was aware of this conflict and sought to reconcile it by sharing the tensions I felt with the course instructors. I suggested shifting to a more structured rehearsal format, with one course instructor in each small group, so that I would feel less of a need to intercede. Moreover, while I did take on a more active instructional role than I had intended in certain instances, my worries about potential implications were partly alleviated by the fact that this occurred later in the study, after I had already completed three rounds of interviews. Thus, any impacts of teacher candidates viewing me as a teacher educator would likely only show up in Round 4 interviews.

#### ***3.5.4 Pandemic Limitations***

As discussed above, the COVID-19 pandemic prompted significant changes to the format and content of the math teaching course sequence. This impacted both the nature of data I could collect and how I went about collecting it. Most obviously, all in-person data collection shifted online. Yet, while working virtually was an adjustment, it did not prevent me from conducting interviews, collecting artifacts and assignments, or taking notes on class sessions. The more consequential impact of the pandemic was that, with shifts to virtual instruction at the K-12 level and many new demands and stressors, teacher candidates' opportunities to engage in math teaching with children were drastically reduced. For example, the small group teaching experience embedded in Sensemakers was cut short, from three planned sessions to just one. In

Math Methods, teacher candidates typically led four math discussions in their field placements, but in 2020, they led one. This meant that it was not really feasible for me to meaningfully explore shifts in teacher candidates' practice over time. I was still able to examine focal participants' early enactments of math teaching using video records of their virtual math discussions but delving into how teacher candidates reasoned about issues of race and racism inside of their math teaching enactments became a smaller part of the study than originally planned. Consequently, my investigation of teacher candidates' language and discourse took on greater significance as a window into their learning.

### **3.6 Data Analysis**

Between four rounds of interviews and two courses' worth of assignments and class observations, I collected an extensive set of data for this study. In line with qualitative methodology, I engaged in data analysis throughout the process of data collection (Merriam, 2001). I also engaged in more intensive analytic work during the summer hiatus between courses and after the conclusion of data collection. In this section, I describe the analytic strategies I used to make sense of the data and develop claims.

#### ***3.6.1 Analysis During Data Collection***

A routine component of my data collection processes was documenting my initial impressions and analytic insights in close proximity to data collection events. This included reflections on interviews, class sessions, and informal weekly assignments as well as initial memos analyzing formal, graded assignments.

**Reflections.** As indicated above, I used a template to structure my reflections immediately following each interview. I also wrote reflective and analytic comments as part of



my observation notes for each class session. I aimed to write these reflections on the same day as interviews and class sessions, or the following day if necessary. Additionally, once teacher candidates engaged with course modules and completed informal assignments (typically within a week of tasks being assigned), I read through their responses and wrote similar reflective and analytic notes. My purpose in regularly writing these reflections was to think critically about what I was noticing and observing, refine my analytic questions, and begin exploring “issues raised in the setting and how they relate to larger theoretical, methodological, and substantive issues” (Bogdan and Biklen, 1992, p. 159 as cited in Merriam, 2001, p. 163). That is, I sought to keep my thinking about specific data sources in conversation with the larger questions and purposes of the study.

**First Pass Memos.** In addition to writing reflections following interviews and class sessions, I wrote what I call “first pass memos” for each graded course assignment after the due date. I read through submissions from the entire cohort,<sup>10</sup> doing some free writing about what I noticed and wondered about. I then did some more focused sorting and describing of teacher candidates’ work with respect to the following set of analytic questions:

- How many / which responses explicitly mention race or racism? How many / which responses do not explicitly mention race or racism?
- What are teacher candidates attending to if not (or in conjunction with) issues of race and racism? How are issues of race and racism positioned relative to other considerations?
- What evidence of discourses about race and racism do I see? What evidence of discourses from teacher education coursework do I see?

---

<sup>10</sup>I was more selective when working through assignments that required teacher candidates to submit videos, such as a small group teaching experience in Sensemakers and enacting a math discussion in Math Methods. I initially watched videos submitted by all interviewees, then, in later rounds of analysis, narrowed my focus to those submitted by the six focal teacher candidates.

- What sorts of pedagogical decisions do teacher candidates seem to be making in light of reasoning about race or racism?
- If this assignment involves a teaching enactment, how do teacher candidates' narrations of their pedagogical reasoning and action with respect to race and racism relate to what they do in video records of their teaching?

These were questions that I asked of the data in service of addressing my research questions.

Although my thinking and the study design evolved after I drafted these analytic questions (e.g., I ended up exploring teacher candidates talk and writing about race and racism across the math teaching course sequence more broadly, rather than solely examining their narrations of pedagogical reasoning and action tied to approximations of practice), my underlying interest in teacher candidates' attention to issues of race and racism remained consistent.

My purpose in listing and addressing these analytic questions in first pass memos on teacher candidates' formal assignments was to create a structure that continually prompted me to tie my initial reactions and analytic thoughts to the questions about race, racism, and math teaching that drove the study. I wanted to both freely explore things that stood out to me *and* guard against the possibility of becoming wrapped up in questions and details that would not provide insight into my research questions. Given that the courses in the math teaching sequence involved multiple strands of work, including a significant focus on representing and explaining mathematical ideas, it was plausible that I might delve into issues of mathematics and teaching and lose sight of my questions about promoting *race cognizant* math teaching. For example, one assignment in Math Methods involved teacher candidates recording a video of themselves modeling the standard addition algorithm using physical materials like popsicle sticks or virtual representations of them. Teacher candidates were also asked to submit a written commentary on

how they tried to disrupt patterns of inequity and marginalization in their modeling. I did not want to end up analyzing teacher candidates' developing mathematical knowledge for teaching (Ball et al., 2008) in isolation, without connecting back to questions of race cognizance. The analytic questions in my first pass memo template helped me to narrow my focus to how teacher candidates seemed to be reasoning about issues of inequity and marginalization in their written commentaries. Consequently, I did not engage in in-depth analysis of teacher candidates' videos.

Another way that I kept my research questions in view in first pass memos was by prompting myself to write about emerging themes. As in my reflections, my first pass memo template included the questions, "What am I noticing about how teacher candidates seem to be thinking about race and racism?" and "What am I noticing about how interns seem to be connecting ideas about race and racism to math teaching?" These questions nudged me to step back from the specific assignment I was examining and consider what I was learning more broadly (Merriam, 2001).

### ***3.6.2 Cycles of Engaging with Data and Writing Memos***

The process of conducting a qualitative case study is neither linear nor straightforward (Dyson & Genishi, 2005). Data collection and data analysis coincide, and the work of analyzing and interpreting data is iterative (Hesse-Biber & Leavy, 2011; Merriam, 2001). Thus, data analysis in this research was cyclical rather than linear. My general approach was to closely engage with data sources (e.g., listening to, reading, or watching data excerpts; annotating; generating and applying qualitative codes) and to write memos documenting my process and analytic insights. As I engaged in cycles of examining and interpreting data, I developed a sense of the overall terrain of my data set, including which data sources were most pertinent for answering my research questions. This enabled me to make choices about data reduction. My

analytic process also evolved over time. The memos I wrote shifted from being a holding place for whatever thoughts, questions, and ideas occurred to me as I interacted with data to being a place to articulate and pursue potential themes and patterns in a more targeted manner. In the sections that follow, I detail different aspects of my analytic process. Though I write about these aspects separately, in actuality they overlapped and are interrelated.

**Transcribing Interviews.** After completing each round of interviews, I prepared the data for further analysis by either transcribing the interviews myself (Round 2) or having an external service produce transcripts (Rounds 1, 3, and 4). I consider this part of my analytical process for two reasons. First, I had to make decisions about transcript conventions that carried tangible analytic implications. For example, I had to decide whether to pursue transcripts that were strictly verbatim, including pauses and fillers like “um,” “uh,” and “you know.” On the one hand, considering Bonilla-Silva’s (2002) finding that the linguistic style of color-blind racism includes rhetorical incoherence, such as lengthy pauses and repetition, I had reason to believe that pauses and fillers could be meaningful signals of a participants’ discomfort with talking about race or racism. On the other hand, I had to consider the exigencies created by the sheer volume of data I collected. In total, I had well over 36 hours of interview audio. I used external transcription services so that I might maximize my own work time to advance my analysis. The service that I used charged higher rates for verbatim transcription, and I had limited funds. Weighing these practical considerations, I opted for transcripts that excluded pauses and fillers. My compromise was that, once I received interview transcripts, I listened to the audio to edit and augment the text, documenting “um”s and “you know”s when they were prominent in stretches of talk about race and racism. This was not an ideal solution, but it enabled me to track on signs of rhetorical incoherence in the places where they would be most meaningful for the study.

The second reason I consider transcription part of my analytic process is that I had analytic and interpretive insights while transcribing interviews and while checking prepared transcripts against audio recordings. I documented these ideas in open-ended memos. For example, when transcribing Round 2 interviews, I noticed that several teacher candidates independently brought up a specific video example (the “Toni and Aniyah video,” discussed at length in Chapter 5) as they were talking about their learning from Sensemakers (i.e., they talked about the video without being prompted to do so). This inspired a hunch that the Toni and Aniyah video might have particular resonance with teacher candidates or a certain potential for bringing larger issues of race and racism into view in the context of micro-level interactions in a mathematics classroom. Consequently, my attention to participants’ commentary on and interactions with the Toni and Aniyah video, both in interviews and coursework, was heightened as I moved forward. Writing memos about insights from transcription also allowed me to note data examples that seemed to confirm, complicate, or contradict my working interpretations (Merriam, 2001). For instance, in a memo about things I noticed and wondered while checking Round 3 transcripts, I wrote that Alex’s comments seemed to run counter to concerns they had expressed in their Round 2 interview about the practice of acknowledging competence. This complicated my working impression of Alex’s uptake of acknowledging competence and alerted me to the possibility of similar shifts in uptake for other participants and with respect to other course ideas and practices.

**Coding.** One of the principal ways that I engaged with data was through coding in NVivo qualitative data analysis software. Following Merriam (2001), I thought about coding as “assigning some sort of shorthand designation to various aspects of your data so that you can easily retrieve specific pieces of the data” (p. 164). Accordingly, my purposes for coding were to

make the data set easier to navigate, to become familiar with the content and nature of the data, and to stimulate my own analytic and interpretive thinking. I did not pursue a comprehensive methodology like grounded theory (e.g., Charmaz, 2004), but instead combined multiple qualitative coding strategies that served my purposes (a form of eclectic coding; Saldaña, 2016, p. 212). I used three main types of codes: (a) organizational codes, (b) codes describing the content of the data, and (c) codes reflecting interpretive and analytic ideas.

Organizational codes functioned to index the data set and facilitate easy retrieval of data tied to a given topic (e.g., acknowledging competence) or participant. I also used NVivo's file system to track important attributes of data, such as the data source (class sessions, written assignments, interviews, video of teaching enactments) and time frame (during Sensemakers or Math Methods). My use of organizational coding served to capture general information about what the data were about, but *not* the particular perspectives, experiences, or ideas that participants conveyed about any given topic (Saldaña, 2016).

To engage more directly with the specific content of the data, I used *initial coding* (also referred to as *open coding*). As Saldaña (2016) explains, initial coding “is an opportunity for you as a researcher to reflect deeply on the contents and nuances of your data and to begin taking ownership of them” (p. 115). Thus, as I read through interview transcripts, submitted course assignments, field notes, and artifacts from class sessions, I generated codes to describe the substance of pieces of data. This often involved creating subcodes under topic-oriented organizational codes. For example, when coding Round 1 interview transcripts, I first tagged full paragraphs as providing insight into participants' conceptions of racism (i.e., I applied a top-level code, “Conceptualizing racism”). Then, upon closer consideration, I created subcodes like “Racism as implicit or unconscious bias” and “Racism as systemic” to label the different

conceptions of racism I was seeing. In some cases, I used participants' exact language in the code (a form of *in vivo* coding), as with "Racism as *smog in the air*." My initial coding process was fluid and flexible; as I engaged with more data, I created additional codes and also renamed, consolidated, and reorganized existing codes. For example, as after coding multiple Round 1 interviews, I realized that many of the subcodes I had created under "Conceptualizing racism" were not parallel with each other but were instead examples of two main conceptions — racism as individual and racism as systemic. I then reorganized subcodes under those two categories. This fluidity reflects the nature of initial coding, as "All proposed codes during this cycle are tentative and provisional. Some codes may be reworded as analysis progresses. The task can also alert the researcher that more data are needed to support and build an emerging theory" (Saldaña, 2016, p. 115). Thus, I used initial coding as a dynamic way of interacting with and thinking about the particulars of the data.

Although there was not a clear separation for me between coding cycles, as my work with initial codes progressed, I gradually shifted towards coding at the level of "interpretive constructs related to analysis" (Merriam, 2001, p. 164). That is, I began creating codes and code categories that involved higher levels of inference and that reflected more of my interpretation and analysis. I used both inductive and deductive approaches in developing analytic codes (Braun & Clarke, 2012; Elliott, 2018). For example, I created the code categories of "Direct race talk," "Indirect, could be about race," and "General equity, justice language" based on what I was noticing in the data; this reflects an inductive, "bottom-up" approach (Braun & Clarke, 2012, p. 58). At the same time, several of the codes and subcodes within these categories were inspired and informed by prior research. For example, within the category of "Direct race talk," I distinguished between talk that merely labeled something as related to race or racism ("Labeling in racial terms") and

talk that unpacked or explained a racialized issue (“Racial analysis”). This was motivated by Pollock’s (2004) distinction between racial labels and analysis of racial inequalities in *Colormute*. My use of Pollock’s distinction reflects a deductive approach, “where the researcher brings to the data a series of concepts, ideas, or topics that they use to code and interpret the data” (Braun & Clarke, 2012, p. 58).

Because I combined inductive and deductive approaches, there are aspects of my conceptual framing that grew from grappling with data. For example, in my attempts to apply Bonilla-Silva’s (2002, 2018) findings about the linguistics of color-blind racism, I ran into instances where the *style* of what participants were saying reflected rhetorical features of color-blind racism, but the *substance* of their implicit ideologies did not. Specifically, I kept encountering data where participants evaded direct racial language but explicitly rejected aspects of color-blind ideology. Thus, while I used sub-codes like “Abstract liberalism” and “Incoherence” that were based directly on Bonilla-Silva’s (2001, 2002, 2018) characterization of the frames, storylines, and style of color-blind racism (reflecting a deductive approach), I ultimately developed separate code categories for “Ideological race evasion” and “Discursive race evasion” to capture what I was seeing in the data (reflecting an inductive approach).

I drew on a range of literature when creating interpretive codes, such as the pattern of teacher candidates embracing a non-critical form of liberal multiculturalism (Shah & Coles, 2020) and differences between traditional and reform-oriented models of mathematics teaching (Boaler, 2002; Munter et al., 2015). However, while I certainly brought concepts and ideas from existing literature to my interpretation of the data, I did not feel beholden to continue using those concepts or ideas if they did not fit or fully capture what was in the data. Thus, my coding at the



analytic and interpretive level was a purposeful hybrid of inductive and deductive approaches. A table with sample analytic codes, definitions, and examples is included in Appendix F.

In many cases, my use of organizational, descriptive, and analytic codes was simultaneous and layered, with multiple codes attached to the same piece of data. This was partly an artifact of the timeline of the study, as I had time to develop analytic codes during the summer hiatus between courses and applied these in conjunction with organizational and descriptive codes as I incorporated new data from Math Methods. For the most part, I worked through my data chronologically and by source, reading and coding transcripts, course artifacts, field notes, and assignments in the order the data was collected. There were some exceptions to this once I completed data collection and organizational coding, as there were times when I followed analytic and interpretive threads by strategically coding data about a particular topic, rather than proceeding chronologically. For example, having developed the “General equity, justice language” code category in the midst of coding class artifacts and my field notes from Math Methods, I was curious about the prevalence of such language in teacher candidates’ comments about Black Lives Matter protests during Round 3 interviews, so I made a focused pass through those transcripts.

Given the extent of my data set, it was not practical to systematically re-code the entire corpus with a final coding scheme. That said, my coding was not haphazard or random. I coded all data in some form, and I applied sufficient organizational and descriptive codes to be able to quickly locate relevant data to check for confirming and disconfirming examples of emerging themes and patterns as I wrote about them. For example, when exploring whether a pattern of conflating acknowledging competence with praise occurred across focal participants or was specific to one teacher candidate, I used NVivo queries to pull up all assignments and interview

comments from focal participants that pertained to acknowledging competence. Compiling and re-reading references for organizational codes therefore allowed me to test working hypotheses against the data without necessarily engaging in another cycle of coding.

**Engaging with Videos of Enactments.** Though video data was included in the coding process I just described (I coded videos directly, without transcription), there are a few aspects of how I approached analyzing videos of participants' teaching enactments that I would like to highlight. First, I decided early on that I would not analyze in depth video records of approximations of practice that did not involve interactions with children. For example, I did not closely analyze teacher candidates' video-recorded explanations of fractions on a number line or the conventional algorithm for addition, as these were done in response to hypothetical classroom scenarios that did not foreground issues of race or racism. While it might have been possible to glean insights about teacher candidates' views on mathematics teaching and learning from their explanations, I thought that teaching interactions with children would provide a more naturalistic context and more meaningful insights into how teacher candidates thought about race and racism inside their math teaching practice.

There were two sources of video data that I did decide to analyze: video records of an in person small group teaching experience at a school site during Sensemakers, and video records of a virtual math discussion conducted during Math Methods. Following Erickson (2006), I recognize that the video records themselves are not data, but a source of information that I, as an analyst, interpret through my own viewpoint and interests. As with video of any social interaction, videos of math teaching contain overwhelming amounts of information and possible foci. Consequently, it was important that I “develop strategies for focusing attention on some phenomena and disattending to others” (Erickson, 2006, p. 178). My primary strategy was to

think about the context of the math teaching coursework and the nature of the approximation of practice (Grossman, Compton, et al., 2009), considering where teacher candidates had opportunities to make their own pedagogical decisions and moves and how I might discern uptake of course ideas and practices. For example, in the small group teaching experience during Sensemakers, teacher candidates primarily had discretion over a getting-to-know-you activity at the outset of the session and in the ways that they responded to children in the moment (e.g., what they said after a child took a turn in the math game). By the time teacher candidates led a discussion during Math Methods, they had been introduced to many more ideas and practices that they might have taken up and enacted, such as acknowledging competence, distributing turns and participation, and disrupting racialized patterns of over-punishment. Thus, my viewing of video records was shaped and focused by using the emphases and assignments of the math teaching course sequence as my frame of reference.

In addition, my analysis of teacher candidates' early math teaching enactments was rooted in my understanding of teaching and learning as socially situated activities. As Erickson (1986) argues:

What the teachers do at the classroom and building level is influenced by what happens in wider spheres of social organization and cultural patterning. These wider spheres of influence must also be taken into account when investigating narrower circumstances of the local scene. (p. 122)

Thus, I thought about teacher candidates as people who were being socialized into the work of elementary teaching (Britzman, 2003) as they were still influenced by their socialization into racial, ethnic, class, gender, language, and cultural identities and communities (Gee, 1992, 2012). Accordingly, I aimed to *make sense* of what teacher candidates said and did in their early

enactments of math teaching in light of broader social contexts and patterns; my purpose was not to evaluate teacher candidates' practice as one might when grading course assignments. This does not mean that I was not critical of teacher candidates' practice — I was absolutely alert to ways that teacher candidates might be reproducing racialized patterns in their teaching interactions, as when Jason and Alex allowed white boys to dominate their respective math discussions. It *does* mean that when I noticed something that I thought was problematic, I considered the larger social forces at work that could help explain what I was observing. This included considering challenges inherent in learning to teach as well as indications of socialization into whiteness and race evasiveness (Frankenberg, 1993; Harper et al., 2021). For example, Alex explained that they had become overwhelmed by technical difficulties during their discussion and defaulted to calling on volunteers, which ended up being white boys; Alex was self-critical and identified disrupting inequitable patterns in the moment as an area for growth. In contrast, Jason seemed focused on just trying to get children to talk and did not recognize the racialized and gendered implications of relying on volunteers and allowing students to interrupt and interject; this paralleled evidence of race evasion in other data Jason. Considering larger social forces and contexts enabled me to recognize the cases of these two teacher candidates as meaningfully different, even though they exhibited a similar pattern in their teaching enactments.

My process for engaging with videos of enactments involved multiple viewings, note-taking, coding, and memo writing. I applied codes directly to video files in NVivo (i.e., I did not transcribe videos). Each time I watched a video, I refined my ideas and focus. For example, when coding videos of teacher candidates' math discussions, I first created a code to tag student talk. As I watched and re-watched video segments, I noticed a difference in the types of student

talk teacher candidates were eliciting (e.g., short numerical answers vs. lengthier explanations). I created subcodes to capture this variation and went back to previously coded videos to apply them. This reflects a “whole-to-part- inductive approach (Erickson, 2006) in that I first viewed recorded events as a whole, noting my impressions, then focused in on parts of videos to develop codes and analytic distinctions. To be clear, while I drew inspiration from Erickson’s (2006) of video analysis methods, my purpose in analyzing videos of teacher candidates’ early enactments was more instrumental than what Erickson describes. In other words, I analyzed videos insofar as they provided insight into my larger research questions about teacher candidates learning and uptake of race cognizant math teaching. I was not analyzing videos for their own sake or to theorize about early math teaching enactments per se. Because I was examining video records in conjunction with multiple other data sources, my analysis of videos was not as fully developed as it might have been in a study focused exclusively on teaching enactments.

**Data Reduction.** As mentioned above, throughout my analytic process, I made decisions that refined and narrowed the focus of the study. This included decisions about which pieces of data to analyze more closely and deeply. For example, while I examined assignments from all teacher candidates enrolled in the math teaching course sequence in my first pass memos, I focused on the work of interviewees when it came to coding and writing further memos. I further narrowed my focus to white interviewees (focal participants) in later analytic passes. In addition, I identified course assignments for further analysis based on what seemed most generative for exploring my research questions (e.g., an assignment in which teacher candidates analyzed and made a plan for acknowledging children’s mathematical competence based on a video episode). I set aside assignments that were less relevant to the research focus, such as an analysis of different fraction representations and explanations.

My process of data reduction also involved decisions about how to use data from class sessions (i.e., observation notes and artifacts like slides and handouts), given that my analytic focus was not on the teacher education pedagogy. I included data from class sessions in my initial coding passes as a check on my memory of how course ideas and practices were introduced and worked on. For example, when I say in Chapter 4 that course instructors framed the practice of acknowledging competence as a means for disrupting status hierarchies and inequitable patterns in who gets recognized as smart in math, especially with respect to race, gender, language, class, and ability status, I know that this is warranted based on my coding of field notes and class artifacts. I had tagged segments of class activity related to acknowledging competence, retrieved those coded segments, and checked for evidence of course instructors' framing. I similarly pulled up other code references, such as for "Orienting" (a component of orchestrating a discussion), when I was noticing a pattern in teacher candidates' talk and work and needed to recall the context of how that idea or practice came up in course work. Thus, while I did not engage in later analytic passes through data from class sessions, I still drew on the data to triangulate my characterization of the ideas and practices presented in the math teaching courses and to recontextualize observations about teacher candidates' discourse and practice.

**Analytic Memos.** As I engaged with data, I routinely wrote memos to document my interpretive and analytic ideas. Initially, these memos were unstructured — I wrote about whatever came to mind as I coded a given data excerpt. I tried to discern and flag ideas that seemed significant by bolding words and phrases and by creating main-idea headings for memo sections, but I did not use prompts to structure my thinking. I typically wrote one memo in conjunction with my initial coding pass through a unit of data from a given source (e.g., one memo per interview, one memo per class session, one memo per graded assignment). After about

four months of analytic work with data from Sensemakers and first two rounds of interviews, I shifted to a basic template that listed my research questions at the top and included sections to record logistical process notes as well as thoughts on my argument. This helped to ensure that I routinely revisited the driving questions of the study while still making space to free-write and document process-oriented decisions. I continued writing one memo per unit of data.

I paused my coding and analytic memo-writing for data collection during Math Methods, returning to routine reflections and first-pass memos completed in close proximity to data collection events (see above). Once I concluded data collection and resumed my recursive process of engaging with data and writing memos, there was a notable shift in my approach. I moved away from writing one memo per data unit and instead began searching for themes and patterns, using analytic memos to name and define them (Braun & Clarke, 2012). That is, rather than writing about whatever I noticed that seemed relevant to my research questions for each piece of data, I waited until I had a potential theme or pattern in mind and then used an analytic memo as a space to flesh out that idea. This involved pulling up coded data excerpts and exploring confirming, disconfirming, and complicating evidence. I created a template to structure my writing around the tentative theme or pattern (shown in Figure 3).

Writing theme- and pattern-driven analytic memos created space for me to draw on methods of longitudinal analysis (Grossoehme & Lipstein, 2016; Saldaña, 2002). For example, I identified a potential theme of “thin” uptake of course ideas and practices based on my coding of Rachael’s Round 4 interview; she seemed to take up the course practice of acknowledging competence as praise.

### Figure 3

#### *Analytic Memo Template*

Date:  
Data Source:  
Pass:

#### **Process Notes**

- What did I look at or do with data?
- What decisions did I make, if any, that might affect my work going forward?

#### **Summary of Draft Pattern or Possible Theme**

#### **Description of Data**

#### **Preliminary Analytic Commentary**

- What stands out from this pass through the data?
- What pattern or theme might be foregrounded?
- What might the pattern or theme signify?
- What conjectures does this support, revise, complicate, contradict, etc.?

#### **Questions, Alternative Ideas, or Additional Thoughts**

To explore the relevance of this theme over time, I used a trajectory approach (Grossoehme & Lipstein, 2016), examining data connected to Rachael and acknowledging competence from across the course sequence. In a second analytic memo on this same theme, I incorporated a cross-sectional approach (Grossoehme & Lipstein, 2016), looking across a given data source (such as Round 4 interviews) to compare Rachael's uptake of acknowledging competence with that of other participants at the same point in time. Because my research questions involve characterizing the learning, discourse, and practice of a set of focal participants as well as exploring shifts over time, it was important that I use and coordinate both trajectory and cross-sectional lenses in my analysis.

In addition, analytic memos provided a site for me to triangulate among data sources and to explore varying explanations for the theme or pattern I was considering. For example, when I noticed teacher candidates emphasizing practices that were good for all children in a discussion

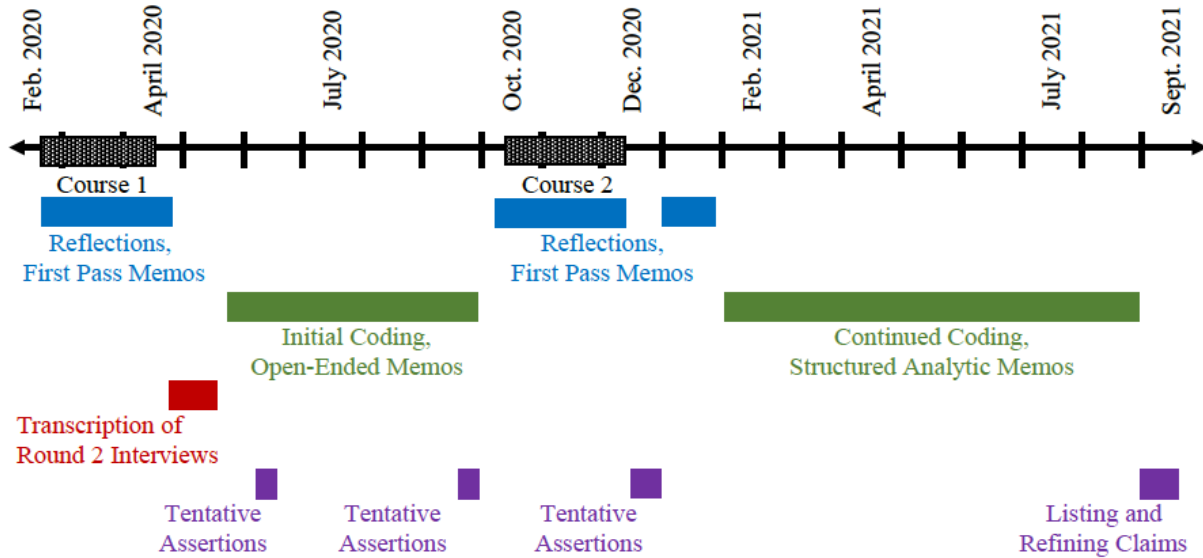


thread about racialized patterns of over-punishment, I started drafting a memo that led me to re-examine my observation notes and artifacts from that class module to explore whether teacher candidates' language and ideas could be traced back to course materials. Thus, I checked tentative themes and patterns against multiple data sources to refine my working understanding. I also drew on Saldaña's (2002) guidance for analyzing change in longitudinal qualitative data as inspiration for different ways to look at and understand change and continuity over time. For example, Saldaña (2002) points out that change can reflect natural trends in human development as well as the influence of contextual or intervening conditions in a participant's life. This reminded me to consider the impact of teacher candidates' general growth and development as human beings alongside the impact of the math teaching course sequence and intervening events like Black Lives Matter protests. For instance, increased use of equity- and justice-oriented language (e.g., terms like "empowerment," "intersectionality," and "marginalization") could reflect teacher candidates' racial identity development and emerging racial consciousness (Helms, 1984; Tatum, 1997) and/or the influence of participating in a teacher education program where such language was the norm. This illustrates how I used analytic memos as a workspace to explore varying explanations and to refine my characterization and interpretation of themes and patterns I was seeing in the data.

**Developing Claims.** During data analysis cycles, I periodically stepped back from coding and memo-writing to identify tentative claims and assertions that addressed my research questions. I did this at meaningful junctures, such as after completing analytic passes through sets of data (e.g., Round 1 interviews, data from Sensemakers / Course 1) and after concluding data collection. My engagement in various analytic activities is summarized in Figure 4.

**Figure 4**

*Timeline of Data Analysis*



When I did this “stepping back” to develop tentative claims and assertions, I structured my thinking and writing around my research questions, as opposed to starting with a piece of data or possible theme. I used coding queries and data visualizations in NVivo to retrieve and review relevant segments of data, then wrote tentative answers to my research questions. I characterize these assertions as “tentative” because I knew my ideas would need to be refined and revised as I collected and analyzed more data; what was salient at one point could seem less so later on. This process of periodically identifying assertions, with awareness that they are preliminary, is informed by longitudinal methods. As Saldaña (2002) explains:

Systematic listing of assertions assists in finding particular themes or trends in the data, and should include speculation of how contextual and intervening conditions may have influenced and affected participant change. If the data are examined chronologically

(with additional data collection remaining), expect to revise assertions continually since data located in the “future” will affect assertions developed in the “past.” (pp. 5–6)

Thus, articulating tentative assertions was an exercise that served to move my analysis forward, even with additional data yet to be considered.

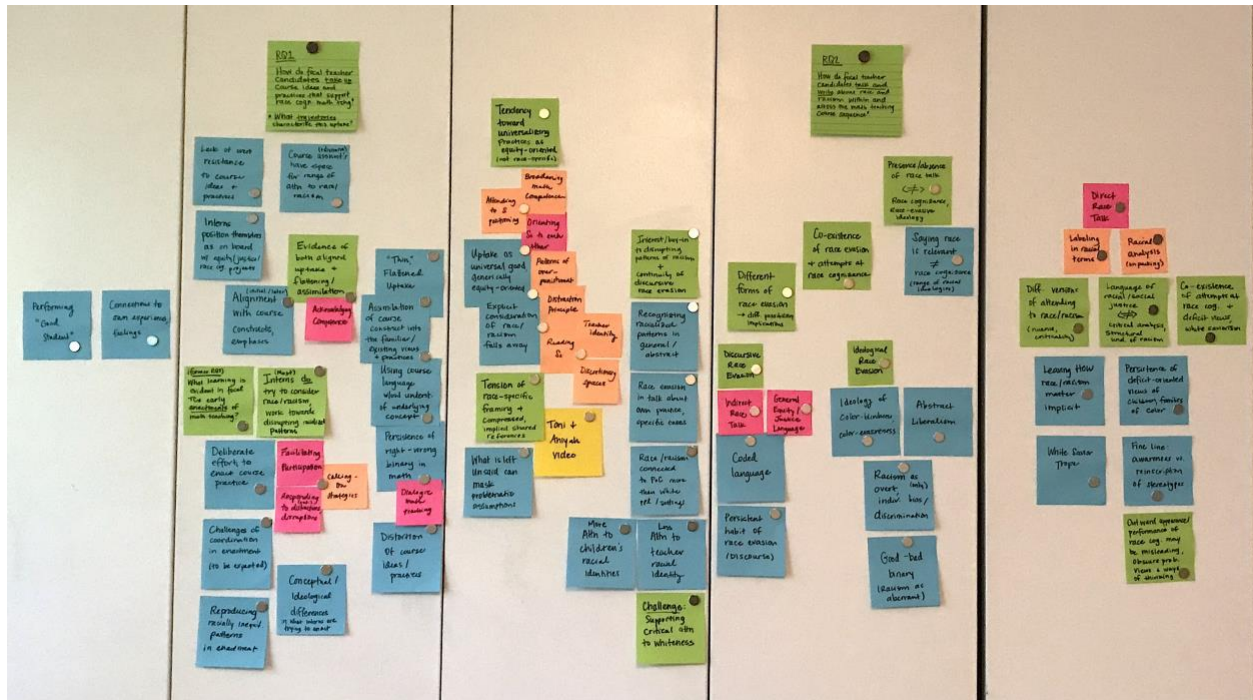
One illustration of this is that drafting tentative claims and assertions often led me to refine and revise my research questions. For example, when I started thinking through tentative assertions after completing a first cycle of coding and memoing about data tied to Sensemakers, I realized that my questions about change over time needed clarification. Was I interested in shifts in participants’ uptake of course ideas and practices *within* the eight-week Sensemakers course, or was I treating Sensemakers as one timespan to be compared with data from the timespan of Math Methods? I determined that my interests (and my interview data) were more longitudinal, pertaining to change over the span of months rather than weeks. Thus, I resolved to characterize teacher candidates’ uptake, practice, and discourse during the first course as an initial timespan. This refinement laid the groundwork for the claims and assertions about initial uptake and trajectories of uptake of acknowledging competence that I present in Chapter 4.

My final round of developing claims was distinct in that I was no longer awaiting further data or the opportunity to closely engage with data. Having written numerous analytic memos and documented preliminary assertions, I began this last phase by rereading those documents with my research questions in mind. I compiled a list of claims (including assertions of varying grain size), and then engaged in concept mapping to think about how the claims related to each other and to my research questions. As the concept map in Figure 5 shows, I represented ideas using color-coded sticky notes, arranging smaller findings (blue sticky notes) around larger questions and claims (green sticky notes). I used additional colors to label areas of course work

(e.g., acknowledging competence, calling on strategies) and to make sub-categories (e.g., direct and indirect race talk). This process of visually representing relationships between ideas stimulated my thinking about how to organize and present my findings (discussed further in the final section of this chapter).

**Figure 5**

*Concept Map of Dissertation Claims and Findings*



### 3.7 Methodological Dilemmas

Over the course of this study, I encountered several methodological dilemmas. These were situations where it was unclear how to navigate the research in ways that honored both participants' expressed viewpoints and the realities of racial socialization and being situated in a society structured by racism and white supremacy. On the one hand, qualitative research aims to understand participants' own perspectives and meaning making. Thus, qualitative researchers often use strategies like member checking to strengthen the validity and trustworthiness of their

findings (Cho & Trent, 2006; Hesse-Biber & Leavy, 2011). On the other hand, critical race perspectives and prior research on whiteness make clear that white people's assessments of their own racial awareness and ideologies should not be taken at face value (A. Brown & Reed, 2017; Evans-Winters & Twyman Hoff, 2011; Matias & Zembylas, 2014; Solomon et al., 2005; Warren, 2015). For example, in group sessions with white teacher candidates exploring white racial identity, McIntyre (1997) found that "the participants used a number of speech-tactics to distance themselves from the difficult and almost paralyzing task of engaging in a critique of their own whiteness" (p. 46). These tactics included evading questions and "not wanting to disrupt the niceness in which they embed interpersonal relations, and not wanting to deal with the discomfort of personal racism" (McIntyre, 1997, p. 46). In other words, although McIntyre's (1997) participants were ostensibly engaged in discussions about whiteness, their habitual ways of speaking and interacting functioned to impede critical ideas and analysis; participants ended up reinforcing and affirming one another's problematic racial beliefs and ways of thinking. McIntyre's (1997) findings underscore that white people's talk about race, racism, and whiteness *is not transparent*; critical attention to the ways that white people navigate race talk is necessary.

Thus, in seeking to both *describe* and *critically analyze* white teacher candidates' learning, discourse, and early practice with respect to issues of race and racism, I needed to simultaneously stay close to the data (keeping my interpretations grounded in participants' words and actions) *and* read into the data with an eye towards the indirect and insidious ways that racism and whiteness operate. As I worked to make sense of participants' talk and course assignments, I knew that some of my findings — particularly those pointing out race evasion and problematic racial ideas — were not likely to be things that participants would see in themselves or affirm in a member check. Consequently, I had to develop other strategies to ensure that my

more critical claims and findings were warranted. In the sections below, I describe three methodological dilemmas I encountered and the ways that I worked to navigate them.

### ***3.7.1 Social Desirability***

As many anti-racism educators and scholars of race and racism attest (Bonilla-Silva, 2018; DiAngelo, 2018; Oluo, 2019), in contemporary times, there is a strong social desire to be perceived as *not racist*. Put differently, in mainstream American culture, “being racist” is stigmatized and perceived as morally wrong, equated with “being a bad person,” so people have social incentives to distance themselves from racism. This raises a question, then, of whether people voice their opposition to racism or commitment to anti-racism simply because it is socially desirable to do so, rather than out of genuine beliefs. In this study, the question of whether talk or behavior is motivated by social desirability is further complicated by the fact that participants were being assessed and graded by course instructors. As students, teacher candidates have a built-in incentive to “please the teacher” — to say and do what instructors want and value. In this case, course instructors emphasized commitments to equity, justice, and disrupting the patterns of racism and oppression that can be reproduced through classroom interactions. Therefore, within this specific math teaching course sequence, it was socially desirable to be positively oriented towards the pursuit of equity, justice, and anti-racism.

The issue of social desirability presented a dilemma for me in interpreting both teacher candidates’ course assignments and their talk during interviews. With assignments, there was the worry that teacher candidates were just writing or doing what they thought course instructors wanted to see and hear with respect to issues of race and racism. This worry extended to interviews in that, despite my efforts to position myself as a researcher rather than as an instructor, participants may have associated me with the instructional team. Additionally, the

social desire to build rapport and “be nice” undoubtedly influenced teacher candidates’ interactions with me; it is not hard to imagine participants expressing interest in thinking about race and racism inside of math teaching or indicating commitments to anti-racism, at least in part, because they thought that is what I expected. Thus, my dilemma was how to distinguish between what participants “really” thought, believed, and understood and what participants were saying and doing in response to social pressures.

My strategy for navigating this dilemma was to carefully consider the context and structure of different data sources. For instance, with course assignments, I paid particular attention to the language used in assignment directions and prompts that spoke to issues of race and racism or equity and justice more broadly. I then noticed when teacher candidates were turning around the prompt to frame their response, and took those responses with a grain of salt, viewing them as less “authentic” or trustworthy expressions of participants’ perspectives. For example, one of the prompts in a Math Methods assignment read as follows: “Explain which patterns of racism, sexism, and ableism are reproduced or interrupted and how, based on the video. Attend to both **reproduced** patterns related to equity and justice in mathematics and patterns that are **interrupted**” (Analyzing Participation Assignment, emphasis in original).

Noting that the prompt uses the language of interrupting and reproducing patterns of racism, sexism, and ableism, I did not view it as a meaningful instance of direct race talk when teacher candidates used that language in their responses. For instance, Jason wrote, “At 1:20, the teacher interrupted a pattern of racism and sexism by validating Toni’s question and by focusing on the content of her question and by not misinterpreting or overreacting to the way in which Toni posed her question” (Jason, Analyzing Participation Assignment). The fact that Jason wrote about interrupting a pattern of racism here is not remarkable; he was just being responsive to the

prompt. Instead, I focused my analysis on the *specific examples* that Jason connected to the language of the prompt (validating Toni’s question, focusing on the content of the question) as a window into how Jason was understanding what a pattern of racism entails and what it might look like to interrupt it. Thus, I tried not to be misled by teacher candidates’ use of racial language from prompts and directions (as well as my own language in interview questions). I endeavored to look beyond the surface, to consider what ideas, beliefs, and understandings might be implied by the substance of teacher candidates’ responses.

In addition, I placed greater analytic stock in what participants did and said that was unprompted or in scenarios where prompts left ample room for interpretation. For example, the assignment of planning, leading, and reflection on a math discussion during Math Methods was much more open-ended than the “Analyzing Competence” assignment during Sensemakers, which involved using a template to describe how students in a given video were positioned, what mathematical competence they exhibited, and what the teacher candidate would say to students acknowledge their competence. Because teacher candidates had more space to bring their own goals, ideas, and approaches to the math discussion, I found that their comments related to acknowledging competence within the math discussion (particularly during Round 4 interviews) were more revealing than their responses to the Analyzing Competence assignment or to direct questions about acknowledging competence in Round 2 interviews.

For instance, during her Round 2 interview, Stacey was clearly attentive to course instructors’ expectations pertaining to acknowledging competence. Responding to a question about how she thought about work on acknowledging competence and positioning in Sensemakers, Stacey said, “Yeah. I’ve noticed, you know, *they really do want you* to recognize, like you said, competence” (Stacey, Round 2 Interview, 4/8/20). Stacey’s mention of what



instructors want makes the impression that Stacey is trying to write and say what is socially desirable in the course context (e.g., framing acknowledging competence as a space for paying attention to children’s racial identities and intervening on patterns of racism), raising doubt about what Stacey really thought or understood. In contrast, Stacey’s Round 4 interview comments on her math discussion show that Stacey thought about acknowledging competence as a universal good, rather than as a strategic practice for intervening on racial patterns. Stacey recalled that she had connected one student’s solution to the lesson, reflecting, “so like during the lesson, I did bring it into to the lesson, ‘Oh, you know, Ahmed said this,’ but then I was like, ah man, *I didn't do that for every student*” (Stacey, Round 4 Interview, 12/11/20, emphasis added). Stacey may very well have been saying what she thought I or course instructors wanted to hear about acknowledging competence, but the example that she generates and comments on nevertheless offers important insight into how Stacey made sense of the practice and its relationship to disrupting of racism.

This illustrates how more open-ended prompts and assignments, such as the math discussion assignment, created space for teacher candidates to populate concepts and terms from the course (like acknowledging competence) with their own understanding. Thus, I viewed these data sources as offering a more reliable window into what teacher candidates “really” thought. There is no way to really resolve the issue of social desirability when interpreting teacher candidates’ talk and work, but it is possible to conduct analyses in light of it. By carefully considering the context and structure of specific assignments and interviews, I identified and made use of data sources that could provide useful insights into participants’ race-related thinking, understanding, and beliefs *despite* the likelihood that participants were influenced by

what they perceived as socially desirable. In other words, I acknowledged that social desirability was probably at play, and proceeded to explore what else I could learn from the data.

### **3.7.2 Problem of Inference**

As I discuss in Chapter 5, white people — including the focal participants in this study — often avoid direct racial language, even when discussing racial issues. Thus, people can talk about race or racism *in effect* without using racial terms or labels. I characterize this as *indirect race talk*. The methodological problem, however, is that in order to classify speech as indirect race talk, one must *infer* racial meaning in the absence of direct racial terms. In other words, identifying indirect race talk requires inferring what a speaker might *mean* but *not say explicitly*. For example, take Evelyn’s comment, “I’ve been trying to not make assumptions about any student experiences or relationships or anything like that” (Round 4 Interview, 12/10/20). Was Evelyn talking about *race-related* assumptions? She did not use any direct racial language, and there is no way to access what she had in mind (i.e., her intended meaning) at that moment. Thus, as a researcher, I had to seek out other forms of evidence, such as the context of the interview question (a prompt about teacher identity, children’s identity, and relationship building) and Evelyn’s subsequent comments (e.g., mentioning a student who lived in Mexico) to ground my inference that Evelyn *was* talking about race, at least in part.

What I am calling the “problem of inference” is the challenge of determining what talk is “about” (i.e., whether talk is “about race”) when that is not made explicit. This problem applies to many forms of interpretive research as well as interpersonal communication more broadly, but takes on particular salience with inquiries into race talk because of well-established patterns of race evasion (Jupp et al., 2019; Pollock, 2004). In general, one might wonder: How do

participants in a conversation infer implicit meanings? More specific to this study, how do people know whether a conversation is implicitly about race and racism?

My primary approach for navigating the problem of inference was to widen my lens and expand my unit of analysis when interpreting data. For example, I frequently zoomed out from individual sentences (like the one from Evelyn above) to consider the broader context of the interview question or assignment and the participant's full response (i.e., the surrounding paragraph or set of paragraphs in an interview transcript or written assignment). If race or racism were clearly named in the prompt or elsewhere in a given response, I took that as plausible evidence that the talk was about race or racism, at least on some level. For instance, in Rachael's Round 4 interview, she gave an example of how she tried to disrupt patterns of marginalization in her math discussion by following the distraction principle when responding to a student who was sharing memes on the group Jamboard. The bulk of her response did not include any direct racial language, but she concluded by saying, "He is also the student of color, the one student of color in my class" (Round 4 Interview, 12/9/20). I took this to mean that Rachael was thinking about that student, and the example she had given, in racial terms, even though she did not make that explicit initially. By expanding my lens to include Rachael's full response, I was able to recognize her comments about using the distraction principle as an instance of indirect race talk.

In addition, I looked across data sources to explore whether participants explicitly connected given concepts, words, or phrases to race and racism in one place, but not another. For example, when I noticed that Margaret did not mention race or racism in relation to acknowledging competence in her Round 4 interview, I looked back at her responses about acknowledging competence in her Round 2 interview. During her Round 2 interview, when

asked whether she saw acknowledging competence as related to issues of race and racism, Margaret said:

I mean, definitely because it relates who we see as more competent and abled versus who we don't see as competent or abled and how, like whose student ideas we choose to share more than others. And I think yeah, those patterns are just ingrained into our society. And I think that race does play a lot into it. (Margaret, Round 2 Interview, 4/10/20)

Although this response remains at the level of labeling acknowledging competence as related to race (rather than analyzing or unpacking how race and racism are relevant), it makes clear that Margaret *could* potentially be thinking about race when she is talking about acknowledging competence in non-racial terms. One caution here is that just because a participant connected a practice like acknowledging competence to addressing issues of race and racism at one time point, that does not necessarily mean that their thinking remained the same over time; it is entirely possible that, several months after focused coursework on acknowledging competence, Margaret was no longer thinking about the practice as race related. Thus, when making inferences about indirect race talk, especially when looking across data sources from different points in time, I was deliberate in considering alternative explanations and interpretations.

Another strategy that I used in navigating the problem of inference was to pay particular attention to general equity- and justice-oriented language and to probe teacher candidates' understanding of that language during interviews. For example, I had a hunch that course instructors were using phrases like "disrupting patterns of marginalization" to pointedly refer to multiple systems of oppression — including racism — whereas some teacher candidates were using the same language in ways that evaded or sidelined the salience of race and racism. With this hunch in mind, I posed a series of questions in Round 4 interviews to probe teacher

candidates' thinking about patterns of marginalization that they anticipated going into their math discussions in their field placements. Teacher candidates' responses gave me insight as to whether they were using the term "marginalization" as an indirect way of talking about racism (e.g., Evelyn clarified that she was thinking about race and gender) or to mean something else entirely (e.g., Jason talked about ways that even the most privileged students could be marginalized in mathematics if they struggled with the content or their confidence). Thus, conducting multiple rounds of interviews allowed me to test some of my interpretive hunches and tentative inferences about instances of indirect race talk by gathering additional data.

Early on in my analysis, I had been thinking about the problem of inference in terms of inferring *intentional* race evasion. That is, I saw the dilemma as trying to discern whether participants who engaged in indirect race talk were doing so to actively avoid reckoning with ideas about race and racism. For example, if a participant did not name race or racism in their response to a course assignment (e.g., an online discussion thread about the *Troublemakers* book), I wondered whether it was fair to say they were *evading recognition* of race and racism, following the definition of race evasion in Jupp et al. (2019). What would constitute sufficient evidence to label a response "race evasive"? I was hesitant to equate the absence of racial terms with race evasion because I figured that participants could be conveying ideas about race and racism while speaking in general, non-race-specific terms like "issues of equity."

The way that I resolved this layer of the problem of inference was to clarify and refine my conception of *race evasion*. I separated claims about *ideological* race evasion (i.e., implied meanings that invoked frames and storylines of color-blind racism or color-evasive ideology, (S. A. Annamma et al., 2017; Bonilla-Silva, 2018) from the *discursive pattern* of avoiding race words. As I argue in Chapter 5, in this study, the ideological or active avoidance of the ongoing

salience of race and racism *did* sometimes overlap with the discursive pattern of indirect race talk or avoiding race words, but this was not always the case; participants also engaged in indirect race talk while conveying meanings and ideas aligned with aspects of race cognizant ideology. Thus, by making explicit when I mean race evasion in the ideological sense or in the discursive sense, I lessened my worry that I was unfairly characterizing participants as being intentionally or ideologically race evasive.

### ***3.7.3 Facilitating Race Evasion through My Own Whiteness***

Going into this study, I anticipated that it would be generally difficult to get white participants to talk about race (DiAngelo, 2018). However, something I did not anticipate was how challenging it would be for me as a researcher to conduct interviews in ways that kept race, racism, and whiteness in focus. As I reflected on and analyzed interviews, I came to realize that I personally contributed to the problem of inference (discussed above) by posing indirect questions about race and racism and by failing to pose direct follow-up questions to clarify participants' racial meaning. That is, despite my express interest in issues of race and racism, I inadvertently enabled participants to dodge race-specific questions and to talk about race and racism in indirect, implicit ways through my own discursive patterns in interviewing. For example, in setting up my Round 3 interview with Jason, I said:

As I mentioned in my email, my main goal today is just to get a sense of how you're thinking about things. Like this summer in particular, there was a lot of really racially charged — so, police violence, protests, news, just a lot going on, and I'm curious about how you're thinking about that, and if in any way, it's connecting to the work you're doing in the teacher ed program and specifically math teaching. (Jason, Round 3 Interview, 9/25/20)

In my framing comments here, I refer abstractly to “things” and “a lot going on” rather than directly naming the state-sanctioned murders of George Floyd and Breonna Taylor or the massive mobilization of protestors for racial justice. I also used the term “racially charged” rather than explicitly connecting police violence and Black Lives Matter protests to issues of systemic racism and racial injustice. This made it both possible and logical for Jason to respond to my questions in a similar fashion, avoiding direct talk about race and racism.

This problem was especially salient in my interviews with Alex. Alex’s style of speaking often included allusions to shared understandings, such as how or why a given teaching practice might be racially problematic, and I routinely found myself wondering what Alex meant. Upon reflection, I realized that I had often failed to ask follow-up questions like, “What do you mean by that?” or “Could you say more about how you see that as related to race or racism?” For example, during Alex’s Round 4 interview, Alex responded to a question about shifts in their thinking about race, racism, and math teaching by saying:

I think that making space for all contributors is probably the biggest thing that I've taken away. And also using examples that I might not otherwise think would lead a conversation forward. I think that there's a lot of power in that. (Alex, Round 4 Interview, 12/15/20)

I could understand the beginning of Alex’s response here as a possible compressed reference to course themes that addressed issues of race and racism (i.e., “making space for all contributors” could connect to course work on facilitating equitable participation and intervening on racialized patterns in how people are positioned in mathematics). But how did Alex see “using examples that I might not otherwise think would lead a conversation forward” as related to issues of race and racism in math teaching? I was puzzled by this in the moment and asked a series of questions

to better understand what sorts of examples Alex had in mind. It turned out that Alex’s thinking had shifted about the usefulness of starting a math discussion with a “wrong” answer, in part due to repeated viewings of the Toni and Aniyah video and learning that the majority of the students in that video were able to correctly name fractions on a number line following the discussion captured on video. Yet, I failed to ask Alex how this shift in their thinking about using examples related to issues of race and racism. Based on the interview question, I could presume that Alex saw race and racism as being relevant to making use of “wrong” examples, *but how?* Was it just that Aniyah is a Black girl, and her solution proved useful in a math discussion? In retrospect, leaving Alex’s implied racial meaning ambiguous and unquestioned feels problematic.

The realization that I facilitated race evasive talk during interviews points to an underlying methodological dilemma: as a white person, I am subject to the same forces of race evasive socialization as participants — I am not outside of the racial dynamics I am investigating. As Best (2003) argues, a researcher, like all people, makes use of racial repertoires and “acts as a social agent who is active in the construction of a racialized social order” (p. 897). In other words, researchers actively participate in racialization and racial systems; conducting research about race and racism does not make a researcher exempt from racial critique. This was a methodological issue because my own whiteness and race evasive discursive habits impeded and complicated my ability to elicit participants’ perspectives on issues of race and racism. As McIntyre (1997) put it, “the dilemma—engaging white people in conversations about whiteness while simultaneously being cognizant of the strategies we use to derail those discussions—resists a simple explanation” (p. 46).

While there is no easy solution to this problem, recognizing that *it is a dilemma* that necessarily impacts the research seems like an important step. Acknowledging that despite my



efforts to explicitly name issues of race and racism and probe participants' racial perspectives, I still often fell back on discursive habits of race evasiveness and whiteness, I was able to look for and analyze my own influence on the data I gathered. When interpreting participants' race talk, I actively considered whether my language or framing of the question might help to explain race evasive responses. In addition, in thinking about the implications of this study, I imagine that I am not alone in avoiding the discomfort of pressing teacher candidates to more fully unpack their thinking about race and racism; I am sure that many teacher educators and researchers similarly experience the inclination to maintain rapport and comfort with white teacher candidates. Thus, recognizing that a white instructor or researcher's own racial socialization and habits of race evasion are likely to pose challenges in tackling issues of race and racism can inform and guide future work related to race cognizant teaching and learning.

### **3.8 Organization of Findings**

I present my findings in two chapters. The first chapter (Chapter 4) addresses my research questions about focal teacher candidates' uptake of course ideas and practices that have the potential to support race cognizant math teaching (Research Questions 1 and 2). The second chapter (Chapter 5) addresses my question focused on teacher candidates' talk and writing about issues of race and racism (Research Question 3). I view these chapters as presenting two different approaches to characterizing teacher candidates' learning across the math teaching course sequence. The first chapter examines *uptake*, where the point of reference is ideas and practices tied to race cognizant math teaching as they were framed by course instructors. The second chapter examines teacher candidates' *discourse* in a more open-ended way, operating on the assumption that people's use of language can reveal shifts and/or continuations in their understanding and underlying ideologies about race, racism, and math teaching.

Chapter 4 primarily probes and analyzes teacher candidates' uptake of the course practice acknowledging competence. I examine teacher candidates' initial uptake of acknowledging competence during the Sensemakers course as well as trajectories of their uptake over time. This analysis draws on data from interviews and teacher candidates' assignments, including a virtual enactment of a math discussion. Because acknowledging competence is well defined in the course sequence, it presents an opportunity to examine teacher candidates' understanding of and attempts at enacting a specific practice in relation to how that practice was framed by course instructors. In other words, there is a clear course construct of acknowledging competence for focal teacher candidates to plausibly "take up." Thus, I make claims about the extent to which focal teacher candidates embraced and pursued the course construct of acknowledging competence in their developing vision and enactment of math teaching. In addition, I briefly discuss a course practice that focal teacher candidates pursued in their math discussion enactments: distributing turns of talk (i.e., "calling on" children) in ways that encourage and support broad participation. I argue that, as with uptake of acknowledging competence, variation in teacher candidates' attempts to equitably facilitate participation reveals important underlying differences in participants' understandings of racism and alignment with race cognizant ideas.

In Chapter 5, I identify and discuss different ways that focal teacher candidates talked and wrote about race and racism across their interviews and course assignments. Following Pollock (2004), I refer to this broad category of discourse as "race talk." I examine focal teacher candidates' race talk, particularly in relation to a touchstone video episode used across the math teaching course sequence, the Toni and Aniyah video. Along with direct interview prompts about issues of race and racism (e.g., questions about Black Lives Matter protests), this video reliably elicited race talk from focal participants, even when participants avoided direct racial language,

which makes visible several discourse patterns. Because the Toni and Aniyah video was used as a text for exploring multiple ideas and practices across the math teaching course sequence, it offers a more flexible window into teacher candidates' thinking and learning about race, racism, and math teaching in comparison to other sites of course work, like acknowledging competence. In Chapter 5, I present a classification of types of race talk and characterize focal teacher candidates' use of these different types of talk. I also make claims about what focal participants' race talk reveals about their learning and relationships to race cognizant math teaching and anti-racist projects more broadly.

Each of the two findings chapters features a major site of work from the math teaching course sequence to contextualize and evidence claims. Acknowledging competence is highlighted in Chapter 4 and work using the Toni and Aniyah video is highlighted in Chapter 5. I emphasize these two sites of work for several reasons. First, as I know from my participation in course planning and observation of class sessions, both sites of work contain deliberate and explicit efforts by course instructors to draw attention to race and racism as salient considerations in elementary math teaching. Developing skill with acknowledging competence and drawing insights from analysis and discussion of the Toni and Aniyah video were both expressly framed as opportunities to work on disrupting patterns of teaching practice that reproduce racism and other forms of oppression. Second, these two sites of work feature prominently across both courses in the math teaching sequence, providing opportunities to explore teacher candidates' learning over time. Relatedly, unlike some other course emphases, I have substantial data, at multiple time points, from class sessions, course assignments, and interviews with teacher candidates pertaining to both acknowledging competence and the Toni and Aniyah video. These two sites of work also capture meaningful variation in teacher candidates' engagement with

course ideas and practices, as evidenced by their interviews, assignments, and early enactments of math teaching. Finally, in line with my rationale for the two findings chapters, each site of work provides a different form of insight into teacher candidates' learning with respect to race cognizant math teaching. I jointly consider the implications of these two lenses on teacher candidates' learning in Chapter 6, the final chapter.

## Chapter 4 Findings Part 1: Uptake of Race Cognizant Course Emphases

The belief that all genuine education comes about through experience does not mean that all experiences are genuinely or equally educative. (Dewey, 1938, p. 25)

In any teaching situation, there is always a question of how the *intended learning* relates to what people *actually learn*. In Cohen's (2011) words, "Teaching and learning are two distinct practices. Though they are often related, often they are not. How they are related and how closely depend partly on how teachers and students regulate the connections" (p. 164). It cannot be taken for granted that the aims and intentions of teachers will necessarily result in particular learning on the part of students. In the context of this dissertation study, this means that within the math teaching course sequence, course instructors' emphasis on issues of race and racism presents the *possibility* of supporting teacher candidates to develop a race cognizant math teaching practice, but that outcome is in no way guaranteed. There is much that hinges on teacher candidates' sensemaking and interactions with the course content as well as the identities and histories of the particular people involved (D. K. Cohen et al., 2003; Dewey, 1938). This chapter picks up from this premise, taking a close look at what teacher candidates took up and learned from their experiences in Sensemakers and Math Methods.

Specifically, this chapter examines teacher candidates' learning with respect to two course emphases: (a) the practice of *acknowledging competence* and (b) distributing turns of talk to facilitate equitable participation. This focus is purposeful, as these practices are a prime examples of math teaching practices that *could* be race cognizant and that could depart from the

status quo in substantive ways. As conceptualized and represented in the math teaching course sequence, both acknowledging competence and facilitating participation entail *attending to race and racism at multiple levels* (e.g., considering children's racial identities, how children are positioned at the classroom level, and larger societal patterns in who is recognized as mathematically competent). The course framing of acknowledging competence and distributing turns also involves *making deliberate moves* towards disrupting inequitable patterns of participation as well as racialized hierarchies of status and mathematical competence. While other teacher education courses or programs may not pursue acknowledging competence or distributing turns of talk exactly as they are constructed here, the patterns that I identify in teacher candidates' uptake can be instructive for anticipating possibilities and challenges in working on analogous race cognizant ideas and teaching practices. Thus, in presenting evidence of uptake in a specific case, I am laying the foundation for a broader argument about learning to engage in race cognizant (math) teaching.

I approach the question of what teacher candidates "take up" operating with the assumption that learning is a constructive and socially situated process where people make sense of new ideas in relation to things they already believe, know, understand, and do (Dewey, 1938; Gee, 1992, 2012; National Research Council, 2000). Moreover, I assume that teacher candidates, like any students, "do not simply absorb cultural authority. They mediate it, refuse it, or refashion it with their own significance" (Britzman, 2003, p. 59). In characterizing teacher candidates' uptake of acknowledging competence and facilitating participation, then, I am interpreting how teacher candidates seem to mediate, refuse, and/or refashion these course emphases through and in relation to their existing ideas and ways of being and doing (Britzman, 2003; Gee, 2012). Thus, this chapter answers the following question: *As teacher candidates take*

*up course emphases, to what extent and in what ways does their uptake reflect or depart from the course framing?* In other words, how are the ideas and practices wrapped up in acknowledging competence and facilitating equitable participation changed by teacher candidates in the process of learning? In particular, I explore the extent to which the *race cognizant* aspects of course emphases are preserved, changed, or lost as teacher candidates incorporate the ideas and practices into and through their existing frameworks.

It is not trivial that the emphases of the math teaching course sequence go “against the grain” (Cochran-Smith, 1991) of evading issues of race and racism. Teacher educators often seek to connect with and build on the beliefs, values, and dispositions that teacher candidates bring with them (Feiman-Nemser & Remillard, 1005; Richardson, 2003), but such an effort becomes much more complicated when the intended learning involves race cognizance and teacher candidates come with race evasive tendencies. As this chapter shows, one pattern of uptake that teacher educators must contend with is that teacher candidates, especially white teacher candidates, may assimilate practices like acknowledging competence into their existing views and orientations *without taking up the race cognizant aspects of the practice*. For example, teacher candidates could embrace the aim of highlighting students’ mathematical strengths *without* considering the insidiousness of deficit framing of students’ of color in shaping what teachers tend to notice (Jilk, 2016; N. Louie et al., 2021). This suggests that maintaining critical attention to issues of race and racism while connecting to and building on teacher candidates’ existing beliefs and goals is likely to be a challenge across a host of race-focused teacher education efforts. For example, race evasive and assimilative tendencies could frustrate efforts to promote critical awareness of racialized patterns and assumptions in teachers’ communication with parents and families (e.g., Khasnabis et al., 2019).

This chapter tackles two of the three research questions that drive this study. I address Research Question 1 — *How do focal teacher candidates take up course ideas and practices that have the potential to support race cognizant mathematics teaching? What trajectories characterize this uptake?* — by presenting findings regarding focal teacher candidates’ uptake of acknowledging competence. This includes characterizing focal teacher candidates’ initial uptake of acknowledging competence during Sensemakers and their trajectories of uptake over time, through the end of Math Methods. Because I trace teacher candidates’ efforts to acknowledge competence into a math discussion that they led as an assignment for Math Methods, I also address Research Question 2, *What uptake of course ideas and practices is evident in focal teacher candidates’ early enactments of mathematics teaching?* My examination of teacher candidates’ math discussions then leads to consideration of their uptake of distributing turns of talk to facilitate equitable student participation.

The chapter is organized into six sections: (1) a section providing background and context regarding course work on acknowledging competence; (2) a section on teacher candidates’ initial uptake of acknowledging competence, (3) a section on trajectories of teacher candidates’ uptake of acknowledging competence over time, (4) a summary of patterns of uptake with respect to acknowledging competence, (4) a section on deliberate efforts that teacher candidates made in their early enactments of math teaching, which centered on promoting equitable participation, and (6) a synthesis of overarching patterns of uptake. Throughout the chapter, I highlight patterns in focal participants’ engagement with issues of race and racism in relation to race cognizant aims and premises.



## 4.1 Background and Context

Acknowledging competence is a central focus of Sensemakers, the first course in the math teaching sequence. While other strands of coursework were newly developed or actively redesigned in 2020, work on acknowledging competence has been developed over the course of several years and multiple iterations of the course. Thus, course instructors have a clear vision of acknowledging competence as a practice and have experience implementing specific pedagogical strategies for supporting teacher candidates' learning. My attention to acknowledging competence here is both an artifact of the practice's centrality to course work and a deliberate choice, as I believe patterns in teacher candidates' uptake of acknowledging competence can be illuminating for race-focused teacher education efforts more broadly.

### 4.1.1 Defining Acknowledging Competence

As developed by course instructors, *acknowledging competence* is deliberate intervention by teachers on who and what is recognized as mathematically competent in classroom interactions (Gadd et al., in preparation). Although I refer to acknowledging competence as *a* practice, it is actually a collection of practices that reflect an underlying stance. For example, acknowledging competence includes moves like publicly highlighting the mathematical contributions of individual students (e.g., “Antar brought up the idea of equal parts”), strategically affirming students' mathematical reasoning (e.g., “That's right, there are seven equal spaces”), and attributing progress in collective work to student contributions (e.g., “Mamadou helped us remember to identify the whole”). These moves all reflect the stance that children already demonstrate mathematical competence but this often goes unnoticed, and so it is teachers' job to look for and recognize that competence, helping to make it visible to others, including children themselves. Being able to recognize and meaningfully articulate how children

are demonstrating mathematical competence in specific situations requires substantial mathematical knowledge for teaching (Ball et al., 2008). Without specific attention to the mathematical substance of children's work, teachers run the risk of offering empty praise, seeming insincere, and trivializing children's contributions. In addition, the course construct of acknowledging competence involves intentional efforts to counteract deficit assumptions about the mathematical competence of children of color, girls, and other groups that are historically marginalized in mathematics. This aim reflects consideration of longstanding racialized and gendered patterns of exclusion in mathematics (Hottinger, 2016; N. Louie, 2017) as well as historically-rooted racist constructions of "intelligence" and mathematical "ability" (Darby & Rury, 2018; Kendi, 2016; Leonardo & Broderick, 2011; Martin, 2009b; Powell, 2002).

This course conception of acknowledging competence stems from Cohen and Lotan's seminal work on complex instruction and classroom status interventions (E. G. Cohen et al., 1999; E. G. Cohen & Lotan, 1995). Acknowledging competence is also an expansion on Featherstone and colleagues' (2011) and Boaler & Staples (2008) work on the practice of *assigning competence*. Like assigning competence, acknowledging competence involves highlighting specific ways that students demonstrate mathematical competence, such as making connections between representations or posing questions that advance collective understanding (T. Bartell et al., 2017; Hiebert et al., 1997). This highlighting serves the dual purpose of broadening students' ideas about what mathematical competence entails and encouraging students to see themselves and their peers (particularly students who have been locally positioned as low-status in the classroom) as mathematically capable (Featherstone et al., 2011). Assigning competence and acknowledging competence rely on similar premises about mathematics learning and identity, such as that notions of mathematical "ability" are socially

constructed (Jackson, 2009), mathematical competence is multidimensional and dynamic (Aguirre, Mayfield-Ingram, et al., 2013), and the ways that teachers and students interactively position themselves and one another shape students' mathematics identities (Langer-Osuna, 2011; Wood, 2013). Moreover, both assigning competence and acknowledging competence are broadly equity-oriented in that they respond to concerns about disparities in mathematics learning (e.g., decreased participation from multilingual students as in Featherstone et al., 2011) by emphasizing students' assets and capacity to engage in meaningful mathematics.

Where acknowledging competence expands on assigning competence is in scope and aim. Acknowledging competence is a strategy applicable to a wide range of instructional contexts including one-on-one teacher-student interactions, whole-class discussions, and written feedback on student work. This is a broader scope than assigning competence, which focuses on intervening on status hierarchies in cooperative small group work (Featherstone et al., 2011). In addition, the course instructors explicitly frame acknowledging competence as aiming to *challenge racial storylines* about mathematical competence (Nasir et al., 2012; Shah, 2017). This express purpose requires deliberate attention to children's racial identities (in conjunction with gender, language, and ability status) and larger patterns in how groups of people tend to be positioned in mathematics, both currently and historically (Hottinger, 2016; Martin, 2009b). Thus, acknowledging competence, as worked on in this particular course sequence, offers an important opportunity for teacher candidates to actively consider race and racism inside of a mathematics teaching practice. In learning to acknowledge competence, teacher candidates must navigate both *math-specific demands* and *race cognizant demands*, including recognizing what students seem to know, understand, and be able to do mathematically *and* deliberately working to intervene on racialized patterns in whose competence gets recognized in mathematics.

### 4.1.2 Work on Acknowledging Competence Across the Course Sequence

As mentioned, acknowledging competence is a central strand of work in the Sensemakers course. To convey the opportunities available to teacher candidates to develop their understanding of acknowledging competence and to engage in components of the practice, I list relevant class activities, assignments, and readings used in Sensemakers 2020 in Table 2.

**Table 2**

*Work on Acknowledging Competence in Sensemakers 2020*

Class	Developing Concepts	Opportunities for Practice
1	Discussion about the importance of names. Repeating viewing and discussion of a video focusing on how students are positioned.	
2	Discussion of common messages about what it means to be smart in math. Reading about meaning of smartness in math (excerpt from Featherstone et al., 2011).	
3	Formal introduction of acknowledging competence.	Facilitate small group work with 5 <sup>th</sup> grade students (fraction game). Analyze student strengths and positioning in small group work (written assignment).
4	Elaboration of acknowledging competence focusing on learning to see mathematical competence. Reflection prompt: How is acknowledging competence different from praise? Discussion thread: Why is it important to move beyond praise in math class? Reading about status and assigning competence (excerpts from Featherstone et al., 2011).	Identify examples of mathematical competence for two students (video).
5	Elaboration of acknowledging competence focusing on distinguishing praise from affirmation. Introducing the idea of acknowledging competence as a collective practice.	Identify examples of teacher moves to acknowledge competence, what intellectual/ mathematical contributions were

	Reflection prompts for revisiting previous analysis of student strengths and positioning in small group work, examining observations of intellectual/ mathematical vs. behavioral strengths.	acknowledged, and how moves intervened on status (video). Draft analysis of and plan to acknowledge children's competence (video, graded assignment).
6	Elaboration of acknowledging competence focusing on techniques / specific things to do and say. Presentation of larger racialized patterns related to "ability" labels and status. Reading about learning to see students' mathematical strengths (Skinner et al., 2019). Peer feedback with rubric for draft analysis of and plan to acknowledge children's competence.	Note teacher moves to acknowledge competence, including ways of supporting students to name one another's competence (video). Discuss how students are positioned with respect to ability, considering teacher rationale and pitfalls, and describe how "ability" is constructed (video).
7	Elaboration of acknowledging competence in the context of written feedback. Naming of specific patterns of oppression connected to written feedback. Reading about giving meaningful feedback (excerpt from Aguirre et al., 2013).	Notice and raise questions about features of sample written feedback, including purpose, how the feedback acknowledges mathematical competence, and ways of supporting student learning.
8	Elaboration of acknowledging competence through written feedback, emphasis on taking an asset-based perspective when solutions seem incorrect.	Draft written feedback for samples of student work. Characterize what specific students seem to know and understand, giving evidence and identify teacher moves to elicit/ probe children's thinking and acknowledge competence (video). Revise analysis of and plan to acknowledge children's competence (video, graded assignment).

*Note.* Classes 1 and 2 were in-person classes on the university campus, and Class 3 was held in-person at a cooperating elementary school. Classes 4 - 8 were conducted as asynchronous online modules due to the COVID-19 pandemic.

There are a few aspects of this work that I want to highlight. First, teacher candidates engaged with multiple representations and decompositions (Grossman, Compton, et al., 2009) of acknowledging competence across the course, adding layers of complexity to the practice over time. This offered opportunities for teacher candidates to develop nuanced understandings of acknowledging competence and to consider what acknowledging competence might look and sound like in different contexts. In other words, acknowledging competence was worked on in Sensemakers in way that resisted reducing the practice to a singular move or technique. A second point is that, despite not being able to continue small group sessions with fifth grade students after Class 3 due to COVID-19, teacher candidates still had multiple opportunities to practice engaging in components of acknowledging competence. For example, teacher candidates approximated the practice (Grossman, Compton, et al., 2009) of identifying specific examples of mathematical competence that a teacher could highlight in analyses of video episodes, including a graded analysis of children's competence. Additionally, teacher candidates practiced generating actual statements a teacher could make to acknowledge specific students' competence both in video-based scenarios and in commenting on students' written work. While these opportunities for practice were not fully authentic approximations of acknowledging competence in the space of day-to-day elementary mathematics teaching, they did allow teacher candidates to gradually take on and try out additional aspects of acknowledging competence. Moreover, teacher candidates did eventually have a more authentic opportunity to practice acknowledging competence in live interactions with students when leading a math discussion in their virtual field placements for Math Methods.

For the teacher candidates in this study, the bulk of direct work on acknowledging competence took place during Sensemakers. Acknowledging competence was not a named focus

for any class segments in Math Methods, although course instructors continued to draw on underlying ideas about how children are interactively positioned and made connections between areas of work in Math Methods and teacher candidates' previous work on acknowledging competence (e.g., acknowledging competence was listed as a strategy for shifting focus away from potentially distracting behaviors to disrupt racialized patterns of over-punishment). Thus, as other ideas and practices came into the foreground in Math Methods, acknowledging competence moved into the background. That said, acknowledging competence did return as an explicit area of work in connection to leading a math discussion, one of the major assignments in Math Methods. Teacher candidates were prompted to consider acknowledging competence in both their preparation for their discussion and in their analysis and self-appraisal of their enactment. For example, the following prompt was part of the discussion planning template:

**Considering how you might deliberately position particular students or make explicit particular kinds of competence to broaden the children's ideas about who and what is "smart" in mathematics:** Identify particular students whose competence and contributions you will be seeking to highlight, as well as reminders to yourself about the kinds of mathematical competence you will be seeking to highlight. How are you thinking about identities and status as you think about this?

(Math Methods Planning Template, 2020, bold in original)

In conjunction with these planning and analysis prompts, I specifically asked focal teacher candidates about their efforts to acknowledge competence in their math discussions during Round 4 interviews. Thus, although acknowledging competence was not as central or as explicit of a focus in Math Methods as in Sensemakers, there is reason to believe that teacher candidates' understanding of acknowledging competence continued to evolve over the course of Math

Methods, particularly as teacher candidates had opportunities to coordinate acknowledging competence with other aspects of teaching as they enacted a math discussion.

## **4.2 Initial Uptake of Acknowledging Competence**

During the Sensemakers course, focal teacher candidates readily adopted some aspects of acknowledging competence while taking up other aspects in more partial and selective ways. For instance, focal teacher candidates largely embraced the idea of broadening what counts as mathematical competence by highlighting more than right answers, but only partially took on a view of acknowledging competence as a strategic practice for disrupting racialized patterns in who is positioned as competent in mathematics. There was variation in what different teacher candidates emphasized, including one instance of a focal teacher candidate interpreting acknowledging competence in a way that distorted the intent of the course construct. Overall, teacher candidates gravitated towards the aspects of acknowledging competence that spoke to familiar notions of good teaching and general equity-oriented aims, which were not specifically attentive to race or racism. This created a scenario in which several teacher candidates appeared to learn acknowledging competence but did not meaningfully engage with the critical race cognizant premises, rationales, or techniques.

### ***4.2.1 Embracing General Equity-Oriented Goals***

In their initial uptake of acknowledging competence, teacher candidates were apt to embrace goals that spoke to the pursuit of equity, in general. By this I mean that teacher candidates adopted aims and language of promoting equity and focusing on student assets, but tended to do so *in the abstract*, without specifying the inequities they sought to disrupt or addressing issues of race and racism directly. Participants conveyed that they wanted to be



equity-oriented teachers and did not publicly object to course efforts to promote equity. Yet, the goals and ideas related to acknowledging competence that teacher candidates most readily adopted were those that could be framed as universal goods — good for all students, rather than specifically seeking to avert or disrupt racial inequities. This makes it seem as though general, not-specifically-race-cognizant conceptions of equity and aspects of acknowledging competence were more palatable to teacher candidates' existing sensibilities, evoking patterns of whiteness (Haviland, 2008; McIntyre, 1997; Picower, 2021).

**Broadening Mathematical Competence.** One illustration of this pattern of embracing the general equity-oriented aspects of acknowledging competence is teacher candidates' consideration of what competence a teacher might highlight. When interviewed towards the end of Sensemakers, all six focal participants spoke about learning to see the importance of acknowledging children's mathematical strengths, understanding, contributions, and practices beyond getting a correct answer. This connects to the general equity-oriented goals of broadening ideas about mathematical competence and adopting an asset-based perspective. Notably, teacher candidates tended to frame the goal of recognizing a broadened version of mathematical competence in general terms, as an aim for all students. For example, Margaret characterized acknowledging competence as follows:

I think in math we typically associate smartness with getting the answer quickly and if the answer was right or not, but *with acknowledging competence it's focusing on recognizing the other areas that students can be knowledgeable in.* Like understanding what the problem's asking or listening to others' ideas or, maybe like noticing something in the problem that other students haven't noticed yet. And so, I think it focuses on

affirming other students' contributions to the work that's being done *beside just the correct answer*. (Margaret, Round 2 Interview, 4/10/20, emphasis added)

Here, Margaret frames acknowledging competence as moving beyond conventional images of smartness in math (namely, speed and correct answers) and instead focusing other ways that children are knowledgeable, including mathematical practices like making sense of problems. This directly aligns with the asset-oriented stance and goal of broadening images of mathematical competence from the course construct of acknowledging competence, but it does so without attending to patterns in which students tend to be marginalized and excluded by a narrow focus on right answers.

Other focal teacher candidates similarly emphasized that acknowledging competence involves thinking more broadly than they might have otherwise about what it means to be “good at math” and being intentional about highlighting what students know and do well. Teacher candidates tended to speak about this as informing their approach to math teaching in general, without unpacking connections to addressing issues of race and racism. For example, Evelyn reflected:

I think that as a result of this work that we've been doing around the different videos, whether it's ours or scenarios we're watching, is that *it goes much farther beyond the right or wrong answer...*<sup>11</sup> And just those small steps that we might overlook as someone who knows how to do things, but they're actually like, they're important steps that are important to be affirmed with children. So certain processes or knowing, being able to explain someone else's thinking or explain your thinking in a way so other people understand it. Or understand someone else's ideas and how they're different from yours.

---

<sup>11</sup> Ellipses indicate places that an interview transcript has been edited for length.

Or understanding what a problem is asking. *Those aren't things that at the beginning of this I would've said, I would've been able to identify as like, "Oh that's part of being competent in math." But now, for sure.* (Evelyn, Round 2 Interview, 4/10/20, emphasis added)

In this excerpt, Evelyn lists aspects of mathematical competence beyond getting right answers that, following work in Sensemakers, she now sees as important to affirm with children. She includes mathematical practices like explaining and making sense of others' mathematical thinking. That Evelyn uses the word *affirm* (as opposed to, say, *developing* students' ability to explain) suggests that she already views children as engaging in these practices and now sees it as important to verbalize that and frame those practices as mathematically competent. Again, this directly aligns with the asset-based orientation of the course construct and with the course emphasis on purposefully recognizing many forms of mathematical competence to broaden what children see as "smart" in math, though there is no mention of racialized patterns.

Likewise, Alex characterized acknowledging competence as "acknowledging the things that lead to really good conversations about breaking things apart or seeing parts of something" (Alex, Round 2 Interview, 4/9/20), focusing on how children's contributions to a conversation can lend insight into mathematical ideas. Similarly, Rachael emphasized focusing on what children *do* understand, even if their final solution is incorrect, saying, "there's more than just the right answer that can determine whether or not a child is understanding what's going on. And they might have different understanding, they might understand parts of it" (Rachael, Round 2 Interview, 4/6/20). Each of these comments reflects uptake of the idea that acknowledging competence involves broadening images of mathematical competence beyond the conventional (i.e., beyond getting right answers quickly), as well as uptake of an asset-based orientation (i.e.,

focusing on what children know, understand, and can do). However, teacher candidates notably expressed these ideas in general terms, without addressing racialized patterns in how mathematical competence has been constructed or in teachers' tendencies to view children of color through deficit frames. It seems that thinking more broadly about mathematical competence and focusing on student assets resonated with teacher candidates' existing orientations towards equity, whereas explicitly naming and unpacking racialized patterns was more of a reach. This makes sense given that focal participants relayed having race evasive upbringings and that explicitly engaging with issues of race and racism was relatively new for them entering the teacher education program (Round 1 Interviews; see description of focal participants in Chapter 3).

Variation in focal teacher candidates' ways of articulating the goal of acknowledging more than right answers from an asset-oriented stance reinforces the point that teacher candidates filtered acknowledging competence through the lens of their existing beliefs and orientations. In some cases, looking beneath the surface of teacher candidates' comments revealed that they were still effectively thinking about answers as being right or wrong and making deficit-oriented assumptions about children of color. That is, even though it *sounded* like they took up the aim of broadening mathematical competence, some teacher candidates held onto their prior underlying views. For example, both Jason and Stacey's talk about what competence to highlight reflected traditional views of mathematics teaching (Munter et al., 2015), including persistent reasoning within the frame of right-vs-wrong answers. Here is an excerpt of Stacey's comments on how she was thinking about acknowledging competence at the end of Sensemakers:

Yeah. I've noticed, you know, they really do want you to recognize, like you said, competence. And even if it's *something that you normally wouldn't think of as being*

*competent*, like them just being able to understand the difference between a half rather than a whole. And maybe not in like the whole question. You know, like one of them, a kid had only looked at one of the boxes, still looking at his contribution as understanding the mathematical concept even though he might have gotten it wrong. But just really focusing in on what they are able to really understand, *even if they're getting the answer wrong completely* doesn't mean that they don't understand how to do it, *it's just they need maybe a little extra help* in understanding exactly what the question is asking and stuff like that. (Stacey, Round 2 Interview, 4/8/20, emphasis added).

Stacey's understanding of acknowledging competence here seems rooted in efforts to identify what course instructors want (i.e., a form of "pleasing the teacher"). Stacey refers to what "they" (course instructors) want, which challenges Stacey to see things that she "normally wouldn't think of as being competent" as competent. Stacey illustrates her point with an example from a course video ("a kid had only looked at one of the boxes"). From her comments, it seems that Stacey is grappling with how to reconcile the way she might normally view things with the new orientation that she perceives as desirable in the Sensemakers course setting. As with other teacher candidates, Stacey's reasoning about the goal of recognizing competence is framed in terms of students in general; racialized patterns in the construction of mathematical competence are not mentioned.

As Stacey endeavors to grasp onto the idea that acknowledging competence entails highlighting forms of competence beyond right answers, she continues to frame mathematical work as either right or wrong. Stacey emphasizes focusing on what children "are able to really understand, even if they're getting the answer wrong completely doesn't mean that they don't understand how to do it, it's just they need maybe a little extra help" (Stacey, Round 2 Interview,

4/8/20), pairing the possibility that a student knows “how to do it” with a characterization of that student as being wrong. It is as though Stacey is interpreting acknowledging competence as *overlooking* that a student is wrong in service of finding something positive to focus on, such as having the capacity to learn with “a little extra help.” While Stacey’s comments initially sound similar to Rachael’s point that right answers are not the only indication of student understanding (implying that teachers should look for and highlight understanding beyond right answers), the subtleties of Stacey’s talk signal some hesitance around the premise that children already exhibit mathematical competence that teachers should work to acknowledge and build upon. Further, Stacey implicitly conveys a view of mathematics learning as learning procedures (“how to do it”), more so than making sense of mathematical ideas, which evokes a traditional model of mathematics teaching (Munter et al., 2015) and differs from the underlying perspective of the course. Jason similarly emphasizes a procedural view of mathematics, saying, “acknowledging competence, I think, is about recognizing, you know, step by step what they [students] were thinking, what their process was” (Jason, Round 2 Interview, 4.9.20). Thus, even as all six focal teacher candidates conveyed that, in accordance with the course construct of acknowledging competence, they aimed to focus on what students know and can do and to acknowledge forms of mathematical competence beyond arriving at correct answers, Jason and Stacey’s comments suggest that teacher candidates could assimilate these ideas into their underlying views of mathematics teaching and learning without substantially altering their perspectives.

**Moving Beyond Praise.** Another aspect of acknowledging competence that focal teacher candidates embraced during the Sensemakers course was distinguishing acknowledging competence from praise. For example, teacher candidates recognized that while it might make children feel good to receive frequent, general praise (e.g., “Good job!”), part of the purpose of

acknowledging competence is to highlight *specific* ways that children are demonstrating mathematical competence to (a) shape children's ideas about what it means to be "good at math," (b) support the development of children's positive mathematics identities, and (c) support children's learning and productive engagement with mathematical concepts and practices. In their initial engagement with the course construct, teacher candidates appeared to recognize that acknowledging competence served different purposes than general praise, and therefore required a different set of moves and techniques. Notably, this is a distinction that remains in the space of considering what is good for children and for teaching and learning in general; teacher candidates could wholeheartedly embrace the goal of moving beyond praise without engaging with issues of race or racism. In addition, teacher candidates could layer the aim of naming specific mathematical strengths and contributions onto their existing inclinations to be "nice" and praise children without letting go of those prior practices.

This pattern of uptake is particularly evident in teacher candidates' responses to an online discussion thread about moving beyond praise from Sensemakers Class 4. For example, Evelyn connected acknowledging competence with providing quality feedback to distinguish it from general praise:

[Another teacher candidate's comment] made me think about in *Managing to Teach* how we had a discussion around feedback, and what it means to give students quality feedback. I remember [the instructor] talking about how "Good job!" might feel nice for a student to hear, but then it leaves some uncertainty on what exactly they did well to deserve that praise. Mathematics education is a space that it is specifically important for a teacher to go beyond praise with students, simply because there is a lack of students feeling competent in math. *Students need to know what they are doing well so that it can*

*be repeated, the verbal affirmations also benefit the rest of the class.* By identifying certain positive behaviors or strategies of a student it also makes the whole class aware of the strategy or method that they could also use to help themselves. (Moving Beyond Praise Discussion Thread, Sensemakers Class 4, emphasis added)

Evelyn indicates that acknowledging competence, like quality feedback, should specify what students are doing well to support individual and collective learning. Moreover, Evelyn suggests that the specific naming and highlighting techniques of acknowledging competence are especially important in mathematics to counteract patterns of children forming negative mathematics identities.

Other teacher candidates similarly picked up on the idea that acknowledging competence, in contrast with general praise, should concretely support children's mathematical learning and sense of themselves as capable doers of mathematics. For example, Rachael echoed Evelyn's point that while "it may be nice for students to hear praise, it really isn't productive in the classroom as it doesn't always lead to a concrete understanding of what the student did that was good and lead to more of that behavior" (Moving Beyond Praise Discussion Thread, Sensemakers Class 4). Rachael also agreed that "Math is a subject that can feel [*sic*] many students feeling incompetent. Students need specific and explicit affirmations that what they are doing is correct and why it is correct so that they can continue to do those things" (Moving Beyond Praise Discussion Thread, Sensemakers Class 4). Thus, early in the math teaching course sequence, teacher candidates connected acknowledging competence to areas of learning from other teacher education courses in a way that supported distinctions from general praise. These distinctions served to refine teacher candidates' vision of what acknowledging competence entails, namely highlighting and affirming specific mathematical strengths and contributions.



However, teacher candidates construed this emphasis on specifics as being generally good for all students; they did not engage with ways that race and racism might impact children’s learning of mathematics or development of positive mathematics identities (cf. [Varelas et al., 2012](#)).

Teacher candidates also distinguished the purposes and techniques of acknowledging competence from praise by considering implications for student motivation and sense of belonging, though again, these implications were largely framed in general terms. Several teacher candidates made the point that praise creates a dynamic where children are aiming to please the teacher, rather than being intrinsically motivated to do things for themselves. For instance, Margaret commented that in contrast to general praise, “when students are given affirmation for the things they do well, it fosters a self-satisfaction that they are valuable and that their contributions matter, no matter how big or how small” (Moving Beyond Praise Discussion Thread, Sensemakers Class 4). Alex extended this line of thinking, pointing out that teachers’ use of praise can differentially impact children’s sense that they are valued and seen in the classroom:

Praise is either given to the student, or it is not. The absence and presence may carry equal weight with respect to feeling acknowledged vs. invisible. Praise perpetuates the oppression cycle by determining who will be receiving it, vs who will be receiving the absence of it.” (Moving Beyond Praise Discussion Thread, Sensemakers Class 4)

By considering the impact of praise on who feels acknowledged and who feels invisible, Alex demonstrates attention to an important equity-oriented rationale for acknowledging competence — constructing a learning environment where all students, especially students who might otherwise be marginalized in mathematics, are included and valued. Yet, although Alex connects

praise to “the oppression cycle,” they do not directly<sup>12</sup> name *racialized* oppression. Thus, it could be that Alex is embracing notions of inclusion and equity that evade consideration of race and racialized patterns. Similarly, Margaret’s emphasis on conveying to students that “they are valuable and their contributions matter” and Evelyn and Rachael’s stress on counteracting tendencies for children to think they lack mathematical competence indicate commitments to fostering mathematics classrooms that are *generally* inclusive. Though teacher candidates seem to have made sense of acknowledging competence as a practice that is broadly equity-oriented, they did not explicitly tie acknowledging competence to disrupting racialized patterns, at least within the space of this discussion thread.

Given that teacher candidates did not articulate race cognizant ideas or rationales in their comments about moving beyond praise, one might wonder what that meant for their initial attempts at acknowledging competence, particularly with students of color. I found that teacher candidates’ early approximations of acknowledging competence, like their comments in the discussion thread, reflect distinctions from praise that remain in the realm of generally good, equity-oriented teaching practices. This is evident in a graded assignment for Sensemakers in which teacher candidates were tasked with analyzing a video episode and scripting statements they might make as the teacher to acknowledge individual children’s competence. In teacher candidates’ scripted plans to acknowledge competence, they employed strategies such as specifically describing what a student did well and explaining why something a student said or did was important in mathematics or for the group’s collective understanding. For example, one of Stacey’s statements read, “Kalvin, that was a really clear explanation of Momadou’s solution.

---

<sup>12</sup> Many of the data excerpts presented in this chapter include examples of what I am calling *indirect race talk* and *race evasive discourse*. I take up these patterns at length in the next chapter, which focuses on teacher candidates’ discourse about race and racism.

Understanding and being able to explain other people’s solutions is part of being a good mathematician” (Stacey, Analyzing Competence Assignment, 3/3/20). While the specific phrasing of Stacey’s statement may seem a bit wordy or clunky, it demonstrates an effort to highlight a specific way that a student showed mathematical competence (understanding and explaining other people’s solutions) that goes beyond having a correct answer.

This was true across focal teacher candidates’ submitted assignments — teacher candidates drafted acknowledgements of specific student strengths and contributions rather than planning to offer general praise. This was a graded and relatively structured assignment, which I think is significant for two reasons. First, there was little opportunity for teacher candidates to offer a race cognizant rationale for the acknowledging competence statements they scripted; it is possible that teacher candidates *were* considering children’s racial identities and broader racialized patterns but did not have a way to indicate that within the assignment template. Second, even if teacher candidates were thinking about acknowledging competence as a form of praise, they may have tailored their work to meet course instructors’ expectations (this issue is discussed in a section on social desirability in Chapter 3). Nevertheless, it is noteworthy that almost all of the instances I coded as “not quite acknowledging competence” fell under the category of other moves and practices that math teachers would likely use in conjunction with acknowledging competence (e.g., eliciting student thinking, orienting children to each other’s ideas, and orchestrating talk turns). In other words, the areas where focal teacher candidates’ early approximations of acknowledging competence diverged from the course construct seemed to reflect attempts to coordinate acknowledging competence with other mathematics teaching practices rather than conflation of acknowledging competence with praise.

Moreover, whether or not their assignments reflect a genuine commitment to move beyond praise, teacher candidates *did* successfully identify specific mathematical contributions made by children of color in the video. Considering well-documented tendencies for educators to reproduce deficit narratives about children of color in mathematics (e.g., [Battey & Franke, 2015](#); [Martin, 2009](#); [Martin et al., 2019](#)), this is not trivial. It seems that, at least in the instance of this structured assignment, focal teacher candidates were able to employ general equity-oriented techniques to functionally disrupt racialized patterns in deficit framing. This certainly does not imply that focal teacher candidates would continue to do so outside of the assignment structure or in other circumstances, but it does demonstrate the *possibility* of white teacher candidates learning to resist deficit narratives and highlight the mathematical strengths and contributions of children of color.

To summarize, as evidenced by Sensemakers course work and interviews, focal teacher candidates at least initially took up several aspects of acknowledging competence as defined in the course. Namely, focal teacher candidates embraced viewing mathematical competence as more than right answers, focusing on student strengths and assets, naming specific forms of mathematical competence (in contrast with general praise), and the purposes of supporting children's learning and positive mathematics identities. Importantly, the goals, methods, and purposes of acknowledging competence that teacher candidates adopted most readily were those that spoke to general, non-race-specific commitments to equity and inclusion. This makes clear that focal teacher candidates' initial uptake of acknowledging competence is not a straightforward case of broadly successful learning; instead, focal participants' engagement with issues of race and racism tied to acknowledging competence was selective and partial. I tackle this pattern directly in the next section, where I examine the extent to which focal teacher

candidates initially took up acknowledging competence as a site for reasoning about race and racism and taking deliberate action to disrupt racialized patterns in math classroom interactions.

#### ***4.2.2 Varying Uptake of Race Cognizant Purposes***

One place where teacher candidates' uptake of acknowledging competence tended to diverge from the course construct was with articulating purposes for using the practice. Although, as described above, teacher candidates did take up some of the purposes for acknowledging competence laid out in Sensemakers, they were less consistent about engaging with purposes that made explicit links to issues of race and racism. Teacher candidates often characterized acknowledging competence as a universal good, a "best practice" for all students and circumstances, thereby avoiding direct mention of racial groups or racialized patterns. That said, underlying differences in the ways that focal participants conceptualized racism and the social construction of mathematical competence led to two distinct patterns of uptake: one reflecting aspects of color-blind ideology (Bonilla-Silva, 2018) and the other being more aligned with race cognizance (Frankenberg, 1993) and the course construct of acknowledging competence. Thus, there was variation in the extent to which focal teacher candidates embraced acknowledging competence as a strategic practice for disrupting racialized and gendered patterns in how children tend to be positioned in mathematics classrooms.

**Ideologically Race Evasive Uptake.** As noted above, some of the purposes for acknowledging competence put forward in Sensemakers that teacher candidates largely took up included broadening ideas about mathematical competence and supporting children's academic identities,<sup>13</sup> or helping children to see themselves as competent and capable learners, thinkers,

---

<sup>13</sup> In the Content Learning and Identity Construction (CLIC) framework, authors Varelas, Martin, and Kane (2012) distinguish between *disciplinary* identities (students' identities as doers of disciplines, like math and science) and *academic* identities (students' identities as participants in academic tasks and classroom practices). Here, I follow

and doers of mathematics. In Sensemakers, these purposes were presented in conjunction with the idea that teachers should actively pay attention to how children are interactively positioned relative to storylines about mathematical and academic competence, looking out for patterns of marginalization, particularly along the dimensions of race, gender, class, language, and ability status. Acknowledging competence was thereby framed as a strategic and deliberate practice requiring attention to children's social identities (especially racial identities) for intervening on local status hierarchies and larger exclusionary patterns in who is recognized as competent in mathematics. However, some teacher candidates took up acknowledging competence as a means to broaden images of mathematical competence and support children's academic identities in general *while evading* meaningful consideration of children's identities or the import of broader racialized patterns. In other words, some teacher candidates assimilated acknowledging competence into race evasive frameworks. For example, Jason framed paying attention to student positioning and acknowledging competence as ways to generally support students socially and to foster students' willingness to participate:

**Jason:** If a student is positioned in relation to the teacher where they are not particularly close with the teacher or they are intimidated by the teacher, they are going to be less willing to seek help when they need it, they're going to be less willing to reach out for support or they're gonna also be less willing to participate if the teacher asks them to do something at the board in class or to share a solution to a problem or something. So that's one example, of students in their positioning to their teacher. And students in, you know, in regard to their positioning to each other, if students are [pause] at a disadvantage, if they are, you know, intimidated by their classmates or they don't feel connected with

---

course instructors' use of *academic identity* as an umbrella term for both children's identities as participants in school and as learners and doers of mathematics.

their classmates they're going to be less eager to present in front of them. But they're also going to be less eager to respond to them, give feedback or support. So, yeah, positioning is—

**Rosie:** And so, if a teacher were to choose to work on acknowledging competence in that sort of scenario— do you see acknowledging competence as a way to kind of encourage greater participation or more, just to kind of motivate—?

**Jason:** Yeah. So, I mean, if we can acknowledge competence as educators, then hopefully we can improve our relationships with our students and we can put them in a better position in relation to us. And understanding how to do that delicately so we don't damage their relationships with their peers. Don't position them as more successful, more intelligent, more academically inclined or something, than their peers. (Jason, Round 2 Interview, 4/8/20)

Jason noticeably does not mention children's social identities or broader racialized or gendered patterns in how people tend to be positioned in school or mathematics as salient considerations. Instead, he seems to be incorporating concepts of positioning and acknowledging competence into his existing ways of thinking about supporting students' academic identities given the social and emotional dynamics of classroom participation that all students navigate.

Interestingly, when asked directly whether he saw acknowledging competence as being connected to issues of race and racism, Jason replied, "Definitely, yeah." However, upon closer examination, it becomes clear that the way that Jason understands racism (at least at this time point) is focused on overt bias and discrimination and does not entail reckoning with nuances of specific and patterned racialized experiences in math classrooms (cf. Martin, 2006). For instance, Jason explains:

I definitely think that acknowledging competence has to do with race and racism *because subconsciously or consciously, you know, we might, educators could acknowledge competence to specific demographics*. They could completely ignore, you know, minorities, which is going to affect those students individually and then it's part of a larger pattern of racism in the education system. So, yeah, making sure that we are trying— that we're being sensitive to where are students are coming from but also that *we're trying to, you know, assign competence to each of our students not just, you know, our favorites or the demographics that we're most familiar with*. (Jason, Round 2 Interview, 4/8/20, emphasis added)

Although Jason uses the language of “a larger pattern of racism,” which might suggest reasoning about racism as structural and systemic, the examples he offers indicate a primarily individualized understanding of racism. He suggests that teachers might exhibit bias in differentially acknowledging the competence of “specific demographics” and ignoring “minorities.” I interpret Jason’s comment here as avoiding direct mention of whiteness and implying that white teachers might preferentially acknowledge the competence of white students. Importantly, the way that Jason indicates a teacher would avoid contributing to patterns of racism is by universally “assign[ing] competence to each of our students” and “not just, you know, our favorites or the demographics that we’re most familiar with.” In other words, Jason views acknowledging competence as a good for all students, a practice that should be universally and consistently applied. This evokes an ideal of equal treatment regardless of social identity, which is central to color-blind ideology and the frame of abstract liberalism (discussed in Chapter 2; S. A. Annamma et al., 2017; Bonilla-Silva, 2001, 2018). It also runs counter to race cognizance as defined by Frankenberg (1993), which entails grappling with and addressing the



specificity of racialized experiences. Thus, even as Jason adopts some parts of the course framing of acknowledging competence, like recognizing aspects of mathematical competence beyond right answers and supporting students to see themselves as capable learners and class participants, he evades the salience of specific racialized patterns in children's experiences as mathematics learners and does not take up the purpose of working towards the disruption of such patterns. Furthermore, Jason simplifies reasoning about issues of race and racism in connection with acknowledging competence to a matter of individual teachers avoiding straightforward racial bias and discrimination. This illustrates a pattern of taking up acknowledging competence in partial and selective ways, often eliding race cognizant aspects of the course construct.

Like Jason, Stacey and Alex framed acknowledging competence as a practice that is generally beneficial for all students. Stacey related acknowledging competence to helping children "find their competence," explaining, "it's kind of being in tune to the students and kind of where, you know, their normal incompetency that they would feel would lie and then kind of focusing in on that when you can with each student" (Stacey, Round 2 Interview, 4/8/20). While Stacey envisioned using acknowledging competence in ways that are attuned to individual students, this attunement did not seem to include reasoning about children's social identities, status hierarchies, or larger patterns of marginalization in mathematics. Similarly, Alex characterized acknowledging competence as a means to establish classroom norms of listening to one another. Alex said:

I think that teaching children to acknowledge competence is huge. And I think that that kind of goes along with the norm-setting of hearing each others' thinking and the importance of that. I think that some kids are so quick — I see this everyday — some kids are so quick to shut the others down. And even some people are so quick to shut

other people down that they never listen to hear what they're actually saying or thinking. And, yeah, so I think acknowledging competence lets us frame things more positively also in our interactions with students or with anybody. (Alex, Round 2 Interview, 4/14/20)

Like both Stacey and Jason, Alex connects acknowledging competence to supporting students to navigate broadly applicable social and emotional aspects of participating in math classrooms. Alex also portrays acknowledging competence as a general form of positive framing to use “with students or with anybody.” Again, absent here is any mention of how children’s specific social identities or broader patterns in the social construction of mathematical competence might inform or motivate a teacher’s use of acknowledging competence.

As with Jason, when directly asked later in the same interview<sup>14</sup> whether they saw acknowledging competence as connected to issues of race and racism, both Stacey and Alex responded affirmatively. Also like Jason, the ways that Stacey and Alex elaborated on how race and racism were relevant to acknowledging competence revealed racial views that stood in contrast to the discourse of race cognizance and course framing of acknowledging competence. For example, although Stacey names a specific racialized pattern with respect to the recognition of mathematical competence and indicates that she intends to counter that pattern, she minimizes the import of continuing racism, invoking a central frame of color-blind ideology (Bonilla-Silva, 2018). Stacey says:

---

<sup>14</sup> I deliberately crafted the Round 2 interview protocol to include multiple open-ended questions about acknowledging competence before direct questions about connections to issues of race and racism. I anticipated that teacher candidates would pick up ideas and language that I introduced in my questions, and I wanted to first elicit how teacher candidates characterized acknowledging competence in their own words. This provided insight into whether teacher candidates independently brought up issues of race or racism as relevant considerations in acknowledging competence.

Because especially, you know, African American, especially males, they're looked at as not being competent and, you know. Or I remember watching some of those videos and seeing how some of, you know, the African American students would seem to be acting out or not what we would necessarily think of as behaving accurately in the class. And so, I feel like that is definitely, you know, a view that a lot of teachers and other people have. And so, focusing in on their competence and showing, you know, that they are capable of it and *it's not the color of their skin or the language that they're using*. And then, just really helping them to see as well that *they can do it* and showing other students that they can do it. (Stacey, Round 2 Interview, 4/8/20, emphasis added).

Here, Stacey suggests that by acknowledging competence, a teacher could show African American students that it is “not the color of their skin” that is inhibiting their mathematical competence. In emphasizing a “you can do it” mindset and discounting the relevance of “skin color,” Stacey endorses the color-blind myth of meritocracy (Bonilla-Silva, 2018) which both minimizes and obscures the role of racist ideologies, practices, policies, and historical legacies in potentially making African American students, “especially males,” be perceived by others as not competent or driven in math. This runs counter to a race cognizant understanding of racism as persistent and endemic in U.S. society. Moreover, while the idea of showing African American students that “they can do it” may sound like a deliberate effort to disrupt a racialized pattern (calling into question my characterization of Stacey taking up acknowledging competence as a universal good), I see it as consistent with Stacey’s interpretation of acknowledging competence as supporting each student to “find their competence.” Nothing that Stacey says in this excerpt contradicts a view of acknowledging competence as beneficial for all students. It just seems that when acknowledging competence for African American students, Stacey will take into account

the likelihood that African American students bring or have encountered negative views of their mathematical competence. This contrasts with the course construct of acknowledging competence, in which intervening on status hierarchies and disrupting racialized patterns are central purposes, rather than an afterthought or special consideration when applying a general practice with a particular group of students.

Alex similarly maintains a view of acknowledging competence as a universal good by positioning racialized patterns as an additional consideration for particular circumstances. For example, when elaborating on their view that acknowledging competence is “absolutely” related to addressing issues of race and racism, Alex said the following:

If there’s a teacher that’s modeling what it looks like to acknowledge competence in a lower socioeconomic area, which is disproportionately Black, and the crime is disproportionately high, when students have opportunities to understand competence and acknowledge it, they can learn to apply that to other areas of life. And this actually, it seems like it’s just a foreign concept from what a lot of the students seem to be bringing into the classrooms... And so as far as how it all relates to race and racism is that I think, by positioning certain students to contribute in ways that maybe are inconsistent in their classrooms or in their just observations in life, seeing each person being positioned as a capable learner or as a competent learner and like validating all contributions can teach them so many huge things, life-skills-wise, without actually like blatantly doing that.

(Alex, Round 2 Interview, 4/14/20)

Notably, Alex speaks here in conditional terms — *if* Alex is thinking about teaching a predominantly Black area, *then* acknowledging competence seems useful for re-positioning “certain students” in ways that contrast with their prior experiences. This suggests that issues of

race and racism are only relevant for communities of color, which contrasts with the race cognizant premise that white people and whiteness are very much bound up in processes of racialization and the construction of race and racial hierarchy (Frankenberg, 1993).

In addition, Alex relies on concerning deficit-oriented assumptions about children and communities of color, suggesting that acknowledging competence is a “foreign concept” that is “inconsistent in their classrooms or in their just observations in life.” Although Alex does not explicitly say that communities of color do not position children as capable learners, Alex’s specification of a context “which is disproportionately Black” and allusion to “certain students” implies an assumption that Black children will not have prior experiences with acknowledging competence, in or out of school. This could be interpreted as an instance of cultural racism, a central frame in color-blind ideology (Bonilla-Silva, 2018), that contradicts a race cognizant commitment to anti-racism. Furthermore, I would argue that with these comments, Alex is implicitly positioning acknowledging competence as a good that white and socioeconomically advantaged children already have experience with and that should be extended to Black and socioeconomically disadvantaged children. In other words, Alex is framing acknowledging competence as a universal good that conditionally requires consideration of race in order to provide equal access to that good. This runs counter to race cognizance and the course construct of acknowledging competence by positioning whiteness and white experiences as a standard of comparison (Martin, 2009b) and by conveying generalized deficit-oriented views of people and communities of color. The course construct, in contrast, is expressly asset-oriented and premised on the notion that it is *teachers* who need to actively learn to see and highlight the mathematical competence of children of color. Thus, instead of indicating aligned uptake of acknowledging competence, Alex’s comments on the relevance of race and racism, like those of Stacey and

Jason, actually reflect significant differences from the course construct in terms of underlying racial ideology and conceptualizing the purpose of the practice.

**Closer Alignment with Race Cognizant Premises and Rationales.** Focal teacher candidates Margaret, Evelyn, and Rachael demonstrate a different pattern of uptake with respect to purposes for acknowledging competence. While each of these teacher candidates exhibited partial uptake in some ways (e.g., portraying acknowledging competence as a universal good until pressed to consider connection to race and racism), they also demonstrated understanding of important underlying premises and rationales for the course construct. For example, although Margaret initially focused on broadening children’s ideas about mathematical competence and positioning students in positive ways as general goods, she later conveyed a fairly nuanced understanding of how her own white identity could impact who and what she views as competent. After stating that she sees issues of race and racism being related to acknowledging competence “because it relates who we see as more competent and abled” and “those patterns are just ingrained into our society,” Margaret elaborated:

If I’m a white teacher and there’s a white student, I’m able to identify with them more and see their ideas as more, like contributive to the class. But if a student is different than me, I might be slower to see it from their point of view if they aren’t always positioned as being a smart contributing student to the class... Students who you identify with have maybe been brought up similarly to yourself. And so, I don’t know even where we talked about this, but yeah, the students who maybe have similar ways of going up and behaving, you identify with those more, but students who maybe behave differently or have been brought up differently, you’re quicker to like dismantle those behaviors

because they're not consistent with your own, or something like that. (Margaret, Round 2 Interview, 4/10/20)

In this comment, Margaret recognizes that racialized patterns of socialization (i.e., how people of given racial identities tend to be “brought up”) can subtly shape how teachers view and respond to students. This goes beyond Jason’s notion that teachers might disproportionately acknowledge the competence of “specific demographics” (i.e., demonstrating clear racial bias) by tracing the influence of living in a racialized society into micro-level classroom interactions; it is not just that teachers might exhibit bias (consciously or unconsciously), but that teachers’ interpretations of children will always be filtered through the lens of that teachers’ identity and worldview. Margaret conveys an understanding that notions of competence and expected classroom behavior are socially constructed and reflect racially- and culturally-specific viewpoints. Thus, although Margaret does not use direct racial language (e.g., she refers to students who are “different than me”) and does not fully articulate the status hierarchies and racialized patterns that acknowledging competence might disrupt, her uptake of acknowledging competence reflects important alignment with course premises about the social construction of mathematical competence as well as race cognizant attention to whiteness.

Similarly, Evelyn and Rachael demonstrate understanding that teachers’ bias and racialized perceptions of student competence can perpetuate patterns where students of color are positioned as less competent in mathematics. Like other focal participants, Evelyn and Rachael initially talked about acknowledging competence in general terms, seemingly framing the practice as a universal good (i.e., they don’t independently bring up issues of race and racism as central considerations in their own understanding of acknowledging competence). Yet, when asked about the relevance of issues of race and racism, both Evelyn and Rachael indicated that

they saw acknowledging competence as a way to counteract racialized and inequitable patterns in who is considered mathematically competent. For example, Evelyn explained:

**Rosie:** So one question that I have, thinking about the larger focus of my study, is do you see acknowledging competence as something related to working on issues of race and racism?

**Evelyn:** I would say yes because more often than not it is people of color that are put into situations where they feel less capable or competent, like students specifically feel less competent in certain areas or have certain bias projected upon them by teachers and other people in their lives, so I think that acknowledging competency is a way to kind of touch that issue. I don't know what word I was looking for there, but I guess one of hopefully many ways to address that and just create more equity. (Evelyn, Round 2 Interview, 4/10/20)

Here, Evelyn positions acknowledging competence as a way to pursue and promote equity, particularly to counter the pattern of people of color being made to feel less capable or competent. On the surface, Evelyn's comment about students of color feeling "less competent in certain areas" might sound similar to Stacey's observation that African American students are often viewed as not competent. However, Evelyn's point that ideas about competence are *projected onto students* by teachers and others recognizes the continuing impact of racialization and racism on students of color in mathematics classrooms, whereas Stacey's message that students are capable regardless of their skin color minimizes the effects of racism and evokes a biological notion of race (i.e., that racial groups are defined by skin color and other physical characteristics rather than socially-constructed categories; [Kendi, 2016](#); [Taylor, 2004](#)).



Like Evelyn, Rachael frames acknowledging competence as a way of intervening on racialized patterns. Rachael explains why she thinks acknowledging competence is related to issues of race and racism, saying:

Because I think that in a lot of situations students of color, or of low SES, are automatically seen as lower than students who are not. And I think that that makes the act and the practice of acknowledging competence all the more important to kind of make sure that students are all seen as competent. Because I do think coming into the classroom there's that staggered playing field, like not everyone is seen as smart. And so, you know, *you need to do that work and interrupt that pattern to make it so that's not the case.*

(Rachael, Round 2 Interview, 4/6/20, emphasis added)

Rachael identifies a racialized pattern, that often students of color “are automatically seen as lower than students who are not,” and argues that acknowledging competence is important for interrupting that pattern and ensuring that “students are all seen as competent.” While the goal of positioning *all* students as smart could indicate a view of acknowledging competence as a universal good, Rachael makes clear that achieving that goal involves deliberate efforts to interrupt racialized patterns, not just equal treatment of all students. Rachael does not speak in particularly nuanced ways about how students might come to be positioned as more or less competent in mathematics (e.g., suggesting that students of color are “automatically” viewed as less competent evokes an understanding of racism as overt individual bias), but she does take up the deliberate, racial equity rationales of the course construct of acknowledging competence.

**Interpreting Different Forms of Race Evasion.** None of the six focal teacher candidates directly talked about race or racism in their initial characterizations of acknowledging competence, demonstrating a form of race evasion. Yet, all of them indicated viewing issues of

race and racism as relevant when they were asked directly. As the data excerpts in this section have shown, differences in teacher candidates' uptake of race cognizant purposes for acknowledging competence become visible when looking below the surface and considering the subtleties of what teacher candidates suggest acknowledging competence might accomplish. An important point here is that saying "race and racism are relevant" is not the same as taking up a race cognizant stance; race cognizance, along with the course construct of acknowledging competence, entails understanding race and racism in particular ways. Thus, it is possible for teacher candidates to take up acknowledging competence with attention to issues of race and racism in ways that diverge from race cognizant math teaching because of differing underlying racial ideologies. For instance, Jason, Stacey, and Alex suggested a vision of equally distributing acknowledging competence among all students, evoking ideals of color-blindness and abstract liberalism (Bonilla-Silva, 2018); I characterize this as *ideological race evasion*.

In contrast, Evelyn and Rachael framed acknowledging competence as a tool for addressing and countering specific racialized inequities, which reflects the critical and structural focus of race cognizance. Margaret was less explicit about acknowledging competence to disrupt racialized patterns but indicated an awareness that teachers' interpretations of children's competence are filtered through a racialized lens, which aligns with race cognizant premises. Thus, while Evelyn, Rachael, and Margaret often did not use direct racial language and at times framed acknowledging competence as a general good, signaling some conceptual evasion of the salience of race and racism, their underlying understandings of racism and the social construction of mathematical competence reflect aspects of race cognizance. I view their race evasion as more akin to a *discursive habit*, rather than overtly ideological.

I characterize these different patterns of uptake of acknowledging competence as different forms of race evasion because each of the teacher candidates could be more explicit about how they are thinking about race and racism and come into closer alignment with the race cognizant and strategic nature of the course construct. At the same time, I think it is important to distinguish between *discursive* race evasion that coincides with race cognizant premises and rationales (as with Margaret's understanding of social influences on teachers' perceptions of competence) and *ideological* race evasion that substantially diverges from race cognizant ideology and critical understandings of race and racism, such as with Jason, Stacey, and Alex. In other words, not all instances of race evasive and partial uptake of acknowledging competence reflect the same challenges and opportunities to support teacher candidates' learning of race cognizant math teaching. In the next section, I focus in on a particular instance where a teacher candidate's interpretation of acknowledging competence significantly altered the original intent of the course construct and raised worrisome possibilities.

#### ***4.2.3 Distortion of the Course Construct***

While most of the ways that teacher candidates interpreted acknowledging competence resembled the course construct at least in broad strokes, there was one instance that stood out as a significant distortion. One teacher candidate, Alex, initially interpreted acknowledging competence as a practice that could be used *either* for the purposes of equity and inclusion *or* to advance students' understanding of mathematics content, creating a false dichotomy. When asked how they were thinking about acknowledging competence towards the end of Sensemakers, Alex responded:

Okay, so I think that... Well, okay, so I'm this person who came back to school after a long time of not being at school, to be the person whose competence was acknowledged.

And I now am realizing that a bit more and it makes me wonder as I look back over the past 18 months since I've returned back to school, *which intentional moves are because of inclusivity, and which intentional moves are because I was content-correct.* And, for me, I think that that, I can see the up and I can see the downside of it. (Alex, Round 2 Interview, 4/14/20, emphasis added)

Reflecting on the experience of returning to school after several years of being in the workforce, Alex distinguishes between instances where their own competence as a student might have been acknowledged “because of inclusivity” as opposed to being “content-correct.” Alex goes on to name several “up sides” of acknowledging competence, such as teaching children to hear each other’s thinking and framing interactions positively, and contrasts this type of acknowledging competence with a “pseudo-acknowledgement of competence,” saying:

And when you come into it kind of acknowledging that I'm gonna look for this thing that this student does know, or the thing that this person is contributing positively instead of the pseudo-acknowledgment of competence where it's like, “I'm gonna acknowledge that you are adding a point” but not actually acknowledging competence. *Like I'm acknowledging you for equity, not for contribution or content.* And so I think that's, that's just something that I keep thinking about is what that looks like. (Alex, Round 2 Interview, 4/14/20, emphasis added)

Here, Alex furthers their distinction between acknowledging competence for equity-oriented purposes and acknowledging a student’s competence with mathematical content. Alex positions attention to mathematical content as “*actually* acknowledging competence” (emphasis added) in contrast to the “pseudo” version of acknowledging students “for equity.” This separates attention to mathematical content and attention to equity, which stands in direct contrast with the course

idea that teachers should look for and name examples of mathematical competence that children already demonstrate *as a core component of* a practice that pursues equity and inclusivity. In the course construct, the competence a teacher acknowledges should be genuine and mathematically meaningful, not an empty compliment or false praise (i.e., saying “Good job” in response to everything) — the equity-oriented purposes are consonant with supporting and advancing children’s understanding of mathematics content.

In the moment of conducting the interview, I wondered whether Alex was suggesting a distinction between superficial acknowledgement of student participation and genuine engagement with student ideas. To test this hypothesis, I probed what Alex meant by “acknowledging competence for equity” and tried to clarify whether Alex was thinking of instances where the teacher made a point of hearing from everyone for the sake of hearing everyone without really engaging with what students said. Alex’s responses suggest that rather than being concerned with whether or how teachers built on student contributions, Alex was instead preoccupied with *why* particular students were being called on. Alex said:

It’s not so much thinking about an incorrect example as much as it is *teaching people to hear everyone’s opinions regardless of accuracy or correctness*, but that we can still hear it, I guess. That’s how it comes off to me. It’s like, *we can still hear you because we’re taught that we’re supposed to*, but the content isn’t going to be recognized as competence but it’s also not going to be recognized as incompetent. So, I guess there’s kind of a gray area that I feel like maybe comes up sometimes... Or like, we’re going to hear them *because they are a minority group, or a oppressed group, or whatever*. And then sometimes also then framing it as, “this is why we hear from all—” like, “this is why it’s

important to hear from all ideas because we might still think this” or whatever. (Alex, Round 2 Interview, 4/14/20, emphasis added)

To be clear, at no point during Sensemakers did course instructors present acknowledging competence as a practice that prioritized hearing from everyone over or in opposition to highlighting genuine and accurate mathematical contributions. Instead, acknowledging competence was framed as way to deliberately re-position children from marginalized groups as mathematically competent by way of highlighting what children have done, contributed, or understood that *is* mathematically or intellectually important. Given this, Alex’s example of calling on a student because of their membership in a minority group or oppressed group likely signals some resentment toward and dismissiveness of race cognizant teaching practices.

Considering Alex’s implication that acknowledging students “for contribution or content” is *actual* acknowledging competence (as opposed to the “pseudo” version, acknowledging students “for equity”), it seems that Alex views consideration of students’ identities as members of marginalized groups as less legitimate and less important to acknowledging competence than mathematical content and accuracy. This could be an indication of investment in traditional models of mathematics teaching, where it is the teacher’s job to make sure everyone learns the correct answer or correct procedure (Munter et al., 2015). However, I think Alex’s particular interpretation of acknowledging competence goes beyond their concern about mathematical content. Given Alex’s white racial identity, their negative characterization of acknowledging competence “for equity” gives the impression of white backlash and resentment towards policies addressing racial inequity (Bonilla-Silva, 2001). In addition, Alex’s insinuation that people from marginalized groups are being acknowledged because of who they are rather than because they’re “content-correct” could reflect deficit assumptions about the mathematical abilities of

marginalized groups. That said, Alex’s own experiences of being different from many of their cohort members in terms of age, life experience, dis/abilities, and gender identity may also have made Alex particularly sensitive to being acknowledged in superficial ways. Alex may have projected their own worry that instructors were valuing hearing a variety of voices over genuine understanding of content onto the course construct of acknowledging competence.

Alex’s distortion of acknowledging competence is complicated by the particular context of Sensemakers 2020. Recalling that there was a mid-course shift from in-person class sessions to asynchronous online modules, it seems important to note that many of the course activities and assignments that develop the course construct of acknowledging competence relied on teacher candidates’ independent efforts to make sense of and engage with course materials. Alex mentioned being “very behind in almost everything,” at the outset of their Round 2 interview. Therefore, it is possible that Alex had not yet engaged with course modules that elaborate on purposes and techniques for acknowledging competence. That said, it is still the case that Alex interpreted whatever materials they *had* engaged with up to that point in way that significantly differed from the course construct of acknowledging competence. I raise this example to highlight an area of caution for teacher educators seeking to support race cognizant practice — teacher candidates may appropriate the *language* of a course (i.e., referring to the practice of “acknowledging competence”) in ways that fundamentally misinterpret course intent (cf. “appropriating a label” in Grossman et al., 1999, p. 16). This poses a risk of fostering unfounded antagonism towards race cognizant ideas and practices. For example, teacher candidates could dismiss course practices like acknowledging competence as not taking mathematical content seriously, despite that being a mischaracterization. Although, over time, Alex ultimately moved

past their distorted understanding of acknowledging competence, this scenario still represents a real and problematic possibility in efforts to promote race cognizant (math) teaching.

### **4.3 Trajectories of Uptake of Acknowledging Competence Over Time**

Acknowledging competence was a central strand of work in Sensemakers. Teacher candidates engaged with the concept and practice in multiple ways, including through scaffolded assignments. Then, after five intervening months, teacher candidates began Math Methods. Acknowledging competence was not a main focus, but towards the end of Math Methods, teacher candidates were tasked with preparing for, enacting, and analyzing a virtual math discussion with children from their field placement classrooms. This math discussion assignment called attention back to acknowledging competence and provided teacher candidates with an opportunity to enact the practice in live interaction with children. This raises several questions:

- How did teacher candidates' uptake of acknowledging competence shift or remain consistent over this time?
- What aspects of the initial course framing of acknowledging competence stuck with teacher candidates, and what aspects fell away?
- How did teacher candidates operationalize their understanding of acknowledging competence in preparing for, enacting, and analyzing their math discussions?

In this section, I will address these questions, making comparisons between focal teacher candidates' initial uptake of acknowledging competence during Sensemakers (characterized in the preceding section) and their uptake towards the end of Math Methods. In conjunction with the data already presented, I primarily draw on teacher candidates' Round 4 interviews. These interviews took place after participants had conducted their math discussion and included a substantial segment of stimulated recall (Rowe, 2009). This involved using teacher candidates'



lesson plans and video recordings of their enacted discussions to ground and stimulate their recollections and reflections. Thus, Round 4 interviews provide a window into teacher candidates' operational understandings of acknowledging competence through the context of their math discussion assignment.

My findings regarding teacher candidates' learning trajectories with acknowledging competence parallel my findings about their initial uptake of the practice during Sensemakers. In both cases, there is important ideological variation under the surface of seemingly similar uptake. All six of the focal teacher candidates indicated that acknowledging competence was something they wanted to do in their math discussions (that is, they took up acknowledging competence as a goal for their own teaching), and all but one framed acknowledging competence as an area for further growth (i.e., five teacher candidates recognized that their enactment of acknowledging competence did not yet fully reflect their vision of the practice). However, by the end of Math Methods, there was one set of focal teacher candidates that held a "thin" or flattened conception of acknowledging competence relative to the course construct, and another set that held a fairly well-aligned conception but wrestled with challenges of enactment. Even when teacher candidates said relatively little about their efforts to acknowledge competence in their math discussions (as with Jason and Margaret), there were important contrasts in their underlying views about race, racism, and mathematics teaching and learning that substantiated different learning trajectories. The two trajectories I identify here pose different possibilities and challenges for teacher educators aiming to support race cognizant math teaching.

#### ***4.3.1 Flattened Uptake Over Time***

Looking across data from Rachael, Stacey, and Jason, there is a pattern of teacher candidates taking up acknowledging competence over time in ways that reduce complexity of the

course construct, default to normalized and familiar practice, and allow explicit consideration of race and racism to fall away. This trajectory involves a considerable reversal for Rachael, who had initially demonstrated well-aligned uptake of acknowledging competence, including the race cognizant aim of disrupting racialized patterns in who is viewed as mathematically competent. For Stacey and Jason, their respective understandings of the practice appeared consistent over time, but their commentaries on their math discussions revealed important underlying differences from the course construct. I interpret this trajectory as a case of teacher candidates assimilating acknowledging competence into their deeply seated prior ways of thinking and doing.

With some distance from the focused assignments and discussions of Sensemakers, Rachael operationalized acknowledging competence as a universal good akin to praise. This contrasts with her initial uptake acknowledging competence, which reflected the race cognizant and strategic nature of the course construct as well as course emphases on moving beyond praise and highlighting specific mathematical strengths and contributions. This shift is evident in Rachael's first comments about acknowledging competence in her Round 4 interview. I had asked Rachael whether acknowledging competence was something she had thought about going into her math discussion, and if so, what she had planned to do or try. Rachael replied:

Yeah, I think *that is one thing that I absolutely love doing, is praising kids*. And so whenever— in a productive way, obviously, but I caught myself, which, I mean, I don't think it is bad, but *every time I talk to a kid*, I am like, "Your answer is so interesting. I really, I noticed that you used three different operations, can you explain to me how you knew you could use three operations?" and stuff like that. Every time I addressed a kid or every time I went to ask a question to a kid or whatever, *I always said like, "I noticed X,*

*Y, Z," and something that they did that stood out.* So I did really make that a priority. So yeah. (Round 4 interview, 12/9/20, emphasis added)

In this response, Rachael makes an immediate and unprovoked connection between acknowledging competence and praise. It seems that Rachael is aware that praise has been problematized in the teacher education program, as she talks about “catching herself” and “obviously” trying to praise children “in a productive way.” Nonetheless, Rachael doesn’t think praising children “is bad” — it is something that she “absolutely love[s] doing.” I interpret this as Rachael connecting acknowledging competence to her existing values and ways of being; Rachael likes praising children, so she fits acknowledging competence into that practice. In addition, the examples Rachael offers here, presumably as ways she sought to acknowledge children’s competence, portray the practice as something Rachael does in every interaction, all the time. Gone is the notion of deliberately acknowledging the mathematical competence of children from marginalized groups to disrupt racialized and inequitable patterns. Instead, Rachael universalizes the goal of noticing something positive in whatever it is a child has done or said. Thus, the version of acknowledging competence that Rachael settles on lets go of many of the subtleties and complexities of the course construct.

This flattened version of acknowledging competence is also evident in Rachael’s actual enactment. In an approximately 30-minute discussion, I tagged 25 instances of praise. For example, Rachel regularly responded to student contributions with comments like, “Yeah, nice job, awesome.” At times, Rachael paired general praise with a more specific observation about a student’s work, such as, “I noticed that you had three numbers and two different operations, that's so awesome.” Rachael also used the technique of flagging a contribution as particularly important, for instance, saying, “That's such a great explanation, Sadie, that was really clear. Can

someone else restate what Sadie just said? It was super important.” Yet, while Rachael demonstrated some efforts to use techniques of acknowledging competence from Sensemakers, her use of general praise was much more frequent and pervasive than what was encouraged by course instructors. The prevalence of praise in Rachael’s enactment especially stood out in the data set because the other teacher candidates used very little praise in their enactments.<sup>15</sup> I coded no instances of praise in Alex, Evelyn, and Stacey’s enactments, 5 instances in Margaret’s, and 9 instances in Jason’s (compared with 25 instances in Rachael’s). My impression from multiple viewings of their math discussion videos was that, apart from Rachael, teacher candidates were quite restrained in their use of praise. This makes sense given the emphasis on moving beyond praise in Sensemakers and makes Rachael’s shift towards tying together praise and acknowledging competence all the more notable.

The contrast between initial and later uptake of acknowledging competence is also evident in Rachael’s analysis and self-appraisal of her math discussion. One can imagine that Rachael might have had more complex intentions with respect to acknowledging competence but fell into habits of general praise during the enactment (i.e., perhaps her *conception* of acknowledging competence was still aligned with the course construct, but she struggled to enact acknowledging competence in conjunction with other aspects of leading a math discussion). However, this does not seem to be the case. In her written analysis and self-appraisal of her discussion, Rachael framed acknowledging competence as one of her strengths rather than an area she needs to develop. She wrote:

---

<sup>15</sup> The length of focal teacher candidates’ math discussion videos varied from 18 minutes to 45 minutes. However, it was not the case that there were more instances of praise in Rachael’s video simply because her discussion lasted longer. Alex’s video was the longest and had no instances of praise. Jason’s video was the closest in length to Rachael’s (the videos were 31 and 28 minutes long, respectively), and contained less than half as many instances of praise.

I think a lot of the time I acknowledged student's [sic] competence and contributions by noticing what they did and then involving it in a question or telling them that it's very helpful or interesting—I think this worked well but I also think I definitely could've been way more specific with my feedback and praise. (Rachael, Discussion Analysis)

Although Rachael recognizes that she could have been more specific, she does not separate acknowledging competence from praise or convey that her acknowledgement of competence was strategic (as opposed to being a general practice to use all the time). Rachael's lack of attention to children's social identities and larger patterns of marginalization in connection to acknowledging competence is particularly notable given that Rachael *did* explicitly attend to race and racialized patterns elsewhere in her discussion. She wrote in her self-appraisal that she "specifically thought about race and gender" when selecting students for the discussion, as she wanted the small group to be "as diverse as possible." From her Round 4 interview, I know that Rachael selected the one student of color in her field placement class, a Black boy, to be part of her small group. She was conscious of this student's racial identity when responding to a question he posed, explaining:

Like the one student of color was the student who asked, "Wait," after I just got done explaining what an expression is and what an equation is, he said, "Wait. What's an expression?" And I could have said, "Weren't you listening? I just explained that." I could hear a teacher saying that, like that is a classic teacher response. And especially, it's especially, I guess, not sensitive, but important for the — I'm sure that this one student of color was not the only student that had that question. I'm sure all the other students did as well. (Rachael, Round 4 Interview, 12/9/20)

Rachael relays that she deliberately opted to say, “that’s a great question” and to re-explain expressions rather so as not to reproduce patterns of positioning Black children as not paying attention. In contrast, Rachael appraised her use of acknowledging competence in general terms, writing, “I wanted to make sure that *everyone’s* ideas were being heard and being acknowledged! I also knew that I wanted *every student* to feel like their contributions mattered!” (Rachael, Discussion Analysis, emphasis added). Rachael operationalized acknowledging competence as making *all* students feel heard and valued, which lacks the nuance of considering larger racialized patterns that Rachael had articulated during Sensemakers and in other aspects of her math discussion. In other words, the version of acknowledging competence that seems to have stuck with Rachael over time and that she enacted in her discussion for Math Methods involves frequent praise and specific feedback as universal goods; the subtleties of considering racialized patterns in how mathematical competence is socially constructed and recognized seem to have fallen away.

Although Stacey and Jason did not demonstrate the same sort of reversal as Rachael in their uptake of acknowledging competence, their learning trajectories similarly involve a “thin” version of the course construct and assimilation of acknowledging competence into their prior ways of thinking and doing. Both Stacey and Jason appropriate surface features (Grossman et al., 1999) of acknowledging competence, such as attributing ideas or methods to specific students, while still operating with fairly traditional and hierarchical conceptions of mathematics teaching and learning (Boaler, 2002; N. Louie, 2020; Munter et al., 2015). For example, during her Round 4 interview, Stacey conveyed an image of acknowledging competence as connecting things that students did or said to pre-determined learning objectives. An important piece of context here is that for the math discussion assignment, Stacey submitted video of a portion of a full math lesson

that she had led in her field placement earlier in the term (this was accepted by course instructors as long as there was a clear segment of math discussion). For Stacey, this resulted in a video where students worked on and discussed two problems, one as the “Math Message” or warm-up, and one as an example for the main lesson. In both cases, Stacey followed discussion of the problem with a presentation of solutions and further explanation of targeted concepts and methods. Thus, Stacey enacted a conventional teacher-led lesson in conjunction with student discussion. Reflecting on her enactment, Stacey said:

In the competence thing, [my field instructor] and I both recognized that, I did bring a couple of the students into it like, "Oh, like Ahmed had showed us those boxes."

Throughout the lesson, I had showed different ways of finding the answer, so we did finding a common denominator, and then we looked at fraction boxes and fraction circles, *so we brought Ahmed's answer back into that*, and I was like, "Oh, like Ahmed did that fraction box." (Stacey, Round 4 Interview, 12/11/20, emphasis added)

In an instance where she felt she had acknowledged competence, Stacey essentially attached a student’s name to a representation she had already planned to show students. While this might have briefly drawn attention to Ahmed for doing something mathematically useful, Ahmed’s specific reasoning about or use of that representation was not the focus, making this a more surface-level use of acknowledging competence.

Recalling a student’s strategy and framing it as valuable *are* ways to acknowledge competence that align with the course construct, but Stacey’s purpose in doing this does not seem geared towards broadening ideas about mathematical competence, strategically re-positioning the student in question, or meaningfully taking up or building on the mathematical substance of the student’s contribution. Instead, it seems like simply an added bonus that Stacey

was able to connect the lesson for the day to something a child said. This is a substantially different orientation to children's mathematical thinking than the view advanced by Sensemakers and Math Methods, which emphasizes leveraging children's mathematical contributions to build collective understanding. Given that Stacey was using a "regular lesson" from the district curriculum, it is not surprising that her efforts at acknowledging competence are fitted to that context rather than attempting a departure into an open-ended mathematics discussion that builds on children's ideas. Moreover, I would argue that Stacey's decision to conduct her discussion within a regular math lesson indicates her greater comfort and familiarity with traditional teacher-directed math instruction.

In addition, Stacey's uptake of acknowledging competence during Math Methods reflects a "thin" version of the course construct with respect to the strategic and race cognizant nature of the practice. Much like she did during Sensemakers, Stacey portrays acknowledging competence as a universal good to be distributed equally to all students. Commenting on her efforts to acknowledge competence during her discussion, Stacey said:

I definitely recognize that I have to do that better, because I remember some things some students say, and so like during the lesson, I did bring it into to the lesson, "Oh, you know, Ahmed said this," but then I was like, *ah man, I didn't do that for every student* and I didn't write down what the students said, and I recognize that it's hard to remember what everybody had said, you know, and so I did try to focus on that and I did bring it into the lesson, but I do know that that's something I need to work on because, [cough] excuse me, even in my other lessons that I did, I just recognized, you do forget what people say, and *I don't wanna just single out some students* and have the other students feel like, "Oh, well, my answer must not have been right," or, "Maybe she wasn't



listening or something," so that's definitely something that I know that I need to work on.  
(Stacey, Round 4 Interview, 12/11/20, emphasis added)

Stacey indicates her goal of doing what she did for Ahmed (connecting something he said to the lesson) for every student. She also frames the possibility of highlighting the contributions of just some students as “singling out” students, rather than as potentially intervening on status hierarchies or larger patterns of marginalization. Stacey’s assumption that children will infer “my answer must not have been right” if they are not specifically acknowledged evokes the dynamics of traditional mathematics classroom, where the teacher is the ultimate authority on mathematical accuracy (cf. Dunleavy, 2015). In other words, in Stacey’s efforts to make sense of and enact acknowledging competence, she settled on a version of the practice that, on the surface, sounds like acknowledging competence but actually still retains traditional ways of thinking about mathematics teaching and learning.

This is evident in a lingering question that Stacey shares at the end of her Round 4 interview. She said:

So, let's say somebody has a completely wrong answer and nothing that they did was what I want, or see, again, stereotypes. *How to name students' competence when you can't see it*, I guess is a good way of saying that. A student who really is not getting it, who really, you know, like— how to see those little— 'cause I— [Course instructor] is so good at it. But just how to recognize the little things that they did do right, and to name their competence, I think is one thing that I'm not exactly sure. (Stacey, Round 4 Interview, 12/11/20, emphasis added)

Here, Stacey is continuing to think in terms of a right-or-wrong binary and positioning herself (the teacher) as the person in charge of making sure that students “get” the content, which

reflects a traditional model of mathematics teaching (Boaler, 2002; Munter et al., 2015). She implies that acknowledging competence (“recogniz[ing] the little things that they did do right”) is *in tension* both with what she sees in student responses and how she thinks about supporting student learning. Stacey’s vague reference to stereotypes raises the question of which students Stacey is imagining, and whether she’s implying that she struggles to recognize the competence of students of color in particular, or just students who are “really not getting it.” All told, it seems that Stacey’s existing ideas about mathematics teaching and learning persisted throughout the math teaching sequence and shaped her understanding of acknowledging competence in ways that departed from the course construct.

Similarly, Jason’s commentary on his math discussion reveals a traditional view of mathematical competence as a static trait that some people have and others lack (Boaler, 2002; N. Louie, 2017, 2020). When asked about his plans for acknowledging competence during his discussion, Jason relayed particularly wanting to engage a few students who he knows “like math” but are also “a little uncomfortable, like speaking or doing math in front of the entire class” (Jason, Round 4 Interview, 12/9/20). Jason wanted to support the participation of these students “so that they could build up some confidence there” (Jason, Round 4 Interview, 12/9/20). Jason reflected that he did call on these students and some of them participated, “but some of them were also just struggling and they *needed* to back away a little bit and let someone else take over” (Jason, Round 4 Interview, 12/9/20, emphasis added). Setting aside that Jason is primarily talking about facilitating participation<sup>16</sup> here, it is noteworthy that Jason characterizes

---

<sup>16</sup> Based on Jason’s response, it seems like he could be reducing the practice of acknowledging competence to offering children opportunities to participate (i.e., conflating calling on a student with acknowledging their competence). However, in both his Round 4 interview and his written discussion analysis, Jason reflected that he did not do well with acknowledging competence in way that differentiated the practice from facilitating participation. He said, “it’s very easy to watch something and to acknowledge competence, but planning ahead of time, it’s very hard, or it was for me, to create opportunities to acknowledge competence” (Round 4 Interview, 12/9/20). Jason’s reference to “watch[ing] something” evokes assignments in Sensemakers where teacher candidates watched videos

some students as “just struggling” and *needing* to “let someone else take over.” This suggests that Jason does not view these students as capable of productively working through the problem, and instead looks to other students, who are presumably more confident and adept, to “take over.”

There is further evidence that Jason implicitly sorts students into those who are mathematically capable and those who are less so in his explanation of how he thought about building or leveraging relationships with students during his discussion. Jason said:

I was thinking about which students I could call on to, *who I knew were competent with math*. If I needed to move the lesson along and we were getting stuck on a particular thing. I was thinking about *the students that I know to be assertive or mathematically competent* or eager to participate. Other times, I was thinking about *trying to bring the marginalized students up to speed* by getting them to engage, by asking them to do problems together in front of the class. So yeah, I think just thinking about how I wanted the discussion to unfold and who would be the best to call on to really lay the groundwork for the discussion, and then who can build it up after that, yeah. (Jason, Round 4 Interview, 12/9/20, emphasis added)

In this comment, Jason classifies students into two categories: those “competent with math” and “marginalized students.” Jason’s use of “marginalized” is ambiguous here. When I had probed his understanding of the term earlier in the interview, Jason indicated thinking about marginalization in terms of race, language, and dis/ability status, but also in terms of participation in mathematics. He said:

---

and scripted statements to acknowledge competence. I infer that Jason understood acknowledging competence as making such statements, not simply calling on students.

Even for the most privileged students, if they are struggling with math, that is another area where they can get where they too can be marginalized 'cause they are just— they're struggling with the math and they are not participating much. (Jason, Round 4 Interview, 12/9/20)

Thus, it could be that the “marginalized students” that Jason was trying to bring “up to speed” were students marginalized in and by mathematics, not necessarily students from historically marginalized social groups. It could also be the case that Jason is collapsing multiple forms of marginalization in a way that reveals deficit-oriented generalizations about the mathematical abilities of students of color, multilingual students, and dis/abled students (i.e., implying that “marginalized students” are both from historically marginalized social groups and “behind” in mathematics). Either way, Jason frames a subset of students as being “assertive” and “mathematically competent.” This contradicts core premises and purposes of the course construct of acknowledging competence. For instance, the course construct is built on the idea what people recognize as mathematical competence is socially constructed. Therefore, although math “ability has traditionally been constructed as a static trait that stratifies people into different “levels,” teachers can deliberately broaden what counts as mathematical competence and construct “ability” as multidimensional and dynamic. Moreover, course instructors explicitly framed acknowledging competence as an asset-oriented practice that takes as a given that children already exhibit forms of mathematical competence that can be highlighted and built upon. Jason’s implication that some students lack mathematical competence misses this key point.

It may seem that Jason’s uptake of acknowledging competence towards the end of Math Methods is not a flattened version of the course construct, but instead a distortion or significant departure. However, Jason made additional comments in his Round 4 interview that make

characterizing his learning trajectory more complicated. When asked what supported his thinking about race and racism in math teaching, Jason said:

I think one of the things which was really helpful was, and I don't think we have done this as much this semester, but it was definitely last semester where we were really, um, practicing acknowledging competence in our students because before, and I think in [another instructor's] class, it was— You know, it was, we were highlighting the differences between general praise and then specific praise, and then with [Sensemakers lead instructor's] class it was, okay, we're gonna take it a step further, and now it's not just praise, *it's distinguishing between praise and competence*, you know, praising our students who are doing something successfully, and then acknowledging competence when, you know, not just when our students answer a problem or give a solution to a problem correctly, but also whether or not they found a correct solution, whether they, you know, *what they did competently in their solution, whether it was correct or incorrect*. Breaking down specifically, it's not just the end game, it's not just the solution they provided, which is correct, *but it's also the process they took to get there*. So yeah, competence has been a big learning moment for me the past year, and that's helped me to think about how to get my students to participate, how to acknowledge my students' participation, how to make them, *help them feel like successful students and practicers of math*. (Jason, Round 4 Interview, 12/9/20, emphasis added)

Here, Jason conveys an understanding of acknowledging competence that shares some important features with the course construct. Namely, he distinguishes acknowledging competence from praise, emphasizes highlighting more than right answers, and connects acknowledging competence to fostering students' positive mathematics identities. In addition, although Jason

does not unpack or explain how work on acknowledging competence supported his thinking about race and racism in math teaching, the fact that he brought up acknowledging competence in response to a question about learning to attend to race and racism suggests that Jason, at least implicitly, saw some connection between children's racial identities, racialized patterns, and the practice of acknowledging competence.

This raises the question of how to reconcile Jason's apparent aligned uptake of some aspects of acknowledging competence with his underlying views on mathematics ability, which significantly diverge from the course construct. My thought is that, for the most part, Jason *sounds* like he has taken up acknowledging competence; he has, if nothing else, appropriated the language and surface features of the course construct (Grossman et al., 1999). The real differences emerge when considering *implicit* views of mathematics ability. Thus, my interpretation is that Jason, much like Stacey and Rachael, assimilated select aspects of acknowledging competence into his existing ways of thinking and doing. For Jason, this looks like paying attention to steps in students' processes rather than just right or wrong answers and planning to specifically name what students did well while operating with a traditional, static conception of math ability. This is a thin version of the course construct that dodges the complexity of viewing mathematical competence as socially constructed and the strategic goals of disrupting status hierarchies and larger racialized patterns.

#### ***4.3.2 Aligned Uptake with Obstacles in Enactment***

Considering the cases of Rachael, Stacey, and Jason, one might conclude that there is little hope for robust and well-aligned uptake of acknowledging competence in the long term. However, the trajectories of Alex, Evelyn, and Margaret suggest another possibility. Over time, these three teacher candidates demonstrated increasingly close alignment with the course

construct and they took up acknowledging competence as a central part of their own aims and efforts in leading a math discussion. In these cases, the challenge was less an issue of holding onto a complex vision of the practice, and more about coordinating acknowledging competence with other goals and considerations in the midst of enactment. I interpret these coordination challenges as largely to-be-expected difficulties in early approximations of mathematics teaching (Ball & Forzani, 2009). At the same time, the obstacles that these teacher candidates encountered in enacting acknowledging competence meant that race cognizant aims and intentions were backgrounded as other concerns took center stage. Thus, although Alex, Evelyn, and Margaret exhibited a trajectory of more aligned uptake of acknowledging competence, following through on race cognizant aspects of the practice in enactment remained a challenge.

Recalling Alex's initial distortion of acknowledging competence, which made a false dichotomy between equity- and content-oriented purposes, it is important to recognize that Alex's later uptake reflects a significant shift towards alignment with the course construct. By the end of Math Methods, Alex conveyed an understanding of acknowledging competence as a strategic practice for positioning students as valued contributors. Alex's discussion plan included direct consideration of students' race and gender identities and clear intentions to re-position students who otherwise might not participate or be viewed as mathematically competent. In response to the planning prompt about acknowledging competence, Alex wrote:

There are two students, white males, who are incredibly knowledgeable and who love sharing out. I aim to separate these two and pair them off with someone who shares less, then ask the less frequent sharer of the group (or the pair) to get us started. (Alex, Discussion Plan)

This suggests that Alex was thinking about acknowledging competence in relation to counteracting typical patterns of participation, which, in this case, includes two white boys sharing frequently. Of note here is that Alex is paying attention not just to who they call on for individual turns of talk, but *participation structures* like breakout groups and having a designated person report out. This suggests awareness of broader patterns of interaction in math classrooms, rather than isolating the source of inequities to moments or acts of bias, like Jason. That said, Alex seems more focused on planning *which students* they want to make sure get opportunities to speak, rather than thinking about what they might say as the teacher to acknowledge the competence of those students or highlight aspects of their contributions. When I asked Alex about their plans to make space for particular students to speak and to acknowledge their competence, Alex replied, “I don't think I really ever got there” (Alex, Round 4 Interview, 12/15/20). This may have contributed to challenges that Alex experienced during their math discussion in that Alex had to generate statements to acknowledge competence in the moment.

During their math discussion, Alex also ran into technical difficulties that made it challenging to follow through on plans to acknowledge competence. Alex's slides failed to load at one point and also posed distracting formatting issues when Alex was recording student ideas. In addition, Alex was navigating between multiple tabs and applications, including Zoom, on a single small laptop screen. Alex reflected on these in-the-moment challenges:

I was trying to position students to acknowledge each other's competence and that wasn't going very well. And when I was doing that, I was like, "Well, how else can I do this?" But also at the same time, I was just trying to deal with the technology. Yeah, I dealt with the slide not loading. I lost my Google Slides completely at one point and then I found them and still typed in Google Slides, so re-cycled through the whole thought process. I



can think of different ways that I could have possibly avoided some of the technology issues and how I would have revised the lesson, but in the moment dealing with things—  
No, I can't really think of anything. (Alex, Round 4 Interview, 12/15/20)

While Alex recognized that their efforts to acknowledge competence were not going as planned, their attention was taken up by technology issues. Later, Alex added, “I think in the moment, my focus was just making it through the lesson plan” (Alex, Round 4 Interview, 12/15/20). This evokes the “survival mode” often associated with beginning teachers (Lang, 2001).

Alex made another attempt to acknowledge competence with some closing statements at the end of their discussion. However, these statements were quite general. Alex said:

We heard from Beth, who had a strategy. We heard from Cameron, who had a strategy. Um, and Anthony and Sam and many other contributions as well who gave us a lot of information about adding and subtracting and multiples of nine. (Alex, Math Discussion Video)

Although Alex was clearly trying to recognize specific students' contributions, the statements Alex was able to generate in the moment did not really engage with the mathematical substance of students' ideas. Recognizing students' participation is certainly in the realm of acknowledging competence, but it does not quite achieve the goal of leveraging student contributions towards mathematical understanding. Thus, while Alex seems to *envision* a math teaching practice where they strategically acknowledge competence and position students as contributors to counteract racialized and gendered participation patterns, they are still working towards being prepared to enact such moves in the moment.

Similarly, Evelyn articulated intentions to acknowledge the competence of particular children during her discussion but had difficulties fulfilling those intentions in the moment.

Evelyn was especially focused on re-positioning students who were labeled as “lower” in math, given ability-based small groups in her field placement. Naming two students whose competence she had planned to purposely highlight, Evelyn explained:

Yeah, so I was particularly hoping to highlight the students that I had been getting the chance to work with one-on-one, or in their small group of two with me, because their voices aren't heard usually at all in the whole group, so I wanted to position them to the other students and to themselves as competent. (Evelyn, Round 4 Interview, 12/10/20)

In her written plan, Evelyn had also specified aspects of mathematical competence she would highlight. For example, Evelyn wrote, “Eloise is very talented in using images to represent fraction problems, her artistic ability is a competence, and her ability to use art to represent mathematics is a competence that I am seeking to highlight.” (Evelyn, Discussion Plan). These plans reflect course emphases on broadening what counts as mathematical competence and intervening on status hierarchies. It was unclear to me, however, whether race and racialized patterns were part of Evelyn’s thinking here. Evelyn noted that in her field placement, there was a subset of students who frequently participated in whole group, and this subset was “not a diverse range of students” and “not reflective of the demographics of the whole class” (Evelyn, Round 4 Interview, 12/10/20). When I probed Evelyn’s meaning, she affirmed that she *was* thinking about race as a dimension of disproportionate participation patterns, responding, “Yeah, I’d say race and gender specifically” (Evelyn, Round 4 Interview, 12/10/20). Thus, although Evelyn used race evasive language when discussing her plans, there is evidence that she was still taking up acknowledging competence as a means to intervene on racialized patterns.

Like Alex, Evelyn encountered some technical challenges that interfered with her efforts to engage particular students and acknowledge their competence. Evelyn explained:

So, some of the students that I, in my lesson plan had planned to try to attend to, I just— I had trouble with being able to view all of my students because of the slides were up and I just had my laptop so I couldn't see everyone, and also people not having their videos on, I just didn't know how to navigate that part, so. (Evelyn, Round 4 Interview, 12/10/20)

Because Evelyn was unable to see the students she had planned to highlight, she was unsure how to bring them into the discussion and acknowledge their competence. Evelyn ended up calling on volunteers, which resulted in a student named Cassandra sharing first. Evelyn explained that “Cassandra is one of my students who — she often is not very confident in her own math ability and will tell you she's not good at math and different things like that, so I was really happy that she volunteered to go first” (Evelyn, Round 4 Interview, 12/10/20). In other words, Cassandra’s volunteering presented an un-planned opportunity for Evelyn to re-position a student as mathematically competent. However, when Evelyn and I re-watched the video of her discussion during the stimulated recall portion of her interview, Evelyn realized that while she had made moves to orient other students to Cassandra’s thinking (e.g., she asked if anyone had questions for Cassandra), she had not done much to explicitly acknowledge Cassandra’s competence.

Evelyn reflected:

I'm wishing I would have done more commentary on Cassandra's stuff in that moment or push students to actually build off of her or comment on what Cassandra had done. But I think at the end, I kind of— I think at the end of everything, I kind of recapped what everyone shared. (Evelyn, Round 4 Interview, 12/10/20)

Similar to Alex, Evelyn made some concluding statements acknowledging students’ contributions to the discussion. Evelyn said:

Thank you everyone for participating. We saw a lot of important skills there and our different ways of solving the same problem. Um, Eleanor was able to repeat what Samuel was saying and you all shared your thinking beautifully. Amira and Isaac were paying attention and were able to ask questions, which is an important math skill to notice when you're like, "Hey! That doesn't make sense to me." And be able to ask it. And Tim was able to answer the questions and explain his thinking more. These are all important math skills. (Evelyn, Math Discussion Video)

Notably, while Evelyn does acknowledge specific mathematical skills that other students exhibited (e.g., explaining, asking questions), she does not name Cassandra here. This was likely an unintentional oversight but still may have inadvertently reinforced Cassandra's view of herself (and/or other students views of Cassandra) as not being "good at math."

I view this instance as illustrating two types of challenges for enacting acknowledging competence: (a) challenges in coordinating plans to acknowledge competence with the reality of which students are present and willing to participate on a given day and (b) challenges of noticing and holding onto specific examples of mathematical competence long enough to both think of something to say and to actually say it. Importantly, these challenges are neither particularly surprising for an early teaching experience, nor are they insurmountable. It is quite plausible that, with time and more opportunities for practice, Evelyn will get better at adjusting her plans and following through on acknowledging competence in coordination with other aspects of math teaching. Considering Evelyn's intentions to broaden images of mathematical competence, strategically re-position students, and disrupt racialized and gendered patterns of participation, Evelyn's trajectory of uptake of acknowledging competence reflects strong alignment with the course construct along with obstacles in early enactment.

Like Alex and Evelyn, towards the end of Math Methods, Margaret conveyed an understanding of acknowledging competence that aligned with the course construct and relayed challenges with enacting acknowledging competence in her math discussion. In preparing for her discussion, Margaret had three students in mind that she wanted to make sure to engage in the discussion and to acknowledge their competence. She recognized that getting one of those of these focal students to participate was a start, but was not sufficient, noting that she just framed their contribution as a “good equation” and “I didn't expand on their competence more” (Margaret, Round 4 Interview, 12/17/20). Thus, Margaret indicated that both calling on students and giving praise (like “good equation”) were distinct from acknowledging competence, reflecting subtleties of the course construct.

Additionally, in her commentary surrounding the video of her discussion during her Round 4 interview, Margaret emphasized that while she had intentions to acknowledge competence, she found it challenging to keep that goal in mind alongside other considerations while teaching. Specifically, she found herself focusing on facilitating participation to the exclusion of most everything else. In her planning, Margaret paid considerable attention to structuring participation and making sure that she heard from each of her students. She pre-recorded each student's name on a Jamboard, then moved the names to label ideas as students contributed. Ultimately, bringing students into the discussion and recording their ideas ended up becoming Margaret's principal objective during the enactment. Margaret reflected that when she is teaching, she is only really able to focus on a few things at a time. She said:

And I think in this instance, it was like, "Okay, participation, remembering to put their names down, and I don't know, how I'm calling on students." Those three things were in my mind and so then acknowledging competence and knowing which problems I'm

asking to students, and you know, they're all just sharing ideas, how can I get visual representations up? Like those things, totally not in my mind at those moments.

(Margaret, Round 4 Interview, 12/17/20)

Given that this was Margaret's first experience facilitating a whole class math discussion, it is not surprising that she struggled to coordinate her efforts to distribute turns and participation with other teaching practices, such as visually representing mathematical ideas and acknowledging competence. This math discussion offered an early opportunity for teacher candidates to recompose or integrate aspects of the work of elementary mathematics teaching that they had previously practiced separately, such as scripting statements to acknowledge competence in Sensemakers and rehearsing ways to record student ideas in a virtual discussion during Math Methods (Grossman et al., 2009). It makes sense that it would take time and additional practice to effectively integrate efforts to acknowledge competence with calling on students and recording their ideas. Thus, with respect to encountering to-be-expected coordination challenges in enactment, Margaret's trajectory of uptake of acknowledging competence parallels that of Alex and Evelyn.

One way that Margaret's case is relatively unique is that the specific racial make-up of her field placement appeared to pose an additional obstacle to enacting a version of acknowledging competence fully aligned with the course construct. Margaret's field placement was predominantly white with one Asian student, and this appeared to make the issues of race and racism that had been worked on in Sensemakers and Math Methods feel less relevant to Margaret's teaching situation. I asked about this directly during Margaret's Round 4 interview:

**Rosie:** I'm curious with a majority white class, like how — I would say a lot of the conversations in Math Methods have been focused on how students of color are

positioned or thinking about patterns tied to Black students or Latinx students. How are you thinking about race or racism, or are you thinking about that in this context where you're with mostly white students?

**Margaret:** Yeah, I feel like what I'm thinking about is their math identities and how they're positioned in math. And so, *I'm not thinking about race, but I feel like that could easily translate to race* just because students of color are positioned based on their math identities, which I feel like is tied to their race. Yeah, it's not on my mind, but I feel like it could be translated easily.

**Rosie:** So, like if you were in another context, that's something that you would think would connect to thinking about students' racial identities?

**Margaret:** Mm-hmm. (Margaret, Round 4 Interview, 12/17/20, emphasis added)

Here, Margaret states that she was *not* thinking about race and racism in relation to her discussion, but she could see how race and racism would be relevant in another context. In other words, it is not that Margaret *rejects* acknowledging competence as a strategic practice for intervening on racialized patterns, but that Margaret does not see those racialized patterns as being implicated in a predominantly white setting. This contrasts with both Alex, who named students' whiteness (and maleness) as a relevant dimension of classroom participation patterns that they sought to counteract, and Rachael, who paid particular attention to her interactions with the one student of color in the class. Notably, the one student of color in Rachael's class was Black and the one student of color in Margaret's class was Asian. Thus, Margaret's implication that the racialized patterns discussed in Sensemakers and Math Methods were less salient in her field placement could reflect recognition of the specificity of different racialized experiences.

For it is true that Asians and Asian Americans<sup>17</sup> *are* positioned very differently than Black people with respect to mathematical competence — the two groups occupy opposite ends of what Martin (2009b) refers to as the “racial hierarchy of mathematics ability.” Moreover, the stereotype that “Asians are good at math” poses substantively different challenges than deficit assumptions about the intelligence of Black children for a teacher seeking to intervene on status hierarchies and racialized patterns in positioning (Shah, 2017, 2019).

On the other hand, Margaret does not voice any reasoning that is specific to the one Asian’s student’s experiences or positioning. Instead, she frames her thinking in terms of students’ mathematics identities more generally, suggesting that race would be more relevant in different circumstances because “students of color are positioned based on their math identities, which I feel like is tied to their race” (Margaret, Round 4 Interview, 12/17/20). This makes it seem as though Margaret is linking issues of race and racism to the presence of students of color (and possibly Black students in particular) and equating whiteness with the absence of race. Such a position directly contrasts with a race cognizant perspective, which holds that white people and whiteness are racialized and actively shape and participate in racialized social systems (Frankenberg, 1993). Thus, although Margaret recognizes that there are racialized patterns in how children are positioned with respect to mathematical competence in the abstract, she does not bring that understanding to bear in the context of her math discussion with majority white students. This echoes Shah and Coles’ (2020) finding that contextual factors, such as racially

---

<sup>17</sup> I want to acknowledge that there is also important variation in how Asian ethnic sub-groups are positioned relative to notions of intelligence and mathematical competence. For example, Bonilla-Silva (2018) argues that in the emerging tri-racial order of the United States, Vietnamese Americans, Filipino Americans, Hmong Americans, and Laotian Americans are effectively treated as part of the “collective Black,” whereas other Asian sub-groups like Japanese Americans and Chinese Americans constitute “honorary whites” (p. 184). While these distinctions were not a central focus in course work on acknowledging competence or racialized patterns related to “ability,” the point remains that there is a great deal of complexity that one *could* consider in reasoning about the specific racialized experiences of an Asian student in a predominantly white classroom.



homogenous classrooms, influenced whether and how teacher candidates noticed racial phenomena in their student teaching experiences. Margaret's case suggests that a challenge in promoting race cognizant uptake of acknowledging competence is supporting teacher candidates to reckon with the salience of race and racism in predominantly white spaces. Consequently, even as Margaret follows a trajectory of taking up many aspects of the course construct of acknowledging competence and encountering relatively commonplace challenges in enactment, her case offers an additional layer of complexity. Namely, obstacles to enacting acknowledging competence can include ideologies that locate issues of race and racism with people of color and not with white people or whiteness.

#### **4.4 Summary of Uptake Patterns with Acknowledging Competence**

As developed in the Sensemakers course, acknowledging competence is a complex practice with multiple, interrelated purposes. Initially, focal teacher candidates embraced some aspects of acknowledging competence more ardently than others. Specifically, teacher candidates took up the general equity-oriented ideas of broadening what counts as mathematical competence, moving beyond praise, and using acknowledging competence to support the development of students' positive mathematics and academic identities. Teacher candidates interpreted and took up these ideas through the lenses of their prior experiences and worldviews, such as seeing school mathematics in terms of a binary of right and wrong answers, which contributed to variation in their understandings and articulations of acknowledging competence. Teacher candidates were less likely to take up strategic and expressly race cognizant aspects of acknowledging competence in ways that aligned with course premises and underlying ideology. Several participants (Jason, Stacey, and Alex) initially interpreted acknowledging competence as a universal good, and though they did make connections between acknowledging competence

and addressing issues of race and racism, they did so in ways that reflected color-blind ideology (Bonilla-Silva, 2018) and deficit-based generalizations about people and communities of color. Other participants (Margaret, Evelyn, and Rachael) were more apt to recognize racialized patterns in who tends to be recognized as mathematically competent and to frame acknowledging competence as an intervention on existing inequities, at least in their initial uptake.

Although all teacher candidates tended to talk about acknowledging competence in general terms until they were specifically pressed to comment on the relevance of race and racism, there were important contrasts in their underlying conceptions of race, racism, and mathematics teaching and learning that present different possibilities and challenges for mathematics teacher educators. For instance, supporting race cognizant uptake of acknowledging competence for Jason would likely require some ideological shifts (e.g., shifting to a view of racism as endemic and permeating social interactions rather than isolated to individual acts of bias). In contrast, Margaret already seemed to be en route to understanding racism as both structural and interpersonal (e.g., she recognized that teachers' racial identities and assumptions shape their interpretations of and responses to children); her area for growth seems more in consistently bringing to bear her emergent understandings of race and racism in specific teaching situations, such as in predominantly white classrooms. A crucial point here is that saying issues of race and racism are connected to acknowledging competence (or any teaching practice) is *not* the same as taking up race cognizant ideology; teacher candidates can reason and talk about race and racism in relation to acknowledging competence and teaching more broadly in ways that are ideologically race evasive (i.e., embracing tenets of color-blindness) and racist (Bonilla-Silva, 2018; Frankenberg, 1993; O'Brien, 1999). Looking past teacher candidates' naming of race and racism to identify subtle underlying differences between teacher candidates' uptake of practices

like acknowledging competence seems like an important area of work for teacher educators seeking to promote race cognizant teaching.

The sections above also demonstrated the possibility that course constructs might be significantly distorted and that teacher candidates' uptake may shift significantly over time. Two teacher candidates (Rachael and Alex) exhibited substantial reversals from their initial uptake of acknowledging competence. However, these reversals resulted in and illustrate two different trajectories. Whereas Rachael shifted from a fairly nuanced and well-aligned understanding of acknowledging competence during Sensemakers to a flattened version of the practice during Math Methods, Alex shifted from a distorted view of the course construct in Sensemakers to a more aligned view of the practice in Math Methods. These shifts underscore the importance of assessing teacher candidates' learning and uptake of course ideas and practices at multiple time points. A single snapshot of either Rachael or Alex's uptake of acknowledging competence would have been misleading and could have promoted a premature sense of success (in Rachael's case) or foreclosed important opportunities for growth (in Alex's case).

Furthermore, the two overarching trajectories that Rachael and Alex demonstrate — (1) flattened uptake over time and (2) aligned uptake with obstacles of enactment — suggest patterns of uptake that are likely transferrable and relevant in other teacher education contexts. It makes sense that teacher candidates would incorporate and connect course ideas and practices to their existing ways of thinking, doing, and being; the question is whether that process allows the complexity of course constructs to remain in view. In the cases of Rachael, Stacey, and Jason, taking up acknowledging competence over time meant assimilating select features of the course construct into familiar practices, like praise and traditional math instruction. This minimized the race cognizant aspects of the course construct, such as strategically highlighting the

mathematical competence of students of color as an intervention on deficit narratives and entrenched narrow and racist conceptions of intelligence. In the cases of Alex, Evelyn, and Margaret, developing an understanding of the acknowledging competence that aligned with the course construct came along with challenges of coordinating acknowledging competence with other goals and considerations in the moment of enactment. Thus, although these teacher candidates may have intended to use acknowledging competence to disrupt local status hierarchies or larger racialized patterns, these intentions were not fully realized in their early enactments. Neither of these trajectories is straightforward or simple; learning to engage in a teaching practice like acknowledging competence that involves reasoning about issues of race and racism in conjunction with questions of mathematical content, mathematics pedagogy, children's identity construction, and social development is complex work. Teacher educators would do well to appreciate this complexity in designing their instruction, assessing teacher candidates' learning, and adjusting in response to varying indications of uptake.

#### **4.5 Deliberate Efforts in Early Enactments of Math Teaching**

Thus far in this chapter, I have taken the approach of starting with a given course emphasis that could support race cognizant math teaching (acknowledging competence) and examining focal teacher candidates' uptake of that practice. I now shift to a complementary approach, starting with a given data source (focal teacher candidates' enacted math discussions) and examining what uptake of potentially race cognizant course ideas and practices is most prominent in that data. This reflects my dual interest in teacher candidates' sensemaking of course emphases (i.e., their learning as acquisition of course constructs) and their engagement in course practices (i.e., their learning as participation in a form of race cognizant math teaching; Sfard, 1998). In this section, I more directly tackle my second research question: *What uptake of*

*course ideas and practices is evident in focal teacher candidates' early enactments of mathematics teaching?*

In my analysis of teacher candidates' enacted math discussions, I found that the most noticeable attention to race and racialized patterns occurred in relation to distributing turns of talk. That is, during the stimulated recall segment of Round 4 interviews and in teacher candidates' discussion plans and written self-appraisals, when participants addressed issues of race and racism directly (i.e., when I coded their comments as "Direct race talk"), they were most likely to talk about children's racial identities in terms of who they called on and sought to engage in the discussion. For example, Stacey reflected, "I deliberately acted to disrupt race and racism in the classroom by consciously considering the identities of the students that I was calling on to ensure that I was calling on a diverse group of students" (Stacey, Discussion Analysis). This was the case for four of the six focal participants (Alex, Evelyn, Jason, and Stacey), with Rachael and Margaret addressing issues of race and racism in slightly different ways. Among participants, Rachael was somewhat of an outlier; she spoke at greater length about issues of race and racism in her Round 4 interview, relaying consideration of children's racial identities in relation to resisting patterns of positioning children of color as troublemakers in addition to facilitation participation among a diverse group of students. Margaret also differed from other participants in that she said she was not really thinking about race in the context of her predominantly white field placement (as discussed above) but still made abstract connections between race and children's mathematics identities and between whiteness and classroom behavioral expectations. Nonetheless, there is clear evidence that distributing turns and facilitating participation was a prominent site for focal teacher candidates to reason about children's racial identities in the context of their math discussions.

This raises several questions: How was distributing turns and facilitating participation framed and worked on in Sensemakers and Math Methods? How might this course work have supported race cognizant math teaching? To what extent did focal teacher candidates engage in the practice in alignment with the course vision? I address these questions below. I show that, as with acknowledging competence, there are some first-glance similarities in how teacher candidates took up the practice of distributing turns and facilitating participation, but there are important underlying differences in participants' reasoning about and pursuit of "equitable participation."

#### ***4.5.1 Course Work on Distributing Turns and Promoting Equitable Participation***

Given that Math Methods centered on learning to lead whole-class math discussions, distributing turns and facilitating participation were a major focus in the course. There was explicit attention to turns and participation in five of the eight class sessions, with full dedicated segments in Class 5 and Class 6. When working on distributing turns, Math Methods course instructors emphasized the goal of promoting broad and equitable participation in terms of getting many children involved in discussion and avoiding patterns where particular children dominate and others are marginalized. Instructors also emphasized thinking strategically and critically about how children are called on and the types of turns offered. For example, only calling on children who volunteer limits teachers' ability to deliberately engage new participants. In addition, children can be implicitly positioned relative to notions of mathematical competence and being a "good student" by the types of turns they are offered. For instance, particular children may be positioned as "smart" in part because they are frequently called on to solve problems or explain challenging concepts, while other students may be positioned as "struggling" if they are asked simple "yes or no" questions. Attending to types of turns entails both *math-*

*focused reasoning* (e.g., considering the specific mathematical ideas and processes at play in a given turn) and *socially focused reasoning*, as students' interactions with the mathematics impacts their social status and positioning. The ways that students are positioned in and through their participation in a math discussion can reflect and reproduce inequitable patterns along major dimensions of difference (e.g., race, gender, language, dis/ability status), as with positioning children of color as less mathematically competent, as “misbehaving,” or as not paying attention (Featherstone et al., 2011; Reinholz & Shah, 2018; Shalaby, 2017). Moreover, the types of turns teachers offer have implications for the kinds of mathematical competence that children have opportunities to demonstrate. For instance, a traditional math teaching scenario where students are only called on to provide answers that the teacher then evaluates as right or wrong provides limited and narrow opportunities to show competence (Cazden & Beck, 2003; Jackson, 2009). In contrast, a teacher could deliberately create opportunities for children to participate in multiple ways (e.g., interpreting what a problem is asking, giving examples and nonexamples, explaining a method or idea, posing new problems for the class, etc.), thereby exhibiting manifold forms of mathematical competence.

Thus, in Math Methods, course instructors framed the practice of distributing turns as involving explicit consideration of who was called on (including attention to students' racial identities), the mathematical and social features of the type of turn offered, and patterns in how children are positioned in and through their participation. In addition, course instructors encouraged teacher candidates to utilize a variety of strategies to elicit participation or “call on” students, providing a handout listing moves like volunteer calling, purposeful calling (deliberately calling on students to share ideas or strategies they've used), cold calling, random calling (e.g., using popsicle sticks to randomly select someone), and student calling (when

students call on other students). Course instructors modeled different calling-on strategies with a “fishbowl” math discussion in Class 7, prompting discussion about the affordances and limitations of various approaches relative to goals of advancing justice and equity. Instructors underscored that to foster equitable participation, teacher candidates should actively consider how students are being positioned as well as who has and has not yet participated.

#### ***4.5.2 Paying Attention to Who Gets Called On***

When commenting on their math discussions in Round 4 interviews, all six focal participants indicated that they had paid attention to which students they called on and were conscious, on some level, of children’s racial identities. This does not necessarily mean that focal participants explicitly thought about the racial identity of each child they called on in the moment of distributing turns. Rather, when asked, focal participants described the racial make-up of their field placement classes, so I have reason to believe that they recognized children’s racial identities to some extent (i.e., no one replied that they “didn’t see color” or hadn’t thought about the racial demographics of their students).

While all of the focal teacher candidates reported attending to who they called on, there were substantive differences in how teacher candidates reflected on and interpreted their own efforts to promote equitable participation. For example, Jason and Stacey each relayed the goal of calling on a variety of students in way that seemed focused on *representation* (i.e., making sure that students from different social categories were called on to participate) rather than on the nature of children’s participation (i.e., considering whether children had opportunities to demonstrate various forms of mathematical competence and how children are positioned through their participation). Jason shared that, during his math discussion, both he and his field instructor tried to keep track of who Jason called on. When debriefing with his field instructor, Jason



realized, “I think I called on a handful of students, more than half a dozen times, and then other students were one or two or zero times, so I gotta work on that” (Jason, Round 4 Interview, 12/9/20). Here, Jason implies a goal of more equally distributing turns among students. Jason connected this goal to engaging children from marginalized groups, reflecting:

I think looking back on it, there were certainly opportunities where I should have gotten more participation from some of the more marginalized students, especially like the EL that we have in the classroom, 'cause he didn't participate at all, his camera was off, even though he was present. (Jason, Round 4 Interview, 12/9/20)

Although Jason’s use of the term “marginalized students” is ambiguous as to whether it includes racially minoritized students, it is clear that Jason’s main concern at this point is whether or not students participated in the discussion (and not, for example, how students were positioned relative to their peers).

Similarly, Stacey’s approach to promoting equitable participation centered on which students were called on to participate. Stacey shared that she “did try to focus on calling one girl, one boy, one girl, one boy, and trying to mix it up and even it out so that we were having an even number of students called on” (Stacey, Round 4 Interview, 12/11/20). In addition, Stacey “did focus on trying to call on different ethnicities” (Stacey, Round 4 Interview, 12/11/20). In other words, Stacey’s goal was to call on students with varying racial/ethnic and gender identities during her discussion. Much like Jason, Stacey’s conception of equitable participation focuses on who is represented in the group of children called on during the discussion. In addition, Stacey’s attention to alternating gender identities in the *sequence* of who she called on further narrows the scope of representation to who is called on for each turn of talk.

While calling on a diverse group of students is a reasonable goal that includes attention to race, Stacey's navigation of distributing turns strikes me as a particularly thin and surface-level interpretation of the course practice and of race cognizant math teaching. Like Jason, Stacey does not appear to consider the implications of positioning students of given identities differently in light of the types of turns she offers or how the student's contribution is taken up in the class discussion (cf. [Reinholz & Shah, 2018](#)). In addition, Stacey offers a rationale for her approach to distributing turns evokes frames of color-blind racism (Bonilla-Silva, 2018). Stacey explains:

I really did try to focus on different, um, representations, um, different identities, so I did try to do that *just to show that everybody can do math, it doesn't matter your gender, it doesn't matter your race*, it doesn't matter any— We are all doers of math and, you know, so yeah. (Stacey, Round 4 Interview, 12/11/20, emphasis added)

As discussed in another example above, Stacey's stance that "it doesn't matter your race" dismisses the impact of continuing racialization and racism on how children perceive and develop mathematical competence, invoking the color-blind frame *minimization of racism* (Bonilla-Silva, 2018). This reduces the complexity of developing a sense of personal mathematical competence to simply seeing students of different identities be called on in a math discussion, which ignores ways that children's racial identities are intertwined with their academic and disciplinary identities, as well as their learning of content ([Varelas et al., 2012](#)). Additionally, much has been written about the limits of representation as a means of promoting equity and inclusion, much less racial justice (e.g., [Bonilla-Silva, 2018](#); [Bruce-Raeburn, 2021](#); [Gray, 2018](#); [Hall, 1996](#)). While it certainly matters to have diverse racial representation in classroom interactions, educational materials, and media more broadly, viewing representation as a cure-all for racial inequity can result in tokenism that ultimately protects existing social

structures (Bonilla-Silva, 2018). Thus, Stacey's narrow focus on alternating racial and gender identities of the students she calls on runs the risk of forestalling more substantive efforts to foster meaningful and equitable classroom experiences.

In contrast to Stacey and Jason, other focal teacher candidates demonstrated more nuanced approaches to fostering equitable participation. For example, as described above, Alex thought about structuring breakout rooms to counteract typical patterns of participation in their field placement, in which certain students (white boys) tended to volunteer and talk a lot (Alex, Round 4 Interview, 12/15/21). Margaret and Rachael also thought ahead about ensuring broad participation, using strategies like having students' names listed on a Jamboard slide as a visual reminder to call on each student and directing questions to particular students (i.e., using purposeful calling).

This set of participants (Alex, Margaret, Rachael, and Evelyn) also exhibited more subtle and critical conceptions of equitable participation in their reflections on their enactments. For instance, Evelyn wrote the following in her discussion self-appraisal:

I notice that I only really engaged with students who had their cameras on, and their hands raised, another consequence of this is that most of the children involved in this discussion were white students. This reinforces existing inequities. With my limited view of all of the Zoom 'boxes', my focus was on the students that I could see and notice most quickly. In the future I hope to have multiple monitors so that my content can be on one screen and the students can be on the other. The problem of not being able to see all of my students is a quite literal representation of the inequities being reinforced. (Evelyn, Discussion Analysis)

Despite her plans to counteract patterns of positioning and engage specific students, Evelyn recognized that, in her actual enactment, she ended up reinforcing racialized inequities in who was seen and called on. Evelyn's focus on the impact of her actions, rather than her intentions, differs from the defensive reactions that many white people have when confronting their own potential involvement in perpetuating racism (DiAngelo, 2018; Marx, 2006; McIntyre, 1997; Oluo, 2019). This suggests a degree of critical reflexivity, or consideration of one's own complicity in systemic racism, which aligns with race cognizance (Frankenberg, 1993; O'Brien, 2000). Whereas Jason's reflection amounted to generally trying to "do better" and call on a greater variety of students, Evelyn unpacks and addresses the circumstances that got in the way of her strategic engagement of marginalized students (namely, the set-up of Zoom on her computer screen).

Similarly, Margaret reflected on how she facilitated participation in a nuanced way. In line with her plan, Margaret had called on all of the students in her field placement class to contribute ideas during her math discussion. Yet, Margaret still saw inequities within this broad participation. She wrote:

I think a pattern I see emerging is the type of questions I ask to certain students. Some students are asked questions that merely reinforce procedural knowledge, like an equation needs to have an equals sign vs. other students are asked deeper level questions like explaining patterns in data. By asking students questions that require either procedural or deeper skills I am reinforcing low expectations for some students and high expectations for other students. This unevenly positions students' knowledge and reinforces existing inequities based on the type of questions and skills I ask them to demonstrate. (Margaret, Discussion Analysis)

Although Margaret does not specify whether she is thinking about racialized inequities, her attentiveness to the different types of turns that she offered students aligns with course emphases on interactive positioning and the social construction of mathematical competence. For Margaret, unlike Stacey and Jason, the act of calling on students was just the beginning, rather than the extent, of fostering equitable participation.

Focal participants' differing approaches to and reflections on distributing turns and facilitating participation have implications for teacher educators aiming to support race cognizant teaching. Jason and Stacey's efforts suggest that an abstract or generic commitment to call on a variety of students, even with consideration of children's racial identities, is not sufficient for bringing attention to how children are positioned relative to ideas of mathematical competence or how such positioning might be impacted by race and racism. Jason and Stacey demonstrate that it is possible for teacher candidates to engage in course practices, like distributing turns of talk, in ways that significantly reduce the complexity of equitable participation and over-simplify the work of disrupting racial inequities. Furthermore, general commitments to call on a variety of students do not ensure that a teacher is making use of student contributions in ways that are meaningful for the larger group. For example, while Stacey did call on students with varying racial and gender identities, she routinely moved on after students spoke, saying "Thank you" without engaging with the substance of students' contributions. This is an important reminder that race cognizant math teaching requires serious engagement with mathematics subject matter and pedagogy — calling on a diverse group of students is a good thing, but not very impactful if children are not also being supported to develop robust mathematical understanding and positive mathematics identities. Course instructors emphasized a vision of equitable participation that included attention to how children are positioned via turns of talk and goals of collectively

building mathematical understanding; uptake of this version of practice was evident in Alex, Evelyn, Margaret, and Rachael's math discussions. Yet, this did not come through in Stacey and Jason's enactments and reflections on distributing turns.

#### ***4.5.3 Using Calling-On Strategies and Reflecting on Participation Patterns***

As with paying attention to which students are called on, focal teacher candidates demonstrated a range of uptake of the calling-on strategies introduced in Math Methods. In their math discussion enactments, Alex, Evelyn, Jason, and Stacey relied primarily on volunteer calling, whereas Margaret, and Rachael used strategies like cold calling and letting a student know they would be called on next. Given course instructors' emphasis on deliberately using different calling-on strategies to elicit broad participation, it may seem that teacher candidates who relied on volunteer calling did not take up a key aspect of the course vision of distributing turns. However, there were again important differences in how teacher candidates reflected on and interpreted their enactment of different calling-on strategies. In fact, I would argue that participants' varying levels of thoughtfulness around calling-on strategies suggest that their uptake of course premises and rationales related to disrupting racialized patterns in math classroom interactions may be more important for developing race cognizant practice than using (or not using) specific moves and strategies. I say this because reflectiveness around how given calling-on strategies played out can provide an impetus for modifying one's enactment or for trying out different strategies in the future. In contrast, unquestioned use of a particular strategy, such as cold calling, could allow a teacher candidate to think they are doing the "right thing" while still ultimately distributing turns in ways that are problematic or that reproduce inequitable patterns of participation.

A prime example of differences in how teacher candidates reasoned about calling-on strategies comes from examining Jason and Alex's reflections on the patterns of participation that emerged in their math discussions. Whereas Stacey, Evelyn, Rachael, and Margaret's respective uses of calling-on strategies in their math discussions resulted in relatively broad and varied student participation, Jason and Alex both ended up with scenarios where a few white boys dominated the discussion. Both Jason and Alex used volunteer calling to some extent, but what really distinguished their discussions from those of other teacher candidates was that students frequently interjected without being called on. My point here is not that students talking without being called on is in itself bad or wrong (to the contrary, I view taken-for-granted norms for talk as one way that classroom interactions are racialized and structured by white supremacy). Instead, my point is that this practice resulted in noticeable racialized patterns in these two teacher candidates' discussions. In Jason's case, one white boy in particular interjected in ways that interrupted Jason and other students; this resulted in other students' contributions being sidelined and forgotten, as Jason generally took up and responded to the one student's interjections. In Alex's case, student interjections were more the result of Alex posing a question and not immediately calling on anyone. In other words, the white boys that dominated Alex's discussion were prone to volunteering quickly and interjecting before other students.

Though Jason and Alex both led discussions that ended up having racialized and gendered patterns of participation, they reflected on and interpreted their experiences quite differently. Namely, Jason and Alex differed in their consideration of broader social patterns and inequities. For example, Jason reflected:

There were definitely particular children who were dominating the discussion and calling out, rather than waiting to be called on. In this discussion I was ineffective at shutting

those students and disruptive behaviors down, this took airtime away from some of the more marginalized students in the class. (Jason, Discussion Analysis)

Jason recognized that having a few students dominate the discussion was problematic, but his solution was to “shut those students and disruptive behaviors down,” which accepts without question traditional notions of classroom discipline (Milner et al., 2019; Shalaby, 2017). Although, in this case, the main student who was doing the interrupting was white, it is not hard to imagine Jason applying this mentality in ways that fall into patterns of disproportionately punishing and excluding Black children and other children of color (Milner et al., 2019). What I find especially telling is that Jason frames his teaching experience as a general failure of managing children’s behavior — he does not consider the impact of his facilitation on children’s sense of their own mathematical competence or right to speak in class. In my view, allowing a white boy to repeatedly interrupt and talk over other students without consequence is problematic not simply because it represents an unequal distribution of airtime, but because it sends the message to that student and to the class that his right to speak will be honored over and above that of other children. This reinforces a sense of entitlement to speak that reflects structures of white supremacy and patriarchy (DiAngelo, 2018; Sensoy & DiAngelo, 2017). Thus, while Jason was self-critical and identified a problematic pattern that emerged in his discussion, his analysis of that pattern did not engage with broader issues of inequity and injustice beyond the space of interactions in his class.

In contrast, Alex was very aware that their reliance on volunteers served to reproduce larger inequitable patterns. During their Round 4 Interview, Alex relayed that they “saw the conversation heading to the route of, ‘it’s just the white boys talking’” but did not know how to interrupt or change that in the moment of enacting their discussion (Alex, Round 4 Interview,



12/15/20). When I asked Alex to elaborate, they connected what happened in their math discussion to other educational experiences:

**Rosie:** You mentioned at one point realizing that there were mostly white boys talking. Can you say a little bit about what you tried to do to interrupt that and, I guess in retrospect, if there's anything else that you might have done or that you've thought about since then?

**Alex:** I actually don't think I did interrupt it or even really tried to, because at that point they were carrying the conversation while I was dealing with technology things and other things. So, I see that and I see that as a huge — I don't know, I can see how this has played out in my own education so much where the teacher is overwhelmed by something, whether it's a behavior or just something, and how *it's very easy to just allow those voices* that are readily available and willing to carry conversations without much regard for everyone else in the classroom. (Alex, Round 4 Interview, 12/15/20, emphasis added)

Here, Alex not only recognizes that going with volunteers created space for white boys to dominate the discussion, but also points to how the complexity of teaching made that an easy default option. This suggests awareness of ways that inequitable patterns and structures, such as racism and patriarchy, permeate everyday classroom interactions and are unwittingly reproduced.

In addition, Alex went on to offer several ideas for how they would interrupt the pattern of white boys dominating the conversation in the future:

Like in person, I think I would remind the students that we've already heard from a few people and now we're going to hear from more. Or again, if I was using the Jamboard, I would have just selected a different student's screen and presented that screen. I would

have probably communicated in the breakout rooms that that was the route I was gonna take and, “I’m gonna share your thinking. I really like —” and comment specifically about their mathematical thinking that was something that I would like them to share about as a whole group. Something like that. (Alex, Round 4 Interview, 12/15/20)

Alex’s ideas for facilitating more equitable participation consist of concrete strategies, from inviting new participants to using different forms of purposeful calling. This contrasts with Jason’s resolution to shut down interruptions in that Alex’s ideas reflect the course emphasis on attending to student positioning. For instance, Alex’s example of purposefully calling on a student to highlight an aspect of that student’s mathematical thinking suggests that Alex is anticipating a student might feel wary about sharing, and so Alex would proactively position the student as a valued contributor; in contrast, Jason did not consider how the student being “shut down” might feel or be positioned.

One possible factor that could help explain Alex and Jason’s varying reflections on their use of calling-on strategies and resulting patterns of participation is the age of students in their field placements. Alex was working with sixth-grade students whom they could reasonably expect to respond to a request to hear from new people, whereas Jason was working with second graders, who may have less-developed social awareness and maturity. It is plausible that Jason saw his role as teaching young children how to engage in school, making it seem more important to “shut down” interruptions. That said, Jason does not offer this rationale in his Round 4 interview or in his discussion analysis. He does not identify what messages might have been sent about what is valued in school when a student repeatedly interjected, nor does he propose alternative messages about participation he would like to communicate more effectively moving forward. Jason seems to accept the idea of teachers enforcing behavioral norms as

unproblematic, which overlooks ways that the norms teachers uphold and the ways that teachers uphold them are reflections of specific cultural, racial, and class-based worldviews (Weinstein et al., 2003). Thus, even if the age of Jason's students was a factor in his reasoning about facilitating participation, Jason still demonstrates less nuanced uptake of relevant race cognizant premises and rationales in comparison to Alex. This illustrates how teacher candidates' underlying views about teaching, learning, and the roots of inequity lead to different take-aways from parallel teaching experiences. Jason and Alex both reckoned with the fact that white boys dominated their math discussions, but their analyses of that outcome diverge in relation to race cognizant ideology and course emphases.

#### ***4.5.4 Summary of Focal Participants' Efforts to Promote Equitable Participation***

This section has presented findings that promoting equitable participation — with at least some attention to students' racial identities — was a prominent goal for teacher candidates in enacting and reflecting on the math discussions they led towards the end of Math Methods. When teacher candidates talked directly about issues of race and racism in relation to their discussions, they were most likely to talk about distributing turns and facilitating participation. While there was certainly a range in terms of how teacher candidates attended to race and racialized patterns in their efforts to equitably distribute turns and foster participation, I think it is important to recognize that there is evidence that teacher candidates *did* learn to think about students' racial identities as relevant to their work in facilitating a math discussion. In other words, work on distributing turns and facilitating participation seems to be a productive site for supporting teacher candidates to reason about race and racialized patterns within the context of elementary math teaching.

At the same time, the varying conceptions of equitable participation that participants conveyed in their enactments and reflections suggest that there is a very real risk of teacher candidates over-simplifying teaching practices that have the potential to be race cognizant. For instance, Jason and Stacey's efforts focused on calling on a diverse group of students without much attention to the mathematical or social features of the turns they offered, how individual students were positioned through their participation, or how student contributions were taken up by the class. Granted, not all participants reduced the complexity of equitable participation in this way; Alex, Evelyn, Margaret, and Rachael demonstrated more nuanced uptake of course emphases, such as considering the types of turns offered to children as well as how children were positioned socially and mathematically. As with acknowledging competence, however, it is important to recognize that genuine efforts to enact practices that are well-aligned with course framing and race cognizant rationales are still complicated. As Alex's case demonstrates, challenges in enactment, such as becoming overwhelmed with technology issues, can interfere with teacher candidates' following through on their intentions to use particular calling-on strategies and intervene on typical patterns of participation. This underscores that even when teacher candidates embrace race cognizant goals and rationales in a math teaching context, learning to enact practices that fulfil those goals is complex work that requires repeated opportunities for practice, reflection, and renewed efforts.

#### **4.6 Overarching Patterns of Uptake**

This chapter has examined six white teacher candidates' uptake of two course practices that have the potential to support race cognizant math teaching: acknowledging competence and distributing turns of talk. Considering patterns of uptake for these two practices together, there are some notable similarities. For one, there is clear evidence of teacher candidates assimilating

course ideas and practices into their existing beliefs and orientations without substantially changing their ways of thinking and doing. With acknowledging competence, Rachael translated the course practice into a form of praise and Stacey and Jason took up surface features of acknowledging competence while maintaining fairly traditional views of mathematics teaching and learning. This process of assimilation resulted in the strategic and race cognizant nature of acknowledging competence being lost. Similarly, with distributing turns, Stacey and Jason interpreted goals of promoting equitable participation through an ideologically race evasive lens; they aimed to for diverse representation among participants without considering ways that children's learning, sense of identity, and experiences in mathematics classrooms are racialized. Course emphases on attending to local and broader racialized patterns in how people are positioned in mathematics did not shift Stacey or Jason's commitments away from notions of equity rooted in abstract liberalism (Bonilla-Silva, 2001).

This pattern of assimilation without changing underlying views is closely related to another consistent pattern: flattening and reducing the complexity of course emphases in ways that diminish the race cognizant purposes and rationales. Though this was not necessarily exhibited by all participants, it was a notable occurrence. Flattening of course emphases occurred over time, as with Rachael, Stacey, and Jason's trajectories of uptake of acknowledging competence. It also occurred in teacher candidates' initial uptake of acknowledging competence, as with their tendency to more readily embrace general equity-oriented goals in comparison to specifically race cognizant goals, like deliberately positioning students of color as contributing important mathematical ideas. Likewise, with distributing turns and facilitating participation, Stacey and Jason pursued the surface-level goal of calling on students with various identities. It is not particularly surprising that as teacher candidates incorporated course ideas and practices

into their existing ways of thinking (which reflect patterns of whiteness and race evasion), the mathematical and social complexities of race cognizant practices would fall away.

A third overarching pattern in focal teacher candidates' uptake of acknowledging competence and distributing turns of talk was that efforts to enact practices in ways that aligned with course emphases and race cognizance were complicated by challenges in enactment. Intentions to deliberately intervene on racialized patterns in classroom participation (by conscientiously distributing turns) and in how children tend to be positioned in mathematics (by acknowledging competence) were impeded by competing demands for the teacher candidates' attention, such as resolving technical difficulties, and by the overall novelty of leading a math discussion. This pattern highlights that beyond taking up a race cognizant *vision* of math teaching, teacher candidates have room for growth and need support in developing their *enacted practice* towards such a vision.

These three overarching patterns were evident across focal teacher candidates' uptake of two different course practices. Yet, while there were many consistencies in the patterns that individual teacher candidates exhibited across the two practices, there was a notable exception. Namely, Rachael demonstrated different patterns of uptake for each course practice. Rachael ultimately conveyed a flattened uptake of acknowledging competence but maintained a more nuanced conception of promoting equitable participation in her uptake of distributing turns, as she made deliberate efforts to facilitate broad participation in her math discussion using strategies like purposeful calling. Furthermore, Rachael stood apart from other focal participants in her consistent use of direct racial language and unpacking of racialized patterns. I raise this to point out that individual teacher candidates may not uniformly exhibit the same patterns of uptake across different areas of course work geared towards race cognizant teaching; it is

plausible that different ideas and practices have varying potential to connect with teacher candidates' existing views and orientations in a way that encourages race cognizant uptake. For example, perhaps thinking about the equitable distribution of turns is a more accessible entry point (in comparison to acknowledging competence) for white teacher candidates to think about the racial identities of their students and racialized patterns that can be reinforced or disrupted through math classroom interactions.

While it may seem obvious, one point to make explicit here is that teacher candidates took up potentially race cognizant ideas and practices in a range of ways, with some of those ways being more race evasive than others. This point echoes Jupp and colleagues' (2019) argument that white teachers' identities and understandings of race and racism are not monolithic; there is variation in how white teachers (and teacher candidates, in this case) grapple with their own racial identities and issues of race and racism. My findings suggest that this variation extends into reasoning about race and racism in the context of elementary math teaching. An important implication of this variation, and of the patterns of uptake I have documented here, is that course work that explicitly attends to issues of race and racism and promotes a vision of race cognizant teaching *cannot guarantee* that teacher candidates will take up course ideas and practices with shared race cognizant meaning. This study shows that, even in a context where math teaching practices are expressly framed as ways to pursue racial equity, teacher candidates can take up course practices in ways that evade critical consideration of race and racism. Given this, teacher educators must notice, assess, and respond in targeted ways to teacher candidates' engagement with the race-specific aspects of race cognizant practices.

Another way to think about these findings is to situate them within a larger project of working towards race cognizant math teaching. Thus far, I have emphasized ways that general

equity-oriented aims, practices, and patterns of uptake are not the same as race cognizant math teaching. This is important to recognize, as teacher educators could plausibly mistake general commitments to equity for meaningful engagements with issue of race and racism. However, considering the broader educational landscape, which includes patterns of overtly racist teaching (e.g., Picower, 2021) and deeply ingrained deficit framing of children of color (Love, 2019; Martin, 2009b), it is also important to consider ways that teacher candidates' embrace of general equity-oriented aims and practices *could be a productive step* towards race cognizant teaching. For example, while it is true that the flattened versions of acknowledging competence that Rachael, Stacey, and Jason took up fell short of the race cognizant course construct, their efforts to positively frame and respond to the contributions of all students still represent an improvement upon the deficit-oriented status quo of mathematics teaching. Similarly, Stacey and Jason's efforts to equally distribute turns among students — while glossing over the mathematical and social complexities of facilitating equitable participation — seem more promising than the normalized habit of just calling on volunteers; some deliberate attention to who gets called on and who participates is better than none. It seems to me that teacher educators committed to promoting race cognizant teaching could leverage teacher candidates' general orientations towards equity, as well as their partial engagement with race cognizant practices, to support further work that is specifically focused on race and racism.

To emphasize this point that teacher candidates' patterns of uptake, though not consistently or fully aligned with race cognizant aims and rationales, can still be seen as steps towards race cognizant math teaching, I offer a reframing of these patterns in Table 3. The table situates patterns of uptake on a spectrum ranging from overt racism to race cognizant math teaching. I further discuss the hopefulness of these findings in Chapter 6.



**Table 3**

*Progress Towards Race Cognizant Math Teaching*

	Overt Racism	Status Quo	General Equity-Oriented Practice (All Students)	Race Cognizant Math Teaching
Acknowledging Competence	Voicing stereotypically racist views about students' mathematical abilities.	<p>Deficit assumptions about children of color (e.g., Battey &amp; Franke, 2015; Martin, 2009).</p> <p>Not-seeing Black children and other children of color (Willis, 2020).</p> <p>Traditional view of mathematics as right or wrong; math ability as static.</p>	<p>Asset-based framing for all students; trying to notice and highlight student's math strengths.</p> <p>Positive framing, affirming students' reasoning, thanking students for sharing.</p> <p>Seeing value and mathematical competence in more than right answers (e.g., steps in students' processes, understandings).</p> <p>Supporting positive math identities for all students.</p> <p>Making all students feel valued and heard.</p> <p>General → specific praise</p>	<p>Attending to racialized patterns in how students are positioned and deliberately intervening to disrupt status hierarchies and broader racialized patterns in who is recognized as mathematically competent.</p> <p>Understanding mathematical competence as socially constructed; actively working to broaden who and what is considered mathematically competent with specific attention to race.</p> <p>Recognizing that constructing a math identity is a racialized form of experience (Martin, 2006; Varelas et al., 2012).</p>

	Overt Racism	Status Quo	General Equity-Oriented Practice (All Students)	Race Cognizant Math Teaching
Distributing Turns & Facilitating Participation	Obvious racial bias in who gets called on, what kinds of questions are posed, and responses to student participation.	Inadvertent racial patterns in who gets called on, what kinds of questions are posed, and responses to student participation (e.g., result of implicit bias, unsupportive learning environment).	Distribute turns equally among students of different identities (focus on representation).  Get more students in the class to participate.	Consider the social and mathematical features of types of turns being offered, how students experience participation, and actively work to disrupt racialized patterns in participation and positioning.  Use participation structures and calling-on strategies to intervene on racialized and status-based participation patterns.  Awareness that, despite their intentions, teachers can reinforce broader social inequities; recognizing the strong pull of defaults.
		Viewing teachers' "management" and regulation of student talk as unproblematic.	Recognizing that teachers may be used to different interactional norms than students, but still upholding dominant white norms.	Recognizing that interactional norms are reflections of specific cultural, racial, and class-based worldviews; taking a non-punitive approach to facilitation.

## Chapter 5 Findings Part 2: Patterns in Race Discourse

The moments when we delete race labels from our talk are perhaps the moments in which race matters most dangerously. Figuring out *how* race matters thus involves attention not just to moments when we talk overly easily ‘about race,’ but also to moments when we resist talking about race at all. (Pollock, 2004, p. 14)

In investigating learning related to issues of race and racism, talk and writing are key sources of evidence. What do people say about race and racism? What do they not say? How does their discourse about race and racism shift, or not, over time? What might this reveal about their underlying beliefs, ideologies, and commitments to anti-racist action? However, examining racial discourse has both affordances and limitations. On the one hand, discourse is conveniently observable. Without being able to step inside a person’s mind, analyzing what people say may be the closest a researcher gets to accessing a person’s thoughts. On the other hand, what people say cannot necessarily be taken at face value. As Gee (2012) argues, “Speakers are actually manipulating hundreds of variables at the same time, and all speakers are actually signaling, in many ways, identification with a number of different ‘social networks’ to which they belong” (p. 115). That is, as social beings, people are motivated to represent themselves as having particular identities and belonging to given groups. In the context of a teacher education program that emphasizes the pursuit of equity and justice, for example, teacher candidates are likely motivated to signal their identification with equity- and justice-oriented commitments. This is not to imply or assume that people are maliciously or strategically misrepresenting themselves, but rather to

emphasize that language and discourse are always situated in social contexts and, therefore, social meanings and implications must be taken into account when interpreting what people say.

This is especially true with discourse regarding race and racism. As Bonilla-Silva (2002, 2018), Pollock (2004), DiAngelo (2018), Oluo (2019), and many others have shown, the ways that people do and do not talk about race are fraught with political and ideological implications. If, as DiAngelo (2018) suggests, people are socialized to understand any connection to racism as a moral judgement of being a “bad person,” then there is great social risk to “getting it wrong” when talking about race and racism. Moreover, the dominance of race evasive discourse in the United States following the Civil Rights era exerts considerable social pressure to deny or play down the continuing import of race and racism (Bonilla-Silva, 2001, 2015; Frankenberg, 1993). Given this, using race discourse as a window into people’s thinking, learning, ideology, and commitments requires digging beneath the surface of what people say (or do not say) to consider the situated meaning of their talk or writing in a specific context (Gee, 2012). This is the stance I take in this study: talk and writing about race and racism can offer useful insights into ways that teacher candidates think and learn over time, but the use of given words and language does not guarantee particular beliefs, understandings, or commitments.

In this chapter, I present findings regarding teacher candidates’ discourse related to race and racism throughout the math teaching course sequence. This includes teacher candidates’ discourse in study interviews and in course assignments, and addresses Research Question 3: *How do focal teacher candidates engage with issues of race and racism in their talk and writing, and what does this reveal about their learning?* Chapter 4 primarily considered teacher candidates’ learning through the lens of *uptake* of given ideas and teaching practices. In this chapter, I consider teacher candidates’ learning through the lens of initiation into and increasing

*participation* in race cognizant discourse from a race evasive starting point (Sfard, 1998, 2001). That is, if one thinks about race evasion and race cognizance as “big ‘D’ Discourse[s]” (Gee, 2012, p. 2) that entail particular ways of being, thinking, and believing associated with given “kinds of people,” then this chapter explores when and how teacher candidates used language in ways that reflected race evasive and race cognizant Discourses. The headline of Chapter 4 was that teacher candidates displayed patterns of assimilating, flattening, and struggling to coordinate teaching practices that have the potential to support race cognizant math teaching; while there was some evidence of uptake that was well-aligned with race cognizant course emphases, that uptake was not straightforward. Similarly, this chapter tells a story of white teacher candidates evading *while also* engaging with the salience of race and racism. As I show in this chapter, there were co-existing, conflicting discourses and ideologies about race and racism in focal teacher candidates’ talk and written work. This was especially evident in focal participants’ talk and writing about a touchstone example, the Toni and Aniyah video, which I describe below. Echoing Harper et al. (2021), I found that teacher candidates perpetuated whiteness and racism in certain ways, even as they challenged those forces and systems in other respects.

This chapter begins with an explanation of what I mean by “race talk” and a description of the “Toni and Aniyah video,” which was used as a context for discussing issues of race and racism across the math teaching course sequence. I then present a key finding about the co-existence of race evasion and glimpses of race cognizance in teacher candidates’ race talk. To ground my analyses and interpretation of this co-existing race evasion and race cognizance, I introduce a visual representation that distinguishes between *discursive patterns* and *patterns of ideological alignment*. The remainder of the chapter is divided into two major sections: one focused on patterns in teacher candidates’ use of language as they engaged in race talk, and one

focused on patterns of ideological alignment. In these sections, I emphasize that avoidance of racial language was not mutually exclusive with direct race talk and that habits of race evasion did not preclude glimpses of race cognizant understandings and commitments. At the same time, I also demonstrate that glimpses of race cognizance were sometimes accompanied by problematic racial stereotypes and tropes, as well as subtle resistance to further learning about race and racism. I conclude with a chapter summary.

## **5.1 Background and Context**

This chapter focuses on teacher candidates' talk and writing about issues of race and racism. I refer to this type of discourse as "race talk." In this section, I explain how I am defining *race talk* and clarify what my usage of this term does and does not mean. I also provide background information about a recurring video example used in the math teaching course sequence as a site for work and discussion on racialized patterns that can manifest in math classrooms. This video example serves as a context for much of the race talk examined in this chapter.

### ***5.1.1 Defining "Race Talk"***

I define *race talk* as any written or spoken language that is about race or racism (i.e., race or racism is the topic being addressed). This follows Pollock's (2004) use of the term. In contrast to scholars who use "race talk" to mean *racist* talk, or discourse that validates and reinforces the existing racial structure (e.g., Myers & Williamson, 2001), when I label discourse as "race talk" I am not making claims about the racial ideologies conveyed in that talk. In other words, I intend "race talk" to include talk reflecting a full range of ways of thinking through race, including essentialist racism, race evasiveness, and race cognizance (Frankenberg, 1993).

It is important to note that I use “talk” as a shorthand for multiple forms of discourse, not just to refer to what people verbally say in conversation. I am examining the *language* that teacher candidates use both in their interviews and in their written course assignments. I recognize that beyond words and language, things like gesture, tone, cadence, facial expression, and embodiment are meaningful aspects of discourse (Bloome et al., 2010; de Freitas & Sinclair, 2014). I relied on such multimodal cues to construct meaning in my interactions with participants, especially during interviews, but they are not a direct focus in this analysis.

This definition of race talk introduces an important question: How does one know when talk is “about” race or racism? My initial instinct was to look for places where teacher candidates used the words “race” or “racism” or racial group labels (e.g., Black, white, Asian, Latinx, Indigenous, people of color). However, as Pollock (2004) documents, people often talk about racial issues using “de-raced” language like “all students,” deleting race words from their speech. Pollock calls this phenomenon *colormuteness*, emphasizing that people actively refrain from explicit talk about skin color and race. This points to the reality that people can effectively talk about racial issues without using race words. Consequently, it was critical that I looked beyond teacher candidates’ literal use of race words to detect talk where the contextual *meaning* of language spoke to issues of race or racism. In other words, I sought to identify both explicit and implicit talk about race or racism.

As I discuss in the section about methodological dilemmas and the “problem of inference” in Chapter 3, determining when teacher candidates might be implicitly talking about race or racism was not a trivial issue. There was no way to definitively know whether a participant had race or racism in mind when speaking or writing, so I had to make inferences based on the available evidence. My main strategies were to consider the context of teacher

candidates' talk (e.g., thinking: What was the interview question? What prompts were given in the course assignment? Was the participant responding to a direct question about race or racism?) and to look out for language that might be racially coded (e.g., references to "certain kids," students' backgrounds, diversity). In addition, I considered individual instances of a participants' talk in relation to things they said or wrote elsewhere in the data set. For example, across her interviews, Stacey frequently talked about a neighboring school district in comparison to the school district where the university is located. She emphasized differences between the two districts, but her talk generally did not include direct mentions of race or racial groups. However, in her Round 4 interview (12/11/20), Stacey explicitly characterized the neighboring district as a place where there were "a lot of Blacks and browns." Setting aside for the moment the dehumanizing nature of Stacey's language, this signaled to me that Stacey's previous talk about the district was likely racially coded (i.e., she was likely thinking about racial difference even though she did not name it). Thus, instances of explicit race talk at times served as a guide for identifying potential implicit race talk.

Given that my identification and analysis of implicit race talk is based on inferential and interpretive work, it reflects my subjectivities and viewpoint. Another researcher examining the same data might have interpreted more or less of participants' talk as implicitly racialized or made different arguments as to why a given example should be read as being about race or racism. This reflects Gee's (2012) argument that all claims and beliefs are "ideological" in the sense that they are "grounded in a theory of some sort that tells us what words ought to mean and how things ought to be described and explained" (p. 20). That said, I have endeavored to make sure that my claims about race talk are well-grounded and warranted. In the sections that follow,



I provide evidence and rationales to make my reasoning about what constitutes race talk, and what I think that race talk means, as transparent as possible.

### ***5.1.2 The Toni and Aniyah Video***

Across the math teaching course sequence and four rounds of interviews, teacher candidates engaged in race talk pertaining to a range of topics and contexts; this chapter includes examples that will demonstrate this. At the same time, my analysis resulted in a cluster of observations and insights tied specifically to teacher candidates' discourse about the "Toni and Aniyah video," which was a touchstone example in the course sequence. Accordingly, references to the Toni and Aniyah video feature prominently in this chapter. To support readers in making sense of these references as well as implications for characterizing teacher candidates' race talk and learning, I next describe the video episode and uses of the video across the course sequence.

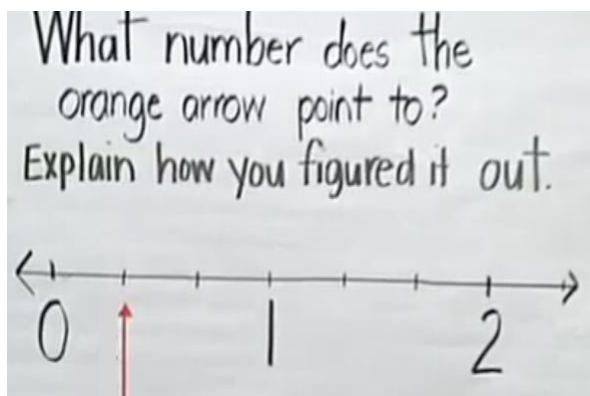
**Description of the Toni and Aniyah Video.** The video episode that I am referring to as the "Toni and Aniyah Video" is an excerpt of a whole class discussion from a 2014 summer mathematics program for rising fifth grade students. There are two versions of this video used in the course sequence: a short clip lasting about 1 minute and 30 seconds, and a longer clip (which includes and extends beyond the short clip) lasting about 10 minutes. The shorter clip focuses on an interaction involving two girls, Toni and Aniyah, which is the source of the video name. The longer clip features additional students, Lakeya, Katherine, Dante, Jamari, Marcus, and Kennedy.

In this video episode, students are seated around set of tables arranged in a "U" shape. There is a movable whiteboard at the front of the "U" with a poster showing the fraction number line problem reproduced in Figure 6 below. The problem reads, "What number does the orange arrow point to? Explain how you figured it out." The diagram shows an equally partitioned number line with 0, 1, and 2 labeled. An orange arrow points to the first tick mark to the right of

zero. This problem is designed to elicit children's thinking about and application of core fraction concepts such as defining the whole on a number line, attending to equal partitions within the whole, and using fraction notation to name the number in question (in this case, one third or  $\frac{1}{3}$ ). Prior to the discussion captured in the video clip, students worked independently on the problem.

**Figure 6**

*The Mathematics Task Featured in the Toni and Aniyah Video*



The video begins with the teacher inviting volunteers to come up to the board and explain their reasoning. The teacher calls on Aniyah, who comes to the board and explains that she thinks the orange arrow is pointing to one seventh. As Aniyah is explaining, Toni says, “Did she say one seventh?” Once Aniyah finishes her explanation, the teacher elicits questions for Aniyah and calls on Toni. Toni begins, “Why did...” then, after a “go ahead” from the teacher, asks, “Why did you pick one seventh?” Another student, who is off camera, says, “You did not” and Toni laughs. This series of exchanges makes up the short version of the video clip. In the longer version (see Appendix G for a transcript), Aniyah responds to Toni’s question. The teacher then calls on Lakeya and Dante to ask questions of Aniyah. Next, Katherine comes up to the board to share a different solution ( $\frac{2}{4}$ ). Dante asks Katherine a question and Lakeya restates Katherine’s explanation. Jamari shares another solution ( $\frac{1}{3}$ ), and Marcus and Kennedy ask him questions.

Relevant to this study and teacher candidates' engagement with this video is that most of the children visible in the video are children of color, and the teacher is a white woman. As described to teacher candidates prior to their first viewing of the video clip, there are 30 students in the class, 22 of whom identified as Black, 4 as Latinx, and 4 as white (Sensemakers Class 1 Field Notes, 2/17/20). In particular, the identities of Toni and Aniyah as Black girls, as well as Dante's identity as a Black boy and Katherine's identity as multilingual and Latinx, were focal considerations in viewings and discussions of the video. For example, during my observation of the first class session for Sensemakers, I noted the following:

The lead instructor makes the point that the dominance of racialized ways or the gendered ways of reading children is actually interactive with our ability to actually hear what children are saying. She gives the example of Toni as someone teacher candidates might want to particularly watch this time, notice what it is that she's doing and think about why is it that people who watch this video often read her as mocking Aniyah, or that she's not listening. How is that related to her being a Black girl? What kinds of stereotypes or patterns does that reflect? (Sensemakers Class 1 Field Notes, 2/17/20)

Here, the lead course instructor explicitly identifies Toni as a Black girl and prompts teacher candidates to think about how Toni's identity might impact how people watching the video hear and interpret her. Direct attention was similarly drawn to the racial and gender identities of Aniyah, Dante, and Katherine at other points in discussions of the video clip. Lakeya, Jamari, Marcus, and Kennedy's racial and gender identities were not explicitly named by course instructors or centered in prompts for reflection and discussion. That said, given that teacher candidates were repeatedly encouraged to consider how race and gender shaped their "reads" or

ways of seeing children, it is plausible that they attended to Lakeya's identity as a Black girl and Jamari, Marcus, and Kennedy's identities as Black boys, at least on some level.

Another important feature of the Toni and Aniyah video is that Aniyah shares and explains an answer that conveys important mathematical understanding, even though it is not "correct" in the conventional sense. Specifically, Aniyah explains that she arrived at one seventh "because there's seven equal parts" and uses her fingers to count segments on the number line, starting from 0 and moving to the right. This is notable because it is quite common for children to count tick marks, rather than the lengths *between* tick marks, when counting fractional parts on a number line; in contrast, Aniyah's gestures and explanation make clear that she is counting equal lengths. In addition, if one sets aside the whole number labels (0, 1, 2) on the diagram, Aniyah's naming of the fraction as one seventh *makes sense* and reflects conventional fraction notation — there *are* seven equal segments shown on the number line, and the orange arrow points to the end of the first segment. If the whole consisted of seven equal segments, we *would* denote the distance from 0 for one of those segments as  $1/7$ . The main thing that Aniyah has overlooked is how the whole or unit is defined on the diagram, which is not at all unusual in children's early experiences with fractions on a number line (Petit et al., 2016).

Aniyah's specific answer and explanation make this video ripe for discussion in a couple of different ways. For one, teacher candidates' first instinct may be to dismiss Aniyah's answer as "wrong," which could reinforce deficit-oriented assumptions about Aniyah's mathematical competence as a Black girl. This instinct can be challenged on both mathematical and racial fronts. As one gains an appreciation for core fraction concepts and common patterns in children's thinking about fractions on a number line, it becomes clear that Aniyah genuinely *is* contributing important mathematical ideas to the class discussion. As the lead course instructor

put it, when one looks closely at what *does* make sense about Aniyah’s answer, it is actually an answer that is “more correct than incorrect” (Sensemakers Class 8 Slides; Module Notes). Being able to recognize and acknowledge Aniyah’s mathematical competence requires both specific mathematical knowledge for teaching *and* a particular orientation towards math teaching and learning; thinking within the traditional binary of right and wrong answers would likely impede or trivialize efforts to name Aniyah’s mathematical strengths and contributions. Moreover, sincerely acknowledging Aniyah’s competence entails resisting deficit assumptions about the mathematical abilities of Black girls. Thus, Aniyah’s answer and explanation in this clip offers opportunities for teacher candidates to grapple with issues that are racialized *and* mathematical.

**Use of the Toni and Aniyah Video Across the Course Sequence.** Both the short and long versions of the Toni and Aniyah video were used multiple times across the math teaching course sequence. At times, the video was the direct focus of discussion during class sessions. At other times, course instructors and teacher candidates made impromptu references to the video as an example of a larger point or in making connections between course ideas. Beyond in-class work and conversation, the video was also used a context for online discussion threads and asynchronous tasks, such as identifying examples of mathematical competence shown by Lakeya and Dante. In addition, the long version of the Toni and Aniyah video was used in a formal graded assignment in Math Methods, the Analyzing Participation assignment.

Course instructors used the Toni and Aniyah video to introduce and develop several ideas and practices involving purposeful attention to issues of race and racism inside of mathematics teaching. For example, as mentioned above, the longer version of the Toni and Aniyah video served as a launch in Class 1 of Sensemakers for course work on “reading” or interpreting children. This strand of work emphasized that teachers’ identities, assumptions, and biases

interact with children's identities to impact how teachers see, hear, interpret, and instinctively respond to children. For instance, the lead course instructor named the possibility that a clash between white women's and Black girls' ways of talking might explain why white women teachers often interpret Toni as being rude (Sensemakers Class 1 Field Notes, 2/17/20). In conjunction with working to be aware of how identity might be influencing interaction between teachers and students, course instructors encouraged teacher candidates to actively seek out and consider alternate reads and interpretations of children. For example, the lead instructor commented, "The point is for us to talk them and think 'What is another read? What is another way to see the children?'" (Sensemakers Class 1 Field Notes, 2/17/20). In this way, the Toni and Aniyah video offered teacher candidates an opportunity to examine and rethink their instinctive reads of children of color in a mathematics context with attention to their own racial identities, assumptions, and biases as teachers. This surfaced both race- and math-specific demands of race cognizant math teaching.

In addition to the notion of "reading" children, the Toni and Aniyah video was used to explore the concept of positioning. Without explicitly drawing on positioning theory (e.g., Davies & Harré, 1990), course instructors leveraged teacher candidates' intuitive ideas about what it would mean for children to be positioned as knowledgeable, mathematically competent, contributing to class, engaged in learning, and so on. This laid the foundation for course work on strategies like acknowledging competence (discussed at length in Chapter 4) for disrupting racialized patterns in how children are often positioned in mathematics and in school.

Another principal way that the Toni and Aniyah video was used and connected to issues of race and racism was in course work on discretionary spaces. The concept of *discretionary spaces* holds that while larger social structures, such as institutional racism, necessarily impact

and shape classroom teaching and learning, the work of teaching is dense with moments and spaces in which teachers can exercise agency to resist, avert, and challenge the reproduction of unjust patterns (Ball, 2018). Course instructors illustrated this idea using the short version of the Toni and Aniyah video, emphasizing that in a small amount of time (a minute and a half), the teacher in the video exercises a great deal of discretion (Math Methods Class 2, Field Notes). This is made tangible by listing moments in the short video clip where other actors (e.g., a school administrator) or policies cannot determine what the teacher does (Math Methods Class 2 Slides). This illustration is reproduced in Figure 7, with an image of Aniyah on the left and an image of Toni on the right.

**Figure 7**

*Slide Highlighting Discretionary Spaces in the Short Toni and Aniyah Clip*

## DISCRETIONARY SPACES IN JUST THESE FEW SECONDS

Speaker	Task	Discretionary space
Teacher	Who would like to try to explain what you think the answer is? And then as you're helping to come up to the board...	1. Deciding when to open the classroom discussion
Teacher	And you know, it might not be right. That's okay because we're learning something new.	2. Deciding what to do to launch discussion
Teacher	It's like to come up to the board and try to tell...	3. Planning the expectation for presenting
Teacher	What someone's presenting at the board, what about you...	4. Figuring out what it's going to be about the board's work
Teacher	Okay, Aniyah?	5. Deciding a student to present
Teacher	Playing with that...	6. Deciding whether to comment
Other students	Leaving on time...	7. Deciding whether to comment
Teacher	When someone's presenting at the board, what about you...	8. Deciding what to do to launch discussion
Students in a whole class	Leaving on time...	9. Responding to students
Teacher	Looking at that problem...	10. Taking up an individual student question
Teacher	Oh, huh?	
Teacher	You want me to write it?	
Teacher	You're going to read what you just explain how you figured it out?	
Teacher	Later, okay? And ask what you... and the answer. Alright, write it by the way.	
Teacher	Did she say one-seventh?	
Teacher	Later, okay? And ask what you... and the answer. Alright, write it by the way.	
Teacher	Did she say one-seventh?	
Teacher	Come to Toni's table. I want you to ask questions if there's something you don't understand about what she did.	
Teacher	No speaking and whispering. Just. All you can do right now is ask Aniyah questions. Who has a question for her?	
Teacher	Okay, Toni, what's your question for her?	11. Responding to student question
Teacher	You did not...	12. Responding to student question
Teacher	Why did (laughs at another student who says something to her from across the board)?	13. Responding to student laughing
Teacher	Oh, ahead, it's your turn.	14. Responding to student laughing
Teacher	Why did you pick one-seventh?	15. Responding to student laughing
Teacher	You did not...	16. Responding to student laughing
Teacher	Let's hear to that answer now. That was a very good question.	17. Taking up a student question
Teacher		18. Responding to student



Through discussion of the short Toni and Aniyah clip, course instructors tied the notion of discretionary spaces to specific moves that elementary teachers of mathematics might make in efforts to disrupt inequitable patterns. One specific pattern that course instructors highlighted is

racially disproportionate school punishment. For example, referencing the book *Troublemakers: Lessons in Freedom from Young Children at School* (Shalaby, 2017), course instructors emphasized that even well-intentioned teachers can easily and unthinkingly default to practices of exclusionary discipline, such as sending children away from a lesson or out of the classroom if the teacher perceives them as being disruptive. For instance, punishment and exclusion would be a not uncommon teacher response to Toni's laughter and the end of the short video clip (i.e., a teacher might have interpreted Toni as being rude or disruptive and asked her to "take a break" from the discussion). It is well-documented that such school practices disproportionately punish students of color, and Black students in particular (Girvan et al., 2017; Gregory & Roberts, 2017; Milner, 2018; Milner et al., 2019; Skiba et al., 2002; Smolkowski et al., 2016).

Course instructors shared data on this pattern of racially disproportionate and unnecessarily punitive responses to student behavior through an asynchronous module in Math Methods Class 4. Then, drawing on the notion of discretionary spaces, course instructors emphasized that teachers actually have quite a lot of power in small moments to work towards the disruption of punishment patterns. For instance, teachers can pause and actively consider alternate interpretations of what children are doing (e.g., perhaps a child is asking a genuine question rather than trying to be funny) and whether there is evidence that the child's actions are distracting from children's learning, or are just bothersome to the teacher (i.e., teachers can consider the distraction principle from Noel, 2018, described in Chapter 3). Thus, the Toni and Aniyah video served as a shared context in which to explore discretionary spaces and the possibility of teachers exercising their agency to work towards the disruption of inequitable patterns, such as racialized patterns of over-punishment. Work with the Toni and Aniyah video across Sensemakers and Math Methods is summarized in Table 4 below.



**Table 4***Overview of Work with the Toni and Aniyah Video*

Class Session	Work with the Toni and Aniyah Video	Sample Prompts for Reflection and Discussion	Big Idea / Theme
Sensemakers Class 1	<ul style="list-style-type: none"> <li>Two viewings and extended discussion of the long version of the video during class.</li> <li>Examination of children’s written work tied to the video.</li> <li>Reflection on shifts in noticing based on second viewing.</li> </ul>	<ul style="list-style-type: none"> <li>What does each of the children—Aniyah, Toni, Lakeya, Dante, and Katherine— appear to know and be able to do?</li> <li>What do you think might be ways in which any of these children might be “read” or interpreted? How are children being positioned in this class?</li> <li>Think about whether any race, gender, or language biases or stereotypes are affecting your reads or reads that other people might have.</li> <li>What does the teacher do to position children as knowledgeable, mathematically competent, contributing to class, engaged in learning, etc.?</li> </ul>	Reading children, positioning
Sensemakers Class 4	<ul style="list-style-type: none"> <li>Asynchronous task: Identify examples of mathematical competence for Lakeya and Dante.</li> </ul>	<ul style="list-style-type: none"> <li>What did Lakeya / Dante do and why is that an example of competence?</li> </ul>	Acknowledging competence
Sensemakers Class 5	<ul style="list-style-type: none"> <li>Lead instructor uses the video as a context for introducing the concept of a “discretionary space” (this involves replaying the shorter clip and identifying discretionary spaces).</li> <li>Asynchronous task: Practice choosing a next mathematical example to pose.</li> </ul>	<ul style="list-style-type: none"> <li>What are some of the ways that someone might respond to Aniyah and what are some ways a teacher might respond to Toni?</li> <li>Teachers often act without realizing that they have the discretion to do something different. Why might that be? Why might teachers do things without noticing how what one decides to do or the moves one makes might in themselves reinforce sexism or racism or oppression or marginalize students in some way?</li> </ul>	Discretionary spaces, power of teaching

Sensemakers Class 8	<ul style="list-style-type: none"> <li>Aniyah’s work is used as an example of an answer that is “more correct than incorrect” when lead instructor introduces identity-affirming and asset-based considerations for acknowledging competence through written feedback on children’s work.</li> <li>Asynchronous task: Practice providing written feedback (work samples are from students in the class shown in the video).</li> </ul>	<ul style="list-style-type: none"> <li>What do you see in Aniyah’s answer that shows competence?</li> <li>What does each child seem to know/understand? What can they do? What strengths in their writing and representation do you notice? What could be built on to support ongoing growth? If something seems incorrect, look closely.</li> </ul>	Acknowledging competence, asset-based interpretation of children’s mathematical thinking
Math Methods Class 2	<ul style="list-style-type: none"> <li>Viewing and discussion of short version of the video to review the concept of discretionary spaces.</li> </ul>	<ul style="list-style-type: none"> <li>What does this video make you think about the risks and affordances of paying attention to children’s identities in the context of a math discussion?</li> <li>What kinds of things might happen in these discretionary spaces, thinking about Toni and Aniyah’s identities as Black girls?</li> </ul>	Discretionary spaces
Math Methods Class 3	<ul style="list-style-type: none"> <li>Course instructors briefly introduce the Analyzing Participation assignment, which involves watching and analyzing the longer version of the Toni and Aniyah video (due Class 4).</li> </ul>	<ul style="list-style-type: none"> <li>Assignment framing: To practice paying attention to who contributes to class and what patterns of racism, sexism, and ableism are reproduced or interrupted in leading a classroom discussion.</li> </ul>	Disrupting patterns

Math Methods Class 6	<ul style="list-style-type: none"> <li>• Lead instructor gives examples from Toni and Aniyah video when revisiting and commenting on premises for the course.</li> </ul>	<ul style="list-style-type: none"> <li>• Following what is shown in the video clip, Toni summarizes the whole discussion. That's something to think about it in its own right – by not being read as silly or distracting, Toni is able to be someone who summarizes the discussion at the end.</li> </ul>	Value of math discussions
Math Methods Class 7	<ul style="list-style-type: none"> <li>• Lead instructor made comments on Analyzing Participation assignments and responding to errors (example of responding to Aniyah).</li> </ul>	<ul style="list-style-type: none"> <li>• Almost no one explicitly examined their own identity (e.g., how it matters if you're a white woman) when considering how they read Toni, Aniyah, Dante, etc.</li> </ul>	Reading children, teacher identity
Math Methods Class 8	<ul style="list-style-type: none"> <li>• Re-viewing the video (longer version).</li> <li>• Writing notes to the children in the video.</li> <li>• Small group discussion about shifts in thinking related to the video.</li> <li>• Writing to next cohort about viewing the video.</li> </ul>	<ul style="list-style-type: none"> <li>• Write a note to one of these children, thanking them for what they have helped you, as a new teacher, to learn.</li> <li>• What have you noticed about your own evolution with this video?</li> <li>• What do you want to say to the next cohort to support their viewing of this video?</li> </ul>	Reading children, teacher identity, trying to disrupt patterns is ongoing work

## 5.2 Co-Existence of Race Evasion and Glimpses of Race Cognizance

I now turn to a key finding about teacher candidates' race talk that lays an important foundation for all that follows. The finding is that for individual teacher candidates, patterns of race evasion *co-existed* with glimpses of race cognizance. In fact, it was not unusual for an individual teacher candidate to evade race in one moment and then indicate some critical racial awareness in another, all within the span of a single interview or course assignment. For instance, during her Round 3 interview, Evelyn shared the following reflection:

What made me wanna go into education is this *commitment to all students* and helping them be the best version of themselves, and I think that that's been strengthened throughout the program and along the lines of what I was talking about just a second ago, in that *all students have these strengths* that can be built upon and noticed and named to help them become better at the content, and also the other skills that we're focusing on in the classroom, and part of that includes feeling comfortable in their own identities and all parts of those identity groups and feeling accepted in the classroom. (Evelyn, Round 3 Interview, 9/28/20, emphasis added)

Here, Evelyn focuses on what is good for “all students” without naming or speaking to race or racism specifically, which I see as a general equity-oriented form of race evasiveness. This is consistent with teacher candidates' embrace of general equity aims in their initial uptake of acknowledging competence during Sensemakers.

Yet, a moment later, after being asked a question about shifts in her thinking regarding race and racism inside of math teaching, Evelyn said:

What first comes to mind when I hear that question is the different groupings in terms of, say accelerated or the gifted and talented, or the higher-up groups, and just the lack of

representation of the actual student make-up and how those groups are mostly comprised of white students, while the Black students are normally placed in those lower or middle groups... *That racial breakdown was not indicative of the actual breakdown of the overall class...* I also just think of expectations. I think that because a lot of the teacher force is made up of, I feel like, in my head, a teacher is a middle-aged white woman... And I feel like with that in mind, there are plenty of blind spots that are brought in by people of those identities, *especially because white people, like white is the dominant culture that's valued in society, so many of these white women haven't had to think about — their implicit biases haven't been challenged,* so I think that often there's brought in this lower expectation of certain students and with those lower expectations, they're not held to the highest standard, they're not pushed to achieve all that they can achieve, so without this high expectation, students aren't gonna achieve as highly. (Evelyn, Round 3 Interview, 9/28/20, emphasis added)

In this second excerpt, Evelyn uses clear racial terms (“white,” “Black,” “racial breakdown”) and offers a critical analysis of racial disproportionalities in which students are designated as “gifted and talented.” She also speaks to how white women teachers, the bulk of the elementary teaching force, are likely to enact implicit biases through lowered expectations of “certain students” (i.e., students of color). Here, Evelyn shows signs of race cognizance in that she names a specific racialized inequity and addresses individual teachers’ potential to contribute to that inequity through their classroom practice. She also explicitly points to impact of dominant white culture on how white women teachers are socialized to not question their assumptions.

These two excerpts are from the same interview, just minutes apart; they demonstrate how, almost in the same breath, a teacher candidate can show evidence of *both* race evasion *and*

race cognizance. This co-existence of race evasion and race cognizance occurred along both ideological and discursive lines. For example, as discussed in Chapter 4, Evelyn, Margaret, and Alex ultimately took up acknowledging competence in ways that were ideologically aligned with race cognizant aspects of the course construct *even though* they tended not to use direct racial language (i.e., they exhibited patterns of discursive race evasion). In addition, even when teacher candidates seemed to regularly demonstrate both ideological and discursive patterns of race evasion (as with Jason and Stacey) or race cognizance (as with Rachael), these patterns were not mutually exclusive with other ways of thinking and speaking about race and racism. For example, although Stacey often showed signs of discomfort with explicit race talk (e.g., frequent stops and starts, using euphemisms like students' "backgrounds" to refer to race), there were also times where Stacey used direct racial terms to critically analyze racial inequalities and patterns. For instance, in her final interview, Stacey characterized social norms in schools as white, and talked about checking her own biases as a white teacher. Likewise, although Rachael stood out from other participants in more consistently using direct racial language and offering critical analyses of racial inequities, she also at times evaded explicit race talk (e.g., referring abstractly to "these issues") and indicated race evasive ideological tendencies, such as universalizing teaching practices like acknowledging competence. Thus, teacher candidates did not display discursive and ideological patterns that were uniformly race evasive or race cognizant.

This finding both confirms and complicates what one might expect based on prior research. On the one hand, that fact that participants often evaded direct talk about race and racism echoes well-documented patterns regarding white teacher candidates' race evasive tendencies and resistance to race-conscious teacher education (e.g., Bell, 2002; Case & Hemmings, 2005; Epstein, 2019; Fasching-Varner, 2013; Myers & Williamson, 2001; Rudnick,

2019; Ullucci & Battey, 2011). It is not surprising that teacher candidates would use language like “identity” and “culture,” or invoke ideas of treating all people equally to respond to interview questions and assignment prompts about issues of race and racism. On the other hand, however, this finding unsettles the storyline of white teacher candidates reliably evading and resisting discussions of race and racism. Race evasion was not the whole story, as race evasive patterns co-existed with teacher candidates engaging in direct race talk, offering critical racial analysis, and buying into anti-racist projects. Therefore, I suggest that white teacher candidates can and do move toward race cognizance, even if that movement is not straightforward or irreversible. In the next section, I provide some conceptual tools to make sense of and sort out this complexity.

### ***5.2.1 Categories for Characterizing Types of Cases***

While there was evidence of both race evasion and race cognizance in all six focal teacher candidates’ discourse, the cases of these participants were not all the same. Though my analysis, I developed conceptual categories to characterize and distinguish between different types of cases. These categories involve the distinction I introduced in Chapter 4 between ideological and discursive patterns of race evasion. I extend this distinction to race cognizance, as teacher candidates can *sound* like they are confronting issues of race and racism through direct race talk without necessarily reflecting race cognizant ideological commitments. In other words, teacher candidates’ race discourse can be characterized as more race evasive or more race cognizant with respect to *talk patterns* (i.e., their use of explicit racial terms) *and* with respect to *ideological alignment*. While the specific ways that these six focal teacher candidates engaged in combinations of discursive and ideological race evasion and race cognizance may be somewhat unique to this study, the conceptual distinctions that I make here can serve as analytic tools for

other teacher educators and researchers. In addition, the high-level patterns, such as white teacher candidates evading race words while indicating alignment with some race cognizant ideas and commitments, represent broad *types* of cases that others might look for and recognize.

### ***5.2.2 An Anchor Representation***

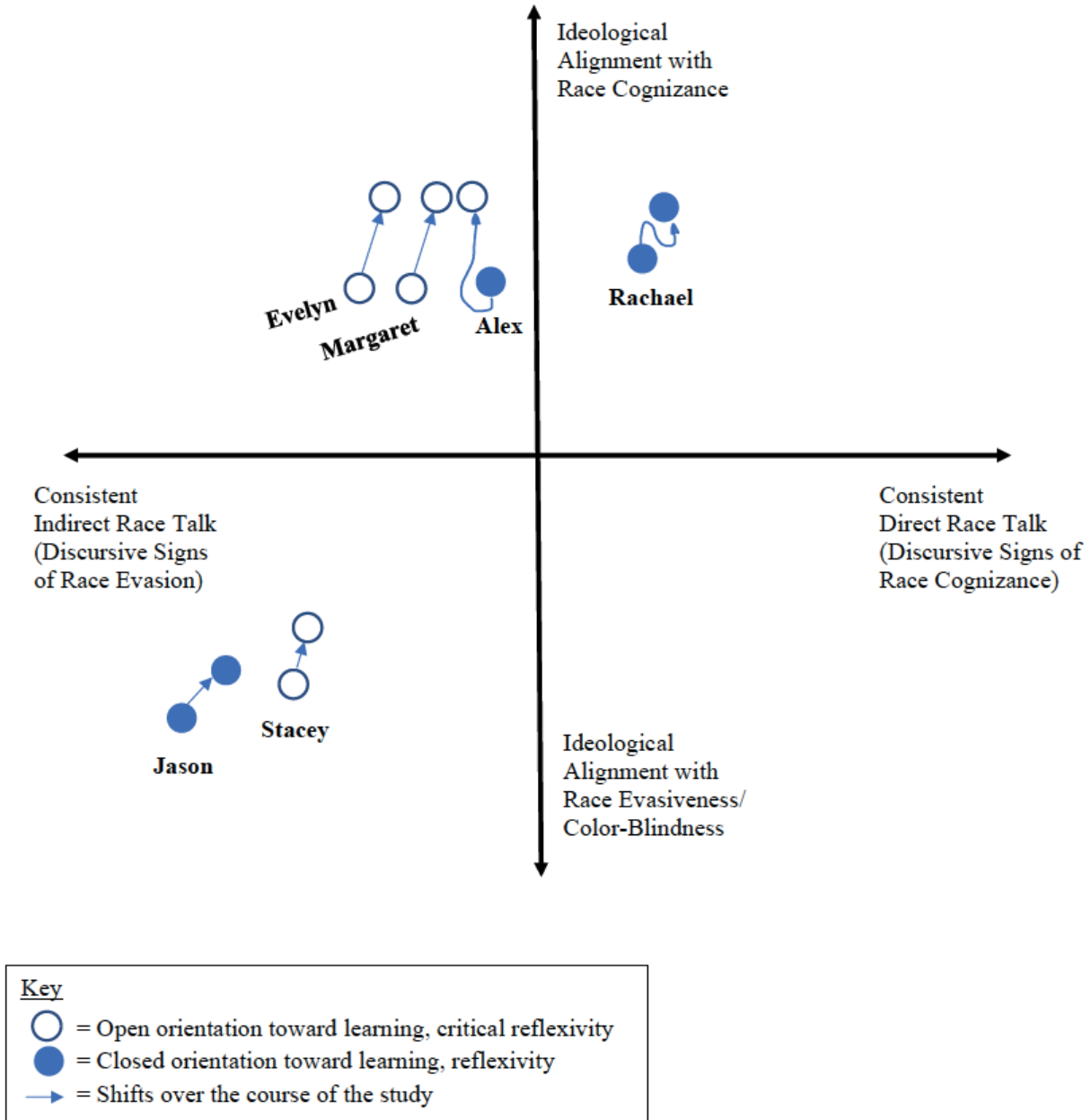
Building from this initial finding that evidence of race evasion and race cognizance do not preclude one another, the rest of this chapter details specific patterns in teacher candidates' participation in race evasive and race cognizant Discourses (Frankenberg, 1993; Gee, 2012). To anchor my presentation and discussion of these patterns, I offer the visual representation in Figure 8 (see below). This representation shows my conceptual distinction between ideological and discursive dimensions of race evasion and race cognizance. The horizontal axis represents the discursive dimension (ranging from consistently *indirect* to consistently *direct* race talk) and the vertical axis represents the ideological dimension (ranging from alignment with race evasive or color-blind ideology to alignment with race cognizant ideology).

In the figure, each focal teacher candidate is represented with two circles connected by an arrow. The placement of the first circle reflects my sense of each teacher candidate's discursive and ideological tendencies at the *outset* of the study, and placement of the second circle reflects my analysis of their discursive and ideological tendencies at the *end* of the study. For example, because Jason tended to avoid explicit racial language, minimize the relevance of racism, and focus on an individual conception of racism over the course of the study, his circles are located on the more race evasive side of both the discursive and ideological axes. In contrast, Rachael often spoke explicitly and critically about systemic racism in a way that aligned with race cognizant premises, so her circles are located on the more race cognizant side of each axis.



**Figure 8**

*Teacher Candidates' Ideological and Discursive Patterns*



When interpreting the placement each participant in this representation, it is important to keep in mind the key finding just presented — discursive and ideological patterns of race evasion co-existed with glimpses of race cognizance. Thus, locating a participant further to the left or

right, further up or further down, indicates *tendencias* that do not preclude other patterns. For instance, although I have placed Evelyn, Margaret, and Alex's circles to the left of the vertical axis (i.e., closer to consistent indirect race talk than to consistent direct race talk), all three showed a combination of race discourse habits, such as speaking about students in general in some moments and explicitly naming racial groups and issues of racism in other moments. By placing these participants on the left side of the vertical axis, I seek to convey that *on the whole* they tended to engage in indirect race talk more often than they engaged in direct race talk. This is a qualitative characterization based on my consideration and interpretation of the full data set, not a quantified or standardized measure.

In addition, the arrows in Figure 8 indicate teacher candidates' trajectories and shifts over time. For example, the arrows for Jason, Stacey, Evelyn, and Margaret point upward and to the right, with slight variations in degree. This indicates that, over time, these teacher candidates picked up and used language (e.g., "patterns of racism," "marginalization") that led to more direct race talk; they also conveyed ideas that were increasingly aligned with race cognizant ideology. The reader will notice that the arrows for Alex and Rachael are curved and winding; this is to reflect their reversals and non-linear trajectories over time, which were discussed in Chapter 4. For example, although Rachael initially explained acknowledging competence in a way that aligned with race cognizant premises and aims, she later reverted to a more generic interpretation of the practice; this is shown in the initial upward trajectory then downward turn of her arrow. Yet, during Math Methods, Rachael critically engaged with racialized patterns in how teachers respond to perceived disruptions by students; this is indicated by the later upward turn of her arrow. Again, this representation is meant to convey qualitative characterizations of shifts over time, not quantified differences.

The final layer of this representation is that each circle is either “open” (i.e., not filled in) or “closed” (filled in) to indicate teacher candidates’ orientations towards learning about issues of race and racism and considering their own potential complicity in systems of racial domination. This speaks to the critical reflexivity component of race cognizance. That is, race cognizant Discourse entails a willingness to interrogate one’s own involvement in racial systems and an awareness that one can still reinforce and reproduce racist patterns even with “good intentions.” Thus, my use of open and closed circles offers another category for interpreting and distinguishing teacher candidates’ indications of race evasion and race cognizance. For instance, while I have located Jason and Stacey in the same quadrant with respect to discursive and ideological patterns of race evasion, I distinguish between Stacey’s openness and Jason’s relatively closed orientation towards further learning about race and racism and considering the possibility that he might contribute to patterns of racism.

In the sections that follow, I provide examples to illustrate, substantiate, and add nuance to the patterns I have represented in Figure 8. I organize my presentation into two major parts, corresponding with the discursive and ideological axes of the representation: (a) examining language and different forms of race talk and (b) examining ideological implications of race talk.

### **5.3 Examining Language and Different Forms of Race Talk**

Focusing on the language that teacher candidates used when they talked about race or racism, I found that participants did not uniformly engage in singular types of race talk. It was quite common for the same person to engage in indirect race talk in one moment, and direct race talk in another. That said, as indicated by the representation in Figure 8, there were still some underlying patterns in the ways that individual teacher candidates tended to talk about race and racism. These patterns revolved around teacher candidates’ likelihood to label people, practices,

or issues in racial terms (Pollock, 2004) as well as their propensity to clearly explain and unpack their racial meanings. For instance, shown furthest to the left in Figure 8, Jason and Stacey often reflected the linguistic style of color-blind racism (Bonilla-Silva, 2002), leaving racial meanings implicit. By comparison, Evelyn, Margaret, and Alex were more likely to use clear racial terms, but they also often used general equity and justice language and tended to leave implicit how race or racism were relevant. That is, they were often indirect about their racial meaning. Thus, they are located to the right of Jason and Stacey, but still to the left of the central axis.

This section describes and illustrates different forms of race talk, which I group into three major categories: (a) indirect race talk, (b) general equity- and justice-oriented language, and (c) direct race talk. As I document and analyze teacher candidates' race talk, I develop a central argument about the relationship between teacher candidates' use of language and their racial ideologies. Namely, although teacher candidates' use (or non-use) of racial language certainly provides some insight into their thinking about race and racism, discursive signs of race evasion or race cognizance do not necessarily provide evidence of ideological alignment. For instance, contrary to what one might assume, teacher candidates' use of direct racial language did not necessarily indicate racial understanding that reflected race cognizance. Likewise, evasion of direct race talk did not necessarily indicate alignment with race evasive or color-blind ideology (Bonilla-Silva, 2018). Quite frequently, teacher candidates' talk raised more questions about their racial ideologies and learning than it answered. Moreover, none of teacher candidates' talk, however explicit about race, precluded deficit-based assumptions about people and communities of color. Ultimately, I show that teacher candidates' use of language, while an important source of data, offers a complicated and often ambiguous window into teacher candidates' thinking and learning with respect to race cognizant teaching.

### 5.3.1 *Indirect Race Talk*

What did it sound like when participants talked about issues of race and racism, but did so implicitly, without direct racial language? In some ways, participants exhibited the linguistic style of color-blind racism (Bonilla-Silva, 2002). For instance, teacher candidates avoided racial epithets associated with Jim Crow racism and sometimes exhibited rhetorical incoherence when talking about race and racism (Bonilla-Silva, 2002, 2018). Yet, teacher candidates also used forms of what I am calling *indirect race talk* that are slightly different from the race evasive discourse patterns that Bonilla-Silva and others describe. For example, teacher candidates often sidestepped direct racial language by referring to students by name (e.g., Toni, Aniyah), making coded comparisons between school districts, and using impersonal pronouns (e.g., “it” or “these issues”) to allude to issues of race or racism. Thus, this section expands on previous work on race evasion and color-blind discourse by detailing the forms of indirect race talk used by this sample of white teacher candidates. I do not make claims that these discursive patterns extend to all white teacher candidates or all white people. Instead, I suggest that the *categories* of talk that I identify could serve as tools for recognizing and interpreting indirect race talk in other contexts.

**Naming Students.** One way that focal teacher candidates responded to questions and prompts about issues of race and racism without using race words was by giving examples that referred to children by name, invoking their racial identities only implicitly. Because the Toni and Aniyah video was such a familiar example, teacher candidates frequently mentioned students from the video without further explanation. For instance, Margaret said the following when asked what had been most helpful from Sensemakers or Math Methods in supporting her thinking about race and racism in math teaching:

I mean, definitely seeing — I know people have different opinions about this, but I liked seeing the same video and we focused on the students and then we focused on the teacher. And obviously, I feel like Toni was, Toni was really influential to a lot of people because they were like, "She's calling out. She's kind of just like calling out, being loud." Something that was really surprising to me to see, she got the right answer. I remember looking at student work and she was one of the only students that got the right answer. And so, I feel like not knowing these things we would have seen her as not being able to do the math and just being disruptive. I think knowing that those are only distractions to you and that she is capable doing the math. And she asked, "How do you know that's one-seventh?" She's asking a question that's not disruptive. (Margaret, Round 4 Interview, 12/17/20)

Although Margaret does not use any race words here, I interpret her talk as being about race and racism because it is in response to an interview question that named race and racism directly. Margaret brings up the class's repeated viewings of the Toni and Aniyah video as something that supported her thinking about race and racism in math teaching. The overall point that Margaret seems to be making could indicate race cognizant learning: from the class's discussions, Margaret realized that there were alternative ways to interpret Toni's question that resist default assumptions that Toni was not mathematically capable and was being disruptive. Yet, Margaret does not name Toni's identity as a Black girl as influencing how she or her classmates initially read Toni. She refers to Toni by name without rearticulating *why* people may have interpreted Toni as calling out or being loud or why knowing "these things" helps in seeing Toni as mathematically capable. Additionally, Margaret invokes the distraction principle<sup>18</sup> (and,

---

<sup>18</sup> Margaret's references to "not knowing these things" and to the distraction principle illustrate additional types of indirect race talk (namely, alluding to issues of race and racism using pronouns and making compressed references

presumably, the goal of interrupting racialized patterns of over-punishment) by noting “those are only distractions to you” and emphasizing Toni was “asking a question that’s not disruptive.” However, Margaret does this without unpacking how the example of interpreting Toni’s question as not disruptive is related to her learning and thinking about race and racism in math teaching. Thus, while there is the possibility that Margaret was engaging with race cognizant ideas emphasized by course instructors, her indirect race talk makes this uncertain.

This tendency of naming students from the Toni and Aniyah video without elaborating on connections to issues of race and racism was evident across all six focal teacher candidates. This pattern was particularly notable in the context of the Analyzing Participation assignment in Math Methods, where, among other things, teacher candidates were tasked with the following:

You will analyze the extent to which common patterns of practice (e.g., controlling behavior, labeling students, foregrounding correct answers, positioning students in deficit frames) that reflect whiteness and that contribute to the perpetuation of racism or sexism are being enacted or disrupted. (Analyzing Participation Assignment Directions)

Having been asked to write about the perpetuation or disruption of patterns of racism or sexism, many teacher candidates used the language of the prompt in their responses (i.e., they wrote about the teacher’s practice in the video as interrupting or reproducing “patterns of racism and sexism”). I interpret this as teacher candidates “studenting” (Goldin, 2010) and signaling their attentiveness to the directions. Aside from restating the prompt, though, teacher candidates often relied on naming students in the video as an explanation for how patterns of racism and/or sexism were implicated. For instance, as I shared in Chapter 3, Jason wrote, “At 1:20, the teacher

---

to course ideas) that I describe below. I note this here to point out that teacher candidates used different forms of indirect race talk in overlapping and interconnected ways. The distinctions I make between these types of talk are for analytic purposes; in actuality, the different forms of talk frequently coincided.

interrupted a pattern of racism and sexism by validating Toni’s question and by focusing on the content of her question and by not misinterpreting or overreacting to the way in which Toni posed her question” (Jason, Analyzing Participation Assignment). Jason names Toni but does not unpack or explain how the teacher’s response to Toni’s question relates to broader racialized and gendered patterns. It could be that Jason (and other teacher candidates) took Toni’s identity as a Black girl and patterns in how Black girls tend to be positioned in mathematics classrooms as a “given,” considering how the Toni and Aniyah video was framed and discussed in Sensemakers and Math Methods. Nevertheless, the rhetorical move of naming students enabled teacher candidates to respond to questions about issues of race and racism without explaining their reasoning or rearticulating the racialized patterns they had in mind.

**Coded Language.** In line with previous research (e.g., Castagno, 2008; Watson, 2012), teacher candidates sometimes talked about issues of race and racism by using coded language. By “coded language” I mean words that on the surface do not refer to race, but as used in context, carry racial meaning. In this study, the most prominent instance of coded language was teacher candidates referencing and comparing school districts to signal racial difference. This often occurred during interviews, as teacher candidates could safely assume that I was familiar with the local context and knew that the neighboring school district was majority-Black, whereas the school district where the university was located was majority-white. Thus, teacher candidates could effectively talk about racialized differences between the two districts without using any direct racial language, instead using the districts as stand-ins for racial descriptors. For example, when I asked Alex about their field experiences<sup>19</sup> during a Round 1 interview, Alex replied:

---

<sup>19</sup> Teacher candidates had one-semester field placements in the university school district and the neighboring school district during Year 1 of the teacher education program. Alex’s first placement was in the neighboring district.



So very different. So I was young fives then. So four and five-year-olds I was working with. I was in a room with a 20-year plus teacher who had taught a variety of levels of grades including fourth grade mostly, and then first, and then young fives, those are kind of the three top ones. And I saw her ability to manage her classroom very well, but I also saw how she was managing that classroom, and *I wondered how to better teach children to self-regulate rather than doing so much of the regulation for the children*. And while, what I saw in her classroom was very small scale, what I saw and observed in a first-grade classroom and other classrooms was constant regulation of students' bodies physically, their voices, all day long, in a way that seemed very disruptive to all students learning... And I guess that was when I saw, *versus now I am in a responsive classroom*. If a student is choicing out of an activity or a lesson, it's generally not something that becomes extremely disruptive until other students, they maybe choose also to choice out but I've seen ways that teachers have handled that appropriately and I've seen a lot of really aligned practices with Responsive Classroom, and *aligned with what I have learned through the program to describe as best practices* and encouraging thinking and processing and whole student-ness. And so many different things. Yeah, and so I guess I see a huge contrast and — yeah. (Alex, Round 1 Interview, 2/21/20, emphasis added)

Although Alex does not use any direct racial language here, they are noticing and commenting on racialized differences between the two school districts. It is not just happenstance that Alex noticed “constant regulation of students' bodies” in the majority-Black school district in contrast to children having options to “choice out” and being encouraged to think and process their emotions, as suggested by a progressive approach to classroom management (Responsive Classroom), in the majority-white district. These patterns have roots in anti-Blackness and

dominant conceptions of white children as innocent (R. Epstein et al., 2017; Martin, 2019; Thompson, 1998), not to mention vast race- and class-based structural inequities in the funding, staffing, and expectations of teachers in each district (Ushomirsky & Williams, 2015). Yet, Alex does not interpret or unpack their observations as being impacted by race or racism. Instead, Alex seems to implicitly view teaching in the majority-white district as “better” and more “appropriate” than teaching in the majority-Black district without questioning how or why the observed differences in practice came to be. By couching their commentary in a comparison of two school districts, Alex *hints* at awareness of racialized patterns without directly articulating ideas about race or racism. I view this as an instance of coded language because such comparisons between the two school districts invoke racial differences without naming race.

Other teacher candidates similarly used comparisons between school districts as a coded and indirect way to speak about racialized issues. For example, in her Round 3 interview, Stacey relayed that she felt “like a bad person” because her daughter had transferred from the neighboring school district to the district where the university is located. When I asked Stacey to say more, she said:

'Cause we live in [neighboring town] and she is school of choice. And the reason why I chose it is because even at the charter school, I saw the things that she was being exposed to. And as a mom, I try to keep her sheltered as I can from things like that, and that's why I chose to put her in school of choice in [university town] because I just worry about, uh, again, stereotypes, right? But I worry about what she's exposed to and being bullied. And she's a very sensitive kid and she wants everybody to like her and I just — I worried about her, you know, just from all the things that I saw and just being a paraprofessional and seeing, having to clear out a room because a kid was throwing chairs and desks. And

I just really worried about her and her not getting what she needed. Or not what she needed, but what I wanted her to get out of school. (Stacey, Round 3 Interview, 9/24/20)

Much like Alex, Stacey talked about differences between school settings that are patterned along racial lines (e.g., perceptions of schools with students of color as being violent; J. H. Price & Everett, 1997) without acknowledging that race or racism might be impacting her observations. This illustrates how, as in previous scholarship documenting coded uses of words like “urban” and “suburban” (e.g., Chou & Tozer, 2008; Watson, 2012), teacher candidates talked about local school districts in ways that carried racial meaning without explicitly naming race or racism. This fosters ambiguity around how teacher candidates are understanding racial issues.

**Implicit References.** Another way that focal participants talked about race and racism without using direct racial language was by implicitly referring to issues or events with clear racial significance (e.g., police violence against Black people, Black Lives Matter protests) as well as ideas that were framed as addressing racialized patterns in the math teaching course sequence (e.g., reading children, discretionary spaces, the distraction principle). In this form of indirect race talk, teacher candidates relied on the fact that other people (including myself, as an interviewer) had already made explicit connections between the topic at hand and issues of race and racism. Because race and racism were already named or invoked, teacher candidates could reasonably assume shared understanding of references such as “these issues,” not using direct racial language while still being responsive to the question or prompt.

On some level, making implicit references is a natural and predictable conversation pattern. People refer back to ideas rather than restating them all of the time (e.g., “everything that’s been happening,” “in response to your question”); this allows conversations to flow and build without feeling redundant. It would be impractical for people to re-explain their ideas in

every conversation. However, in the context of this study, implicit references made it much harder to discern what teacher candidates were thinking and learning about race and racism in relation to math teaching. Shorthand mentions of “learning a lot” from Toni, for instance, raise multiple questions: What exactly were teacher candidates taking away from class discussions of the Toni and Aniyah video? Was their learning in line with race cognizant ideology, or might course efforts have inadvertently reinforced deficit-oriented ideas about children of color? Relying on an implied references and operating as if those references are clearly shared can obscure underlying differences in what each speaker is thinking and understanding. In this case, that could mean that teacher candidates *appeared* to be moving towards race cognizance while still harboring race evasive ideologies and/or problematic racial views. To be clear, I am not asserting that teacher candidates were consciously using this strategy to avoid direct race talk or genuinely expressing their learning. Instead, my point is that, *in effect*, teacher candidates’ use of implicit references enabled them to talk about racial issues without using direct racial language and without explicating their thinking about race and racism, which poses challenges for teacher educators seeking to assess and support the development of race cognizant teaching. I now illustrate two common varieties of implicit references made by participants: (a) alluding to race or racism with pronouns and (b) making compressed references to race-related course ideas.

***Alluding to Race and Racism with Pronouns.*** During interviews, I routinely made a point of posing questions that explicitly named race and racism. For example, I regularly closed interviews by asking about any shifts or lingering questions in teacher candidates’ thinking about how race and racism are connected to math teaching. In analyzing interview transcripts, I found that my direct prompts and explicit framing of my interest in participants’ thinking about race

and racism often resulted in responses that *took for granted* that race was a focus. For example, at the end of her Round 4 interview, Rachael reflected:

I grew up in this little bubble, and I would have never known *any of this*, and going in and knowing what I know now, I feel like if I didn't know *it*, I would be creating a lot of those harms that Carla Shalaby [author of *Troublemakers*, guest speaker in Math Methods Class 8] was talking about. And it kind of scares me that all of these other programs don't talk about *it* because all of these teachers are going into the workforce, and what are they doing? They're perpetuating *all of these issues*. So I'm really grateful for people like you and for people like all of our professors who really focus on race and racism. And *it's* become something — I would have never thought that *this* is something that I'm so passionate about, growing up in a conservative small town, and I'm really grateful for *it*. (Rachael, Round 4 Interview, 12/9/20, emphasis added)

In this comment, Rachael repeatedly refers to issues of race and racism (presumably in the context of elementary teaching) using the pronouns “this,” “it,” and “these issues.” Though Rachael does at one point state directly that she is referring to a focus on race and racism, she does not unpack *what it is* related to race and racism that she now knows, is passionate about, and is grateful for. This example illustrates how a teacher candidate can, in effect, talk about race and racism without clearly articulating their racial understandings and ideology — pronouns stand in for direct race talk. As with the example from Margaret above, Rachael’s comments *could* plausibly signal race cognizant ideas and commitments, but the indirect nature of her talk makes this unclear.

An example from Stacey further demonstrates how participants could rely on pronouns to allude to issues of race and racism and *talk about race* without conveying substantive *ideas*

about race or racism. During Round 3 interviews, I recounted salient race-related events from the summer of 2020 (e.g., racial justice protests sparked by the murder of George Floyd) and asked teacher candidates how they were making sense of those events as white people. In response, Stacey said:

Yeah. Actually, more as a mother, *these events* have really shown me how important it is to even bring *this* to [my daughter's] attention, my middle schooler and stuff. Again, because I grew up not even knowing *any of this*, and I just — I really want her to be aware of *it* and to be able to be an activist against *it*. And I feel like they're the future, so if we can really instill *it* in — you know, unfortunately, it's not gonna be a quick fix or whatever, but if we can really instill *this* in the kids that are going to be leading the country, that hopefully, *things* will end up changing. But I know it's gonna be a long road, and I don't know. Hopefully this election coming up will show some positive movement, but we'll see. (Stacey, Round 3 Interview, 9/24/20, emphasis added)

Here, Stacey uses “this” and “it” rather than directly naming racism or anti-racism. She also refers to “these events” and “things,” leaving it unclear what aspects of the contemporary sociopolitical context Stacey hopes will change. This ambiguity is not trivial, as Stacey made comments later in the interview expressing disapproval of Black Lives Matter protests “when it turns into vandalism” (Stacey, Round 3 Interview, 9/24/20). Thus, it is entirely possible that Stacey’s takeaway from “these events” was that police repression of Black Lives Matter protests was justified. Such a stance would diverge from a race cognizant understanding of racism as endemic and structural.

This evasion of direct race talk also made it challenging to decipher how Stacey was connecting ideas about race and racism to her teaching. For example, Stacey shared that several of her fall classes were addressing race and racism,<sup>20</sup> saying:

Now basically every class is really focusing in on it, especially [the course on teaching in a multicultural society]. But [a course on classroom management] with [instructor], she's starting — like really focusing in on it, and I even put in one of my reflections, I was like, "I'm so happy," because a lot of the questions that I had as far as implementing into the classroom is really being answered this — is starting to be answered this semester. And they're really giving us examples and ways, which was really nice, because before it was all learning about how to do it, but we never really had practical ways of — like examples or whatever. So I've been really glad about that. (Stacey, Round 3 Interview, 9/24/20)

What strikes me in this excerpt is that in addition to implying shared referents with the word “it,” Stacey described her course experiences without ever specifying the subject or object of her sentences. She talked about “implementing into the classroom,” but did not say *what* teacher candidates were learning to implement. She said her questions were being answered and she appreciated examples but did not specify what her questions were or what the examples were examples of. It seems that Stacey was signaling that she was excited to learn to think about race and racism and was “on board” with the race-related work occurring in her fall courses, but her reliance on indirect language and implicit references makes the precise nature of her learning and thinking about race and racism unclear. I interpret Stacey’s frequent use of implicit shared

---

<sup>20</sup> I inferred that Stacey was referring to work on race and racism here based on the context of the interview question. I had asked about any conversations Stacey had had about race, racism, or whiteness with friends, family members, or classmates coming out of summer 2020.

references as indicating some degree of discomfort with directly discussing race and racism, even as she conveys interest in promoting racial change.

*Compressed References to Course Emphases.* Another pattern in participants' race talk was referring in compressed and shorthand ways to course ideas and examples that had been framed as sites for considering and countering patterns of racial inequity. That is, teacher candidates sometimes named or invoked course emphases (e.g., attending to how students are positioned) without rearticulating how that course emphasis related to race or racism. For instance, teacher candidates frequently brought up the Toni and Aniyah video in response to direct questions or prompts about race and racism but did so without explaining how the video illustrated their points about issues of race and racism in math teaching.

Jason exhibited this pattern in his Round 2 interview in response to my question of whether he saw acknowledging competence as being connected to issues of race and racism. Jason said:

Definitely, yeah. Because of, you know, everyone's from a different background, from a different culture, and if we're not sensitive to that or if we're not trying to appreciate, you know, their culture, our students' culture and their background, it's very easy to misinterpret what's going on in the classroom. And as a result, we can have situations like the video we looked at in class, where, you know, students are like laughing as they're posing questions and we're misinterpreting that as students that are disengaged or they're being, you know, rambunctious instead of, you know, that's just her personality, that's her culture, her background. (Jason, Round 2 Interview, 4/9/20)

Setting aside Jason's talk about "culture" and "background" in lieu of naming race (an instance of race evasive language that could plausibly include attention to race, discussed below), this



example contains an implicit reference to the Toni and Aniyah video (“the video we looked at in class” where students are “laughing as they’re posing questions”). The comment also offers insight into Jason’s takeaways from class discussions about the video, namely that “it’s very easy to misinterpret what’s going on in the classroom” if teachers are not sensitive to “students’ culture and their background.”

Jason’s compressed reference to learning from the Toni and Aniyah video is significant because it disguises an ideologically race evasive interpretation as addressing issues of race and racism. Rather than naming or engaging with Toni’s identity as a Black girl, Jason speaks about “students” in general and universalizes the idea of appreciating that “everyone’s from a different background, from a different culture.” This evokes a version of liberal multiculturalism that lacks attention to racialized power structures and histories of oppression (May & Sleeter, 2010; Shah & Coles, 2020). Jason also displays patterns of whiteness by individualizing culture as a *trait* that students have, rather than engaging with the social and group-based aspects of cultural norms, practices, and histories (DiAngelo, 2010; Lewis, 2004). Echoing Frankenberg (1993) and Annamma, Jackson, and Morrison (2017), I argue that Jason’s non-naming of race here represents active evasion and avoidance, rather than a “not noticing.” Jason clearly views Toni as different from himself (a white man), as is indicated by his shift from the general “students” to the pronoun “her” at the end of his comment (“that’s just her personality, that’s her culture, her background”). Yet, he does not acknowledge the salience of race or racism in teachers’ potential misinterpretation of Toni. Here, my own familiarity with the Toni and Aniyah video and the ways that course instructors framed the video with explicit attention to children’s racial and gender identities and to racialized patterns in how children tend to be “read” created a situation in which Jason could make a shorthand reference to the video, evade direct race talk, and still

sound (to my ears, in the moment) responsive to the interview question. Only upon closer examination did it become clear that Jason's indirect race talk was an evasion of meaningfully reckoning with the impact of race and racism in a math teaching context.

Similarly, Alex made a compressed reference to the Toni and Aniyah video in a way that obscured Alex's reasoning about issues of race and racism in math teaching. When I asked Alex in their Round 4 interview about shifts in their thinking about race and racism in math teaching, Alex talked about "making space for all contributors" and "using examples that I might not otherwise think would lead a conversation forward" (Alex, Round 4 Interview, 12/15/20). I was not sure how Alex was connecting these ideas to issues of race and racism, so I probed further,<sup>21</sup> asking about readings or discussions from the math teaching course sequence that impacted Alex's thinking. Alex replied:

It's definitely, "Did she just say one seventh?" That's what it is for me, every time. And that's gonna stick in my mind, probably for life, and just that thought of, here's somebody who was confident and ready to share out and felt supported by a community of people to go up in front of the class and give an answer that was not mathematically accurate, but did so with confidence, and then was supported by a community of people who challenged the initial thinking. (Alex, Round 4 Interview, 12/15/20)

Here, Alex quotes Toni's initial question ("Did she just say one seventh?") about Aniyah's solution to the number line task, indicating that the Toni and Aniyah video had a definite impact on Alex's thinking and learning from the math teaching course sequence. Alex seems to be interpreting the video as an instance where a student (Aniyah) confidently shared her answer (which Alex characterizes as "not mathematically accurate") and was supported and challenged

---

<sup>21</sup> In the section on methodological dilemmas in Chapter 3, I discuss how my own failure to pose more direct follow-up questions about how Alex saw race and racism as relevant enabled continued race evasive talk.

by the class. Notably, Alex's response does not name or unpack their ideas related to race and racism; it is left to me as a listener to connect the dots between Alex's comments on the Toni and Aniyah video and shifts in Alex's thinking related to race, racism, and math teaching. My inference was that Alex seemed to have learned something about the value of math discourse and engaging with answers that appear incorrect, and because those ideas were connected to a video example in which the primary student participants were students of color, Alex brought up that learning in response to a question about how race and racism matter in math teaching. This compressed response leaves Alex's ideas about teaching mathematics to children of color (not to mention Alex's understanding of race and racism in relation to white people) unexplained and likely unexamined, including by Alex. As an instance of indirect race talk, this sort of compressed and shorthand reference to ideas and examples that had been framed in racial terms in the math teaching course sequence made it challenging to discern what teacher candidates were learning with respect to race cognizant math teaching.

### ***5.3.2 General Equity- and Justice-Oriented Language***

In Chapter 4, I characterized teacher candidates as more apt to take up acknowledging competence to pursue general equity-oriented goals, like recognizing all students' assets and mathematical strengths, than to pursue specifically race cognizant aims, such as strategically looking for and highlighting the mathematical competence of children of color. Here, I expand on this pattern, documenting ways that teacher candidates evaded direct race talk across the math teaching course sequence and interviews through their use of general equity- and justice-oriented language. This includes literal use of the words "equity" and "justice" as well as terms like "culture," "identity," "bias" and "oppression," which speak to social categories and issues that *could* include attention to race and racism, but do not make that attention explicit. When using

equity- and justice-oriented language, teacher candidates positioned themselves as people who were broadly committed to equity and justice, making it seem plausible that they were therefore committed to *racial* equity and *racial* justice. Yet, more specific commitments to challenging racialized patterns and racist structures were often left implicit.

**Palatable Race-Inclusive Terms.** As illustrated by Jason’s talk about students’ “different cultures” and “backgrounds” above, teacher candidates at times engaged in race talk by using terms that could conceivably include attention to race and racism but tend to be more comfortable and palatable to white people (Case & Hemmings, 2005; Haviland, 2008). For example, Jason’s talk about being sensitive to and appreciative of students’ different cultures and backgrounds *could* entail attention to students’ racial identities, but this is not something Jason says directly. My interpretation, which draws on a long history of critical scholarship in multicultural education, is that talk about culture<sup>22</sup> and different backgrounds is less threatening to and more in line with white liberal orientations because it does not necessarily require any recognition of the structural and systematic differences in how racialized cultural groups have been and continue to be treated in society (Banks, 2009; Nieto, 1995; C. Sleeter, 1992). In other words, by using terms like “culture,” one can seemingly address issues of race and racism and position oneself as “embracing diversity” without reckoning with the endemic and systemic nature of racism. Similarly, terms like “identity” and “bias” convey potential implicit attention to race and racism but tend to be more comfortable for dominant white sensibilities, perhaps because they lend themselves to a focus on individuals rather than on social groups, systems, and structures (DiAngelo, 2010; Lewis, 2004; Solomon et al., 2005; Unzueta & Lowery, 2008).

---

<sup>22</sup> I want to acknowledge that concepts of identity and culture are valuable and important in their own right. I am not suggesting that teacher educators should avoid such constructs, but rather arguing that teacher educators should be alert to ways that teacher candidates might embrace the language of identity and culture to appear responsive to race-focused work without engaging with more critical and structurally-oriented ideas about race and racism.

As with implicit references to race-related events, issues, and course emphases, teacher candidates' use of more palatable race-inclusive words made it challenging to determine whether they were reckoning with racialized patterns and structures impacting math teaching and learning. For example, consider Evelyn's response to my question about shifts and changes in the way she'd been thinking about race and racism in math teaching over the math teaching sequence. Evelyn said:

I think that the classes in general have just made me more aware of how like *culture* and *cultural identities* impact the way that we as people perceive like other people's actions. And that as the teacher and the person in power like, *you have to be aware of those identities and how they're influencing your perception*. Like in just how you're taking everything in because that influences the way you act towards certain students. Kind of like the video with Toni and Aniyah and drawing on your students to then to, you know, interpret behavior and see like — it also kind of ties to the distraction principle I think. Like is this only something that I'm perceiving as distracting or as rude or is it distracting other students? Are other students hurt by this? (Evelyn, Round 4 Interview, 12/10/20, emphasis added)

Given that Evelyn was responding to a question about race and racism, it seems fair to assume that she is using the terms “culture” and “identity” in race-inclusive ways. However, Evelyn's talk about cultural identities and their influence on teachers' perception of “certain students” makes it unclear whether Evelyn is conceiving of racism as solely a matter of individual bias — conscious or unconscious — or whether she is attending to the deeply patterned ways that children of color are positioned and interpreted in schools. Like other forms of indirect race talk, use of race-inclusive terminology complicates efforts to assess teacher candidates' shifts towards

race cognizant math teaching. At the same time, this example illustrates one way that a teacher candidate could potentially convey race cognizant reasoning and understanding without using direct racial terms.

**Ambiguous Use of Umbrella Terms.** In equity- and justice-oriented work, people often use words and phrases to encompass multiple forms and systems of oppression. I refer to these as “umbrella terms” as they function as a larger umbrella under which specific forms of injustice and oppression fall. For example, the phrase “patterns of marginalization” offers an overarching term for different axes of marginalization including race, ethnicity, class, gender, sexual orientation, language, dis/ability, citizenship status, and national origin. There is nothing inherently problematic about using umbrella terms in justice-oriented work; such terms serve an important purpose in recognizing that all injustices are not reducible to one axis of oppression (Collins, 1998; Crenshaw, 1989; Kumashiro, 2000; Omi & Winant, 1994). However, I found that teacher candidates sometimes used umbrella terms in ambiguous ways that raised questions about their intended meaning. For example, Alex often referred to “oppression” and Evelyn talked about “equity” in ways that *could* have included attention to race and racism but could also have reflected ideological race evasion.

A prime example of this pattern is Jason’s use of the term “marginalized.” As noted in Chapter 4, Jason referred to “marginalized students” in ways that made it unclear as to whether he was thinking about students across all social identities who were marginalized in terms of their mathematics identity (i.e., students who perceived themselves as not good at math) and/or students from historically marginalized social groups (e.g., students of color, multilingual students, students with dis/ability labels). This is significant because an emphasis on students marginalized with respect to mathematics *without* attention to those students’ social identities

would be a way of evading engagement with race and racism in math identity development (Varelas et al., 2012). During his Round 4 interview, when I first asked about a section of the math discussion planning template about anticipating patterns that might marginalize some groups of students, Jason's initial response seemed to attend to race, dis/ability, and language. He mentioned "I have a minority student in my classroom who is also — I think she also has ADHD, and so that is a factor" (Jason, Round 4 Interview, 12/9/20). Jason also mentioned "the EL [English Learner] in my classroom" who Jason felt he needed "to be doing more to re-engage him in the class" (Jason, Round 4 Interview, 12/9/20). Yet, shortly afterwards, Jason added on:

Oh, that is another thing about marginalizing students, is math is a really difficult content area to begin with, *so even for the most privileged students, if they are struggling with math, that is another area where they can get where they too can be marginalized 'cause they are just, they're struggling with the math and they are not participating much.* (Jason, Round 4 Interview, 12/9/20, emphasis added)

This addendum, with Jason's reference to "even the most privileged students," suggests that Jason was including white students "struggling with the math" in the category of students who may be marginalized in a math discussion. I do not disagree that white students can experience harm and exclusion in math classrooms. However, using the term "marginalized" to refer to these students introduces an alternate meaning for marginalization that is not about race or racism nor about *historically* marginalized groups.

As his Round 4 interview progressed, Jason repeatedly used the term "marginalized students" in ways that could plausibly have meant students with historically marginalized social identities and/or students marginalized with respect to mathematics. This ambiguity caught my attention when Jason made a distinction between thinking about marginalized students and

thinking about race and racism. I had asked whether there was anything Jason had thought about going into his discussion that was related to thinking about race or racism or an effort to disrupt some of the racialized patterns discussed in Math Methods. He responded:

*Not in relation to like race and racism*, but I was definitely thinking about the marginalized students and how I wanted to get them participating, I wanted to give them opportunities to stay on the same page as the rest of us, as we progress through the discussion with content, ways to get them to participate, to ask them questions and make sure that I am checking their understanding throughout the discussion, yeah. And unfortunately, like the majority, I think, of the minority students we had in the classroom were not even present. (Jason, Round 4 Interview, 12/9/20, emphasis added)

It could be that Jason was trying to convey that he hadn't been thinking *in terms of race and racism*, but rather in terms of the broader category of marginalization. However, Jason's elaboration about getting "the marginalized students" to participate and checking their understanding makes it seem as though Jason was primarily focusing on bolstering students' mathematics learning rather than on counteracting social marginalization more broadly.

Confused by this response, I followed up by asking Jason what he meant by "marginalized students." Jason replied:

When I was just speaking about marginalized students, *the students that are marginalized because they don't have advanced math skills*, I am not as concerned about them because they will be in attendance, and I will still try to get them participating, but I am not as worried about their attendance. The marginalized students I think, yeah, that I was speaking about who were not present, were not present for that discussion, who I did not get opportunities to try to call on, were the intersectionality — were the, um, *the*



*intersecting students who are typically minority students and have disabilities*, so yeah and trying to plan for how to — like if they were going to be present and then how I would engage them in the lesson. (Jason, Round 4 Interview, 12/9/20, emphasis added)

Setting aside Jason’s odd reference to “the intersecting students” (which I discuss below), Jason’s response here is telling. Although Jason’s response clarifies that he is attending to race on some level (i.e., he thought about “minority students” as marginalized), I contend that it still reflects an ideological form of race evasion. Jason indicates that he thinks about marginalized students in two different categories: (a) “the students that are marginalized because they don’t have advanced math skills” and (b) “the intersecting students who are typically minority students and have disabilities.” Based on Jason’s talk, it seems he thinks of these categories as mutually exclusive; he wasn’t worried about the first group during this discussion, so he was thinking about the second group. This suggests that in his own developing racial ideology, Jason was *not* reckoning with ways that race and racism interact with and impact mathematics learning and identity formation (Varelas et al., 2012). Instead, it seems that Jason was primarily thinking about race as an identifier for students of color, which, as Martin (2009b) argues, can feed into deficit narratives. Jason’s case illustrates how ambiguous usage of umbrella terms for issues of inequity and injustice can make it sound like a participant is attending to race and racism while obfuscating underlying race evasion.

**Generic Good or Generic Bad.** As discussed in Chapter 4, a pattern in teacher candidates’ uptake of acknowledging competence was embracing general equity-oriented goals and, unless directly prompted to consider the relevance of race and racism, framing the practice as a universal good for all children. This pattern extended to teacher candidates’ talk about a host of topics across the study. It especially stood out when teacher candidates responded in generic

ways to learning about race-specific patterns, such as the disproportionate punishment of children of color in school. For example, as asynchronous work for Class 4 in Math Methods, teacher candidates were tasked with reading through a slide sequence that presented data on racially disproportionate school punishment and responding to an online discussion thread. The title slide read: “Your power to see and disrupt patterns of racism and marginalization: Classroom discipline during math discussions.” The associated discussion thread, where teacher candidates were to respond, was labeled “Learning to disrupt patterns of over-punishment of BIPOC children” and included the following prompt:

What is one thing you plan to work on to develop yourself to be a teacher who does not fall into perpetuating these patterns of over-punishment of Black and Indigenous children and children of Color? How will you think about intersectionalities of race and gender in your goal? (Math Methods Class 4, Discussion Thread Directions)

Evident here is that course instructors framed patterns of over-punishment as specifically racialized; there was little room for interpretation about whether race and racism were relevant. Yet, while some teacher candidates engaged directly with the racialized nature of punishment patterns, others framed typical punishment practices as generally bad for all children and pointed to alternative practices they would pursue as generally good for all children.

This pattern of framing practices as generically good or bad is demonstrated by Alex’s comment on a peer’s post. Bethany, a teacher candidate who identified as Korean American, had responded quite passionately to the discussion prompt, writing:

One thing I plan to work on to develop myself to be a teacher who does not fall into perpetuating patterns of over-punishment of Black and Indigenous children and children of Color is to use techniques and responses that do not escalate or exclude. I despise the

idea of wanting to "control" student behavior. If teachers are constantly asking BIPOC children to control their own behavior and be quiet, what does that essentially mean but to ask them to comply to a teacher? to comply to a school that does not value them? This screams the school-to-prison pipeline. (Bethany, Discussion Thread on Disrupting Patterns of Over-Punishment)

Bethany went on to describe how she would make a point of consciously thinking about the different identities in her classrooms and asking herself questions about how she can provide more opportunities and resources for BIPOC children to be truly equitable.

Though Bethany is not a focal participant in this study, I highlight her comments here because of how they contrast with Alex's reply. Alex wrote:

"This screams the school-to-prison pipeline" way to recognize and name what controlling behavior does in classrooms! Something I really appreciate in your response is how you have scripted your thinking to support how you would stop, take a moment to think about student needs, and then challenge yourself as the facilitator *to ensure you are meeting the needs of each student, as an individual!* (Alex, Discussion Thread on Disrupting Patterns of Over-Punishment, emphasis added)

Notably, Alex refers to "what controlling behavior does in classrooms" without restating or specifying the racialized impacts of patterns of control. Alex then reframes Bethany's ideas of pausing to think about how she is supporting BIPOC children as "meeting the needs of each student, as an individual," which shifts the goal from disrupting a specific racialized pattern to doing something that is generically good for all students. Moreover, Alex's focus on individual students evokes the frame of abstract liberalism, central to color-blind racism (Bonilla-Silva, 2001). As defined by Bonilla-Silva (2001), abstract liberalism involves applying "elements of

political liberalism (equal opportunity, meritocracy, equal rights) and economic liberalism (free market, competition, individuals' preferences, little government intervention) to racial matters in an abstract and decontextualized manner that rationalizes racially unfair situations" (p. 141). In this instance, Alex refers abstractly to "meeting the needs of each student, as an individual," which suggests that teachers should center individual rights and needs rather than racialized patterns of over-punishment in school. Alex affirms a general principle (meeting individual needs) without engaging in the details of what that would entail for people of color in a context that is structured by racism. Thus, Alex's response to Bethany represents an instance where a white teacher candidate evaded the salience of race and racism by using general equity-oriented language that emphasized a generic good.

This phenomenon of emphasizing practices as generically good or bad even in response to learning about race-specific issues and patterns is also evident in a comment that Margaret made in a discussion thread at the outset of Math Methods. Teacher candidates were prompted to review an instructor-created summary of key aspects of the Sensemakers course with links to class artifacts, then make connections to their learning in Math Methods and other teacher education coursework. Like Bethany in the example above, a teacher candidate (not a focal participant) made a connection between learning about classroom discipline and its relationship to the school-to-prison pipeline. Margaret replied:

Your comment on discipline reminded me that misbehavior is the communication of unmet needs. Now thinking in terms of mathematics for this class, it makes me wonder if we can notice misbehavior during math instruction. Now, we understand that this could be due to the student not understanding the material and needing extra support or perhaps they felt embarrassed by an incorrect answer. Prior to this class, misbehavior would have

been met with punishment, but now we understand that the child simply needs a need met. It's our job to figure out what that need is. I think the work we do in Sensemakers is beneficial because we work away from "right vs. wrong" answers, which could be really big triggers for misbehaviors. Instead, we focus on noticing students' assets and positioning them as powerful contributors to discussions. (Math Methods Class 1, Discussion Thread Reviewing Key Aspects of Sensemakers)

Here, Margaret emphasizes attending to the general social-emotional and psychological needs of children, as well as noticing and highlighting students' assets and contributions. Margaret writes in general terms about "the student" and "the child," suggesting that she not considering any particular children or patterned school experiences, but rather a generic case of misbehavior. Although Margaret wrote this comment before engaging with the slide sequence on patterns of over-punishment from Math Methods Class 4, I have reason to believe<sup>23</sup> that other teacher education courses addressed the school-to-prison pipeline and patterns in classroom discipline as racialized issues. Thus, Margaret's emphasis on interpreting student "misbehavior" as the communication of unmet needs reflects a choice, whether conscious or unconscious, to focus on a teaching stance that generically applies to all students rather than to name or directly consider the impact of race or racism on interactions in math classrooms. This focus on generic goods does not have to be intentional on the part of teacher candidates to be race evasive. Regardless of intent, the outcome of talk about teaching that is generically good or bad is that the specific salience of race and racism are not examined or addressed. This reflects patterns of both discursive and ideological race evasion.

---

<sup>23</sup> My impression that other course instructors highlighted the salience of race and racism in connection to the school-to-prison pipeline and classroom discipline is based on my familiarity with the syllabus of the course on teaching in a multicultural society as well as conversations with instructors during the summer and fall of 2020 about tackling issues of race and racism in coursework.

### 5.3.3 *Direct Race Talk*

Across course assignments and interviews, participants directly addressed issues of race and racism in a range of ways, with varying ideological consequences. This was illustrated to some extent in Chapter 4, where I contrasted Jason, Stacey, and Alex's initial uptake of acknowledging competence with that of Rachael, Margaret, and Evelyn. In that instance, all six focal participants said they saw acknowledging competence as connected to working on issues of race and racism in math teaching when they were asking directly. However, their underlying ways of understanding race and racism revealed important ideological differences, with Jason, Stacey, and Alex invoking tenets of race evasive ideology and Rachael, Margaret, and Evelyn indicating closer alignment with race cognizant premises and ideas. Considering topics and course emphases beyond acknowledging competence, I found that teacher candidates similarly engaged in direct race talk that reflected a range of underlying ideological views, with varying degrees of nuance and criticality. In this section, I present examples of different forms of direct race talk that focal teacher candidates used, highlighting implications for characterizing teacher candidates' racial ideologies.

**Leaving the Relevance of Race and Racism Unexplained.** A prominent pattern in teacher candidates' race talk was leaving implicit how they understood race and racism to be relevant. As discussed in the section on implicit references above, this occurred frequently with *indirect* race talk, in instances where teacher candidates relied on the explicit naming of race or racism in a prompt or shared understanding of an example, such as the Toni and Aniyah video. However, this pattern was not unique to indirect race talk; it also occurred in teacher candidates' *direct* race talk. Participants sometimes used direct racial terms while still leaving the relevance of race and racism to the topic at hand implicit and unexplained. To make sense of this, I drew

on Pollock (2004)'s distinction between the use of *race labels* (i.e., referring to racial groups, describing something as race-related or racist) and *inequality analysis*, or everyday theorizing about how racial inequalities came to be, have persisted, or might be addressed. I found that teacher candidates often engaged in direct race talk by using *race labels*, but not necessarily offering explicit *analyses* of racial inequities. That is, the use of racial terms, such as references to “patterns of racism” or descriptions of people as white, Black, Asian, etc., did not necessarily imply analysis of racial inequality; teacher candidates could label situations and phenomena as racialized without further explanation. Therefore, even direct race talk represents a complicated and ambiguous window into teacher candidates' thinking and learning with respect to race cognizant teaching, as teacher candidates could explicitly name race or racism without articulating ideas about how or why they saw race or racism as relevant.

For example, at the outset of their Round 3 interview, Alex labeled several of their experiences from the summer of 2020 as being connected to race and racism. This was in response to a general prompt to “tell me a bit about your summer.” Alex said:

So yeah, I took classes spring and summer, and it was interesting. And after George Floyd's death, I actually went home to Minnesota and spent some time with family and friends and things, and it was an interesting place to be kind of in the weeks following. And yeah, I guess I've had a lot of conversations with people in classes and out of classes about the impact of race and racism and where people are at. And as far as classes I took this summer, I think my awareness for things shot up, and something I noticed early in June, early to mid-June, was that in classes, students were actively calling things out and calling people both out and in, in meaningful ways. So, there was a lot of people discussing, "Is there some sort of baseline language that [the university] is going to use

for like are we talking about African-American or calling people like Black, or Black and brown children?" And getting a clear understanding from the Black perspective about what feels best as far as identifying, because I think that in a white-centered domain in teaching that there's a lot of just assumptions about how people want to identify, even with respect to race. And I don't think, I think that that was made available just because of the ongoing racial war, racial realization, I don't even know, that people are going through. (Alex, Round 3 Interview, 9/24/20)

Despite clearly characterizing conversations as being "about the impact of race and racism," naming racial groups, and describing spaces and events as racialized (e.g., teaching as a "white-centered domain," "the ongoing racial war, racial realization"), Alex uses a host of phrases that leave the relevance of race and racism implicit. Alex refers to spring and summer classes and traveling home to Minnesota as "interesting," which could mean any number of things. Alex also talks about "where people are at" and the "racial realization... that people are going through," *alluding* to evolving racial understandings without unpacking them. This strikes me as a form of "insider" talk in that Alex speaks as if I, the listener, will know what they mean by their "awareness for things" and "assumptions about how people want to identify." In other words, Alex's talk positions both Alex and myself as members of a group that is racially aware, while, at the same time, leaving that racial awareness implicit and unexplained.

On some level, I can reasonably infer what Alex means. For example, I assume that George Floyd's murder was a salient and challenging event to process for Alex's family members, who are white and from a small town in the state where Floyd was murdered. Nonetheless, I wonder whether Alex left the relevance of race and racism implicit here because they were *unsure* how to unpack and analyze racialized events but still wanted to position



themselves as racially aware. For instance, when Alex refers to students “calling people both out and in,” this signals awareness of current social justice lingo without specifying the sorts of racialized actions being addressed. It could be that Alex had clear examples in mind of calling people in or out because of problematic racial language or actions but just didn’t offer them, but it could also be the case that Alex was trying out a new social justice concept without a fully fleshed out understanding. Regardless, the point remains that, in this example, a teacher candidate engaged in direct race talk while leaving the racial meaning and implications of their talk unexplained. This constitutes a glimpse of race cognizance in that Alex is directly naming racial issues and signaling a desire for critical racial awareness. Yet, given the ambiguity of Alex’s racial reasoning and understanding, it is no more than that — a glimpse.

One implication of this pattern of using direct race labels but leaving implicit how and why race and racism are relevant is that teacher candidates may *sound* race cognizant while maintaining problematic deficit-oriented ideas about people of color. For example, during her Round 4 interview, Evelyn made several observations about students of color in her field placement that simultaneously identified racialized issues and implied questionable generalizations about how those racial inequalities came to be. The following excerpt comes from Evelyn explaining the participation patterns that she was trying to counteract in her math discussion.

**Rosie:** You mentioned that the group of people whose voices are typically heard are less diverse than the whole class. Is race one of the things that you're thinking about when you say that or — ?

**Evelyn:** Yeah, I'd say race and gender specifically. I think that it also highlights that *a lot of our Black students, my Black students personally have more going on in their homes.*

I've noticed they're more, less comfortable sometimes having their video on, or when I work one-on-one with them and they're unmuted, there are little siblings that need them or other things that are happening. So, like there's just more going on in their learning environment than some of my other students who have the luxury of being able to sit in a quiet space or have nice headphones, so even though they're in a noisy space, it's not noisy for them and focus on whatever they wanna focus on, which isn't always school, but they have that choice. It's not a burden placed on them. (Evelyn, Round 4 Interview, 12/10/20, emphasis added)

Although Evelyn explicitly named race and gender as dimensions of diversity that she was paying attention to when she thought about who typically participated and then elaborated by referring directly to her Black students, Evelyn still left unspoken how exactly race was featuring in the observations she made about her Black students. It is clear from the beginning of Evelyn's response that she viewed race as relevant, but it is unclear *how* she saw race as explaining the differences in learning environments that she is noting. This ambiguity could indicate conflation of race and class (e.g., Evelyn contrasting the environments of Black students with other students, presumably of higher socioeconomic status, "who have nice headphones") as well as overgeneralized connections between race, culture, and family structure (e.g., Evelyn observing that Black students have little siblings that need them and are in a noisy space in contrast to other students "who have the luxury of being able to sit in a quiet space").

While it seems like Evelyn was *trying* to be cognizant of the privileges that some students have in connection to race (i.e., asserting that her Black students do not have these privileges), what she left unsaid here raises questions about whether she thought the things she noticed extend to *all* Black children and about who or what Evelyn saw as responsible for these

racialized inequalities. Was Evelyn making a generalization that all or most Black children are from low-income families and therefore have “more going on” in their homes, or did she recognize heterogeneity in Black experiences? How did Evelyn understand the roots and causes of the racialized differences in privileges and learning environments that she named? Did she recognize the role of systems and structures, or was she thinking primarily in terms of individual choices? It could be that Evelyn was exhibiting *biologization of culture* and cultural racism, pointing to cultural patterns and practices as the source of racial inequality (Bonilla-Silva, 2001, 2018). On the other hand, it could be that Evelyn was actively (and critically) grappling with how race and racism were impacting the learning experiences of her students but just was not yet able to fully articulate her thinking. Either way, the fact that Evelyn did not unpack the connections between her observations about Black students in her field placement class and the impacts of race and racism introduced the possibility that Evelyn was making deficit-oriented overgeneralizations about Black children and families and/or entertained culturally racist explanations of racial inequality. Thus, it is not safe to assume that direct race talk, particularly the use of race group labels, necessarily entails critical or race cognizant analysis or understandings of racial inequality.

**Naming Whiteness.** In light of prior research documenting white people’s avoidance of recognizing their own white racial identity and involvement in racial systems (e.g., DiAngelo, 2018; Frankenberg, 1993; McIntyre, 1997; O’Brien, 2000; Picower, 2021; Solomon et al., 2005; Vaught & Castagno, 2008), I paid particular attention to teacher candidates’ naming of whiteness within their use of racial terms. By “naming whiteness,” I mean instances where teacher candidates specifically described someone or something as “white” and/or used the words “whiteness” or “white supremacy.” For example, Jason wrote about “white speech patterns and

culture” in his Analyzing Participation Assignment and Margaret named that “a lot of classroom expectations and expectations for behavior are centered in whiteness” during her Round 4 interview. I consider naming whiteness a form of labeling in racial terms that may or may not co-occur with other forms of direct race talk. This is because there were multiple instances in the data where teacher candidates named whiteness but evaded direct talk about people of color, race, or racism. For example, in a comment in discussion thread about disrupting patterns of over-punishment, Evelyn wrote:

This is so important because *as a teacher that is a white woman* there comes a lot of power, and all of my students will not come from similar culture to myself, and it is not fair to prescribe my culture and ideas of norms to my students. (Evelyn, Discussion Thread on Disrupting Patterns of Over-Punishment, emphasis added)

In this example, Evelyn directly names her own identity as a white woman while simultaneously displaying the race evasive pattern of talking about culture rather than talking about race directly. Evelyn also refers to her white identity and culture as individual traits, rather than addressing her relationship to larger systems and patterns of whiteness and racism.

Conversely, there were also instances where teacher candidates used direct racial terms to refer to people of color or racialized patterns *without* naming whiteness. For instance, in her Discussion Analysis assignment for Math Methods, Rachael wrote:

A goal I have for developing my skills in leading math discussions in light of this experience is always checking my assumptions. Assumptions can be an extremely harmful part of our practice that can continue to persistently create inequities amongst certain groups of students, particularly students of color. For example, I connect this to the video with Toni. If a teacher were to assume that Toni’s comments are rude and

disrespectful, that will automatically further the racist belief that Black girls are inherently rude and disrespectful. It is so important to check our assumptions about our students in all circumstances and pursue them with equity and compassion in mind. This is not what many people think about as an important step in leading a math discussion, but it should be what we are thinking about as educators, so that is why it is my goal.

(Rachael, Discussion Analysis)

In this response, Rachael talks directly about students of color and a racist belief about Black girls *without* acknowledging that the assumptions she brings that she aims to keep in check are very much tied to her identity as a white teacher. Instead, Rachael writes in general terms about “our practice” and “our assumptions” as educators. This illustrates how teacher candidates could engage in direct race talk, labeling ideas and examples in racial terms, without necessarily naming whiteness.

Additionally, in my analysis of when and how teacher candidates’ named whiteness, I found that, as with direct race talk more broadly, the act of naming whiteness did not necessarily imply or straightforwardly indicate alignment with race cognizant ideology. There was meaningful variation in the ways that teacher candidates named whiteness, from talking about “white norms” or patterns of whiteness in the abstract, to naming other people’s whiteness (e.g., talking about white teachers or white students), to recognizing and considering the implications of their own white racial identity. This varied talk about whiteness reflected a range of ideas about race and racism. For example, during her Round 4 interview, Stacey named whiteness in connection to recognizing her own biases about language and ways of interacting that seem “normal.” While her talk indicates some alignment with race cognizant ideas, it simultaneously draws on problematic racial stereotypes. The following excerpt comes from a portion of the

interview where I was probing Stacey's thinking about reading the book *Troublemakers* and hearing from the author, Carla Shalaby, in the final Math Methods class. In the framing of my question, I had noted that Carla Shalaby covered a lot of different issues in her work, including issues of race and racism. Stacey replied:

Yeah, and I think *that goes along with the "social norm," which is white, right?* What they have to follow along. The making them conform to what, you know, whites perceive as acceptable and even, you know, I've recognized even language. English is the only thing that's accepted and stuff like that, and so, I guess one thing that I got out of it is that *not every culture, not every race sees the "white norm" as being acceptable* and not making them conform to the, um, social, I guess I keep saying social norm, I can't think of another word, but anyways... And just accepting that it's a, like a classroom is a combination of all of these different identities and they bring — in my language classes over the summer, I learned the difference even between AAVE and English and *how a lot of the times, Africans, they're a lot more eccentric and they're a lot more loud and expressive*, and even sign language, African-American sign language *and "normal" whatever, white sign language is a lot different, too, through the expression and through stuff like that. So just recognizing that and recognizing that as a white female teacher, I need to, I need to recognize my own biases* that I came through with school, and being like, "Okay, well, that's not the "norm" for all of my students," so, I guess that's what I get out of that, is that not everybody has the same ways of expressing, *not everybody is going to conform to this mold that our government and society thinks is right*, you know?

(Stacey, Round 4 Interview, 12/11/20, emphasis added)

First and foremost, Stacey’s comment that “a lot of the times, Africans, they're a lot more eccentric and they're a lot more loud and expressive” is striking for its unselfconscious voicing of a racial stereotype. This comment is a useful reminder that even as teacher candidates grapple with critical ideas about race, racism, and whiteness, they may not recognize disconnects between their beliefs and stances in different contexts (Philip, 2011). In this single response, Stacey both reinforces a blatant racial stereotype and conveys some critical awareness that teachers have discretion in making children conform to white social norms, which aligns with race cognizant ideas about how racial hierarchies are reinforced and reproduced through processes of socialization. Yet, Stacey also talks about social norms in terms of clear-cut dichotomies — as acceptable or not, as conformed to or not — which glosses over the everyday, insidious ways that people learn and reinforce the racial status quo. Stacey makes it seem as though the problem of enforcing a white social norm would be solved by teachers recognizing their own biases and accepting that students will enter classrooms with diverse sets of norms. This idea is akin to celebrating diversity within liberal multiculturalism, where counteracting histories of racial marginalization and exclusion is not an explicit goal (Shah & Coles, 2020). Ultimately, while there is evidence that Stacey is learning to pay critical attention to whiteness and the enforcement of white social norms, she clearly has room for further growth with respect to debunking stereotypes, resisting racial essentialism (Ladson-Billings, 2013), and wrestling with the complexity of how race, racism, and whiteness operate in everyday interactions.

Another pattern was that teacher candidates were more likely to talk about whiteness in the abstract or in relation to other people than in relation to themselves. For example, during their Round 3 interview, Alex relayed learning from webinars on justice-oriented teaching that school curriculum in general is white-centered. Alex also raised the issue of white fragility in

connection to their professors. Notably, Alex’s talk remains fairly abstract throughout their comments. When I asked Alex to share what they learned or were thinking about after participating in webinars and courses during the summer of 2020, Alex said:

Okay, so there's a lot. With the webinars, one of the biggest takeaways I've had is how curriculum in itself is harmful. It's white-centered and it — without making significant adjustments to how you present the curriculum, it can do a lot of harm for students and it kind of sets a framework that has been set and needs to not be set. And I think that especially, there's a lot of conversations about how in schools where it's 90% Black and the curriculum is 100% white, or who wrote the curriculum specifically, is a question that's always brought up, and how curriculum goes, I guess that's one part... And then white fragility and challenging white fragility, and how that can be used to excuse. And I've seen this, I've seen this in practice. (Alex, Round 3 Interview, 9/24/20)

Alex’s talk in this excerpt is noticeably de-personalized; they talk about the curriculum and how, without adjustments, “*it* can do a lot of harm.” Alex also names white fragility and alludes to the idea that white fragility “can be used to excuse” without unpacking what they mean or offering specific examples. I find it striking that Alex directly names broad issues related to whiteness but seems to primarily associate those issues with other teachers and professors, rather than with themselves. Though Alex indirectly acknowledges that they, like other teachers, have agency in adapting curriculum (e.g., “without making significant adjustments to how *you* present the curriculum”), Alex does not focus on their own potential as a white teacher to contribute to patterns of curricular harm or to exhibit white fragility. In terms of racial ideology, Alex’s commentary here diverges from race cognizance in that it avoids critical reflexivity about Alex’s own whiteness. Thus, like other participants, Alex displays aspects of discursive and ideological



race evasion while also demonstrating growing understanding of racism as systemic and permeating teaching and learning. This reaffirms the co-existence of race evasive discourse moves, habits, and ways of reasoning alongside glimpses of emergent race cognizance. It also echoes O'Brien's (2000) findings of "selective race cognizance" among white anti-racism activists. Alex's talk underscores that teacher candidates' naming of whiteness does not necessarily imply robust or reflexive thinking about their own white identity and potential to participate in systems of racism and white supremacy as white people.

**Fine Line Between Naming and Reinscribing Stereotypes.** When focal teacher candidates labeled people, patterns, or practices in racial terms, they sometimes walked a fine line between indicating their awareness of a racial stereotype and reinforcing or reinscribing that stereotype. For example, in the Analyzing Participation assignment in Math Methods, teacher candidates were prompted to explain which patterns of racism, sexism, and ableism were reproduced or interrupted in the long version of the Toni and Aniyah video. In response, teacher candidates sometimes referred to patterns of racism in shorthand, such as Rachael listing "Girls can't do math//Students of color are inferior math students" as a pattern that was both interrupted and somewhat reinforced (Rachael, Analyzing Participation Assignment). Negative stereotypes about the mathematics ability of people of color are well documented and have been shown to impact individual academic and test performance (Ambady et al., 2001; Cvencek et al., 2011; Nasir et al., 2009, 2017; Steele & Aronson, 1995). Yet, Rachael's reference to the idea that "students of color are inferior math students" sounds like a statement of fact and does not make it clear whether Rachael rejects that stereotype. In contrast, earlier in the same response, Rachael referenced the pattern of "Students of color's behavior *being interpreted* as disruptive and rude" (Rachael, Analyzing Participation Assignment, emphasis added). In this second instance,

Rachael locates the pattern of racism in how students of color are *interpreted* by their teachers, which makes clear that Rachael does not buy into stereotypical characterizations of students of color as disruptive. This illustrates how teacher candidates' direct race talk could vary with respect to how clearly teacher candidates articulated their own views and positions on familiar racial stereotypes. Because such stereotypes pervade dominant culture and were explicitly targeted as patterns to resist and disrupt in the math teaching course sequence, it could be that teacher candidates felt less of a need to explicitly reject or debunk the stereotypes. Nevertheless, there were numerous instances across participants' race talk in which compressed and shorthand references to racial stereotypes made it sound as though teacher candidates accepted those stereotypes as fact. This echoes findings from McIntyre (1997).

Another way that focal teacher candidates' race talk walked the line of naming and reinscribing racial stereotypes was in using language that evoked stereotypical views of children of color even while discussing teaching moves that challenged racialized patterns. For example, in the context of the Toni and Aniyah video, teacher candidates frequently characterized Toni as being "rude" or "disrespectful" to Aniyah because Toni "called out" a question and laughed after Aniyah first explained her solution at the board. The following response from Margaret illustrates this occurrence. Describing turns of talk in the Toni and Aniyah video, Margaret wrote:

Toni says, "Did she say 1/7?" Toni, a Black, female student *interrupts* and *calls out*. This opened up a discretionary space for the teacher where she could have disciplined Toni, by reinforcing the stereotype that Black girls are loud and disruptive. Instead, *the teacher chooses to ignore this behavior* and allow Toni to maintain her grace and dignity.

(Margaret, Analyzing Participation Assignment, emphasis added)

Though Margaret makes clear that she recognizes the idea that Black girls are loud and disruptive is a stereotype that the teacher in the video is pushing against, Margaret's interpretation of the beginning of the Toni and Aniyah clip suggests that Margaret is still implicitly operating with that stereotype. For instance, Margaret presents her description of Toni as interrupting and calling out as unproblematic; Margaret does not acknowledge that viewing Toni's question as an interruption and characterizing Toni as "calling out" are already racialized interpretations of Toni's actions. Neither does Margaret consider that a teacher's expectations for raising hands and being called on are culturally specific and highly racialized, with white teachers tending to expect compliance with white middle class interactional norms (Weinstein et al., 2003). Moreover, the disruption of a racialized pattern that Margaret points to is in the teacher *ignoring Toni's behavior* (which Margaret has framed as transparently disruptive) rather than in *actively considering alternate interpretations of Toni*, which would have more closely aligned with course instructors' emphasis in discussions of the video. In other words, Margaret's comments on the Toni and Aniyah video revealed patterns of thinking that took for granted stereotypical ways of viewing and interpreting Black girls, even as Margaret highlighted moves the teacher made to disrupt related racialized patterns. This sort of unselfconscious use of language that implicitly reflected racial stereotypes was also evident in other teacher candidates' descriptions and interpretations of the Toni and Aniyah video, as well as other teaching episodes.

In addition, although this was less common in the data set, there was some evidence of teacher candidates directly endorsing or subscribing to racial stereotypes. For example, in response to a question about what being an anti-racist teacher meant to her, Stacey brought up the idea of displaying representations of different identities in her classroom. In doing so, Stacey made a global comment about "Africans," which reflected the problematic pattern of white

people essentializing and overgeneralizing about people of color, and Black people in particular, not to mention collapsing the diversity of the many nations and ethnic groups of the African continent into one group (Kendi, 2019; Oluo, 2019). Stacey said:

Yeah, I think that for me, being an anti-racist teacher is being completely transparent with everything, not — using discretionary spaces or moments to really talk about, you know, what they see — um, how can I say this? Analyzing, I guess is a good way, like analyzing things that they see in books, in the classroom even, not being afraid to talk about race, because I think that's one thing that I was [sigh] really worried about is, "How do you talk to the students about race?" And I've learned just honestly, they see it, they know, they see the differences, you know, and just letting them openly talk about it and having books, other thing— other representations around the room that include other identities that include Africans, that include... Actually I, thinking of this, my husband's grandma, she moved out of her home and we had all gotten some things, and there is this picture that I have hanging up upstairs of a tut-tut, I think it's what it's called, and *just a whole bunch of Africans in there and they have all their colors, and it's so eccentric and stuff*, and I was like, "I'm gonna put this in my classroom, whenever I get a classroom."  
(Stacey, Round 4 Interview, 12/11/20, emphasis added)

Here, Stacey combines several types of race talk: (a) she uses *direct racial terms* to convey a commitment to talking with students about race (though this is something she worries about), (b) she *talks indirectly about race* by using implicit references (e.g., “being completely transparent with everything,” “they see it,” and “just letting them openly talk about it”), and (c) she describes a cultural artifact that she wants to put up in her classroom in a way that *conveys stereotypical ideas* about African people (“they have all their colors, and it’s so eccentric and stuff”). Notably,

patterns of discursive race evasion and reinforcing racist ideas coincide with indications that Stacey wants to address issues of race and racism with students and aims to be an anti-racist teacher, which would suggest movement toward race cognizant teaching. Thus, this example illustrates that teacher candidates' use of direct race language does not preclude continued race evasion or problematic racial ideas; Stacey reinscribed a racial stereotype in the same breath as she argued that — contrary to race evasive ideology — it was important for teachers and students to talk directly about race. I view this as further evidence that teacher candidates' learning and thinking about issues of race and racism in the context of elementary (math) teaching is quite complicated and, at times, seemingly contradictory; glimpses of race cognizance are intermixed with patterns of race evasion and racist ideas.

**Remnants of “Old School” Racist Language.** As the previous example from Stacey suggests, teacher candidates in this study were developing their ways of thinking and speaking about race and racism in a context where familiar and novel discourses about race were colliding. Teacher candidates grappled with race evasive upbringings and familiarity with overtly racist ideas as they interpreted and responded to race cognizant ideas and discourse introduced by course instructors. One indication of this collision of discourses about race was that teacher candidates occasionally used language that evoked Jim Crow-era racism, such as referring to “colored” or “ethnic” people (Bonilla-Silva, 2001). In addition, teacher candidates sometimes used racial terminology that, while not necessarily tied to Jim-Crow era racism, still felt somewhat outdated in 2020, amidst national and international protests for racial justice. For instance, Jason often referred to students of color as “minorities” (rather than as minoritized) and Stacey sometimes described white people as “Caucasian.”

I interpret these instances of “old school” and less up-to-date racial language as cases where participants intermittently slipped and reverted to familiar terms as they tried out and took on new language, rather than cases of participants conveying traditionally racist views. For example, during her Round 1 interview, Margaret relayed growing up in a predominantly white context that emphasized color-blindness. She said she later realized that race and racism were more relevant in her hometown than she had thought. In the process, Margaret uses the word “colored,” as well as the terms “minority” and “ethnic” to refer to students of color. Describing the schools she attended growing up, Margaret said:

Demographics were white and upper to higher socio-economic status. And I mean obviously, there's been a lot of controversy<sup>24</sup> in [hometown] recently. So that's, now being here in college, it's really made me see my education in a different way because for me growing up, it was just what I was used to, I didn't think twice of it, and I definitely grew up being color-blind, not to see race. *And so now being at [university], I really do see how that can be problematic* and it's really kind of forced me to re-look at my education and with all the stuff that's happened in [hometown] recently, my mom was like, "Oh, I've never seen any racist or like any racist things at [hometown] happen." And now I see that, I was like, "Well, you're a white parent. Of course, your experiences are gonna be different and you might not see it *as compared to a colored student or like a minority or ethnic student.*" (Margaret, Round 1 Interview, 3/4/20, emphasis added)

Relevant here is that Margaret used the word “colored” (as well as the terms “minority” and “ethnic”) in the context of making the point that her mother’s perception that their hometown is not racist was in fact reflective of her mother’s positionality as a white parent. This attention to

---

<sup>24</sup> Margaret’s hometown, a small predominantly white town near the university, made national headlines in February 2020 for racist incidents at a local high school and community meeting. Hundreds of people marched in protest.

how one's specific racial location impacts their understanding and experience of racism, along with Margaret's realization that being color-blind and not seeing race is problematic, aligns with key aspects of race cognizant ideology. Thus, given the thrust of Margaret's comments, it seems fair to infer that Margaret meant to say "people of color" rather than to invoke a racial epithet from the Jim Crow era.

Whereas most of the forms of race talk that I have described thus far were evident across focal participants, use of "old school" or outdated racial language was concentrated in the talk of Jason, Margaret, and Stacey. Over time, Margaret and Jason seemed to adjust their language to align with the language of course instructors more closely (e.g., in Round 3 and 4 interviews, Margaret and Jason began using the terms "BIPOC" and "marginalized"). Though Stacey also picked up racial terminology from coursework, she stands apart from other focal participants for directly expressing uncertainty about how to refer to racialized groups and for continuing to use questionable group labels. For example, during her Round 2 interview, Stacey shared the following shift in her thinking about the impact of teacher identity and assumptions based on work with the Toni and Aniyah video:

I was one of the ones that kind of saw it as a behavior issue. And, you know, the calling out stuff like that, that's not what I normally would have expected from my students and stuff and what I've seen in classes, definitely not what I expected, but seeing as how that might be a norm for that — for that student and that — not race, but, you know, *those people*, I guess. [laughter] Again, *I'm not very good with words*, but [laughter] for that group of people. (Stacey, Round 2 Interview, 4/7/20, emphasis added)

It seems that Stacey was trying to acknowledge that Toni, as a Black girl, may have been accustomed to different norms of interaction than Stacey herself, a white woman. Yet, Stacey

struggled to name Black or African American cultural norms, instead awkwardly referring to “those people.” Stacey seemed to recognize that this was not the “right” terminology and followed her statement with laughter and a disclaimer that she is “not very good with words.” I view this as Stacey attempting to take up ideas about race and racism that were new to her (namely, that norms of interaction are racialized and culturally specific) while still relying on the race evasive and “old school” racial language that she grew up with. That is, Stacey was thinking and speaking at the intersection of multiple discourses about race.

Stacey’s negotiation of different ways of thinking and speaking about race was evident across the course of the study, including in Stacey’s final interview. For example, in response to a question about what supported her thinking about race and racism during Sensemakers and Math Methods, Stacey mentioned a reading about the adultification of Black girls, and then said:

And so, I think that really stood out to me as well, and I was just like, "Oh my gosh," and just seeing all of these different statistics about the small number of representation that like *the Blacks and browns* have in the classroom, but the large number of how they're getting in trouble, how they're being expelled, *how the prison — the class to — what is it? The school-to-prison pipeline*, those types of things, I was like, "Oh my gosh, I did not realize the in-proportion of that," and so that goes along with recognizing that not everybody fits into this mold, you know like — and then Responsive Classroom, all of the stuff that we've learned about that, I think is really, has been extremely helpful for me. (Stacey, Round 4 Interview, 12/11/20, emphasis added)

As in a prior example, here Stacey refers to students of color as “the Blacks and browns,” which strikes me as a dehumanizing and outdated way of speaking about racial groups. However, at the same time, Stacey indicates that she is still thinking about justice-oriented concepts, like the



school-to-prison pipeline and data on racial disproportionalities in school punishment that she was exposed to through teacher education coursework. Throughout the study, Stacey used language that, to my ears, sounded racist, or at least out of date. Yet, at the same time, she also seemed to be paying attention to and sincerely thinking about the issues of race and racism emphasized in the math teaching course sequence in ways that engaged with both individual teacher biases and more systemic patterns. Therefore, I argue that Stacey cannot be easily characterized as simply maintaining racist or race evasive views. Moreover, while different from that of other focal teacher candidates in this study, Stacey's race discourse is likely not unique for white teachers and people more broadly. Following the Civil Rights era, many white people were raised and socialized in communities where public race evasion and private racism were the norm (Bonilla-Silva, 2018; Kenny, 2000). As people newly encounter and grapple with critical ideas about race and racism and race cognizant discourses, it makes sense that their race talk would contain remnants of previously familiar ways of thinking and speaking.

#### ***5.3.4 Summary: Discursive Patterns in Race Talk***

This section has detailed different forms of race talk that were exhibited by white teacher candidates across this study. Recalling that the discursive, language-focused dimension of teacher candidates' engagement in race evasion and race cognizance is represented as the horizontal axis in Figure 8 above, this section has shown that teacher candidates' race talk ranged from frequently indirect (towards the left along the horizontal axis) to more direct (towards the right). I have described and provided examples of three main categories of race talk — indirect race talk, general equity- and justice-oriented language, and direct race talk. In doing so, I have illustrated that, while all teacher candidates at times used clear racial language, on the whole, the group often left racial meanings implicit and ambiguous. In other words, although none of the

teacher candidates uniformly engaged in one type of race talk, on balance, there was pattern of persistent indirect and race evasive discourse.

However, within this pattern of evasion, there were nuances and differences in what teacher candidates were evading in given instances. For example, at times, teacher candidates seemed to be primarily avoiding *race words*, relying instead on the names of students, coded language, implicit references, race-inclusive terms like “culture” and “identity,” umbrella terms like “equity,” or references to students in general to talk about race and racism. At other times, teacher candidates noticeably evaded particular *ideas* about race and racism. Namely, teacher candidates sometimes dodged the idea that racism has historically and continues to structure the material conditions, experiences, and life chances of people in the United States, such as through the racial segregation of neighborhoods and schools and patterns of interaction, including in math classrooms (Bonilla-Silva, 2018; Martin, 2019; Omi & Winant, 1994; Rothstein, 2017).

Evading race words and evading race cognizant ideas both constitute race evasive discourse, but as I have argued and demonstrated in this section, there was variation in the extent to which teacher candidates’ race evasion evoked and aligned with central aspects of color-blind ideology (Bonilla-Silva, 2001, 2018). For example, while Evelyn’s talk about cultural identities impacting the way that teachers perceive students’ actions did not use direct racial language, it still signaled recognition that classroom interactions are influenced by social structures and individuals’ social locations, which is more closely aligned with race cognizance than race evasiveness (Frankenberg, 1993). In contrast, Jason’s use of the term “marginalized students” separated students marginalized by mathematics and students from historically marginalized groups, minimizing the impact of race and racism on students’ construction of mathematics identities and invoking color-blind ideology (Bonilla-Silva, 2001). Thus, at times, teacher

candidates' use of indirect and ambiguous language *overlapped* with ideologically race evasive ways of reasoning, but this was not always the case. This is illustrated in Figure 8 above with the varying placement of Jason, Stacey, Evelyn, Margaret, and Alex along the vertical axis; these teacher candidates shared some race evasive discursive tendencies but differed in their overall alignment with race evasive and race cognizant ideologies.

Recognizing that race evasion takes multiple forms with different ideological implications is important for teacher educators seeking to support race cognizant (math) teaching, as this highlights some likely challenges for furthering teacher candidates' learning. For instance, the tendency to leave racial meanings implicit can make it difficult to assess what teacher candidates are thinking and learning with respect to race and racism. This suggests that teacher educators may need to design and use assessments that consider teacher candidates' use of language in multiple contexts *along with* other data sources, such as observation and analysis of teacher candidates' approximations of practice. In this study, I was able to gain greater insights into teacher candidates' racial ideologies by considering what they said beyond a single assignment or conversation. Being able to hear teacher candidates' responses to both direct and indirect prompts was also crucial for making sense of how they were thinking about issues of race and racism. Moreover, analyzing teacher candidates' talk and writing in connection to specific math teaching situations, such as the Toni and Aniyah video and teacher candidates' math discussions, offered an important window into how participants translated and applied broader terms and ideas (like interrupting patterns of racism) in the specific context of elementary math teaching. To ascertain what teacher candidates *are* learning and thinking with respect to race cognizant (math) teaching, I encourage teacher educators to elicit teacher candidates' thinking using prompts that directly name race, racism, or racialized patterns and to

closely examine teacher candidates' responses, looking beyond the surface of the language used to consider potential ideological and practice-related implications. Recognizing that it is common for white people to be socialized to avoid direct race talk (DiAngelo, 2018; Frankenberg, 1993), teacher educators should also anticipate and plan for patterns of discursive race evasion when working on issues of race and racism with white teacher candidates.

#### **5.4 Examining Ideological Implications of Race Talk**

Despite general patterns of discursive race evasion, all six teacher candidates also exhibited moments of alignment with race cognizance during the study. For instance, I found evidence of teacher candidates, at various points, offering critical racial analyses and grappling with the systemic and permeating nature of racism. Yet, I think about these as “glimpses” of race cognizance, rather than an outright pattern of increasing participation in race cognizant Discourse, because teacher candidates often spoke to *pieces* of race cognizance without fully aligning with all of the ideological underpinnings characterized by Frankenberg (1993). In this section, I examine and analyze teacher candidates' race talk with a focus on ideological alignment with race evasiveness and race cognizance. This corresponds with vertical axis of the anchor representation in Figure 8. In addition, because Frankenberg's (1993) conception of race cognizance involves confronting one's own complicity in constructing and maintaining racial injustices and an anti-racist commitment to challenging the existing racial order, I also speak to teacher candidates' orientations to critical reflexivity (represented with open and closed circles in Figure 8) and self-positioning with respect to anti-racist projects.

My central argument here is that participants *did* show some alignment with and movement toward race cognizance, which presents opportunities for teacher educators to support further race cognizant learning. However, this also coincided with views and ways of thinking

aligned with color-blind ideology (Bonilla-Silva, 2018) and patterns of whiteness, as well as problematic deficit-oriented assumptions and white savior tropes. Thus, I emphasize that while there can be progress and promise in white teacher candidates' learning of race cognizance, this learning is rarely straightforward or unproblematic. With the examples below, I illustrate that the story of these teacher candidates' discourse and learning about issues of race and racism in connection to math teaching is a complicated one; glimpses of race cognizance coincided with patterns of ideological race evasion and troubling racial ideas. I organize my discussion of teacher candidates' ideological alignment into four sub-sections: (1) racial analyses and conceptions of racism, (2) ideological ambiguity of social justice discourse, (3) reflexivity and orientation to further learning, and (4) self-positioning in relation to anti-racist projects.

#### ***5.4.1 Racial Analyses and Conceptions of Racism***

I have argued that teacher candidates' engagement in direct race talk does not necessarily imply full understanding of or alignment with race cognizant ideology, though there were glimpses of some aspects of race cognizance. I have supported this argument with examples of ways that participants labeled people, practices, or patterns in direct racial terms with a range of ideological implications, such as making observations about students of color that could alternately imply awareness of structural race-related inequalities or problematic generalizations about families and communities of color. This argument extends to instances of racial analysis, where teacher candidates offered more explanation about how they saw race and racism as being relevant, including informal theories about how racial inequalities came to be, are maintained, and might be challenged. In this sub-section, I demonstrate that the fact that a teacher candidate provided a racial analysis does not necessarily mean that their analysis aligned with race cognizant premises. Teacher candidates' racial analyses varied with respect to their attention to

structural aspects of racism. As examples below illustrate, participants sometimes provided racial analyses that reflected race evasive ideology, non-critical liberal multiculturalism, and/or individual understandings of racism. In other instances, they offered analyses indicating structural and systemic understandings of racism that were more aligned with race cognizant ideology. In light of these varying ideological implications and understandings of racism, I present my findings about teacher candidates' racial analyses in two sections: (a) analyses that portray racism as isolated to individual moments and acts, and (b) analyses that portray racism as permeating interactions and structures.

**Racism as Isolated to Individual Moments and Acts.** Prior research shows that white people, including white Millennials, are more likely to define racism in interpersonal terms (e.g., referring to the behavior of racially biased individuals) than to point to rules and practices within institutions or systems (Apollon, 2011; DiAngelo, 2010; Flynn, 2015; Unzueta & Lowery, 2008; Wilson & Kumar, 2017; Young, 2011). Moreover, white people are often socialized to think about racism through the lens of a “good/bad binary” where bad people are racist, and good people cannot be racist (DiAngelo, 2018). In this study, I found evidence of teacher candidates analyzing racial issues in ways that reflect these patterns of whiteness, focusing on interpersonal racism and framing racism in terms of a good/bad binary. While teacher candidates may have used direct racial language, the substance of their racial analyses conflicted with two key aspects of race cognizance: understanding racism as endemic and structural (i.e., not just interpersonal) and recognizing one's own potential to be complicit in systems of racial oppression. This reaffirms that learning to engage in direct race talk does not necessarily coincide with learning race cognizance or shifting one's fundamental views about race and racism.

For example, during his Round 3 interview, Jason offered an analysis of racialized patterns in school discipline and punishment. Using direct racial terms, Jason emphasized the role of individual school actors in discriminating against Black students, Indigenous students, and other students of color. Jason said:

And once I send them out of my classroom to the principal's office, the obligation to not discriminate when you are handing down punishment, it's out of my hands. So, *the principal could easily discriminate* and give white students a slap on the wrist and they could suspend or expel BIPOC students at a much higher rate. We were reading and learning about that in [a teacher education instructor's] class like a week ago, so yeah. And now, I'm thinking more about *how to protect my students* and thinking more about extending the threshold before I send students to the principal's office. If I can, you know, like give them a proper, you know, thought-provoking discipline or punishment myself, which is non-punitive, non-traditional *then I can also, hopefully, guarantee that it's non-discriminating against BIPOC students*. And so, I can control and I can protect my students effectively. 'Cause once they leave my classroom, they're out of my hands. And if I'm not confident that I'm living in or working in a safe community with a good principal or a good school disciplinarian, I'm not comfortable doing that, especially if we have an SRO [School Resource Officer]. (Jason, Round 3 Interview, 9/25/20, emphasis added)

In this comment, Jason portrays himself as trying to “protect [his] students” from potentially discriminatory punishments handed down by school administrators. This creates a good/bad binary between Jason, on the one hand, and school principals and disciplinarians, on the other. Notably, Jason does not critique the policies and practices of sending students to the principal’s

office or giving suspensions and expulsions. Neither does Jason consider that he himself might fall into or contribute to racialized patterns of punishment. Instead, he suggests that by handling discipline himself, he could “hopefully, guarantee that it’s non-discriminating against BIPOC students.” This isolates the source of racially disproportionate school punishment patterns to the individual actions of teachers and school administrators. While it is certainly true that individuals’ subjective judgements and discretion contribute to these patterns (Girvan et al., 2017; Smolkowski et al., 2016), those individual judgements and acts do not occur in a vacuum. There are long and deeply rooted histories of white people and institutions criminalizing and seeking to control the bodies and behavior of people of color (Simson, 2014). Thus, Jason’s suggestion that his individual actions might avert patterns of racism evades the salience of the systems and structures that produce and maintain racial inequity.

To contextualize this example in the broader data set, it was not the case that Jason uniformly avoided thinking about racism as systemic. At another point in the same interview, for instance, Jason indicated critical awareness that governmental rights and policies are not fairly enforced, commenting that, “the second amendment only applies to you if you're white” in reference to the police killing of Tamir Rice, a 12-year-old Black boy carrying a toy gun (Jason, Round 3 Interview, 9/25/20). This is to say that there were moments where Jason *did* attend to systemic and structural manifestations of racism, but he seemed to focus on individual and interpersonal acts of racism more consistently. Other focal participants also provided racial analyses that, at times, emphasized the role of individuals and isolated acts of racism. For instance, Stacey talked about interacting in ways that might “offend other cultures,” such as shaking hands, and using hurtful language as examples of racism in her Round 1 interview (2/28/20). Beyond focusing on individual acts of racism, Stacey’s examples also invoke a



version of multiculturalism that emphasizes cultural sensitivity without consideration of power or legacies of colonization and domination (Banks, 2009; May & Sleeter, 2010; Nieto, 1995).

However, coming out of a course on teaching in a multicultural society that emphasized systemic racial injustices, most participants talked about racism as being *both* interpersonal and systemic, even at the outset of this study. For example, in response to a question about different understandings of racism, Evelyn said:

I guess it's kind of like the micro and macro levels. I guess micro would be individual people's effects on — individuals' racist acts, like individuals being racist, while — which add to the systemic. But systemic, I think of the school-to-prison pipeline and things like that. Like how schools that are in lower-income areas get less funding because a lot of that's property tax. So they don't have the resources, and then they don't do as well on the standardized tests that are systemically made to benefit one group and not another. Those questions are worded in a certain way so then they do poorer and they don't get as much funding, and then it's just this perpetuating cycle. So people think democracy in America as a whole is like the “pull yourself up by your bootstraps” type of deal, but there are systems in place that don't let you do that. (Evelyn, Round 1 Interview, 2/19/20)

Here, Evelyn recognizes that individual acts of racism occur and are a problem, but she does not stop there; Evelyn points out that individual racism can “add to the systemic” and then goes on to give examples of systemic and structural manifestations of racism, indicating some alignment with race cognizance. Rachael, Stacey, Margaret, and Alex similarly spoke to both individual and systemic forms of racism in their interviews, albeit with varying levels of comfort and fluency in using direct racial language and unpacking examples of systemic racism. Jason stands

out as more consistently emphasizing and displaying an individual view of racism and maintaining that view over time.

**Racism as Permeating Interactions and Structures.** During the math teaching course sequence, teacher candidates sometimes offered racial analyses that reflected an understanding of racism as permeating both interpersonal interactions and larger structures and systems, which is a key aspect of race cognizance. These analyses were likely informed by a combination of teacher candidates' prior learning and insights gained over the course of 2020. As just mentioned, teacher candidates took a course on teaching in a multicultural society prior to the math teaching sequence. This course oriented teacher candidates to several foundational ideas about race and racism from a critical perspective, such as the idea that racism is not a thing of the past, but still an urgent problem in contemporary society, and that attempting to be color-blind does not solve racial inequities. The course also introduced teacher candidates to examples of systemic racism, such as the history of residential segregation in the United States and the school-to-prison pipeline. In addition, teacher candidates spoke to important insights from elective courses they took during in the spring or summer of 2020. For example, Stacey and Margaret took a linguistics course focused on language and discrimination that seemed particularly impactful. Teacher candidates also relayed that engaging with social media, webinars, and popular books about anti-racism and whiteness during the summer of 2020 contributed to their thinking about issues of race and racism. Across these different experiences and their work in the math teaching course sequence, teacher candidates seemed to make subtle shifts towards more structural and permeating understandings of racism. These shifts were not uniform across focal participants, but nevertheless, increased awareness of the systemic and pervasive nature of racism represents important progress towards race cognizance. Teacher educators could leverage and build on

these kinds of shifts to further support and advance teacher candidates' critical reasoning about race and racism in the context of (math) teaching.

One example of a teacher candidate offering a racial analysis that signals increasing awareness of how racism permeates interactions and structures in society is Margaret's comments during her Round 3 interview. When I asked whether Margaret felt like her thinking about what racism is or what it might mean to challenge it had shifted over the summer of 2020, Margaret replied:

Definitely. I think from this book I've mentioned [holds up *Begin Again: James Baldwin's America and Its Urgent Lessons for Our Own* by Eddie S. Glaude, Jr.], but something this book was saying that really stood out to me was we're so quick to look at Black people as being violent or drugs and guns and all of these things, but *it's — white people need to change*. It's not them that need to change, it's white people, because we are just as violent as them. Not in the same ways, but *these laws, and treating homelessness as [pause] a crime or, just the way society is built is, is something we need to take responsibility for*. And I feel like — um, yeah. (Margaret, Round 3 Interview, 9/25/20, emphasis added)

Here, Margaret articulates the idea that it is white people who need to change and who bear responsibility for the status quo of racial inequity. Margaret's assertion that white people are complicit in establishing and maintaining the racial order, as well as her questioning of white people's innocence, reflects key emphases of critical race perspectives and critical whiteness scholarship (Frankenberg, 1993; Leonardo, 2004, 2013). Moreover, the fact that Margaret points to laws and "the way society is built" as things "we" (white people, I presume) "need to take responsibility for" suggests that she is recognizing ways that racism is built into the societal

structures and systems, which aligns with the critical race theory premise that racism is endemic in U.S. society (López, 2003). This signals promising movement towards race cognizance. Yet, at the same time, Margaret walks a fine line between naming and reinscribing stereotypes about Black people, drugs, and violence. She also refers to Black people as “them,” which suggests some lingering discomfort with using direct racial language even as she shares her learning about race and racism. Thus, as in other instances throughout this chapter, this glimpse of race cognizance does not preclude problematic racial ideas or continued discursive race evasion.

Margaret’s commentary about shifts in her thinking about race and racism during her Round 3 interview is also notable for seeding an idea consistent with race cognizance that Margaret directly applies to thinking about classroom interactions in her field placement. Just after making the comment above, Margaret continued:

So I think it's seeing ourselves responsible as much as them, and... and changing the narrative too, because I feel like the media is always — well, it's about, *so something that I've been thinking about is visibility, and visibility of marginalized, oppressed groups.* And I read this book and it was like, "*They're either invisible or hyper-visible, they're never just visible.*" And so, the book I was reading was specifically talking about refugees and how we only care about them when it's talking about them being criminals and murderers and all of these things that are usually talked about in the media. But other than that, when we're not saying those narratives, they're completely invisible to us. And so, I feel like that understanding can be applied to any marginalized group. And in light of Black Lives Matter, I've been thinking about that for Black people, and they're super visible during these times, but, after this, when, say, the presidential election consumes our attention, then they're just gonna be invisible again. *So, just thinking about when I'm*

*seeing them and how they're being portrayed, I think, is maybe a new lens I've acquired.*

(Margaret, Round 3 Interview, 9/25/20, emphasis added)

In this excerpt, Margaret points to how dominant social narratives shape the way marginalized people are portrayed and seen. This moves beyond an individual view of racism, such as one person holding a racial stereotype, toward a permeating view of racism where overarching narratives are communicated and reinforced by the media to shape people's perceptions of marginalized and oppressed groups in patterned ways, making people from marginalized groups alternately hyper-visible or invisible. This connection that Margaret makes between larger social narratives and how individuals see other people aligns with key premises of race cognizance. Namely, Margaret is attending to ways that larger social structures (like racism) and patterns of thought (like racial narratives) can organize and shape individual perceptions and interactions.

Margaret later connected this "new lens" of paying attention to when she sees marginalized people and how they are portrayed to her own perceptions of a particular student in her field placement class. In response to a question about her takeaways from *Troublemakers* by Carla Shalaby, Margaret said:

Yeah, I think what really stands out to me is the visibility, and this is something I see in field with the one student, he's hyper-visible only when he's being, engaging in trouble-making behaviors, like calling out. And then all of the attention is on him, but when he's really trying, he's always engaged, he's with the whole lesson, probably one of the only students that's sitting for the whole lesson. When he's doing that, he's not visible, and so I feel like noticing patterns on when they're hyper-visible and if that's only when they're making trouble. *And if they're not visible when they're doing good, I feel like that is*

*something that I'm really taking away from that.* (Margaret, Round 4 Interview, 12/17/20, emphasis added)

Although Margaret is not speaking explicitly about race here, she has clearly carried the idea that what one sees and perceives is shaped and informed by social narratives into her work as a teacher. Margaret applied the lens of the thinking about hyper-visibility and invisibility to notice strengths and efforts of a student that might have otherwise been overlooked. This closely aligns with race cognizant work in the math teaching course sequence on paying attention to how one reads and interprets children and actively seeking out alternate ways of seeing them, especially in light of racialized and gendered patterns in how people tend to be read and positioned. Thus, I view Margaret's thinking about hyper-visibility and invisibility as evidence that shifts toward a permeating understanding of racism and other systems of oppression and marginalization *can* plausibly impact teacher candidates' reasoning about race-related issues inside of mathematics teaching and learning; increasing ideological alignment with race cognizance and growth towards race cognizant math teaching are real possibilities.

As teacher candidates conveyed shifts towards structural and permeating understandings of racism, however, they, at times, simultaneously positioned themselves as "saviors" of children of color. Just as Margaret's racial analysis did not preclude problematic racial ideas or race evasive tendencies, other focal teacher candidates' critical racial analyses sometimes evoked white savior tropes (Aronson, 2017; Meiners, 2002). For example, consider Rachael's analysis of patterns of racism that could be reinforced or disrupted in math teaching. I had asked whether or how Rachael saw race and racism as related to the way her math discussion played out in her field placement. In response, Rachael said:

Yeah, I guess specifically, those discretionary spaces that pop up consistently. Like the one student of color was the student who asked, "Wait," after I just got done explaining what an expression is and what an equation is, he said, "Wait. What's an expression?" And I could have said, "Weren't you listening? I just explained that." I could hear a teacher saying that, like that is a classic teacher response. And especially, it's especially, I guess, not sensitive, but important for the — I'm sure that this one student of color was not the only student that had that question. I'm sure all the other students did as well. But, and even if I would have responded — So even if it was another student who asked that question and I would have said, "Weren't you listening to me?" me saying, "Weren't you listening to me?" to the Black student versus me saying, "Weren't you listening to me?" to a white student, it's that harm that Carla Shalaby was talking about. And me saying that to a Black student is a lot — *it still does damage to both students, but it does a lot more damage to the Black student because it perpetuates that pattern, that Black students aren't paying attention.* That, that pattern that already exists, I'm perpetuating that if I were to do that, but in that discretionary space, I would have chosen either way, no matter what student it was to explain it again, saying, "Oh, that's a great question." Similar to how in the video when after Aniyah just got done explaining all of her reasoning so well of why she chose one seventh, and Toni asks, "Wait, why did you choose one seventh?" Instead of saying, "Weren't you listening?" the teacher said, "That's a great question. Aniyah, can you explain again why you did that?" You know what I mean? So it's like that discretionary space. I would have done it either way, whether it's a Black student or a white student, but it's especially important because it was a Black student. And so I need

to disrupt that pattern of calling out children of color in that way. (Rachael, Round 4 Interview, 12/9/20, emphasis added)

In alignment with race cognizant ideology, Rachael demonstrates awareness of how larger racial patterns can permeate classroom interactions by pointing to the “classic teacher response” of reprimanding a student of color for not paying attention. Rachael also makes relevant connections between course work on discretionary spaces in the Toni and Aniyah video and her own thinking about race in the context of facilitating a math discussion. That is, she seems to recognize that teachers hold considerable power in how they choose to interpret and respond to students in small moments, such as when a student asks a question that sounds redundant from the teacher’s perspective. Rachael also clearly indicates understanding that the ways that teachers navigate those small moments can alternately reinforce or counter harmful racial patterns.

However, in unpacking this discretionary space, Rachael implicitly frames Black children as victims who might be saved from harm by a well-intentioned teacher like Rachael. In emphasizing that the classic “Weren’t you listening?” teacher response “does a lot more damage to the Black student” than to a white student, Rachael positions Black students as being uniformly damaged and harmed by their teachers. While there is certainly some truth to that (e.g., considering forms of systemic violence against Black children as discussed in D. B. Martin et al., 2019), Rachael over-simplifies the situation by suggesting that this harm could be prevented by the simple teacher choice to respond with “That’s a great question” instead of “Weren’t you listening?” Admittedly, grappling with both the power and limitations of teachers’ moves in discretionary spaces demands a fair degree of nuance and racial awareness. That said, the point remains that as Rachael conveyed understanding of racism as systemic and pervasive, she implicitly positioned herself as saving Black children from harm, evoking white savior tropes



(Aronson, 2017; Martin, 2007). This example suggests that white teacher candidates can simultaneously offer racial analyses that align with some aspects of race cognizance (e.g., viewing racism as systemic, structural, and pervading social interactions) while still falling into problematic tropes, such as viewing themselves as saviors of children of color.

#### ***5.4.2 Ideological Ambiguity of Social Justice Discourse***

As Sensoy and DiAngelo's (2017) book introducing key concepts in social justice education illustrates, there is an entire Discourse (Gee, 2012) associated with contemporary social justice commitments. This Discourse includes core concepts and terminology, such as "power," "oppression," "privilege," and "intersectionality." In the context of this study, I found that teacher candidates often made use of social justice terms in their interviews and coursework. What might this mean for teacher candidates' learning and critical engagement with issues of race and racism? On the one hand, teacher candidates' participation in social justice Discourse could signal alignment with race cognizant premises and aims. For example, talk about power and oppression could reflect a structural understanding of racism and an awareness that racism interacts with other systems of domination, such as sexism and classism. On the other hand, it could be that teacher candidates are trying out new social justice concepts and language with a still emergent understanding, potentially masking race evasive ways of thinking.

For instance, Jason's reference to "the intersectionality... the intersecting students" (Jason, Round 4 Interview, 12/9/20) suggests that Jason was attempting to apply a concept that he was in the process of learning. Jason seemed to recognize that intersectionality involves attending to multiple social identities at the same time (in his words, thinking about "minority students" who have disabilities). Yet, he awkwardly used the concept as a label for *individuals* who differ from an implicit norm in multiple respects ("intersecting students") rather than as a

lens for understanding how *systems* of oppression compound to shape the lives and experiences of people who are multiply-marginalized in specific ways (S. Annamma & Morrison, 2018; Bullock, 2018). Recognizing that experimenting with new language is part of learning (Sfard, 2001), I assert that tentative uses of social justice concepts like Jason’s use of intersectionality can still represent a form of ideological race evasion. I say this because using social justice concepts while maintaining a focus on individuals could provide a cover for *not* really considering broader systems, structures, and histories like those of racism and ableism. In other words, people can *sound* like they are engaged in and committed to social justice work without critically attending to the complex systemic aspects of persistent injustices and inequities. This is where the ideological underpinnings of race cognizance really matter, as it is possible for teacher candidates to name race and use social justice terms while still evading the salience of race and racism in the teaching and learning of elementary mathematics. The fact that general equity- and justice-oriented language leaves race-specific ideas and commitments implicit only exacerbates ideological ambiguities.

In addition, a pattern in teacher candidates’ discourse was using terms and concepts that have social justice cachet in superficial ways. A key example of this is Rachael’s written analysis of the Toni and Aniyah video for the Analyzing Participation assignment in Math Methods. Rachael repeatedly described the teacher in the video as “giving” students agency and power, which over-simplifies and flattens the meaning of exercising agency and power. For instance, when describing patterns related to equity and justice in mathematics that are reproduced or disrupted in the video, Rachael wrote:

--Girls can’t do math//Students of color are inferior math students; this pattern is being interrupted because *the teacher is really giving the students who share their thinking at*

*the board (two of which were girls) a lot of agency and power!* She is showing them that their thinking is important and wants the rest of the class to understand it. Nevertheless, I find that this pattern is somewhat reproduced when Toni seems visually/physically upset when the teacher didn't call on her. I'm not sure how one would address this situation, but in this instance Toni's negative feelings seemed to be overlooked. (Rachael, Analyzing Participant Assignment, emphasis added)

While Rachael emphasizes concepts that are central concerns in social justice work (agency and power), signaling potential alignment with race cognizance, her interpretation of those concepts seems superficial. Rachael appears to reduce the meaning of a student's agency and power to being called on and provided an opportunity to share their thinking (or not) by a teacher. This frames the teacher as an authority who doles out power and agency, as if students do not have power or agency apart from what the teacher gives them. This substantially differs from notions of empowerment in social justice or critical race perspectives, wherein resistance to oppression and dominant narratives, as well as the creative and persistent exercise of agency by marginalized people, is centered and highlighted (e.g., Solórzano & Yosso, 2002; Stinson, 2008). Viewing student power and agency as conditioned upon what the teacher bestows or allows (e.g., calling on a student to share) flattens and arguably distorts the possibilities of transformative change in educational contexts.

Moreover, emphasizing how the teacher is "giving" students agency and power in this single classroom episode exaggerates the impact of small teaching moves and overlooks the importance of *patterns of practice* over time. Rachael's response here is not race evasive in the sense of avoiding recognition of children's racial identities (she clearly identifies the idea that "students of color are inferior math students" is a pattern relevant to the Toni and Aniyah video),

but her vision of what it means to “interrupt” a pattern of racism seems limited. For instance, would it be enough, in Rachael’s mind, for the teacher to call on Toni to counter racist and sexist stereotypes about students’ math abilities? Rachael’s response to this assignment suggests it would be, which risks overstating the possible impact of a teacher’s move in given moment in relation to the project of countering systemic racism.

To be fair, the assignment directions set up teacher candidates to think about instances of teaching practices as reproducing or interrupting broader patterns. The directions read, “Explain which patterns of racism, sexism, and ableism are reproduced or interrupted and how, based on the video” (Analyzing Participation Assignment Directions). It is also true that part of the course instructors’ argument behind focusing on discretionary spaces as a site for working towards disrupting patterns of racism and oppression is that teaching is more powerful than people often think (Math Methods Class 2, Slides). That said, my understanding of course instructors’ intent is that they sought to emphasize that what teachers and teacher candidates do in small moments of teaching matters and is important for shaping student experiences in ways that can *cumulatively* reproduce or interrupt larger patterns, but *not* to suggest that teachers are solving or effectively countering racism or sexism with isolated moves. This is part of the reason that course instructors refer to disrupting *patterns* of racism that manifest in classroom interactions rather than disrupting racism directly.

Thus, Rachael’s interpretation of promoting student agency and power lacks the subtlety of a more race cognizant viewpoint; she does not qualify her claims about individual moves like calling on a student as interrupting patterns of racism, nor does she indicate thinking about patterns over time of who gets called on and who gets to share their mathematical thinking in a given classroom. That said, Rachael’s stance here is more race cognizant than it is ideologically

race evasive; she is trying to apply course ideas about discretionary spaces and disrupting patterns of racism, even if her use of those ideas could be more nuanced. Ultimately, Rachael's use of social justice terms, like Jason's, shows that one cannot take for granted that participation in social justice Discourse necessarily reflects robust race cognizant reasoning and understanding. This is important for teacher educators to recognize so that they do not falsely or prematurely make the assessment that teacher candidates *are* learning race cognizance, and so they can accurately identify teacher candidates' areas for further growth.

#### ***5.4.3 Reflexivity and Orientation to Further Learning***

A central component of race cognizance as conceived by Frankenberg (1993) is reflexivity, or critical reflection on one's own complicity in systems of racism and oppression. From my perspective, this means that race cognizance, and by extension, race cognizant math teaching, requires a certain degree of humility and openness to further learning. If one truly and deeply reckons with the endemic and systemic nature of racism, then there is no point of arrival at which one is "free" of racism or "fully" anti-racist (Oluo, 2019). Consequently, I see it as imperative that people striving towards race cognizance recognize that they will always have work to do in learning about and taking action to dismantle racism and their own participation in racist discourses, systems, and patterns.

As noted above in the section on naming whiteness, teacher candidates varied with respect to their attention to their own white racial identity and potential to reproduce racist patterns. Similarly, participants adopted different stances towards their own learning about issues of race and racism: some focal participants conveyed a clear awareness that they had more to learn, whereas others positioned themselves as already well-informed. Interestingly, teacher candidates' orientations towards further learning about issues of race and racism did not

necessarily mirror my assessments of their learning and race discourse. For instance, Rachael is a teacher candidate who engaged in direct race talk and signaled alignment with race cognizant ideology more consistently than most other participants. At the same time, Rachael seemed to view herself as someone who “got” race in contrast to other people who did not. As a result, Rachael did not seem particularly concerned with further learning or reflection on how she might be inadvertently contributing to racialized patterns. This is reflected in the “closed circles” representing Rachael in Figure 8. Conversely, Stacey is a teacher candidate who often engaged in race evasive and problematic talk (e.g., using outdated racial language, reinforcing racial stereotypes), but also recognized that she was “not good with words” and asked earnest questions of me as an interviewer to further her own understanding of how race and racism can impact math teaching and learning. Thus, Stacey’s race evasion co-existed with an openness and desire to learn more about race and racism. This is shown with open circles in Figure 8.

In this section, I argue that teacher candidates’ dispositions towards examining their own role in (anti)racism and their willingness to keep learning is as important for informing race cognizant teacher education as noticing patterns in teacher candidates’ engagement in different forms of race talk. My rationale is that teacher candidates’ reflexivity and orientation to further learning suggests different possibilities and challenges for supporting their practice *moving forward*, as they interact more and more with actual children in classrooms.

Alex’s case is one that illustrates how a reflexive stance might support ongoing learning as one makes anti-racist efforts. At the outset of this study, Alex generally positioned themselves as someone who understood and championed social justice. This stood in contrast to instructors whom Alex critiqued for making superficial or ineffectual efforts to attend to issues of justice, including race and racism (this relative closed-ness towards self-critique is indicated in Figure 8

with Alex's first circle being filled in). For example, during their Round 1 interview, Alex shared how an instructor for math content course had substituted the name "DeMarius" for "Jeff" in a word problem. Alex recognized that this move was likely made to signal representation and inclusion of Black students but "that in and of itself has a lot of underlying things going on" (Alex, Round 1 Interview, 2/21/20). Although Alex makes more of an allusion to something problematic rather than stating a direct concern, it was clear to me as the interviewer that Alex was skeptical about their instructor's approach. Similarly, in Alex's Round 3 interview, they characterized some of their professors as *understanding* culturally responsive pedagogy but falling short in *implementing* it, which Alex saw as demonstrating white fragility. Alex seemed comfortable critiquing the practice of others with respect to addressing issues of race and racism while positioning themselves as someone with clear intentions to do better. For instance, speaking about their professors who understood, but did not *practice* culturally responsive pedagogy, Alex said, "I think that that's been a big part of why I have wanted to have conversations about race and racism is to move into the ability to practice culturally responsive pedagogy" (Alex, Round 3 Interview, 9/24/20). This statement could be interpreted in multiple ways. On the one hand, Alex recognizes that they are not *yet* in a place where they are themselves implementing culturally responsive pedagogy (i.e., Alex views conversations about race and racism as necessary for *moving into* such practice). On the other hand, Alex does not seem to doubt their own capacity to move beyond the white fragility that they see with their professors. Early in Year 2 of the teacher education program and roughly halfway through the math teaching course sequence, Alex seemed oriented towards developing their own practice to pursue anti-racism and social justice, though they were perhaps more critical of others than of their own efforts.

Looking across Alex’s third and fourth interviews, there is a noticeable shift in Alex’s talk about their own relationship to systems and patterns of racism and oppression. Namely, Alex seemed to become more self-critical and open about naming their own areas for growth (this is captured in Figure 8 with Alex’s second circle being open). I attribute this shift, at least in part, to active identity work that Alex was doing with respect to gender. During their Round 1 interview, Alex shared that they had been involved in social justice activism for same sex marriage rights when they lived in another state. Yet, at the outset of the study, Alex had not shared that part of their identity with their classmates in the teacher education program. For example, in response to class survey questions about pronouns and gender identity, Alex wrote, “I really don't like the labeling aspect of pronouns, but I most closely align with they/them/their pronouns--Although not something I have really openly shared within my Cohort” and “again I don't typically like the labeling aspect of gender, but I most closely align with non-binary/gender-queer (again not something I have shared as openly with my peers)” (Alex, Getting Ready for Sensemakers Survey). However, as time went on, Alex participated in workshops and conversations around LGBTQIA+ inclusion at the university and gradually became more public about their non-binary / gender-queer identity. For instance, in the fall term of 2020, Alex shifted away from using their first name (which people typically interpreted as a woman’s name and associated with she/her pronouns) and instead went by their last name,<sup>25</sup> which was more gender neutral. Additionally, after the formal conclusion of this study, during the student teaching semester, Alex became more explicit about their gender in their field placement context, using the honorific “Mx” in their Zoom name.

---

<sup>25</sup> While the pseudonym “Alex” does not capture this participant’s shift to using their last name, I tried to select a name that would honor and reflect the participant’s non-binary identity while maintaining continuity for readers.



This identity work around gender seemed to provide an important entry point for Alex in advancing their thinking about issues of injustice and oppression, including issues of race and racism. For example, during their Round 3 interview, after speaking about the idea that school curriculum is often written for a white audience and sets up students of color and English language learners to fail, Alex shared:

Yeah, like I guess something that I've noticed lately, because since I asked specifically for teachers to stop gendering me in class, that I noticed that my attention to gendered language is — *I'm very hyper-vigilant about hearing it and noticing it, and I think that that's what microaggressions feel like*, and so I guess what I'm thinking as far as setting students up to fail is *knowing that students are feeling microaggressions* and either working to support them and through recognition of what that is and how like, I guess for me — So this past week we were supposed to work on something and I started reading it and it was like, “Talk with your mentor teacher and find out her opinion about this, did she do this? Did she do this?” And not all of our mentor teachers are female, and so, so then I am fixated on the language, and so *I think with students or learners who are feeling the effects of oppression, that fixating on something around injustice ends up happening in a way that detracts or distracts them from their ability to learn* and confronting that in a way to interrupt it seems necessary, and I think that's what shifts from allowing a curriculum to fail a student and providing that student with a different path or approach or an option to still be successful. (Alex, Round 3 Interview, 9/24/20, emphasis added)

In this comment, Alex relates their own heightened attention to gendered language and experience of gender-related microaggressions to the learning conditions of other students “who are feeling the effects of oppression.” Although Alex does not make an explicit connection to

race and racism here, when I restated what I was hearing in the interview, Alex affirmed that thinking about what microaggressions might feel like was a way for them to think about racism less abstractly. Thus, Alex's own learning and experiences related to gender seemed to prompt Alex to imagine and empathize with the experiences of racially minoritized students.

By the end of the study, Alex acknowledged that their own prior ways of thinking had reinforced patterns of racism and expressed a commitment to informing themselves, learning from their mistakes, continually working to improve their own practice. This was a much more direct demonstration of critical reflexivity than in Alex's prior interviews. Alex said:

So I think when I was in the first semester of the program, I realized my own deficits a lot, *I realized my own patterns of thinking that were — that would encourage patterns of racism.* And I looked around in classrooms, both ones that I was a student in and ones that I was an intern in, and could see where discretionary spaces were happening and where teachers were not interrupting patterns of racism. And I think that I reflected heavily on that and thought about ways that I could improve my own practice before I'm learning from my own mistakes in classrooms, which is part of what's gonna happen anyway, but I'd rather do that from an informed perspective than from an uninformed perspective. And I think that was kind of my motivation for wanting to contribute to something like this and other conversations about race and racism that have happened, is just like the concept of "Be the change you wish to be in the world," but also that really just *starts with yourself and owning your own things* and — yeah, I guess that was it for me, like, *"How can I do better to recognize where I can improve and then practice, yeah, learning from my mistakes now?"* (Alex, Round 4 Interview, 12/15/20, emphasis added)

Although Alex still points to other teachers who “were not interrupting patterns of racism,” they frame their observation of those teachers as a learning opportunity to “improve my own practice before I’m learning from my own mistakes and classrooms,” rather than as a judgment. That is, Alex recognized that they would inevitably make their own mistakes once they got into the classroom, and they saw their teacher education experiences as a chance to be more informed going into that work. Alex concludes by emphasizing that justice-oriented work “starts with yourself and owning your own things,” which suggests, in alignment with race cognizant ideology, that everyone has reflective and self-interrogating work to do. This stance seems very promising and generative for Alex’s future learning and efforts with respect to tackling issues of race and racism within and beyond the context of math classrooms.

Though Alex’s gender identity journey is unique among study participants, their case still helps to illustrate the range of orientations that teacher candidates displayed towards their own relationship to systems of racism and oppression and towards further learning about race and racism. For example, juxtaposing the end-of-the-study reflective comments from Alex presented above with analogous comments from Jason demonstrates that some teacher candidates thought more deeply and critically about their own practice and areas for growth than others. In Jason’s reflective comments, he uses a metaphor of spotting and avoiding “landmines” in the classroom to stand in for efforts to avert patterns of racism and oppression. This metaphor suggests that Jason views racism and other forms of oppression as *traps* into which teachers might inadvertently fall, which moves much of the agency for reproducing racist and oppressive patterns away from teachers. Responding to a question about whether there had been shifts in his thinking about how race and racism are connected to math teaching over the course of the study, Jason said:

Definitely, because when I started the program — yeah, the first time I had [Sensemakers and Math Methods lead instructor’s] class was winter semester, so yeah, when I started the program, we started with the multicultural societies class and so it was all very — we were learning about like active oppression in the classroom. *And so it was a very conscious thing trying to not repeat the easy landmines*, the easiest to spot landmines in the classroom, and then when it got to [Sensemakers and Math Methods], it was much more about, "Okay, so we take it for granted that you are not actively trying to oppress your kids, but now we are *teaching you to avoid the landmines that are not so easy to spot*, and which still are harmful to your students." So definitely in the past year, there has been more thinking and learning about that, about *being very selective about what I say or how I say it*, or how I interpret what my students are saying. And yeah, like what I've said with you today, a number of times, *the latest thing I am trying to work on is getting equitable participation from my students*, but yeah. (Jason, Round 4 Interview, 12/9/20, emphasis added)

While Jason conveys some openness to further learning in talking about trying to “get” equitable participation from his students, his comments on what he had learned already suggest a simplified view of teaching and learning interactions. For instance, Jason implies that he might avert patterns of racism and oppression by being careful about what he says and by avoiding “the landmines that are not so easy to spot.” This reduces the complexity of teachers’ relationships to systems and patterns of racism and oppression to *trying to avoid certain harms*. Moreover, as discussed above, Jason emphasizes an individual and interpersonal view of racism over systems and structures that may complicate teachers’ ability to follow through on their equity-oriented intentions (DiAngelo, 2010). Thus, even though Jason recognizes that he has room to grow in

terms of fostering equitable participation, he seems to be expecting to learn techniques and strategies that will reliably produce equitable participation rather than engaging in deeper learning about race and racism or his own participation in oppressive systems. In addition, as I discuss further below, Jason expressed the sentiment that he had learned all that he could from the Toni and Aniyah video, and felt that at a certain point, re-watching the video was like “trying to get blood out of a rock” (Jason, Round 4 Interview, 12/9/20). This conveys some resistance to unpacking and learning further from the complexity of race and racism in a classroom episode.

In comparison to Alex, Jason seemed less self-critical and more satisfied with his existing understanding about issues of race and racism. Considering all six focal teacher candidates, I characterize Margaret and Evelyn as more reflexive and oriented towards further learning, like Alex and Stacey, whereas I view Rachael and Jason as more closed to such self-interrogation and critique. This is the distinction signaled with open and closed circles in Figure 8. Despite this variation in teacher candidates’ stances towards their own involvement in and learning about systems of racism and oppression, all six participants regularly signaled their personal alignment with anti-racist and justice-oriented efforts. I discuss this phenomenon in the following section.

#### ***5.4.4 Self-Positioning in Relation to Anti-Racist Projects***

Along with critical reflexivity and a structural understanding of racism, a commitment to anti-racist aims and action is central to race cognizance (Frankenberg, 1993; O’Brien, 2000). I found that participants consistently positioned themselves as embracing work on issues of race and racism across the length of the study, suggesting strong alignment with this aspect of race cognizance. For example, the “Getting Ready for Sensemakers” survey, which was sent out shortly before the first class session, included the following prompt: *This course will interweave work on mathematics, teaching practices, and advancing justice, with specific attention to race*

*and racism. What is your reaction to this?* In response, Rachael, Stacey, and Jason each stated their excitement about these course foci (e.g., Rachael wrote “I am very excited to learn and grow”). Margaret, Alex, and Evelyn similarly expressed interest in and enthusiasm about the course’s emphasis on advancing justice through math teaching. For instance, Alex wrote, “This is the class I have most looked forward to, as it combines most of what inspired my return to school” (Getting Ready for Sensemakers Survey). Additionally, in their course assignments and interviews across the year, teacher candidates signaled in multiple ways that they saw themselves as people who were (or were trying to be) racially aware and working towards racial justice.

There is no definitive way to know whether teacher candidates positioned themselves in this way out of a desire to say and do what seems socially acceptable, out of “genuine” anti-racist commitments, or some combination of both. Regardless, the fact remains that none of the focal participants explicitly or directly resisted the math teaching course sequence’s emphases on being aware of and working to disrupt racialized patterns in the context of teaching elementary math. This outcome is not one that should be taken for granted, given recent political fractiousness and controversy around addressing issues of race and racism in K-12 schools (e.g., Hogeland, 2021; Walker, 2021); it is entirely possible that another sample of white teacher candidates enrolled in a similar teacher education program (or even different teacher candidates at the same institution) might have rejected out of hand any discussion of race and racism in the context of math teaching.

When teacher candidates position themselves as aligned with racial justice efforts, this has important implications for teacher educators. Rather than investing time and energy in making the case that elementary teachers *should* be paying attention to race and racism (which many teacher educators have to do), teacher educators working in contexts where teacher

candidates appear to be “on board” with anti-racist projects can instead delve into race-focused course work, using assessments and feedback to ensure that teacher candidates are critically engaging with issues of race and racism across their thinking and practice. This includes looking out for more subtle and indirect forms of resistance to anti-racist work. For instance, in the absence of overt pushback against work on anti-racism and social justice, the resistance I did see from teacher candidates was generally under the guise of “reasonable objections” from equity-minded people. This aligns with prior critical race research on white teachers and teacher candidates, which suggests that white teachers often espouse justice and equity-oriented aims while simultaneously operating with color-blind frames (e.g., embracing the myth of meritocracy), using silence, “simulated tolerance,” and other rhetorical strategies to distance themselves from issues of racism, and/or indirectly undermining meaningful anti-racist change (Case & Hemmings, 2005; Evans-Winters & Twyman Hoff, 2011; Haviland, 2008; Viesca et al., 2013). These patterns of less overt resistance raise concerns that teacher candidates will “perform” anti-racist commitments in teacher education spaces without departing in any meaningful way from enacting normalized teaching practices that maintain the racial status quo. In other words, there is a worry that teacher candidates could pay lip service to equity, justice, and anti-racism without genuinely taking up anti-racist *action* in their teaching. In this section, I present data relevant to these concerns, documenting ways that teacher candidates signaled their alignment with anti-racist projects as well as instances of subtle resistance that occurred under the guise of being “on board” with equity, justice, and anti-racism.

### **Positioning Oneself as Racially Aware and “On Board” with Anti-Racist Projects.**

All six focal participants regularly positioned themselves as aligned with goals of attending to race and racism and, more broadly, pursuing equity and justice in elementary (math) teaching.

Teacher candidates accomplished this self-positioning in multiple ways. Teacher candidates cited books and podcasts related to anti-racism, referred to things they had learned from friends of color, relayed participating in Black Lives Matter protests, and used language associated with social justice discourse, such as the terms “BIPOC,” “marginalization,” “intersectionality,” and “empowerment.” For example, when describing race-related resources she sought out during the summer of 2020, Evelyn said:

To be honest, I really enjoyed — there were several — you know how Instagram you can post more than one picture. There were a lot of organizations and just people I saw sharing posts that had multiple links in there, so just following resources that were shared, especially by friends of color, and if they think this is important, then I need to read this, and just engaging in things like that. I tried to stay up-to-date on the news and all that was happening. I did attend a protest in [university town], but my work schedule made it hard. I also — *I grappled with like, "How can I help? What impact can I have right now?"* So part of that I thought would be like educating myself for sure, in terms of — especially going into the field of education. *It is so important that educators are educated on these issues and these systems that are in place*, different places that you could donate in terms of money, other things. Yeah. (Evelyn, Round 3 Interview, 9/28/20, emphasis added)

Evelyn clearly conveys that she wants to help with and contribute to racial justice efforts, sharing her wondering “How can I help? What impact can I have right now?” Evelyn also connects this commitment of her to educating herself (presumably about issues of race and racism) as she prepares to enter the teaching force. In this case, it seems that Evelyn was at least contemplating forms of action that would align with anti-racist goals, though there is no guarantee that she will



follow through on these ideas. Still, this seems like a promising disposition that teacher educators could encourage and build on to support follow-through with race cognizant teaching.

Another way that teacher candidates implicitly positioned themselves as racially aware and committed to anti-racism was by contrasting their own learning and experiences in teacher education with that of friends and family members outside of the university. For example, Margaret shared that one of her sisters was interviewing for an alternative teacher certification program in a predominantly Black city. Margaret overheard her sister emphasizing that students need to be disciplined, follow the rules, and respect authority. Margaret relayed, “And so, I was like, ‘Wow, there's a lot there that maybe she hasn't learned about before’” (Margaret, Round 3 Interview, 9/25/20). Without saying so explicitly, Margaret suggested that her sister had not learned about racialized patterns in school discipline in punishment the way that Margaret and other teacher candidates had during the math teaching course sequence and other teacher education courses.

Similarly, Rachael positioned herself as more racially aware than her friends enrolled in other teacher education programs. For example, at the end of her Round 4 interview, after asking about my plans after finishing my dissertation, Rachael said the following:

Yeah, that's the one reason why I'm grateful I landed at [university], because I do think that this is one of the only universities [chuckle] that does this. *All of my other friends who have graduated from teacher ed programs talk literally nothing about race at all.* I'm like, "That's literally what our entire teacher ed program revolves around." I'm so grateful for that, because I would not be prepared. And that's honestly scary to me because all — I can't imagine going into a classroom without this knowledge now. *I feel*

*like I would be doing so much damage because I wouldn't know any of this.* (Rachael, Round 4 Interview, 12/9/20, emphasis added)

Here, Rachael characterizes the teacher education program as giving her essential racial knowledge. In contrast, Rachael describes her peers' experiences at other programs as talking "literally nothing about race at all." Rachael further suggests that without the racial awareness she has gained through the teacher education program she "would be doing so much damage" going into a classroom. Clearly, Rachael views herself as someone who knows and cares about disrupting racial injustices that can be reproduced through classroom teaching, and she expresses gratitude for the teacher education program's emphasis on racial issues. However, in positioning herself this way, Rachael runs the risk of over-estimating the extent of her learning and understanding, perhaps leading her to view her learning about race and racism as "done." This suggests that one challenge that might be particular to working with teacher candidates who align themselves with racial justice causes is helping to support teacher candidates' meta-awareness of what more they might learn and work on with respect to anti-racism and race cognizant teaching moving forward.

**Subtle Resistance to Anti-Racist Work.** Because teacher candidates publicly aligned themselves with anti-racist efforts, the ways that they resisted course attention to issues of race and racism were less overt, reflecting patterns of whiteness and race evasive ideology. Interestingly, the main place where resistance surfaced was in connection to course work with the Toni and Aniyah video. That is, teacher candidates did not critique course instructors' emphasis on issues of race and racism outright, but instead raised smaller concerns about specific conversations about the Toni and Aniyah video that, in effect, signaled some resistance to anti-racist work. Rachael and Jason were the main examples of this. I now turn to specific ways that

Rachael and Jason indirectly resisted course emphases attending to race and racism in elementary math teaching.

*Referring to Peers to Voice Skepticism.* There were two notable instances in the study where Rachael mentioned the perspective and experiences of other teacher candidates in the cohort as a way of introducing critiques of course instructors' treatment of issues of race and racism. Similar to the color-blind rhetorical move of saying "Yes and no, but..." and appearing to take all sides on a racial issue (Bonilla-Silva, 2002), framing concerns as coming from peers allowed Rachael to voice skepticism without positioning herself as "against" work on issues of race and racism in math teaching courses. Both instances of this discursive move revolved around work with the Toni and Aniyah video and similarly suggested that course instructors had misinterpreted teacher candidates' analyses of the video, wrongfully characterizing teacher candidates as racist.

For example, during her Round 1 interview, Rachael shared that some of her friends in the teacher education program held the view that "not everything is a race issue" (Rachael, Round 1 Interview, 2/21/20). Rachael said, "I don't know if I necessarily agree with this," but she had heard people say that "they feel like the professor is trying to turn it into a race issue" and "turning something into a race issue can be a form of racism" (Rachael, Round 1 Interview, 2/21/20). When I pressed Rachael to say more about what she meant by "turning something into a race issue," it became clear that she was thinking about a specific moment in Class 1 of Sensemakers. The class was discussing the Toni and Aniyah video after a second viewing of the long version of the clip. Rachael said:

Yeah. So if a student is like — I don't know.<sup>26</sup> Okay, there was — okay, for one example, was in Sensemakers. The one girl was, I don't remember her name in the video, but she was laughing at the student at the board. And obviously, assumptions that we could be making about this student, obviously, could be a race issue, definitely. *But I know one of my fellow students contributed to the conversation, and kind of felt like the instructor was calling her a racist, but her comment was never meant to be.* I don't know, I just feel like sometimes, it's like — I don't know, I don't even really know what I'm trying to say right now. (Rachael, Round 1 Interview, 2/21/20, emphasis added)

Here, Rachael refers to a peer (a white woman) who shared that because she grew up “painfully shy” being in Aniyah’s position and “experiencing laughter or someone playing with your hair, the way Toni acted” would have make her feel nervous and like she was being mocked (Sensemakers Class 1 Field Notes, 2/17/20). Rachael’s peer framed this reaction as “not as much with race,” but instead a personality-based bias. However, the lead course instructor responded that even though the teacher candidate said this was not about race, “*it probably is partly about race*, because white women tend to have certain reactions to certain ways of talking, and Black girls likely have other ways of talking, and that clash is probably what we’re looking at here” (Sensemakers Class 1 Field Notes, 2/17/20, emphasis added). In Rachael’s processing of this event, she notes that her friend “felt like the instructor was calling her a racist, but her comment was never meant to be.” Rachael friend’s defensive reaction (and Rachael’s revoicing of it) evokes the phenomenon of white fragility and the good/bad binary between non-racist and racist people (DiAngelo, 2018). Rather than hearing the lead course instructor’s point that personal

---

<sup>26</sup> Rachael’s repeated hedging that she “doesn’t know” what she thinks or what is trying to say also evokes the “Yes and no, but...” rhetorical strategy characteristic of color-blind racism (Bonilla-Silva, 2002).

preferences for ways of talking are influenced by race, Rachael's peer took this nod to implicit racial bias as being called "a racist."

Although Rachael has distanced herself from the view that the course instructor was being racist by couching it in the experience and perspective of her friend, Rachael's further comments suggest that this is also a concern of Rachael's. During the interview, I had revoiced Rachael's comment as a wondering about what it means to say something is "about race" and what that implies about being racist or not racist. Rachael replied:

Right. So it's like, this girl is — if this girl laughed at the girl at the board, and we're like, "Well, that's a race issue that she's laughing." Are we entitled to say that she's laughing because of her race, or is she actually just laughing at the girl because she has a bad attitude? You know what I mean? Or, like, yeah, I don't know.... Are we just saying, "Well, this person is acting that way because of their race?" Is that problematic in itself? You know what I mean? (Rachael, Round 1 Interview, 2/21/20)

Despite the fact that Rachael speaks in the form of questions, one can infer that Rachael *does* think it is problematic to suggest that Toni is laughing "because of her race." On the surface, this seems like a reasonable objection; it *would* be a gross oversimplification, not to mention a clear instance of biologizing race and culture (Bonilla-Silva, 2001), to assert that someone was acting in a particular way "because of their race." However, that is not what the lead course instructor said or implied. Based on my field notes from the class session and my interactions with the instructional team during planning meetings, my understanding is that the lead instructor was making a much more nuanced point. Namely, the instructor was arguing that many of the ideas, norms, and preferences that people take for granted are in fact tied to their racial socialization. This is very different from suggesting that race *causes* or provides a simple explanation for

particular behaviors. Ultimately, Rachael's comments here suggest some resistance to exploring a view of racialization and racism as permeating and impacting all social interactions.

Given that this first instance stems from a Round 1 interview, one might wonder whether Rachael's initial resistance diminished, intensified, or otherwise changed over time. I did not see evidence of similar resistance in Rachael's Round 2 interview, and because of scheduling difficulties, Rachael did not have a Round 3 interview. That said, Rachael made comments in her Round 4 interview that were strikingly similar in terms of referencing peers' viewpoints to critique course instructors' responses to teacher candidates' analyses of the Toni and Aniyah video. In this case, Rachael and her peers were reacting to public feedback on the Analyzing Participation assignment, which involved analyzing the Toni and Aniyah video. The lead course instructor pointed out the many of the teacher candidates had read moves by the teacher in the video "as a behavioral rebuke" rather than considering the possibility that shushing students might have been a move to "disrupt a pattern of children not listening to or respecting each other" (Math Methods Class 7 Field Notes, 12/1/20). During the Round 4 interview, I had asked about any tensions or challenges in thinking about race and racism in the context of math teaching across the two courses. Rachael said:

I don't know, I guess I don't know how to really explain this in words, but *everything we said*, every time us, someone, a classmate would bring up a point of what they would have done or — it was all about, "No, that would be perpetuating racism, like X, Y, Z, and student —" I don't know, I just feel like *sometimes people thought that it was a little harsh in that aspect, and that they felt like sometimes instructors were misunderstanding what they were saying* about — but I personally didn't feel that way, but I do realize

where my classmates are coming from and can recognize that. (Rachael, Round 4 Interview, 12/9/20, emphasis added)

Again, Rachael distances herself from direct criticism of course instructors' treatment of issues of race and racism, pointing to what "people thought" and stating that she "personally didn't feel that way." However, the fact that Rachael starts out by talking about instructors' responses to "everything *we* said" suggests that, on some level, Rachael includes herself in the group of people who felt their comments were misunderstood. I interpret this example as an instance of subtle resistance to work on issues of race and racism because, again, Rachael is indirectly (through the framing of peers' feelings) pushing back against consideration of nuance and complexity in analyzing racialized patterns in the Toni and Aniyah video. Course instructors did not say that teacher candidates were wrong in their analyses, but instead encouraged teacher candidates to actively consider "alternate readings" of classroom interactions (Math Methods Class 7 Field Notes, 12/1/20). Rachael's revoicing of her peers' concerns overlooks the substance of course instructors' push to engage with the complexity of race and racism in classroom settings. Considering that Rachael actively and consistently positioned herself as racially aware and invested in anti-racist projects, I think it is important to hold these examples of subtle resistance in mind. Rachael's case demonstrates that white teacher candidates can simultaneously "buy in" to anti-racist work, show evidence of race cognizance, and still harbor reservations that obscure and impede learning about the complexities of race and racism. In other words, teacher candidates can show ideological alignment with race cognizance in certain respects, while displaying patterns of whiteness and ideological race evasiveness in others.

***Nothing More to Learn.*** As discussed above, teacher candidates varied with respect to their orientations towards further learning about issues of race and racism. In Jason's case, I view

his stance towards further learning as a form of subtle resistance to anti-racist work. Speaking about the repeated viewings of the Toni and Aniyah video across the math teaching course sequence, Jason said:

Not that I'm criticizing, but also we've seen the same video of [instructor] teaching the particular math discussion more than a dozen times now, I think, *so trying to get blood out of a rock, basically*. Like trying to still find important things to notice or to acknowledge from that particular video. So there were some struggles with just keeping up with the work, and then there were times when *I was struggling to make sure that I was still getting something out of the class*. And because the big focus of [lead course instructor's] class, I think, is learning to notice and sidestep the harder to spot landmines, you know, it's like, I think you're, *you're in danger of making yourself go blind because you're looking so hard*. So, yeah. Thinking and finding ways to stay engaged in the process of trying to be better every day, trying to do more for my students and making sure that the language I'm using is equitable, that it is — that the content is accessible for all of my students and that I'm doing the best I can for them, or I'm not doing anything which is inadvertently gonna harm them in the long run. Yeah. (Jason, Round 4 Interview, 12/9/20, emphasis added)

Much like Rachael had voiced concerns with the disclaimer that she had heard the ideas from peers and was not sure if she agreed with them, Jason softened his pushback by saying, “not that I'm criticizing.” Yet, Jason proceeded to characterize gaining additional insights from re-viewing the Toni and Aniyah video as “trying to get blood out of a rock” — he clearly thought there was nothing more to learn from engaging with the video. Moreover, Jason suggested that the class's overall attention to “harder to spot landmines” (i.e., less overt ways that racism and oppression



might be reproduced) made it so that “you’re in danger of making yourself go blind because you’re looking so hard.” This implies some skepticism that there *were* real racial issues that Jason and other teacher candidates had not yet identified and considered. Interestingly, Jason closes his comment by reiterating his commitments to equity, accessibility, and “trying to be better everyday,” as if to quash any doubts raised by his critiques of the math teaching course sequence. Nonetheless, the substance of Jason’s comments is that he had learned all he could from the Toni and Aniyah video. This evokes concerns that Jason may not meaningfully extend or act on his learning about issues of race and racism in his own teaching practice. It also further illustrates that positioning oneself as “on board” with anti-racist projects — in alignment with race cognizance — is not mutually exclusive with resisting work on issues of race and racism and displaying ideological race evasion.

#### ***5.4.5 Summary: Ideological Patterns in Race Talk***

In this section, I have analyzed examples of teacher candidates’ race talk and emphasized that, whether or not clear racial language was used, there was meaningful variation in teacher candidates’ ideological alignment with aspects of race evasiveness and race cognizance. For instance, I showed that when teacher candidates engaged in analysis of racial inequities, they conveyed conceptions of racism ranging from a primarily individual and interpersonal problem (as demonstrated by Jason) to a structural and systemic phenomenon (as demonstrated by other participants). I highlighted teacher candidates’ increasingly structural and permeating understandings of racism as a promising and important leverage point for supporting further race cognizant learning and practice. In addition, I showed that while teacher candidates *did* indicate alignment with and movement towards race cognizance in various moments across the study, this was not consistently or uniformly true for any individual participant over time. For instance,

even as Margaret conveyed that she was developing a conception of racism that largely aligned with race cognizance, she simultaneously walked the line of naming and reinforcing stereotypes about people of color. Similarly, other teacher candidates exhibited moments of alignment with race cognizance alongside patterns of whiteness, such as making deficit-based generalizations about people of color and positioning oneself as a white savior, as well as patterns of ideological race evasion, such as minimizing the complexity and continuing salience of race and racism. Thus, patterns of ideological alignment, like patterns of language use, were not clear cut.

Race cognizance entails more than naming and reckoning with the pervasive and persistent nature of racism; critical reflexivity and anti-racist commitments are also key components. As with other aspects of their race talk, there was variation with respect to teacher candidates' reflexivity. For instance, some teacher candidates named whiteness and patterns of racism in the abstract but avoided considering the implications their own white racial identity or their own potential to be complicit in systems of racism and oppression. Teacher candidates also displayed a range of orientations towards further learning about race and racism, from eagerness to learn (as with Stacey and others) to a sense of having already learned enough (as with Jason and Rachael). As for anti-racist commitments, all six teacher candidates publicly expressed their alignment with anti-racist projects, although, as Rachael and Jason demonstrate, this did not preclude subtle resistance to course efforts and emphases. Taken together, these findings reinforce the point that, within individuals and discourse communities, glimpses of race cognizance can and do co-exist with other racial discourses and ideologies, including race evasiveness and essentialist racism. This indicates that movement towards race cognizance, while complicated, is possible for white teacher candidates.

## 5.5 Chapter Summary

This chapter has reported findings pertaining to the third research question in this study: *How do focal teacher candidates engage with issues of race and racism in their talk and writing, and what does this reveal about their learning?* After sharing the key finding that evidence of race evasion and race cognizance co-existed in the talk of teacher candidates, I presented some conceptual categories for interpreting and characterizing different types of cases with respect to teacher candidates' race talk. These categories included discursive and ideological dimensions of race evasion and race cognizance, as well as teacher candidates' orientations towards learning about race and racism and critical reflexivity. I used these categories to locate my six focal participants in an anchor representation (Figure 8). While the precise placement and pathways of change over time for these participants may be specific to this study, the high-level categories and patterns can serve as tools for making sense of teacher candidates' race talk in other contexts. For instance, researchers and teacher educators could consider whether patterns of indirect race talk also communicate relative alignment with race evasive ideology (as with Stacey and Jason), or whether teacher candidates are more aligned with key aspects of race cognizant ideology despite tendencies to evade explicit race talk (as with Evelyn, Margaret, and Alex). Similarly, people could question whether instances of direct race talk reflect robust and nuanced ideological alignment with race cognizance, or perhaps signal some superficial patterns of reasoning (as with Rachael). Additionally, people could consider teacher candidates' shifts and changes over time, as well as their relative openness towards further learning, self-interrogation, and anti-racist projects.

Following my introduction of the anchor representation and high-level categories, I presented and analyzed numerous examples of teacher candidates' race talk in two major

sections. The first showed that teacher candidates often talked about race and racism in indirect and ambiguous ways, although they also, at times, used direct racial language. Importantly, this general tendency towards discursive race evasion did not preclude engagement with race cognizant ideas and commitments. This was illustrated by examples in which teacher candidates spoke to racialized patterns by using general terms like “identity” and “culture” or making compressed references to the Toni and Aniyah video and the concept of “reading” students. The second major section further demonstrated that although teacher candidates often evaded explicit talk about race and racism, they also showed glimpses of race cognizance in critically analyzing racial issues, reflecting on their own potential complicity in systems of racism and oppression, and/or aligning themselves with anti-racist projects. Teacher candidates *did* show evidence of race cognizant learning, but this was complicated by lingering assumptions, ideas, and ways of thinking and speaking tied to race evasion and essentialist racism, such as deficit assumptions about people of color, white saviorism, and frames of color-blind ideology (Bonilla-Silva, 2018).

In efforts to promote critical attention to issues of race and racism, it is tempting to believe that getting people to *name* race and racism is in itself an accomplishment. Especially given the breadth of literature documenting white people’s evasion of race talk (Bonilla-Silva, 2002, 2018; DiAngelo, 2018; Jupp et al., 2019), it is logical to think that using explicit racial language and engaging in direct race talk could reflect movement towards critical race understandings and perspectives. However, this study shows that while direct race talk *can* signal alignment with some ideological aspects of race cognizance, that alignment cannot be assumed. Likewise, this study suggests that evasion of direct race talk can, but does not necessarily, mean the speaker embraces color-blind ideology (Bonilla-Silva, 2018). Thus, a central argument of this chapter is that engagement in a given type of race talk does not necessarily imply understanding

of or alignment with particular racial ideologies, nor does it preclude engagement in conflicting discourses. This points to the complexity of using language and discourse as a window into thinking, learning, and ideology, as well as an inherent challenge in pursuing ideological shifts as learning goals. For while language and discourse are readily accessible for observation and analysis, there is no one-to-one relationship between what someone says (or how they say it) and their underlying beliefs, understandings, values, and commitments.

In initiating teacher candidates into race cognizance, it makes sense that there would not be a clean break from participation in one racial Discourse to another (Gee, 2012). Given the continuing prominence of controversies related to race and racism (Hogeland, 2021; Walker, 2021), it seems inevitable that teacher candidates will have to negotiate multiple conflicting discourses as they engage in race-focused course work. Accordingly, it is not surprising that teacher candidates would continue to draw on prior ways of thinking and speaking about race and racism as they pick up and try out new language and ideas. This speaks to Frankenberg's (1993) framing of essentialist racism, color- and power-evasiveness, and race cognizance as *discursive repertoires*. For while each discourse involves patterned ways of being, thinking, and speaking, individuals can and do draw on multiple discursive patterns and sets of ideas — multiple repertoires — in different moments and contexts. Thus, I emphasize that researchers and teacher educators should expect to see discursive and ideological heterogeneity and seeming contradictions in white teacher candidates' engagement with issues of race and racism.

For teacher educators aiming to promote race cognizant (math) teaching, my findings suggest that it is not enough to be alert to teacher candidates' use or evasion of direct racial language. Rather, teacher educators need to find and make use of opportunities to gain insight into teacher candidates' racial *ideologies*, and how teacher candidates might utilize and act on

those ideologies in *practice*. In the context of this study, for example, the Analyzing Participation assignment provided a useful window into how teacher candidates were thinking about what it would mean to reinforce or interrupt patterns of racism. Even though teacher candidates' shorthand references to Toni, Aniyah, and other students left a great deal implicit, their submitted assignments still revealed important variation in underlying ideas about how individual teachers' actions relate to larger patterns and systems of racism and oppression.

In a similar vein, my findings tied to course work with the Toni and Aniyah video bolster the argument from Chapter 4 that teacher educators cannot take for granted that explicitly framing course work as addressing issues of race and racism will necessarily support race cognizant learning on the part of teacher candidates. For instance, one unintended consequence of using a recurring example like Toni and Aniyah video in connection with work on issues of race and racism seems to be that course instructors' explicitness enabled teacher candidates to *allude* to racial implications without further explanation. Such allusions can obscure substantively different interpretations of the video and relevant racial issues under the guise of shared meaning. Thus, this chapter's exploration of teacher candidates' race talk further highlights the complexities of promoting race cognizant (math) teaching. I discuss implications for teacher educators and researchers at greater length in the next chapter.

## Chapter 6 Discussion

This dissertation employed qualitative case study methods to examine the learning, discourse, and early practice of six white teacher candidates in the context of a two-course sequence on elementary mathematics teaching. The course sequence advanced a version of race cognizant math teaching, which I have conceptualized as acting on race cognizant (Frankenberg, 1993) ideas, premises, and commitments within the space of math teaching. Course instructors emphasized concepts and practices such as acknowledging competence, distributing turns of talk, discretionary spaces (Ball, 2018), and the distraction principle (Noel, 2018) as sites for paying attention to and working to disrupt harmful racialized patterns. In this setting, I pursued three research questions:

1. How do teacher candidates take up course ideas and practices that have the potential to support race cognizant mathematics teaching? What trajectories characterize this uptake?
2. What uptake of course ideas and practices is evident in teacher candidates' early enactments of mathematics teaching?
3. How do teacher candidates engage with issues of race and racism in their talk and writing, and what does this reveal about their learning?

In this final chapter, I draw on findings and analyses presented in Chapters 4 and 5 to make a broader argument about possibilities and challenges in white teacher candidates' learning to engage in race cognizant math teaching. I discuss implications for teacher education and research and conclude by identifying limitations of the study and directions for future work.

## 6.1 Insights into Possibilities and Challenges of Race Cognizant Learning

This study examined teacher candidates' learning in an elementary math teaching course sequence that emphasized a vision of race cognizant math teaching. In Chapter 4, I presented findings related to teacher candidates' uptake of potentially race cognizant course ideas and practices, including patterns of initial uptake, trajectories of uptake over time, and deliberate efforts that teacher candidates made in an early approximation of math teaching. In Chapter 5, I documented patterns in teacher candidates' talk and writing about race and racism, making the case that direct and indirect race talk, as well as varying racial understandings and ideologies, were not mutually exclusive, but instead often co-existed in teacher candidates' discourse. I now consider these findings together, addressing ways that teacher candidates' patterns of uptake are related to and intertwined with their patterns of race discourse. Building from the specifics of this case study, I highlight overarching themes that are likely to apply in work with white teacher candidates beyond this setting. For instance, I discuss ways that teacher candidates tended to evade explicit or critical consideration of race and racism even as they made some important shifts towards race cognizant math teaching.

I organize this discussion around five key points. First, I speak to the persistence of race evasiveness in teacher candidates' discourse and uptake of course ideas and practices. While affirming the prominence of race evasive patterns, I argue that race evasion is more complicated than is often acknowledged. Drawing on my distinction between discursive and ideological dimensions of race discourse, I emphasize that these dimensions do not always overlap and I encourage teacher educators to pursue more nuanced assessments. Second, I call attention to the ambiguity of language as a window into teacher candidates' learning and racial ideologies. I assert that general equity and justice language especially can obscure the salience of race and



racism, making it difficult to discern whether shared understanding of race cognizant premises and rationales has really been developed. Third, I contend that assimilative tendencies (i.e., folding new learning into existing ways of thinking and doing) pose particular difficulties for race cognizant learning. This point underscores the entrenched nature of whiteness, and the non-trivial nature of the learning that is required for white people to develop sustained and critical attention to race and racism, in and beyond classroom teaching. My fourth point is that learning to engage in race cognizant math teaching is a complex, multidimensional endeavor. I emphasize that movement towards race cognizant practice *is possible*, but entails breaking with deeply ingrained habits, ideologies, and assumptions not only tied to race and racism, but also tied to the work of teaching and the subject matter of mathematics. Finally, I argue that teacher candidates bring important assets and strengths to the project of working towards race cognizant math teaching that teacher educators should recognize. I highlight aspects of teacher candidates' knowledge, orientations, and early approximations of practice that teacher educators might see as positive steps forward and leverage points for further growth. Taken together, these five points lay the foundation for an emergent theory of learning race cognizant (math) teaching and can inform ongoing efforts in teacher education.

### ***6.1.1 Attending to the Discursive and Ideological Dimensions of Race Evasion***

The teacher candidates in this study often evaded direct engagement with issues of race, racism, and whiteness. This was evident in the language that they used and in their uptake of key course ideas and practices. For example, several teacher candidates took up acknowledging competence as a generic equity-oriented practice and explained it in ways that invoked color-blind ideology (Bonilla-Silva, 2018). Teacher candidates also routinely engaged in indirect race talk in their interviews and assignments, opting for more palatable terms like “culture” and

making implicit references to race. In comparison, explicitness around race and racism was less common. These patterns echo existing research on white teachers and teacher candidates. For example, prior studies have documented tendencies for white teachers and teacher candidates to talk about culture rather than race, rely on racially coded language, and use a variety of discourse strategies to evade confronting their own embeddedness in racial systems (Case & Hemmings, 2005; Haviland, 2008; Picower, 2009; Solomon et al., 2005; Watson, 2012; Yoon, 2012).

Nonetheless, the patterns that I identified in teacher candidates' discourse and uptake of course constructs and practices complicate existing notions of race evasion in important ways. In my analyses, I distinguished between *discursive* and *ideological* dimensions of race evasiveness and race cognizance. Within the broader category of race evasion, discursive patterns involve evasion of *direct racial language*, whereas ideological patterns entail evasion of race cognizant ideas and alignment with *color-blind ideology* (Bonilla-Silva, 2018). I have argued that discursive and ideological forms of race evasion can overlap, but do not always do so. For instance, I showed that teacher candidates' non-use of race words did not always signal evasion of race cognizant ideas, as in the cases of Evelyn, Margaret, and Alex. I also demonstrated that teacher candidates sometimes conveyed ideas and frames from color-blind ideology (Bonilla-Silva, 2018) while speaking in explicit racial terms, as in the cases of Jason and Stacey. Additionally, I showed that teacher candidates can *sound* like they are taking critical stances by using the language of social and racial justice, but still harbor some resistance to race cognizant ways of reasoning, as in Rachael's case.

Attending to ideological and discursive patterns as related but independent dimensions of race discourse opens up possibilities to make more nuanced observations about the ways that white teacher candidates engage with issues of race and racism. Rather than lumping white

teacher candidates under a singular banner of being race evasive, these two dimensions can enable teacher educators to assess and identify areas for growth for specific teacher candidates more precisely. For instance, it seems that Evelyn, Margaret, and Alex, who displayed patterns of discursive race evasion, would benefit from support in further unpacking their ideas about race and racism, perhaps as a way to recognize and problematize unexamined deficit assumptions and stereotypes. They would also likely benefit from practice-focused support for acting on race cognizant ideas in specific math teaching situations, such as in virtual settings and in predominantly white classrooms. This stands in contrast to teacher candidates like Jason and Stacey, who more consistently minimized racism and conveyed ideas of abstract liberalism in alignment with color-blind ideology (Bonilla-Silva, 2018). Teacher candidates displaying ideological patterns of race evasion seem like they would benefit from efforts to foster more critical and systemic understandings of racism in service of ideological change. Thus, having conceptual tools to distinguish between discursive and ideological race evasive patterns can facilitate more targeted efforts to further race cognizant learning and practice.

### ***6.1.2 The Ambiguity of Language as a Window into Ideology and Practice***

As discussed above, the relationship between teacher candidates' evasion of race *words* and their engagement with race cognizant *ideas* was not straightforward. Direct race talk did not necessarily signal alignment with race cognizant ideology, and indirect race talk did not necessarily signal alignment with race evasive ideology. Race talk of all kinds often left racial meanings implicit, posing ideological ambiguities. Moreover, teacher candidates' evasion of race and racism in one moment, whether discursive and/or ideological, did not preclude explicit and critical engagement with race and racism in other moments. These findings suggest that teacher candidates' use of language in a given moment, while an important source of data, should not be

seen as a stand-alone proxy for their thinking, learning, and racial ideologies, nor as a transparent predictor of their future practice.

The complicated relationship between language, ideology, and practice came up with all forms of race talk but was especially salient with general equity- and justice-oriented language. This is in part because equity- and justice-oriented language can plausibly include attention to race and racism without stating that attention explicitly. In this study, I found that teacher candidates often used general equity- and justice-oriented language in ways that allowed for both discursive and ideological race evasion with respect to math teaching. For example, in teacher candidates' uptake of central course constructs and practices, race cognizant purposes and rationales seemed to be sidelined by the appeal of general equity aims. With acknowledging competence, goals of deliberately intervening on status hierarchies and racialized patterns in how children were positioned were only partially taken up by three teacher candidates. Moreover, teacher candidates tended, over time, to generalize and universalize teaching practices. Examples of this included Rachel's collapsing of acknowledging competence into praise and Alex's emphasis on meeting individual student needs as a way to confront racialized patterns of over-punishment. Talking about equity and "all students," at times teacher candidates did not seem to attend to how racism permeates classroom interactions, including racialized patterns in teachers' interpretations of and responses to students.

Additionally, teacher candidates' use of umbrella terms for issues of inequity and injustice was often superficial or ideologically ambiguous. For example, Jason used the term "marginalized students" to point to ways that all children, including white children, might feel excluded in mathematics, which glossed over historical and systemic patterns of marginalization, such as racism, sexism, and ableism (Jason, Round 4 Interview, 12/9/20). Likewise, Alex's

comments about praise and “the oppression cycle” made it unclear whether Alex was *evading* or *reckoning with* race-specific issues (Moving Beyond Praise Discussion Thread, Sensemakers Class 4). Thus, the use of general terms exacerbated challenges in using teacher candidates’ talk as a window into their learning and engagement with race cognizant ideas and practices.

Certainly, valid arguments can be made to use general equity and justice language. For one, the phrases “advancing justice” or “disrupting patterns of marginalization” allow speakers to acknowledge multiple systems of oppression and forms of injustice without listing “isms” (e.g., racism, sexism, classism, ableism, linguicism, and so on). Moreover, umbrella terms like “inequities” and “injustices” provide a way to speak about complex social issues without reducing or collapsing all harms into to one system or axis. In my own experience, I have seen teacher educators receive pushback when they name anti-racism as a central focus for their work, as people are (understandably) worried that issues like gender- and sexuality-based oppression and marginalization will be overlooked. Thus, words that cut across multiple systems of oppression serve an important purpose in framing and orienting justice-driven work.

General equity and justice language is not always problematic. Yet, in this study, general equity and justice language functioned in ways that seemed to enable teacher candidates to sidestep explicit talk about race and racism and evade the race cognizant aspects of course constructs and practices. This finding suggests that teacher educators who are specifically committed to supporting critical attention to issues of race and racism might anticipate and be wary of ways that white teacher candidates will likely gravitate towards more general equity- and justice-oriented framings. Moreover, this finding draws attention to the possibility that teacher candidates can *appropriate* course terms (e.g., acknowledging competence, discretionary spaces, the distraction principle) or general equity- and justice-oriented language (e.g., equitable

participation, marginalized students, intersectionality, oppression) in ways that lack critical attention to race and racism and are inconsistent with race cognizance. For example, Jason and Stacey both described their efforts to facilitate participation in their math discussions in ways that reduced equity to a balanced distribution of turns among children of different social identities. This differed significantly from the course emphasis on considering and intervening on racialized patterns in positioning and constructing broadened ideas about mathematical competence but was still under the same banner of promoting “equitable participation.” Thus, my findings related to general equity and justice language underscore that the same words can mean different things to different people, representing a range of ideals and ideologies (Cochran-Smith, 2003; Reinholz & Shah, 2021).

This insight is important because teacher candidates could use equity and justice language to position themselves as “on board” with anti-racist work, while at the same time evading meaningful consideration of race cognizant ideas and premises. Considering the broad appeal of concepts like equity, inclusion, and diversity in institutional initiatives (e.g., N. Louie, 2017; Lukacs, 2021; Martin, 2019), it is a real concern that teacher candidates, and white teacher candidates in particular, could appropriate and reframe race cognizant course emphases in ways that maintain the easily digestible, “universal good” equity aims and obscure the more challenging and race-critical purposes and rationales. Knowing that teacher candidates may use general equity and justice language in this way, teacher educators seeking to promote race cognizance would do well to pay special attention to when and how teacher candidates speak in general terms or universalize given teaching practices. It may be that teacher candidates are using equity and justice language or speaking to generic goods in ways that include consideration of race and racism, but it may also be the case that teacher candidates are evading race cognizant

ideas under the guise of general equity commitments. Though teacher educators can work to move teacher candidates further towards race cognizant teaching in either case, these scenarios represent different challenges. To discern if teacher candidates need support to attend to race and racism as a key part of equity- and justice-oriented work (i.e., an ideological push), and/or support to be more explicit about how race and racism figure in their reasoning (a discursive push), teacher educators can press teacher candidates for further explanation and weigh the *ideas* and *implications for practice* that teacher candidates are communicating over and above their use of certain language. Additionally, researchers and teacher educators could consider multiple data points, such as a combination of structured and more open-ended assignments, to make inferences about the ideological and practice-oriented implications of teacher candidates' talk.

### ***6.1.3 Challenges of Assimilation in Race Cognizant Learning***

Another key finding of this study is that several focal teacher candidates displayed patterns of assimilating potentially race cognizant course ideas and practices into their existing ways of thinking and doing without fundamentally shifting their beliefs or assumptions about race, racism, or mathematics teaching and learning. This resulted, in some cases, in uptake of flattened and over-simplified versions of course constructs. For example, Jason and Stacey each assimilated acknowledging competence — a practice meant to intervene on traditional notions of what it means to be “good at math” to foster racially inclusive and equitable learning experiences — in ways that maintained a traditional model of mathematics instruction and static views of math ability (Boaler, 2002; N. Louie, 2020; Munter et al., 2015). They also interpreted course constructs of acknowledging competence and promoting equitable participation through race evasive ideological frames, reflecting central ideas of color-blind racism (Bonilla-Silva, 2018). Additionally, Rachael's case illustrated that, over time, teacher candidates are likely to fold new

ideas and practices into things they were already inclined to do, such as praising children. Although this phenomenon of assimilating “thin” versions of course ideas and practices was more noticeable in some teacher candidates than others (i.e., I saw less evidence of this pattern with Evelyn, Margaret, and Alex than with Jason, Stacey, and Rachael), it is nonetheless a noteworthy finding.

I consider this finding important for several reasons. For one, it echoes and extends ideas from previous scholarship in learning theory, educational reform, mathematics and science education, anti-racist education, and teacher education. For instance, the term *assimilation* evokes Piaget’s view that “no behavior, even if it is new to the individual, constitutes an absolute beginning. It is always grafted onto previous schemes and therefore amounts to *assimilating new elements to already constructed structures*” (Piaget, 1970, p. 707, emphasis added). While my use of “assimilation” is more loosely metaphorical than Piaget’s, the point remains that teacher candidates, like all learners, are not blank slates — they come to teacher education with prior ideas, habits, and ways of making sense of the world, and part of learning is incorporating new ideas and actions into those existing frameworks. Particularly relevant to this study are teacher candidates’ prior ways of thinking and doing tied to race, racism, whiteness, mathematics, teaching, and learning. While teacher candidates may have learning experiences that significantly shift their perspectives and underlying “schemes” (akin to what Piaget calls *accommodation*, where the scheme or structure itself is modified), they are also quite likely to assimilate new ideas and practices *without* substantially changing their existing views and ways of being, especially when it comes to deep-seated ideologies. This idea has been demonstrated in studies of teachers’ uptake of educational reforms, such as Cohen’s (1990) investigation of one teacher’s response to policies geared toward reforming math instruction. Cohen found that the



case study teacher, Mrs. Oublier, “believes that she has revolutionized her mathematics teaching. But observation of her classroom reveals that the innovations in her teaching *have been filtered through a very traditional approach to instruction*” (D. K. Cohen, 1990, p. 311, emphasis added). In other words, Mrs. Oublier, much like Jason and Stacey in this study, took up and incorporated new ideas and practices into her math instruction, but did so in a way that allowed her deeply-held prior views and practices to persist. This underscores the considerable challenges inherent in pursuing learning that involves changing fundamental views and ways of acting, such as dominant racial ideologies and traditional models of instruction.

Relatedly, research from multiple fields has shown that changing people’s beliefs, attitudes, and conceptions in meaningful and lasting ways is not easy to do. For example, research in science education suggests that “conceptual change is extremely difficult to achieve” (Carey, 2000, p. 14). Similarly, research on teacher candidate beliefs and conceptions, such as beliefs about what constitutes good teaching and the role of the teacher, indicates that changes in such beliefs, while not impossible, are challenging to realize within the space of a single course or teacher education program (e.g., Pajares, 1992; Richardson, 1996, 2003). More specifically, in mathematics teacher education, surfacing and shifting teacher beliefs about and attitudes towards mathematics as a discipline and the teaching and learning of mathematics has become a central focus for many teacher educators (e.g., Ambrose et al., 2004; Cooney et al., 1998; Philipp, 2007; Philippou & Christou, 1998). Although studies have indicated that it *is* possible to impact teacher candidates’ mathematics-related beliefs and attitudes, this requires concerted efforts on the part of teacher educators. Likewise, anti-racist educators have demonstrated that shifts in racial literacy, attitudes, and conceptions *can* occur if sustained and targeted efforts are made, but resistance to discussions about race and entrenched racial views still pose significant challenges

(e.g., L. A. Bell, 2002; L.-A. Jacobs, 2021; Khasnabis et al., 2019; Mosley, 2010; Ohito, 2016; Perouse-Harvey, 2020; Picower & Kohli, 2017; C. Sleeter, 1992, 2008; Ullucci, 2010).

This dissertation builds on and extends these insights by examining a particularly complex learning context: teacher candidates were learning to teach while also being exposed to new ideas and practices related to issues of race and racism *and* the teaching and learning of mathematics. In other words, this study offers insight into what can happen when teacher candidates are simultaneously engaged in multiple forms and layers of new and challenging learning. Namely, teacher candidates may take up and assimilate course constructs without fundamentally shifting their existing perspectives or approaches, especially those tied to and regularly reinforced by dominant worldviews. In this case, for some teacher candidates, race evasive ideas and traditional views of mathematics teaching and learning persisted, while race cognizant ideas and reform-oriented views of mathematics teaching and learning fell away.

Along with patterns of assimilation, my findings point to the likelihood of teacher candidates flattening and over-simplifying potentially race cognizant course ideas and practices. This echoes patterns of teacher learning discussed by prominent scholars in the field of teacher education. For example, Ladson-Billings (2014) shares that, across two decades of supporting teachers to take up her framework of culturally relevant pedagogy, she has noticed that many practitioners “seem stuck in very limited and superficial notions of culture” and that “few have taken up the sociopolitical dimensions of the work, instead dulling its critical edge or omitting it altogether” (p. 77). This mirrors ways that, over time, Jason, Stacey, and Rachael internalized acknowledging competence as a universal good, rather than as a strategic intervention on racialized patterns in how children are positioned in mathematics. Additionally, Grossman and colleagues (1999) describe how some teacher candidates in their study took up tools for teaching

English by “appropriating surface features,” or learning *some* features of a conceptual tool but “doing so only at the surface level” (p. 17). This characterization resonates with Stacey and Rachael’s uptake of acknowledging competence, as they both made efforts to consistently say positive things after students contributed to a math discussion, but their comments generally did not engage with or build on the mathematical substance of children’s contributions, thereby missing opportunities to build collective mathematical understanding and to authentically recognize children’s mathematical strengths. Similar to participants in the study by Grossman and colleagues (1999), Stacey and Rachael took up *some* features of the ideas and practices made available to them in the math teaching course sequence — namely, publicly highlighting student contributions — but did so in a way that lacked the nuance and complexity of course constructs.

These patterns of assimilating and flattening race cognizant ideas and practices are important as a cautionary reminder for teacher educators. While many likely already subscribe to the theoretical stance that people learn by connecting new ideas to their prior knowledge and experiences, it is easy to lose sight of that when promoting perspectives and approaches that, by definition, seek to disrupt the status quo. This study makes clear that teacher educators’ explicitness about race cognizant aims and rationales, while valuable, *cannot guarantee* how teacher candidates engage with and take up course constructs. Teacher candidates will necessarily bring their own ideas, refashioning and interpreting course ideas and practices in ways that make sense to them (Britzman, 2003). This is a perennial problem of teaching and learning, but it is an especially tenacious challenge in efforts to disrupt patterns of whiteness and promote race cognizance (Haviland, 2008; McIntyre, 1997; Picower, 2009; Viesca et al., 2013; Yoon, 2012). Thus, explicit telling or even modeling of race cognizant premises and practices on

the part of teacher educators is not enough — attention must be paid to the specific ways that teacher candidates interact with and take up course emphases.

#### ***6.1.4 The Multidimensionality of Learning Race Cognizant Math Teaching***

Thus far, I have emphasized that, in a math teaching course sequence that prioritized and explicitly addressed issues of race and racism, teacher candidates exhibited patterns of engaging in indirect and ambiguous race talk, evading the salience of race and racism, and assimilating flattened versions of race cognizant ideas and practices. These patterns point to the difficulties and ambiguities of supporting race cognizant learning. For teacher educators committed to fostering race cognizance, these findings may seem disheartening. Yet, I also found that teacher candidates *did* show glimpses of race cognizance throughout the study. Some teacher candidates made deliberate efforts to intervene on racialized patterns in their virtual math discussions. At times, teacher candidates explicitly confronted issues of race and racism and wrestled with the structural and systemic nature of racism. Moreover, some teacher candidates reflected on their own potential to reproduce racialized patterns and signaled their openness to continued learning about race and racism. At the same time, teacher candidates' moments of race cognizance often coincided with deficit assumptions about people of color and white savior tropes. Though shifts towards race cognizant math teaching occurred, they did not represent a clean break from prior ways of thinking and doing. Teacher candidates' movement towards race cognizant math teaching was complicated by the multiple dimensions of the learning that was required — learning about race, racism, and whiteness; learning to teach; and learning to teach elementary mathematics in particular. In this section, I highlight ways that participants displayed race cognizant understandings and commitments and also discuss the complicated and multifaceted nature of their learning.

**Complexities of Race-Related Learning.** Previously, I have noted that all six focal participants engaged in some form of race evasion — whether discursive or ideological — during the study. However, it is also true that all six focal participants showed some evidence of race cognizant learning during the study. Though there were meaningful ways that individual participants differed from each other in their learning, discourse, and practice, in every case, there was some “both-and-ness” to teacher candidates’ evolving ways of talking about and understanding issues of race and racism in relation to elementary math teaching. That is, teacher candidates each displayed signs of *both* race evasion *and* race cognizance across the study and course sequence. This suggests that teacher candidates can make promising shifts towards race cognizance even as they retain some of their prior ways of thinking, speaking, and acting.

For example, even though Rachael ultimately took up a “thin” version of acknowledging competence that left out strategic efforts to intervene on racialized patterns, her commentary on her enacted math discussion makes clear that she *did* learn to think critically about children’s racial identities and racialized patterns of over-punishment in connection to the distraction principle (Noel, 2018) and her responses to student behavior. Similarly, although Jason and Stacey reflected aspects of race evasive ideology in their interpretations of acknowledging competence and facilitating participation, they both rejected the notion of “not seeing color” and made efforts to describe their students in racial terms. Stacey explicitly stated that she believed it was important to talk about race with children, which shows that she did not follow the race evasive pattern of associating race talk with racism (DiAngelo, 2018; Frankenberg, 1993). In turn, the wave of Black Lives Matter protests in summer 2020 sparked Jason’s interest in current racial issues, such as police violence, and seemed to energize him to follow racial justice activists on social media and sensitize him to discriminatory punishment of BIPOC students. In

other words, Jason started learning about and showing interest in anti-racist activism and advocacy, even as he continued to evade race in other capacities.

Alex, Margaret, and Evelyn also showed alignment with aspects of race cognizant math teaching even as they tended to evade direct race talk. For instance, while Alex tended to speak in general terms, such as “making space for all contributors,” their reflection on their enacted math discussion offered important race cognizant insights, such as how feeling overwhelmed meant that Alex defaulted to calling on volunteers, which enabled white boys to dominate the conversation (Alex, Round 4 Interview, 12/15/20). Similarly, Evelyn often used the language of “culture” “identities” and “assumptions” rather than naming race or racism directly, but also recognized that teachers can project racialized biases onto students as they interpret students’ thinking and behavior. Likewise, Margaret often spoke about teaching practices in universal terms, such as meeting children’s social and emotional needs. Yet, Margaret also offered an incisive analysis of how “classroom expectations and expectations for behavior are centered in whiteness,” conveying important race cognizant ideas (Margaret, Round 4 Interview, 12/17/20).

Thus, all six focal teacher candidates showed glimpses of race cognizance alongside forms of race evasion as they progressed through the course sequence on mathematics teaching. Considering that the teacher education program marked the beginning of most of the teacher candidates’ formal learning about issues of race and racism and a departure from race evasive upbringings, finding some evidence of race cognizant ideas and commitments suggests that teacher candidates *were learning*. Though by no means robust or full-fledged, shifts towards race cognizant math teaching were starting to occur. For example, in my analysis of teacher candidates’ plans, enactments, and reflections on leading a math discussion, I found that they all thought about students’ racial identities as relevant to their work in facilitating participation. This

suggests that teacher education coursework *can* productively support teacher candidates to reason about race and racialized patterns within the context of elementary math teaching. In addition, as I suggested at the end of Chapter 4, teacher educators can build on teacher candidates' proclivity to embrace general equity-oriented aims and practices to work towards more specifically race cognizant teaching; patterns of race evasive uptake and assimilation do not mean that further race cognizant growth is not possible.

To be clear, I fully recognize that, in this study, glimpses of race cognizance also coincided with racial stereotypes, deficit-oriented assumptions about people and communities of color, and hints of white saviorism. I am not claiming that participants wholly or successfully learned race cognizant math teaching (or even suggesting that that is possible), but rather arguing that the relationship between race cognizance and race evasion in teacher candidates' learning is *not a binary* — teacher candidates can engage in multiple “modes” of thinking through and talking and about race, racism, and math teaching, even if those modes are ideologically at odds (Philip, 2011). Race cognizant learning is not an all or nothing affair; teacher candidates can take steps forward in some senses while holding onto their existing habits and ways of thinking in other respects. I see this as an inherent part of learning race cognizance and negotiating socialization into multiple conflicting discourses about race, racism, and whiteness.

**Challenges of Coordinating and Enacting Race Cognizant Practices.** As many scholars of teaching and teacher education have argued, learning to *do* teaching is complex and demanding work (e.g., Ball & Cohen, 1999; Ball & Forzani, 2009; Feiman-Nemser, 2012; P. Grossman, Hammerness, et al., 2009). Given this, it is to be expected that novice teachers will encounter some challenges in their early practice. For example, it is quite understandable that novice teachers might hyper-focus on enacting a particular practice or aspect of their plan (e.g.,

getting students to talk) and thereby forget or overlook other elements, such as posing certain questions or managing time. This is a relatable part of learning to do anything new, like learning to play a sport or speak another language. It takes time and practice to develop skills and build foundational knowledge. Then there is the challenge of bringing those skills and ideas to bear in the moment of an enactment, which often results in clunky and uncoordinated early efforts. Learning race cognizant math teaching is no different; it is a developmental process.

Beyond noticing to-be-expected challenges of early enactment, in this study I found that in-the-moment obstacles tended to result in unfulfilled *race cognizant* intentions. That is, the parts of focal teacher candidates' early math teaching experiences that did not go as planned were patterned; for several teacher candidates, it was the goal of strategically acknowledging competence and engaging students from historically marginalized groups, rather than, say, clearly defining *equations* or giving directions for independent work, that fell by the wayside in their math discussions. For example, Alex and Evelyn both shared clear intentions to acknowledge particular students' competence and to counter racialized and gendered patterns of participation going into their math discussions. However, technology glitches, students' cameras being off, and the desire to just get through a first discussion got in the way of enacting acknowledging competence for Alex and Evelyn.

The fact that race cognizant intentions went largely unrealized in these participants' early math teaching enactments raises questions about whether teacher candidates can learn race cognizant math teaching in ways that will last beyond coursework to *actually* impact their enacted practice in classrooms. This is a valid concern; one of the enduring problems of teacher education is trying to foster learning and forms of practice that persist beyond preservice preparation and that "hold up" against the realities and conflicting pressures of school



environments (Britzman, 2003; Cochran-Smith & Fries, 2005; Feiman-Nemser, 2012; M. M. Kennedy, 1999; Schön, 1987). Additionally, as Alex pointed out in their reflective comments about their math discussion, when a teacher feels overwhelmed, they can easily fall back on default habits that tend to reproduce inequities, such as only calling on volunteers (Alex, Round 4 Interview, 12/15/20) or reprimanding a student for misbehavior (Milner, 2018; Noel, 2018; Shalaby, 2017). As Lortie (1975), Britzman (2003), and countless others have argued, there is a strong pull for teachers to teach in the ways that they were taught and to preserve and perpetuate conventional teaching practices. This is precisely why so many are skeptical that teacher education can make any difference in impacting classroom practice. It was also a key motivation for the course instructors in this study to introduce and support practices like acknowledging competence, intended to depart from and disrupt normalized and inequitable patterns of practice.

However, in my view, the finding that teacher candidates in this study struggled to coordinate and enact race cognizant practices in their early math teaching enactments is a *call to action* for teacher educators, rather than a reason to lose hope in teacher candidates' learning potential. In their analyses of their math discussions, both Alex and Evelyn (as well as Margaret, Jason, and Stacey) set goals to improve on acknowledging competence and fostering more equitable participation in their future practice. This creates an opening for teacher educators to provide targeted feedback and to encourage teacher candidates to revisit the goals they set for themselves, keeping race cognizant aims and practices in view for future enactments. In this case, opportunities for practice were limited given the COVID-19 pandemic. Nonetheless, designing practice opportunities and providing focused, constructive feedback is something that teacher educators *can do* (e.g., Aguirre, Turner, et al., 2013; Grossman, 2018; Kavanagh & Danielson, 2019; Kazemi et al., 2016; Lampert et al., 2013); race cognizant ideas and practices

would just need to become a priority in teacher educators' pedagogical designs and feedback. Supporting teacher candidates to meaningfully act on race cognizant commitments in their practice is certainly challenging and demanding, but *it is the work* and responsibility of justice-oriented teacher educators.

**The Specific Subject Matter Matters.** Another point I want to emphasize regarding the possibility of white teacher candidates learning to engage in race cognizant math teaching is that the specific subject matter under consideration — mathematics — is relevant and significant. In this study, I saw evidence that teacher candidates' ideas about what it means to know, do, learn, and teach mathematics, as well as their own mathematical knowledge, interacted with and complicated their learning and uptake of potentially race cognizant course practices like acknowledging competence and distributing turns of talk. For example, Alex's initial preoccupation with mathematical accuracy may have led Alex to misinterpret the intent of acknowledging competence as *either* recognizing student contributions “for equity” *or* “for content.” This distortion of acknowledging competence rests on an implicit traditional view of mathematics teaching and learning in which it is the teacher's role to draw out or provide correct answers and procedures (Boaler, 2002; Munter et al., 2015). By the end of the study, however, Alex shared that their thinking had shifted significantly when it came to using examples of student work that were “not mathematically accurate” as a starting point for class discussions (Alex, Round 4 Interview, 12/15/20). After repeated viewings of the Toni and Aniyah video, Alex recognized that students *did* learn from the discussion and were able to correctly name fractions in an exit slip. This made Alex more open to a model of math instruction rooted in discussions of students' mathematical thinking, which in turn supported more authentic and nuanced possibilities for acknowledging students' mathematical competence. Thus, Alex's

evolving ideas about their own role as a teacher in supporting students' mathematical learning were intertwined with Alex's uptake of race cognizant practices like acknowledging competence.

In addition, I hypothesize that uncertainty around mathematics content may have contributed to surface-level responses to student contributions and less strategic decisions about which students to call on in the context of teacher candidates' enacted math discussions. For example, in Stacey's math discussion, Stacey routinely responded to student contributions by saying "thank you" and asking very general questions about whether other students wanted to add on. Although Stacey did not articulate this herself, I wonder whether part of the difficulty here was recognizing what might be mathematically significant in students' comments to highlight or pose strategic questions about (Ball, 1988a; Ball et al., 2008; Stockero et al., 2020). In other words, it is possible that limited mathematical knowledge for teaching might have impeded Stacey's uptake of course emphases like purposeful calling and acknowledging students' mathematical competence by building on their ideas. This suggests that teacher candidates' content knowledge for teaching, along with their views about teaching and learning in that subject area, can impact their uptake of ideas and practices that have the potential to support race cognizant teaching.

Although my findings related to teacher candidates' mathematical knowledge for teaching and views of mathematics teaching and learning are more tentative than other findings, I highlight them here to draw attention to the breadth and scope of learning involved in developing race cognizant practice. In order for teacher candidates to take up and enact practices like acknowledging competence and distributing turns of talk in ways that accomplish race cognizant aims, they also need to develop robust pedagogical content knowledge in the specific subject matter they are teaching (Aguirre et al., 2012; Charalambous, 2015; Martin, 2007).

Moreover, teacher candidates will inevitably need to reconcile familiar traditional views of mathematics teaching and learning with the models they are introduced to in teacher education (which, in this case and in many teacher education programs, means making sense of conceptual, discussion-based, and reform-oriented math instruction). This is not to suggest that a traditional or direct instruction model of mathematics teaching is antithetical to or mutually exclusive with race cognizant math teaching. Instead, my point is that, in this study, deeply ingrained ideas about what it means to learn and be good at math *interacted with* and *impacted* teacher candidates' learning of practices with race cognizant aims, such as acknowledging competence and distributing turns of talk. Thus, efforts to support the development of race cognizant math teaching need to take seriously the specific issues raised by teacher candidates' knowledge of and orientations towards mathematics as a subject matter and the ways that mathematics has historically been taught in schools.

#### ***6.1.5 Recognizing and Leveraging Teacher Candidates' Strengths***

Given that I am a white woman studying white teacher candidates' engagement with issues of race and racism, I have made a concerted effort to name, rather than gloss over, ways that participants and I could be reinforcing and falling into problematic racial patterns. I see this as a form of confronting white people's complicity in racial systems, and an integral part of race cognizance. At the same time, however, I recognize that one can easily get stuck in searching out ways that individuals are racist, missing the larger structural issues (Bonilla-Silva, 1997, 2019; Leonardo, 2004). Additionally, white people can become immobilized by feelings of guilt and an inability to undo racial injustices (Flynn, 2015; Frankenberg, 1993). If the ultimate goal is racial justice, there is a real question about how to most productively view and position white people's efforts (Leonardo, 2013).

One of the major reasons that I was initially drawn to Frankenberg's (1993) work and the concept of race cognizance is that, unlike much of what I had encountered up to that point, it presented the possibility of an anti-racist path forward for white people. In other words, Frankenberg (1993) helped me to think about what white people *could do* that would be meaningful in larger efforts to dismantle white supremacy. In that spirit, I think it is important to consider ways that teacher candidates *are* earnestly trying to take on anti-racist work. What is *good* in what teacher candidates are inclined to do and try? What assets and strengths do teacher candidates bring that show potential for race cognizant learning? In this section, I offer a few high-level answers to these questions, considering data from this study. These examples are meant to be illustrative, rather than exhaustive. My larger point is that thinking about white teacher candidates' strengths and assets in anti-racist work is something that teacher educators and researchers *should do* alongside critical analysis and assessment.

In this study, one of teacher candidates' strengths was embracing equity and justice as ideals. I do not mean this is the trivial sense that anyone and everyone will say they are "for" equity. Instead, I mean that teacher candidates' work in course assignments, talk during interviews, and deliberate efforts in their math discussions demonstrated meaningful commitments to equity. All six participants conveyed that (a) they wanted their students to have positive and affirming experiences in school, especially in math, (b) they recognized that children's school experiences were often inequitable and unevenly harmful, and (c) they saw it as their role and responsibility as teachers to navigate interactions and shape the learning environment in ways that promoted more just and humane experiences. These commitments were evident in multiple ways. In their course assignments, teacher candidates identified mathematical understandings and strengths beyond right answers, suggesting aims of

constructing more inclusive notions of mathematical competence. In their discussions, teacher candidates tried out different strategies for calling on students, signaling a desire to involve a broad swath of students. They used students' names and publicly noticed positive things about students' contributions. They refrained from punitive responses to potential distractions, such as students using the annotation feature on Zoom. And despite predictable difficulties of early enactments, they made clear efforts to advance mathematical ideas and ensure that children learned something from participating in a math discussion. While these general moves towards equity were not explicit about acknowledging and challenging racialized patterns, they still represent important openings for race cognizant and anti-racist work. If teacher educators make a point of it, specific and critical attention to racialized inequities can be layered onto teacher candidates' general efforts to make children feel valued and to support mathematical learning; race cognizant knowledge, rationales, and practice can be built up from a starting place of equity-oriented commitments and principles.

In addition to general orientations towards equity and justice, study participants brought some important knowledge and understandings about race and racism. Specifically, teacher candidates' familiarity with the concept of implicit bias (e.g., Banaji & Greenwald, 2013) seemed to be a useful stepping stone for considering ways that teachers might inadvertently contribute to racialized patterns. Though there was certainly variation in the extent to which teacher candidates' saw *themselves* as potentially enacting implicit racial biases, they all indicated understanding that teachers do not necessarily need to hold overtly racist views in order to reproduce problematic racial patterns. This created space for course instructors to talk about habits that teachers often unthinkingly fall into that reinforce racialized inequities — such as instinctively reading Black children like Toni as “interrupting” and admonishing their behavior

— as well as ways that teacher candidates might resist and try to change those habits, such as using the distraction principle (Noel, 2018). This opened up ways of critically exploring the moves and choices teachers make in discretionary spaces (Ball, 2018) without demonizing or condemning individual teachers, which helped to pre-empt defensive reactions from teacher candidates. Recognizing the limits of implicit bias as a construct (e.g., it doesn't necessitate attention to racial structures and systems), I view teacher candidates' willingness to engage with the idea as a strength; implicit bias seems like a useful *entry* point (not *end* point) in working towards race cognizant teaching.

Beyond implicit bias, teacher candidates also brought some awareness of systemic racism and the school-to-prison pipeline, which especially helped to motivate attention to racialized patterns in teachers' "management" of children's behavior. This awareness likely stemmed from teacher candidates' work in other areas of the teacher education program, such as their course on teaching in a multicultural society. I highlight it here to emphasize that individual teacher educators, regardless of specialization, can deliberately think about teacher candidates' prior learning about issues of inequity, injustice, race, and racism as assets to leverage in their own courses. For example, course instructors in this math teaching course sequence knew that teacher candidates were having conversations across the program about embracing a strengths-based lens and resisting deficit framing of children and families; this presented a connection and launch point for work on acknowledging competence and math-specific ways to emphasize children's strengths. Thus, teacher candidates' prior learning, however recent or still-in-progress, is important for teacher educators to consider and to build on in their own efforts to support race cognizant teaching. Recognizing and leveraging white teacher candidates' strengths and assets is part of the work of promoting race cognizance and pursuing racial justice.

## 6.2 Implications

In both the research and practice of teacher education, serious attention to race and racism often occurs in separate spaces from work on elementary mathematics teaching. This dissertation counters this separation, investigating the possibilities and challenges of prioritizing work on issues of race and racism *within* mathematics teacher education coursework. The findings of this study suggest that there is much to be learned from pursuing race-focused questions in subject-specific contexts. This has general implications for all teacher educators seeking to support and develop race cognizant teaching, as well as particular implications for teacher educators responsible for subject-specific coursework, like mathematics content and methods courses, and for race-focused coursework, such as courses on the social foundations of education. In addition, the findings and methodological approach of this study have implications for researchers, particularly those studying how white people learn about and engage with issues of race and racism. I discuss these implications in the sections below.

### 6.2.1 Implications for Teacher Education

This study makes visible several layers of complexity in efforts to support teacher candidates to develop race cognizant understandings, commitments, and practice. These layers of complexity have important implications for the practice of teacher education. In particular, I emphasize implications for how teacher educators *assess* teacher candidates' learning and *design* their own instruction and programs with respect to fostering race cognizant teaching.

First, this study makes clear that teacher candidates' use of language in discussing issues of race and racism should not be interpreted as a self-evident signal of racial understanding. Teacher candidates both used direct racial language while evading race cognizant ideas and evaded explicit race talk while demonstrating alignment with race cognizant understandings and



commitments. Moreover, participants used general equity- and justice- oriented language in ways that were often ambiguous, sometimes enabling teacher candidates to evade the continuing salience of race and racism in teaching, learning, and life experiences. This suggests that examining language alone is insufficient in assessing race cognizant learning. Instead, teacher educators should consider teacher candidates' language *in conjunction with* the ideological implications of their discourse and their efforts to attend to race and racism in practice. Teacher educators should not be satisfied when teacher candidates use key terms or course language, but rather read into teacher candidates' discourse and make inferences about their underlying ideas about race, racism, teaching, and learning. This involves being alert to subtle forms of resistance to work on issues of race and racism, as well as to ways that teacher candidates might take up and use course language without conceptual understanding or ideological alignment.

Moreover, the possibility that teacher candidates could be meaningfully engaging with aspects of race cognizance while evading direct race talk suggests that teacher educators should *resist quick categorization* of teacher candidates as race evasive or resistant to work on issues of race and racism. In other words, teacher educators should anticipate teacher candidates' simultaneous participation in multiple, conflicting discourses about race, racism, and teaching and learning, and therefore move away from binary or rigid evaluative categories. Teacher educators should recognize that teacher candidates' learning with respect to issues of race and racism will be complicated, and therefore, will require nuanced appraisals with room to consider apparent contradictions. Additionally, teacher educators should not rely exclusively on written tasks to assess teacher candidates' learning and movement towards race cognizant teaching but should incorporate approximations of practice and practice-based assessments. Teacher

educators need windows into how teacher candidates' use their learning from coursework in specific teaching situations; written plans and analyses can only provide so much information.

Another layer of complexity highlighted by this study is that it is quite possible for teacher candidates to align themselves with race cognizant projects while, in effect, evading race cognizant ideas, invoking central frames of race evasive ideology, and maintaining problematic racial views and assumptions. This was evident in findings about patterns of ideological race evasion, teacher candidates' embrace of generic equity aims, and the assimilation and flattening of course constructs over time. Teacher candidates were able to evade the salience of race and racism *without* overtly resisting race cognizant course work. This suggests a few things. Because people can easily take up diversity, equity, and inclusion language and goals without engaging with race and racism, *teacher educators should make their own attention to race and racism explicit*. That is, when teacher educators are addressing race-specific issues, they should make that specificity clear, rather than only alluding to race and racism through general equity and justice language. Additionally, teacher educators should *expect* race evasive and flattened uptake of race cognizant course emphases and *proactively design* coursework to address such patterns. For example, in work on distributing turns of talk, a teacher educator could anticipate that some teacher candidates might reduce the complexity of equitable participation and just focus on calling on a variety of students (like Stacey and Jason in this study). With this likelihood in mind, the teacher educator could emphasize in their framing that equitable participation is about much more than who gets called on. This framing could avert over-simplification to some degree, and then the teacher educator could highlight race cognizant emphases, such as paying critical attention to how children are interactively positioned, through targeted feedback and comments on teacher candidates' assignments and approximations of practice. Put differently,

teacher educators can make a point of keeping race cognizant aims and rationales in view by anticipating ways that teacher candidates might sidestep or overlook aspects of race cognizance and adjusting their instruction, assessments, and feedback accordingly.

A third layer of complexity illustrated by this study is that teacher candidates' uptake of course ideas and practices with the potential to support race cognizant teaching can shift and change over time. Thus, snapshots of what teacher candidates believe, understand, and do at a given point in time provide limited insight into their learning and practice over the long term. Given that individual courses are often bound by university structures, such as term lengths and credit hours, the longitudinal findings of this dissertation suggest implications for teacher educators at the level of program design and administration. Building in multiple program-level assessments focused on aspects of race cognizant ideology and practice could enable teacher educators working in different areas (e.g., in foundations courses, general pedagogy courses, and subject-specific methods courses) to *collectively* support the race cognizant learning and development of teacher candidates. Such assessments could involve written analyses of classroom episodes as well as a range of approximations of practice, from planning or scripting teaching moves to enacting lessons in field placements. Many teacher education programs already have systems in place to assess and document teacher candidates' learning and growth over time. My point here is that such systems can and should include longitudinal assessments that are *expressly focused* on teacher candidates' developing ideas, commitments, and practices with respect to issues of race, racism, and injustice more broadly. This argument echoes calls for teacher education programs to make explicit and sustained commitments to tackling issues of oppression and working towards social justice (e.g., K. D. Brown, 2013; Cochran-Smith, 2010; Milner & Laughter, 2015; Picower, 2021; Souto-Manning & Winn, 2019).

**Specific Implications for Math Teacher Education.** Thus far, the implications I have discussed are broadly applicable to teacher educators, regardless of specialization. However, this study also has distinct implications for mathematics teacher educators and for teacher educators already engaged in race-focused work, such as in social foundations courses. In mathematics teacher education, there are often calls to integrate attention to issues of equity throughout teacher educator coursework. For example, the first foundational assumption of the recent *Standards for Preparing Teachers of Mathematics* is that “Ensuring the success of each and every learner *requires a deep, integrated focus on equity* in every program that prepares teachers of mathematics” (Association of Mathematics Teacher Educators, 2017, p. 1, emphasis added). I agree with this stance — work on issues of equity and justice *should* be integrated across teacher education coursework, rather than addressed in stand-alone modules or courses. As this study demonstrates, even when a math teaching course sequence tackled issues of race and racism head on, this did not preclude patterns of race evasive learning. For teacher candidates to even partially take on aspects of race cognizant math teaching, there was much more involved than transferring and applying general learning about racial inequity from social foundations or pre-requisite coursework.

Yet, many equity-oriented efforts within mathematics teacher education rely on generic language and aims, without concretely speaking to specific issues of race and racism. For example, the recent *Catalyzing Change* series published by National Council of Teachers of Mathematics offers recommendations “for launching each and every child on a successful life-long journey with mathematics” (Huinker, 2020, p. 9). One of these recommendations is to “Create equitable structures in mathematics” and “dismantle inequitable structures, including ability grouping and tracking” (Huinker, 2020, p. 9). This may very well be an instance where

the language of “equity” and “inequity” is being used as an umbrella to speak to a range of issues, including race and racism. However, given my findings about how teacher candidates can evade the salience of race and racism under the guise of equity and justice language, there is good reason to be skeptical that such general equity-oriented framing will supporting race cognizant learning on the part of teacher candidates in math-focused coursework. I am certainly not the first to critique or question mainstream equity efforts in mathematics education from a critical race perspective (see Bullock, 2017; Larnell et al., 2016; D. B. Martin, 2003, 2019). In fact, these prior critiques were an important inspiration in pursuing this study in the first place. My point here is that if mathematics teacher educators are truly committed to supporting learning and practice that is expressly *race cognizant* — and not just generically equity-oriented — then a more specific and explicit focus on race and racism is needed. One cannot assume that general commitments to equity and justice will be interpreted or taken up in race cognizant ways, even if that is the intent. This pertains to both research and practice in mathematics teacher education. Further work like Shah and Coles’ (2020) study of teacher candidates’ racial noticing and Harper et al.’s (2021) investigation of the role of whiteness ideology in teachers’ learning to teach mathematics for social justice is imperative for tackling issues of race and racism inside of elementary mathematics teaching.

**Specific Implications for Race-Focused Teacher Education.** This study also has specific implications for teacher educators who *do* typically tackle issues of race and racism, such as in social foundations or multicultural education courses. Namely, race-focused teacher educators should pay serious attention to the work that teacher candidates must do to *translate* their knowledge of larger systems and injustices and their orientations towards equity, justice, and anti-racism *into actual teaching practice*. The findings of this study show that even when

teacher candidates embraced race cognizant aims and rationales, challenges of enactment made race cognizant intentions difficult to realize. This is not to discount the importance of building teacher candidates' understanding of racism and other patterns of injustice and how they shape schooling in the United States, nor to diminish the role of teacher candidates' beliefs and commitments to advancing justice; I agree that such knowledge and critical ideological orientations are essential for supporting race cognizance. Instead, this is to emphasize that teacher educators *should not take for granted* that implications for practice in specific subject areas are clear to teacher candidates, nor that teacher candidates have yet developed enough skill and dexterity to enact and coordinate race cognizant practices with other aspects of teaching.

This point has relevance in recent debates surrounding practice-based teacher education and teacher education for social justice (e.g., Domínguez, 2020; Philip et al., 2019). On the one hand, I agree with the argument that practice-based teacher education can and should be more critically self-aware and explicit about the ideological stances at stake in work on specific teaching practices, especially with respect to issues of race, racism, and injustice writ large. This follows from my point above that teacher educators, especially math teacher educators, should make their attention to race and racism unequivocal rather than rely on generic equity language. On the other hand, however, this study illustrates how challenges of enactment can easily get in the way of teacher candidates following through on race cognizant and justice-oriented intentions in practice. As the cases of Evelyn, Margaret, Alex, and Rachael demonstrate, showing relative alignment with race cognizant ideology is still no guarantee that teacher candidates will engage in race cognizant *practice*. Thus, I argue that taking commitments to social and racial justice seriously in teacher education requires deliberate and critical attention to *both* ideology and practice.

Echoing McDonald (2010) as well as Kavanagh and Danielson (2019), I contend that using practice-based pedagogies to work on teaching practices that are explicitly geared toward race cognizant and justice-oriented aims could be a powerful way to support the development of race cognizant teaching. This could mean that instructors of foundations courses collaborate with instructors of methods courses to build connections across different learning opportunities (e.g., framing approximations of practice in methods courses as opportunities to apply ideas and commitments introduced in foundations courses). This could also mean that foundations instructors identify and work on specific practices with the potential to support race cognizant teaching (e.g., partnering with families, as in Khasnabis et al., 2018). Either way, the implication is that supporting race cognizant practice requires attention to *developing practice*, not just to race cognizant ideas, understandings, or commitments. As practice-oriented scholars have argued (e.g., Ball & Cohen, 1999; Ball & Forzani, 2009; Grossman, Hammerness, et al., 2009), this development will take time and coordinated support across teacher education programs.

### ***6.2.2 Implications for Research***

This dissertation has implications for research both within and beyond teacher education. In particular, the methods employed are highly relevant to interview-based studies that address issues of race and racism and involve white participants. Here I highlight implications pertaining to interview protocols, warranting claims about race-related learning, and researcher reflexivity. Additionally, I suggest ways that future research might incorporate and build on some of the findings of this study.

As anticipated based on prior research (e.g., Bonilla-Silva, 2002; DiAngelo, 2018; Kenny, 2000), I found it challenging to invite and sustain direct race talk during interviews. As a result, I had to be innovative in my design and revision of interview protocols. For example, I

purposefully asked open-ended questions about course experiences and constructs *before* asking direct questions about race or racism. This created space for participants to introduce racial language or ideas of their own accord. It was also important that I followed open-ended prompts with questions that explicitly named race and racism, as this ensured that racial issues *were* directly addressed at some point in each interview. I believe that this approach of using both indirect and direct prompts — in a strategic order — could be useful to other researchers. To this end, I have included my interview protocols in Appendices B – E.

In addition, this study taught me a great deal about warranting claims about teacher candidates' learning with respect to race, racism, and teaching. I had initially set out thinking that I might identify race evasion and race cognizance by the absence or presence of explicit racial terms. I imagined that teacher candidates might become more likely to mention race and racism as they progressed through the math teaching course sequence, given the courses' attention to racialized issues. However, I soon came to feel it was unfair to describe a teacher candidate as race evasive when the task or question they were responding to did not clearly call for consideration of race or racism. This led me to think more carefully about the nature and context of each data source, including the specific language of prompts, as I interpreted data and developed claims. I gave more weight to teacher candidates' commentary on issues of race and racism in response to open-ended questions and considered patterns in their talk and writing across data sources. Another realization was that the *substance* of what teacher candidates were saying was sometimes at odds with their ways of speaking. For instance, in Alex's first interview, they spoke about disrupting cycles of oppression while also conveying deficit-oriented generalizations and assumptions about teaching and learning in a neighboring majority-Black school district. This is the kind of observation that led to my emphasis on looking past teacher



candidates' use of certain words to consider the ideological implications of their meaning in context. From a research perspective, this suggests that a participant's use of justice-oriented or explicit racial language, on its own, is not sufficient to warrant claims about race cognizant learning. Careful consideration of implied meanings and alternative interpretations is necessary to support and qualify assertions about race-related learning and thinking.

As I wrote in the section on methodological dilemmas, one problem that I had not anticipated was that my own discursive habits as an interviewer would enable and facilitate race evasion by participants. I came to this realization by reflecting on interviews right after conducting them, as well as using memos to document my sensemaking and interpretations. This underscores the need for *ongoing* critical reflexivity on the part of researchers, especially white researchers investigating race, racism, and whiteness. As critical scholars have argued (e.g., Best, 2003; Frankenberg, 1993; Milner, 2007), it is insufficient for researchers to simply name their racial identities or even to acknowledge that their positionality impacts the research. Researchers need concrete strategies for actively attending to *how* their identity, subjectivity, and positionality are showing up *throughout the research process*. For me, this involved routine reflections and structured memo-writing, including prompts that reminded me to consider how my perspective and my interactions with participants could be shaping the data. I am sure that other scholars have developed their own methods of journaling or otherwise documenting reflections on their involvement in the research. My point here is not that all researchers should use the exact methods that I used, but rather that, as this dissertation demonstrates, it is important for researchers to design and use *some way* to continually think about their own imprint on the research, especially when the research concerns race, racism, and whiteness.

In addition to the methods used in this study, the findings have implications for future research on race discourse and race-related learning on the part of teacher candidates. For example, the finding that individual participants engaged in both direct and indirect race talk suggests that researchers should expect and use more nuanced descriptors of race discourse, not simply sort people according to a race evasive or race-conscious binary. Moreover, researchers should consider how meanings and patterns of race evasion and race consciousness may be shifting and evolving in across sociohistorical contexts. It may be that such complex discourse patterns are common among or even characteristic of Millennials or members of Generation Z, but more research is needed to examine how the race talk of these generations relates to the dominant race discourse patterns of previous generations, such as Generation X or Baby Boomers. Bonilla-Silva's (2001, 2002, 2018) seminal work on the linguistic style, frames, and storylines of color-blind racism remains relevant, and represents an important set of conceptual tools for any analysis of race talk, but there is room to complicate and complexify these ideas based on new data and different historical and sociopolitical circumstances.

### **6.3 Limitations**

There are several limitations to the findings and implications of this study. First and foremost, due to the COVID-19 pandemic, teacher candidates had few opportunities to engage in math teaching with children, virtual or in person. This meant that I was not able to see shifts or continuities in participants' enacted practice over time. Additionally, having just one opportunity to lead a math discussion likely exacerbated anxiety about doing well and increased the probability that teacher candidates would run into challenges of coordinating different aspects of math teaching. That is, having a single math discussion may have contributed to the pattern of teacher candidates struggling to follow through on race cognizant aims, like strategically

engaging and acknowledging the competence of particular students. Thus, readers should interpret findings about early math teaching enactments with caution, as they are just a single glimpse of teacher candidates' early practice, and they stem from teaching in unusual conditions.

Though not exactly a limitation, another caution in interpreting the results of this study is that certain features of the research context undoubtedly impacted the outcomes. This study was situated in a teacher education program and university where school leaders, guest speakers, major initiatives, and everyday discourse made it socially desirable to profess commitments to equity, justice, and anti-racism. I am certain that this contributed to teacher candidates publicly aligning themselves with anti-racist projects and resorting to indirect means to express any skepticism or resistance. In a context where explicit attention to race and racism was *not* supported at the program level or was more controversial (e.g., where “anti-critical race theory” legislation has been passed; Kim, 2021), I likely would have seen more overt pushback on course instructors efforts to promote race cognizant math teaching. This suggests that readers should reflect on the particulars of their own contexts when considering whether the findings and implications of this study are transferrable or relevant.

Another limitation of this study was that I did not delve as deeply as I would have liked into the interrelationship between teacher candidates' mathematical knowledge, experiences, orientations, and their uptake of race cognizant math teaching. Refining one's focus is a necessary part of qualitative research, and in this case, I opted to background my more math-specific hunches and interests. This is evident in my framing of key insights and implications. During the process of collecting and analyzing data, I had written numerous memos with math-focused observations and questions. For example, I wondered whether teacher candidates' own experiences as students of mathematics might predispose them to see broadening what counts as

mathematical competence as a worthwhile goal (i.e., if teacher candidates had felt excluded from being “good at math” themselves, they might more readily recognize how narrow conceptions of mathematical ability can be harmful). I also realized that there were ways that the course instructors in this study supported teacher candidates’ mathematical knowledge for teaching that were incredibly important for race cognizant practices like acknowledging competence, and that could easily be overlooked. For instance, focused work on naming and explaining fractions during Sensemakers likely enabled teacher candidates to identify specific mathematical strengths and contributions for several students of color in a video episode (Analyzing Competence Assignment, Sensemakers). Had teacher candidates been operating with just a general or everyday understanding of fractions, they might have been pre-occupied with students getting the “right answer” or drafted vague statements like “good explanation.” Thus, there were ways that course *work on the mathematics* seemed to impact teacher candidates’ capacity to take up and enact potentially race cognizant practices.

Despite my attention to these math-specific issues in my own thinking and sensemaking, however, I ultimately did not emphasize them in writing this dissertation. In part, this is a consequence of the specific research questions I pursued. I did not pose a question about how teacher candidates’ mathematical knowledge, experiences, and orientations related to their learning and uptake of race cognizant math teaching, so those ideas became less of a priority as I developed and honed assertions that answered my research questions. Yet, I also made a choice not to revise or expand my research questions in this direction. In an already complex and multi-layered study, I concentrated on questions related to uptake of potentially race cognizant ideas and practices. In the future, I hope to return to this area of inquiry and further explore the

relationship between patterns of learning race cognizant math teaching and teacher candidates' mathematical knowledge, experiences, and orientations.

#### **6.4 Directions for Future Work**

Engaging in this study has raised several questions that I think merit further investigation. These questions reflect the practical limitations of this study, but also map out areas for future research that would build and expand on the contributions of this dissertation. For example, while this study was only able to offer an initial glimpse of teacher candidates' enacted math teaching practice, future studies could — by design — follow teacher candidates into their student teaching experiences and into their careers as classroom teachers. Such studies could pursue longitudinal questions, like: *After having completed teacher education coursework geared toward supporting race cognizant (math) teaching, what aspects of race cognizant (math) teaching do novice teachers hold onto? What falls away, and what shifts as novice teachers develop their own practice?* This research could contribute portraits of teaching at different points of development, supporting efforts to track and appraise teacher candidates' and novice teachers' growth over time. Put differently, future research could further explore what it looks like *to make progress* in learning and enacting race cognizant (math) teaching, both within and beyond initial teacher education.

Another direction for future research centers on the work of teacher educators in supporting race cognizant learning and practice. For example, when teacher candidates resist work on issues of race and racism, in overt or subtle ways, what pedagogical strategies do teacher educators use in response? What enables teacher educators and teacher candidates to work through moments of impasse, conflict, or racial harm? In this study, I chose to focus on *teacher candidates* and their learning and experiences; future studies could expand or shift that

focus to explore *teacher educators'* goals, intentions, rationales, and enacted practice with respect to supporting race cognizant (math) teaching. For instance, one could explore efforts to leverage and build on teacher candidates' general orientations towards equity, pushing for more explicit and critical attention to race and racism. Additionally, future studies could zoom in on specific challenges or obstacles to enacting race cognizant practice, such as supporting white teacher candidates to recognize and reason about the salience of race and racism in predominantly white contexts (a challenge demonstrated by Margaret in the present study). How might teacher educators highlight specific *patterns of whiteness* that get reproduced in (math) classrooms and support teacher candidates to resist and disrupt those patterns? These questions could be investigated through action research (i.e., a teacher educator experimenting with and studying their own practice), as well as through purposive sampling, where a researcher seeks out teacher educators who are already working on these issues.

As mentioned in my discussion of limitations, another direction for future inquiry would be to focus more squarely on the role of specific subject matter, such as mathematics, in teacher candidates' uptake and learning of race cognizant teaching. Above, I suggested examining teacher candidates' subject matter knowledge, experiences, and orientations and investigating relationships with race cognizant learning; this is one possible line of inquiry. In addition, one could explore different ways of bringing a race cognizant perspective to bear in the teaching of given subject matter. For example, what are different ways that classroom teachers and teacher educators envision and work on race cognizant math teaching? I imagine that some teachers and teacher educators might highlight the history of mathematics as a discipline, emphasizing how race and racism are intertwined with what is recognized as mathematics and who is venerated in the field (e.g., D'Ambrosio, 1985; Hottinger, 2016; Powell, 2002). This could lead to studying

the work of mathematicians who have been systematically erased or sidelined in dominant representations of mathematics, such as the work of Black women mathematicians (Bullock, 2018). Others might examine racialized patterns in the types of mathematics learning experiences children are typically provided (e.g., Davis & Martin, 2008; Kokka, 2020). Some might frame and employ mathematics as a tool for understanding and motivating action on sociopolitical and racial issues in their work with students (e.g., Gutstein, 2006, 2012; TODOS, 2020). As I recognized in my description of this research context, the course instructors in this case pursued *one possible version* of race cognizant math teaching. Future research could explore and document other variations, as well as specific possibilities and challenges for supporting teacher candidates to take up different interpretations of race cognizant math teaching. My interests lie primarily in the teaching of elementary mathematics, but parallel questions could be posed in any subject area and at any level, including secondary and postsecondary education.

A final direction for future work would be to flesh out the construct of race cognizant (math) teaching and consider its relevance for teachers and teacher candidates of color. Frankenberg's (1993) concept of race cognizance came from a study of white women; this was a central reason that I kept my focus on white teacher candidates in this study. Yet, I am still interested in the learning, discourse, and practice of teachers and teacher candidates of color. I also believe that recruiting and actively supporting teachers of color is of crucial importance in anti-racist efforts. How might my conceptualization of race cognizant math teaching relate or contribute to work centering teachers of color? Considering that whiteness, as an ideology and set of cultural practices, does not just exist within white people, but impacts everyone in a society structured by white supremacy (Bonilla-Silva, 2001), it could make sense to think about race cognizance as a way of navigating and understanding whiteness (along with race and racism

more broadly), that is relevant to people of all racial identities. Of course, people's specific racial locations and social identities would impact what it would mean to take up race cognizance. This suggests that there is substantial work to be done in reviewing existing scholarship that speaks to patterns in the ways that members of specific racial groups think about issues of race and racism (e.g., K. D. Brown, 2018; Gomez, 2014; Haddix, 2012; Philip et al., 2017). The question then becomes: in light of this existing scholarship, does it make sense to apply notions of race cognizance and race cognizant teaching to teachers and teacher candidates of color? If so, how, and with what qualifications or caveats? Future research could take up these questions and consider how the constructs of race cognizance and race cognizant (math) teaching might need to be adjusted and refined considering racially specific literature bases. Additionally, future studies could center on the learning, discourse, and practice of teachers and teacher candidates of color with respect to addressing issues of race and racism within specific teaching contexts, such as elementary math teaching.

## **6.5 Closing Thoughts**

One of my primary goals in this study was to highlight and engage with complexity in a way that was responsive and relevant to the work of teacher education. Recognizing that work on race and racism often happens in isolation from work on mathematics teaching, I hoped to demonstrate that there is much to learn and to grapple with when we look closely at the specific possibilities and challenges of learning to reason about race and racism *in the context of teaching elementary mathematics*. Reflecting on this intention, many of my findings *do* draw attention to the complexity of supporting race cognizance within courses focused on math teaching in ways that have important implications for teacher education. For example, I have shown that even when teacher educators explicitly frame teaching practices with race cognizant purposes and



rationales, this does not guarantee race cognizant uptake on the part of teacher candidates. I have also shown that teacher candidates' ways of talking about issues of race and racism are not straightforwardly related to their racial ideologies and commitments, which complicates efforts to assess race cognizant learning. These findings suggest that teacher educators need to anticipate and be ready to respond to signs of race evasive, flattened uptake, and also look beyond the racial language that teacher candidates use. At the same time, I also feel that I have just scratched the surface of understanding how learning to teach *mathematics*, and *elementary* mathematics in particular, relates to learning race cognizant practice in general. I hope that my efforts here can serve as a starting point to inform and motivate further work that is squarely focused on *both* learning to teach elementary mathematics and learning race cognizance.

I also set out on this study trying to strike a balance between *critical awareness* of how white people are routinely complicit in systemic racism and a *hopefulness* that white people can learn to break the patterns they have been socialized into, commit to anti-racism, and meaningfully contribute to the pursuit of racial justice. As I grappled with contradictions and troubling patterns in the data for this study, I also wrestled with the pervasiveness of white people doing harmful and disappointing things in the news and on social media. For example, during Black Lives Matter protests during the summer of 2020, there was much discussion of white people and people with institutional power “virtue signaling” and engaging in “performative allyship” — making a show of their support for racial justice in ways that were self-serving and reward-seeking (Phillips, 2020; Rovine, 2020). Many shared “Black Lives Matter” images and statements on social media while doing nothing to support policies that could materially impact Black lives; this allowed white people to feel good about themselves but did little to change racial realities. More recently, Senator Kyrsten Sinema of Arizona, a white

woman, and Senator Joe Manchin of West Virginia, a white man, very publicly conveyed their unwillingness to do away with the filibuster to pass voting rights legislation, effectively enabling and protecting racist voter suppression (Hulse, 2022; Montellaro & Daniels, 2021). Sinema and Manchin's stance is particularly galling, given that they simultaneously profess to support voting rights and the legacy of the Civil Rights movement.

These patterns of behavior make it easy to feel cynical about white people and the potential for actual change. Yet, thinking about the teacher candidates that I got to know through this study, I find myself remaining hopeful. Despite their contradictions and race evasive tendencies, I genuinely believe that all six teacher candidates cared about issues of racial injustice and wanted to think about race and racism in their teaching. These teacher candidates brought important assets and strengths to the project of working towards race cognizant math teaching: they wanted children to see themselves as competent doers of mathematics, they paid attention to which children they involved in class discussion, and they recognized that teachers could reproduce problematic racialized patterns, including through unintentional bias. They also conveyed clear desires to be anti-racist and equitable teachers. These positive signs are certainly no guarantee that teacher candidates will continue to hold anti-racist commitments or that they will realize their intentions in practice. However, the teacher in me views this as an *opportunity* and *responsibility* to support and guide teacher candidates, rather than as a reason to dismiss them. As this dissertation attests, supporting white teacher candidates to learn and engage in race cognizant math teaching is complex and uncertain work. Nonetheless, it is work that has the potential to make a meaningful difference in real people's lives and experiences in classrooms. It is imperative that we try.

## **Appendices**

## Appendix A

### Early Ideas about Race Cognizant Math Teaching (March 2020)

<u>Shulman's (1987)</u> <u>Model of Pedagogical</u> <u>Reasoning and Action*</u>	<u>Ideas and Questions Reflecting Race Cognizance That</u> <u>Teachers May Consider</u>
<p><i>Comprehension</i> Of purposes, subject matter structures, ideas within and outside the discipline</p>	<p>Inequities in mathematics and mathematics education reflect broader histories and structures of racism and other forms of oppression, for example:</p> <ul style="list-style-type: none"> <li>• racial hierarchy of mathematics ability (Martin, 2009b); racialized notions of intelligence and (dis)ability (Artiles, 2011)</li> <li>• mathematics as a gatekeeper (NCSM &amp; TODOS, 2016; Stinson, 2004)</li> <li>• procedural, test-driven math instruction for children of color (Battey &amp; Leyva, 2018; Davis &amp; Martin, 2008)</li> <li>• disproportionate discipline and punishment of Black and Latinx students (Girvan, Gion, McIntosh, &amp; Smolkowski, 2017; Milner, Cunningham, Delale-O'Connor, &amp; Kestenberg, 2019; Skiba, Michael, Nardo, &amp; Peterson, 2002; Smolkowski, Girvan, McIntosh, Nese, &amp; Horner, 2016)</li> </ul> <p>Everyday teacher actions have power to reproduce or disrupt larger patterns of racism (Ball, 2018)</p> <p>Teaching and learning are interpersonal and relational activities, and therefore closely intertwined with identities (Aguirre, Mayfield-Ingram, et al., 2013; Nasir, 2002); math classrooms are racialized spaces (Martin, 2006)</p> <p>Dominant conceptions and representations of mathematical competence in school are exclusionary and reinforce Whiteness (Battey &amp; Leyva, 2016; N. Louie, 2017)</p>
<p><i>Transformation</i> <b>Preparation:</b> critical interpretation and analysis of texts, structuring and segmenting, development of a</p>	<p><b>Tasks:</b> How do mathematics tasks position children and their mathematical abilities? How does this positioning relate to broader racialized patterns in school mathematics? What space do tasks provide for racially marginalized children to engage in meaningful mathematical work? How do task contexts relate to students' identities and lives? Do tasks assume or further</p>

<p>curricular repertoire, and clarification of purposes</p> <p><b>Representation:</b> use of a representational repertoire which includes analogies, metaphors, demonstrations, explanations, and so forth</p> <p><b>Selection:</b> choice from among an instructional repertoire which includes modes of teaching, organizing, managing, and arranging</p> <p><b>Adaptation and Tailoring to Student Characteristics:</b> consideration of conceptions, preconceptions, misconceptions, and difficulties, language, culture, motivations, social class, gender, age, ability, aptitude, interests, self concepts, and attention</p>	<p>normalize dominant identities in mathematics (Hottinger, 2016)?</p> <p><b>Multiple representations and modalities:</b> What representations and connections among representations will support access to mathematical ideas for racially marginalized children (Aguirre, Mayfield-Ingram, et al., 2013)? How might students draw on their multiple mathematics knowledge bases (E. E. Turner et al., 2012) to generate, represent, and make sense of mathematical ideas?</p> <p><b>Participation structures:</b> How are children grouped and organized to participate in mathematical activities? What messages might groupings send about mathematical ability? How have students been positioned relative to each other over time, and is this positioning racially patterned? What existing racialized status and power dynamics might affect student participation? How might different participation structures intervene on racialized status hierarchies and promote meaningful involvement of all students in mathematical work (Featherstone et al., 2011)?</p> <p><b>Mathematical competence:</b> What messages might children have internalized about what it means to be smart in mathematics (Featherstone et al., 2011)? What are the implications of those messages for children’s racial, academic, and mathematics identities (Varelas et al., 2012)?</p> <p><b>Teacher identity:</b> How might my own social identities and experiences in learning this content shape my assumptions about what is accessible or challenging and about how to teach this (Aguirre, Mayfield-Ingram, et al., 2013)?</p>
<p><i>Instruction</i></p> <p>Management, presentations, interactions, group work, discipline, humor, questioning, and other aspects of active teaching, discovery or inquiry instruction, and the observable forms of classroom teaching</p>	<p><b>Participation:</b> What are the racial identities of the students who participate? Are there racial patterns with regard to who participates, in what ways, and how often (Reinholz &amp; Shah, 2018)? What forms of participation predominate? Is participation broadly distributed, or concentrated among a few? How do local participation patterns relate to broader racialized patterns of who is recognized as having mathematics ability, being intelligent, and doing well in school?</p> <p><b>Interactive positioning:</b> How are students’ contributions taken up or affirmed by the teacher and other students (Langer-Osuna, 2011; Wood, 2013)? Who or what is publicly recognized as mathematically competent or smart (Featherstone et al., 2011)? Who has the authority to determine mathematical correctness</p>

	<p>and validity (Dunleavy, 2015)? Are there racial patterns in in who is positioned as mathematically competent and what or how contributions are acknowledged?</p> <p><b>Student thinking:</b> How am I (the teacher) eliciting and probing student thinking in ways that focus on mathematical meaning? How am I orienting children to each other’s mathematical thinking? Keeping in view goals of supporting children’s sensemaking and access to mathematical ideas, especially for children from groups historically marginalized in mathematics.</p> <p><b>Classroom management:</b> How am I (the teacher) interpreting and responding to student behavior? What racialized habits and logics of control might I be falling into? Do I really need to intervene? Is the student distracting themselves or other students, or is the behavior just bothering me personally (Noel, 2018)? What is my evidence that intervention may be needed?</p> <p><b>Relationships and care:</b> How am I conveying respect and care for students as people? How are my conceptions of care racialized, gendered, and classed (T. G. Bartell, 2011; Noblit, 1993; Rolón-Dow, 2005; Thompson, 1998)? How might students be experiencing and receiving my efforts to demonstrate care and respect?</p>
<p><i>Evaluation</i>  Checking for student understanding during interactive teaching  Testing student understanding at the end of lessons or units  Evaluating one’s own performance, and adjusting for experiences</p>	<p><b>Deficit vs. Asset-Based Frames:</b> What am I (the teacher) looking for and focusing on – what children can do and understand, or what children cannot do or do not understand (Battey &amp; Franke, 2015)? Do I consistently operate from asset-based frames when assessing students of different racial identities?</p> <p><b>Evidence:</b> Does the evidence I have connect to and match the scope of the assessment claims I making (Boerst et al., 2020)? Am I jumping to conclusions without specifying my evidence, and if so, are my conclusions racially patterned?</p> <p><b>Bias:</b> Could my expectations and assessments of students be biased according to student identities, including race (Copur-Gencturk et al., 2020; Fennema et al., 1990; Y. Irizarry, 2015; Riegle-Crumb &amp; Humphries, 2012)?</p>
<p><i>Reflection</i>  Reviewing, reconstructing, reenacting and critically analyzing one’s own and the class’s performance, and grounding explanations in evidence</p>	<p><b>Teacher responsibility:</b> How might my own racialized assumptions, beliefs, knowledge, decisions, and actions have contributed to the outcomes of this interaction?</p> <p><b>Student perspectives:</b> How are students interpreting me and my actions (given my social identities and embodiment)? What evidence do I have that children feel cared for, respected, and supported in their mathematics learning?</p>

	<p><b>Broader patterns:</b> How might institutional and social structures related to race (and gender, class, etc.) be influencing what is happening here? Did this specific interaction perpetuate or disrupt broader patterns of racial inequity, oppression, and marginalization?</p>
<p><i>New Comprehensions</i> Of purposes, subject matter, students, teaching, and self Consolidation of new understandings, and learnings from experience</p>	<p>Mathematics teaching and learning interactions are always racialized (as well as gendered, classed, etc.), whether or not people of color are involved. Teachers constantly make decisions within discretionary spaces (Ball, 2018); habitual decisions are racialized and need to be critically examined (Noel, 2018).</p>

\*The left column is a reproduction of Table 1 from Shulman’s 1987 article, “Knowledge and teaching: Foundations of the new reform.”

**Appendix B**  
**Round 1 Interview Protocol**  
*Last Revised 2/28/20*

**Start by framing the study and the nature of the interview.**

*Say: Thank you so much for agreeing to participate in this study. I'm thinking about this first interview as a **background interview** — an opportunity to begin to get to know you as a person and try to understand what perspectives and experiences you're bringing to bear in Sensemakers. Later interviews will dig deeper into your initial experiences teaching mathematics your thinking about those experiences.*

*I'm going to be audio-recording so that I can transcribe and analyze what we talk about. Is that okay?*

**Participant Information Form**

*Say: Before we dive into the interview, I'm going to ask you to provide some information about yourself.*

Explain that all data from the study will be de-identified, but it is important to me to accurately represent how participants identify themselves. Have the participant complete the information form. Clarify any items as needed.

*Say: Do you have any questions for me before we get started?*

**Gauging Interest and Interpretation of Recruitment Efforts**

*Say: To begin, I'm wondering if you could say a little bit about why you chose to participate in this study and what you're hoping that we might talk about today.*

- What about this study interested you?
- Is there anything in particular that you want to make sure that we talk about during this interview?

**Getting to Know the Participant**

*Say: As I mentioned, I'd like to use this interview to get to know you a bit. This will help me make sense of where you're coming from and how you might be experiencing Sensemakers and the course's work on math teaching and larger issues of race and racism.*

1. Tell me about yourself. Where are you from, and what brings you to the elementary teacher education program here?
  - Where did you grow up? What was that like in terms of demographics?
  - Did you interact with people of different racial or ethnic groups when you were growing up? If so, when, where, and how often did you have these interactions?
  - What kinds of schools did you attend?
    - Public or private?



- Neighborhood school? Magnet school? Charter school?
      - How would you describe the student population of the schools you attended? (press to find out about racial diversity, if not mentioned)
      - Did you change schools at any point? If so, what prompted the change?
    - Did you have experiences with people who were culturally or racially different from you outside of school? If so, what were those experiences?
    - What got you interested in teaching?
      - What did/do your parents do?
      - Is anyone in your family a teacher? Did this affect your interest in teaching?
      - Are there other career paths that you've explored or that you are interested in? If so, what led you to pursue teaching?
    - Why do you want to become an elementary teacher?
      - Probe: Why not a secondary teacher?
      - What do you think drives your desire to be an elementary teacher?
      - What do you hope to accomplish as an elementary teacher? What are your goals for yourself and your future students?
    - What kinds of jobs do you think you might pursue after completing the teacher education program? Why?
      - Probe: location, type of school, student population, grade level
2. Tell me about your experiences with math, both in and out of school.
- What kinds of math experiences did you have as a math student? Give an example.
    - Would you say that your experiences as a math student were largely positive or largely negative? Why?
    - Tell me about an experience you had as a math student that stands out to you. What makes that experience memorable or important to you?
  - Were any teachers particularly influential in your view of math or math experiences? If so, how were they influential?
  - How do your experiences of math in college compare to earlier experiences? What do you think accounts for that difference (e.g., how classes were taught, supports available, etc.)?
  - How do your experiences as a math student compare to your experiences in other subject areas?
3. Tell me more about how you identify yourself. What communities or experiences do you strongly identify with? Why?
- I notice that you [did / did not] mention your **gender**. Can you tell me more about how your gender has mattered in your life?
    - What is an example of a time where you felt your gender really mattered or stood out to you as an important part of your experience?
    - What **messages** did you receive about gender when you were growing up (e.g., from family members, from TV, movies, books, news, etc.)?
  - I notice that you [did / did not] mention your **race**. Can you tell me more about how you think about your experiences in terms of race?
    - What is an example of a time where you felt your race really mattered or stood out to you as an important part of your experience?
    - What **messages** did you receive about your race when you were growing up (e.g., from family members, from TV, movies, books, news, etc.)?
4. What sorts of social differences or inequalities were you aware of growing up? (e.g., socioeconomic, racial, gendered, linguistic, etc.)

- What sorts of messages did you hear about social differences or inequalities when you were growing up (e.g., from family members, from TV, movies, books, news, etc.)?
- When you were growing up, did you talk about social differences or inequalities with anyone? (e.g., friends, family, classmates, teachers)
  - If so, what did you talk about? What sorts of things did you say or hear? What questions did you have?
  - Can you give an example?
- Have you had any experiences that stand out to you as really shaping how you think about social difference or inequalities? If so, tell me about them.
- Have your thoughts about [type of social difference/ inequality] changed since you were growing up? If so, how have they changed? What do you think prompted that change?

### Experiences in the Teacher Education Program

*Say: Now I'm going to ask you a bit about your experiences and perspectives related to the teacher education program.*

5. Tell me about your experience so far in the teacher education program. What has the program been like for you?
  - [If relevant] How has your experience in the TE program compared to your earlier experiences at Michigan [or prior institution]?
  - [If relevant] The TE program at Michigan is predominantly made up of White women. As a person of color / man, what has this context been like for you?
6. What are some themes or ideas that have stood out to you so far from your courses in the teacher education program?
  - [Rephrase] What are some things that you are learning in/from the program?
  - Is that something that you expected to learn (about) when you started the program?
  - Is there anything that has surprised you about the work of teaching or learning to teach?
7. What **field placements** have you been in so far? Tell me about them.
  - Tell me about something that you have learned, noticed, or thought about in your field placements.
  - How do your two placements compare to each other? What are some examples of similarities / differences? How do you think about that?
8. What has stood out to you from your coursework so far?
9. [If mentioned, follow up] Two terms that often come up in courses on teaching are “**equity**” and “**social justice**.” These terms can mean many different things. What have either of these terms meant in the context of your TE courses so far?
10. One of the courses you took last term / that you've mentioned was the first module of Teaching in a Multicultural Society. What were some of your takeaways from that course?
  - Had you learned about those ideas before, or was this the first time you'd encountered them?
  - [if not new] Where did you encounter these ideas before? How was that experience different from or similar to the work you did in Teaching in a Multicultural Society?
11. Sensemakers is the first course in the TE program that focuses on math teaching.
  - What do you **hope to learn** about math teaching during Sensemakers?

- How do you think that math teaching might be different from teaching other subject matter in elementary school? How might it be the same?
12. Sensemakers is designed to build on ideas from both the earlier, science-focused Sensemakers module and Teaching in a Multicultural Society.
- What sorts of connections do you expect might be made among these courses? Or, what questions do you have about how these courses will relate to one another?
13. One of the central goals of this study is trying to better understand how ideas about race and racism might connect to the work of elementary math teaching. What do you think about that right now?
- It is okay if you're not sure – I'm just trying to gauge what's on your mind at this point, at the outset of Sensemakers.
  - What connections can you imagine? Or what makes these things feel separate?

### **Surfacing Ideas about Math Teaching**

*Say: Now I'm going to ask you a bit more about how you are thinking about math teaching in particular. If you are not sure, or if you have multiple ideas for a given question, feel free to say so.*

14. What are some things that you hope to do or accomplish as a math teacher?
15. Teachers often have to juggle different priorities in deciding what to do. For example, when picking a book to read aloud, a teacher might think about reading standards as well as the interests of kids in the class. Thinking specifically about teaching math, what are some demands that you think might be in tension, or things that elementary teachers have to juggle and navigate? Can you give an example?
16. What do you think makes math teaching especially “good” or successful? Why?
- Can you give an example from your own experiences as a student or as a prospective teacher? What makes this an example of “good” math teaching?
  - Can you say a bit more about what makes **math** teaching in particular good or successful?
  -

### **Surfacing Ideas about Race and Racism**

*Say: As you know, my interest is in how people who are becoming elementary teachers might connect the day to day work of math teaching to ideas about race and racism. In this last part of the interview, I'd like to learn a bit more about how you are currently thinking about race and racism. This will help me make sense of the connections that you make during Sensemakers, and also any areas where it seems more challenge to think about race and racism in elementary math teaching.*

17. Race and racism, like equity and social justice, are words that people understand in and use a variety of ways.
- **Can you say more about how you think about what race and racism mean?**
  - Are there any experiences (e.g., course activities, life experiences), analogies, or readings that have strongly shaped how you think about race and racism? If so, what are they? How does that inform your thinking about race and racism?
  - What are some questions that you have or that you've grappled with in thinking about race/racism?

18. When you think about an example of racism, what do you think of?
- Where do you see examples of racism taking place (e.g., interactions between individual people, in policies and systems)?
  - What do you think allows or causes that racism to happen?
19. Are race and/or racism things that you think about often? In other words, are race/racism things that are usually on your radar?
- If so, when do you think about them? What prompts you to think about race/racism?
  - Is there a time when you thought about race or racism differently, more or less often, or for different reasons?
    - If so, tell me about it.
    - What spurred changes in your thinking?
20. [If not addressed] Some people view racism as something that is intentional or conscious, rather than something that is unintentional or unconscious (like implicit bias). What do you think about that?
21. [If not addressed] Another debate in ways that people think about racism is whether to focus on the words and actions of individual people or the broader impacts of systems, structures, or institutions. What do you think about that?
22. [If not addressed] In popular media, there are some people who frame racism as a thing of the past, or something that ended after the Civil Rights Movement or when President Obama was elected. Others, such as those taking part in the #BlackLivesMatter movement, frame racism as an ongoing problem.
- What do you think about either of those viewpoints? Can you say more about how you think about what racism is?
23. [If not addressed] One idea about how to counter racism or not be racist is to “not see race” and treat everyone the same.
- What do you think about that idea?
  - Are there parts of this idea that you agree with or disagree with? Why is that?
  - Can you talk a bit about what you think it means to oppose racism or be anti-racist? Is that something that you identify with? Why or why not?

## Closing

Say: *That is all the questions that I have planned. Is there anything that you expected me to ask about that I have not asked? **Is there anything else that you would like to add or ask me?***

*Thank you for your time! You can expect to hear from me again in about 3 weeks to schedule the next interview.*

**\*\*Give participant a gift card and have them sign the receipt form**

**Appendix C**  
**Round 2 Interview Protocol**  
*Last Revised 4/12/20*

**Start by framing the nature of the interview.**

**Say:** *Thank you again for making the time to talk. As I mentioned in my email, my main goal today is to ask you about some of the big ideas and practices being worked on in Sensemakers. I've been following along with the modules through Canvas. My hope is to get a sense of how you're thinking about things, what questions you have, and what you're taking away from the course.*

*Do you have any questions before we get started?*

**CHECK THAT RECORDING HAS STARTED**

**Checking In**

**Say:** *To get started, I'd like to check in to see how you're doing and what's currently on your mind.*

1. A lot has changed since the first time we talked — the Governor has declared a state of emergency, university classes have all moved online, the university asked students to move home, K-12 schools have closed, the number of COVID-19 cases and deaths has rapidly increased, and more.
  - How has all of this affected you and your family? (share as much or as little as you feel comfortable with)
  - How are you coping with all of these changes and adjusting to online coursework?
  - What's been at the forefront of your thinking and attention these past few weeks? Have you felt like you have the mental space to focus on coursework?

**Open-Ended Prompts**

2. What are some of the things that you are learning or have learned from Sensemakers in the past few weeks?
3. Do you have any questions on your mind at this point in the course? If so, what are they?

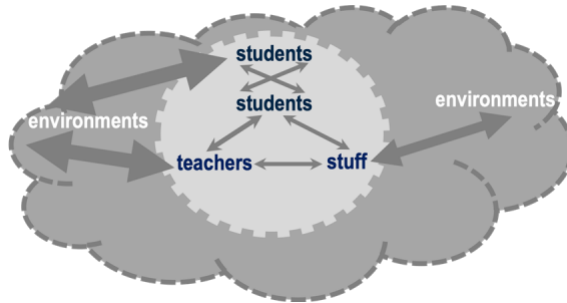
**Making Sense of and Responding to Sensemakers Course Content**

**Say:** *Now I'm going to ask you about some specific ideas and practices that have come up in the recent Sensemakers modules. My goal here is to learn more about how you're making sense of things in the course, especially because the online format involves more sensemaking on your own.*

4. In the past few classes, there has been a strand of work on **acknowledging competence**. Can you tell me how you are thinking about that?

- How do you think about what “acknowledging competence” is? What do you see as being involved?
  - Related to the practice of acknowledging competence is the notion of **positioning**. How do you see positioning as being related to the practice of acknowledging competence?
  - What are some reasons that you think a teacher might use acknowledging competence as a practice?
  - Is acknowledging competence something you were able to try out in your small group session at the partner elementary school?
    - If so, what did you try? What was your reasoning behind that?
  - Do you have any qualms or questions about acknowledging competence? If so, what are they?
  - Do you see acknowledging competence as related to issues of race and racism?
    - If so, what connections do you see?
    - If not, what gives you pause or makes you wonder about this connection?
5. One goal of Sensemakers is to support you and your colleagues in embracing and promoting a **broad view of mathematical competence**. In your current thinking, what does it mean to be “good at math” or “smart” in mathematics?
6. An idea from earlier in the course is that teachers’ **identities and assumptions** can shape the ways that they “read” or interpret children, and that teachers can work to actively consider different interpretations or “reads.” For example, during Class 1, there was a whole group discussion about how different people interpreted Toni in the clip with Aniyah (this clip also came up again in recent weeks).
- What do you think about the idea that teachers’ identities and assumptions can shape how they read or interpret children?
  - When course instructors talk about teachers’ identities shaping their assumptions and reads of children, **what aspects of your own identity do you think about**?
    - Are there any “blind spots” that you think you might have when it comes to interpreting children and their actions in classrooms?
  - How do you think that teachers’ “reads” of children might be affected by **children’s own identities** or broader patterns in society?
7. Recent class modules have also included a strand of work on **patterns of oppression and marginalization**. Can you tell me how you are thinking about that?
- How do you think about what a “pattern” is?
  - How are you thinking about how patterns get **reproduced or disrupted**? What do you see as an individual teacher’s role in that?
  - What is an example of a pattern relevant to math classrooms that comes to mind for you?
  - Do you have any qualms or questions about this notion of disrupting patterns? If so, what are they?
8. In class segments on patterns, the slides and the lead instructor’s narration sometime refer to disrupting patterns that marginalize people in general, and sometimes refer to disrupting **patterns of racism** in particular.
- What do you think about that?
  - What comes to mind for you as an example of a “pattern of racism”?
  - What does this make you think or wonder about how issues of race and racism relate to broader efforts to pursue equity and justice?

9. [Reference / show instructional triangle diagram] The lead instructor showed this **diagram** when she was introducing the concept of a pattern. How did you interpret this diagram?
- What does this diagram represent or illustrate for you? Can you give an example?
  - Do you have any questions about this diagram? If so, what are they?



10. Another idea that the lead instructor introduced is the notion of **discretionary spaces**. Can you tell me how you are thinking about that?
- How do you think about what a “discretionary space” is?
  - What is an example of a discretionary space in an elementary math classroom that comes to mind for you?
  - Do you have any qualms or questions about this notion of discretionary spaces? If so, what are they?
11. At this point in your development as a teacher, do you feel like you personally have ideas of things to do in your math teaching to disrupt or intervene on broader societal patterns, and/or patterns of racism in particular?
- If yes, what are some examples?
  - If not, why not?
  - What are some things that you hope to learn or further develop in the coming year of the teacher education program?

### Exploring an Enactment of Math Teaching

**Say:** *Before all of the changes with COVID-19, I had planned to look together at some places where you've actually been engaged in the work of elementary math teaching and talk about what sorts of things went into your thinking and decision making. For example, I was hoping to look together at your plans and video from Week 2 or 3 at the elementary school. Obviously, you did not get the chance to meet with your small group for a second or third time, and I'm hesitant to ask too much about the first session because it was the first time you were meeting the students and you undoubtedly had a lot on your mind.*

*My hope is that we'll get another opportunity to dig into this work when you are in Math Methods in the fall. In the meantime, I'd like to just briefly touch base with you about the one session you led..*

12. How was the small group teaching experience for you? (*follow up with probes based on what intern shares / as feels appropriate*)
- What was at the forefront of your mind when you were doing this teaching? In other words, what were your main concerns going into and during the session? How come?
  - When you were preparing for this session with your teaching partner, do you remember making any particular decisions about how to approach the small group session? If so, what were they?

- One of the places where teaching partnerships differed in their approach to this lesson was in \_\_\_\_\_. How did you and your partner think about that?
  - Choosing a get-to-know-you activity
  - Having number lines partitioned and labeled ahead of time vs. having kids do this
  - Facilitating turn-taking among students
  - Asking follow-up questions to elicit/probe mathematical thinking
- How would you describe the students in your small group? What did you learn about the students in your group during that first session?
- Did you notice any status differences or potential hierarchies among the children in your small group?
  - If so, did you and your teaching partner discuss how you might intervene?
  - Did the status differences / hierarchy you observe seem gendered? Racialized? Tied to language or ability? Something else?
- If you were to re-do this small group session again, is there anything that you would do differently? Why or why not?
- What did you learn from engaging in this small group teaching?

13. Recognizing that other things may have been at the forefront of your mind during the small group session, if you think about it now through the lens of issues of race and racism, what reflections or wonderings come to mind?

- Were there any **specific moments** during the small group session where you were actively thinking about race and/or racism? If so, what were you thinking about?
- Do you see race and racism as connected to what's happened in your small group session **more broadly** (i.e., beyond specific moments)? Why or why not?

14. Stepping back now to think about my larger focus of this research, have there been **any changes in your thinking** about the connections between issues of race and racism and math teaching since the last times we talked? If so, what has changed for you and why?

### Closing

Say: *That is all the questions that I have planned. Is there anything else that you would like to add? Any questions for me?*

**\*\*Confirm that participant still has the gift card** from the Round 1 interview. Explain that the card will be reloaded with \$30 at the end of the week.

*I'll be in touch to confirm when your gift card has been reloaded. After that, you can expect to hear from me again in the fall.*

*Thank you for your time! Take care.*

### After the Interview:

- Complete a post-interview reflection
- Make revisions to interview protocol; print a new version for next interview
- Download and save interview recordings (audio and video files)



**Appendix D**  
**Round 3 Interview Protocol**  
*Last Revised 9/28/20*

**Start by framing the nature of the interview.**

**Say:** *Thank you for making the time to talk today. As I mentioned in my email, my main goal today is to check in with you and see what is on your mind related to race, racism, and math teaching following the events of this summer and going into Math Methods this fall. Just like with the previous interviews, I will not share anything we talk about with the instructional team in a way that identifies you. I may share questions or ideas that you raise for the purpose of informing the planning for Math Methods, but I will do so in an anonymized way.*

*I am video recording for the purposes of my dissertation, so that I can return to and transcribe this conversation. Is that okay with you? Do you have any questions before we get started?*

- **START RECORDING [Set Zoom to record to computer]**

**Checking In**

**Say:** *To get started, I'd like to check in to see how you're doing and get some context for how you spent the summer.*

1. How did you spend the summer? What was the summer like for you?
  - [If unclear] Did you work or take classes?
  - [If unclear] Did you have any experiences related to (math) teaching (e.g., tutoring, babysitting, working at a summer camp, etc.)? If so, what were they?
2. [If needed] Is there anything else that you think it would be helpful for me to know as background or context as I try to make sense of your perspective and experiences in the teacher education program (and specifically math methods) this semester?

**Current Ideas about Race and Racism**

**Say:** *From late May onward, protests against police violence have erupted across the U.S. Although the killings of George Floyd, Breonna Taylor, and Ahmaud Arbery, and the police shooting of Jacob Blake (in August 2020), reflect long-standing and deep-seated patterns of both racist violence and resistance to racial oppression in the United States, the public outrage surrounding their killings has brought issues of racial justice to the forefront of national conversations. **I'm really interested to hear how you have been thinking about recent events related to race and racism, and whether these events have sparked any changes in your views.** I'm also curious about how the particular timing and context of your experiences in teacher education might impact your thinking and teaching.*

3. The killing of George Floyd in Minneapolis, MN on May 25, 2020 ignited widespread protests against police violence and systemic racism. Protests and actions under the banner of Black Lives Matter continued to take place across the US and the globe throughout the summer and are still ongoing. The police shooting of Jacob Blake in Kenosha, WI on August 23, 2020 and the failure to indict the officers responsible for the killing of Breonna Taylor on September 23, 2020 each sparked a resurgence in public outrage and attention to protests for racial justice.
  - What has stood out to you about these events as they've unfolded?
  - **Can you tell me what these events mean for you or how you have experienced them, particularly for you as a white person (if applicable)?**
  - Have you been personally involved in any protests or related actions?
  - What have the protests and related discussions made you think about or wonder?
  - How have you made sense of these events?
  
4. Since early June, books on race, racism, whiteness, and anti-racism have been dominating best-seller lists and many articles, podcasts, and news stories have delved into issues of racial justice.
  - Have you personally sought out any resources or learning opportunities related to race, racism, whiteness, or anti-racism this summer?
    - If so, what resources or opportunities did you engage with and how?
    - **What did you think about or take away from engaging with those resources or opportunities?**
  - Have you discussed race, racism, whiteness, or anti-racism with friends, family members, or colleagues this summer?
    - If so, what sorts of conversations did you have?
    - **What did you think about or take away from those conversations?**
    - Did you attend or consider attending any of the Zoom meetings hosted by instructors in the teacher education program? (if applicable) What did you think about those meetings?
  
5. Have the protests and national attention to racial justice this summer affected your thinking about **what racism is and what might mean to challenge racism or be anti-racist** in any way?
  - If so, how? Can you give an example?
  - If not, what views of yours have been reaffirmed or strengthened?
  
6. [If needed] Has anything else recently affected your thinking about race and racism (e.g., data on racially disproportionate impact of COVID, 4-week module of Teaching in a Multicultural Society)? If so, what has affected your thinking, and how?
  
7. Have the protests and national discourse affected your thinking about race and racism in relation to teaching & learning, schooling, or your **role as a future elementary teacher**?
  - If so, how? Can you give an example?
  - If not, what views of yours have been reaffirmed or strengthened?
  
8. Are there connections for you between these protests and national conversations about racial justice and your own developing **math** teaching?
  - If so, what connections do you see?
  - If not, what feels disconnected? Why?

## Current Ideas about Math Teaching

**Say:** *My study focuses on your experiences in the two teacher education courses that are focused directly on math teaching: Sensemakers and Math Methods. It has now been nearly six months since Sensemakers ended and since we talked about how you were thinking about things from the course. You're also now one year into the teacher education program.*

9. Do you think your perspective on or approach to math teaching changed or shifted since the beginning of the program?
  - If so, how?
  - Are there any beliefs, values, or goals related to math teaching that you feel have stayed the same or been reaffirmed or strengthened over your first year in the program?

## Current Ideas about Race, Racism, and Math Teaching

10. Stepping back now to think about the larger focus of this research, what are you currently thinking about whether or how race and racism are connected to the work of teaching elementary math?
  - Can you give an example?
  - In what ways are those connections between race/racism and teaching in general, and in what ways are they specific to math?
  - [If applicable] What is it about math as a subject area that makes it feel different or less easily thought about in connection to race and racism?
11. [If not already addressed] Have there been any significant changes or shifts in your thinking about connections between issues of race and racism and math teaching since the last time we talked? If so, what has changed for you and why?
  - If so, how? Can you give an example of something you thought before that you think about differently now?
  - What do you think prompted that shift in your thinking?
12. The second course focused on math teaching, Math Methods, is starting soon (next week). Are there questions you have about the relationship between issues of race and racism and math teaching or things that you're puzzling about that you hope to learn more about or work on during Math Methods?
  - If so, what are they?
  - How has your fall field placement and work with your mentor teacher been going, given the virtual context? Have you been able to start working on or thinking about any of the things you just raised in the context of your field placement so far?

## Closing

**Say:** *That is all the questions that I have planned. Is there anything else that you would like to add? Any questions for me?*

**\*\*Ask the participant send an email with their preferred address for a new gift card.**

*I'll be in touch to confirm when your gift card has been requested. After that, you can expect to hear from me during Math Methods about additional interviews.*

*Thank you for your time! Take care.*

**After the Interview:**

- Complete a post-interview reflection
- Make revisions to interview protocol; print a new version for next interview
- Download and save Zoom recordings (audio and video files)
- Organize information to request gift card reload / mailing

## Appendix E

### Round 4 Interview Protocol – Stimulated Recall of Math Discussion

*Last Revised 12/16/20*

#### Checking In

Greet the participant and ask how they are doing. Ask how the end of the semester is going and what their plans are for break.

#### Framing the Interview

**Say:** *Thank you for making the time to talk today. As I mentioned in my email, my main goal today is to learn about your experience leading a math discussion for Math Methods. I'll ask you about things you considered in your planning and preparation, things that came up during the enactment, and things you've been thinking about as you reflect on and analyze the discussion. As you know, I am particularly interested in where, how, and why issues of race and racism may or may not have factored into your thinking, so I will ask some questions about that specifically. I recognize that you may not have been thinking about race or racism every moment, and that is fine — I am still interested in what was on your mind. This will likely be that last interview for my dissertation study, so I'll end with some more general questions about shifts in your thinking related to race, racism, and math teaching.*

*As a reminder, I am video recording for the purposes of my dissertation, so that I can return to and transcribe this conversation. Is that okay with you? Do you have any questions before we get started?*

[ ] **Check that recording has started** \*\*Priority questions

#### Exploring Teacher Thinking and Decision-Making using Artifacts of Math Teaching

1. First, can you give me some background about what you did for the discussion leading assignment?
  - Were you able to lead the discussion in your virtual field placement? Did you lead this during a designated math class or another time of the day?
  - What task did you use? Why? (Was it one provided by course instructors, one you developed, one from your mentor teacher?)
  - What did you discuss with your mentor teacher and/or field instructor in getting ready to lead this discussion?

**Say:** *Let's take a look at your plan for the discussion you led for Math Methods, particularly at the parts that you wrote. Can you pull this up and share your screen? (I can also do this if that would be easier.)*

#### Planning: Attending to the Mathematics

2. Tell me about how you were thinking about the math task for this discussion.
  - What did you see as the mathematical point of your discussion?

3. How does the math task you used for your discussion compare to the types of math tasks children in your field placement typically work on?
  - *Possible probes:* number of problems assigned, one right answer vs. multiple solutions, opportunity for multiple strategies and/or representations, solving independently/with others, discussion of strategies in small or whole group
  - How does the whole-class math discussion format compare to how math work is typically organized in your field placement? Do you have a sense of whether your mentor teacher taught math differently prior to COVID or would approach math differently if school were in person?
  - Did you see this particular math task as more challenging, less challenging, or relatively consistent with the type of math tasks students in your field placement typically work on? Why is that?
4. Did you make any decisions regarding the math task and the point you planned to pursue in light of what you know about the students in your field placement or your mentor teachers' approach to math teaching? If so, what were they?

Planning: Attending to the Learners

5. Part of preparing for this discussion is thinking about how the students in your particular classroom might interact with the mathematics, with you, and with each other during the discussion. In order to get a sense of what that involves for you, can you tell me a bit more about your field placement? How many students are there, and how would you describe the demographics of the students?
  - *If not mentioned, probe for:* Race/ethnicity, gender, languages spoken, exceptionalities or dis/ability status, and socioeconomic status / class
6. As you were anticipating how your students might engage with the math and with each other in your discussion, what were some things that you were thinking about?
7. The planning template asks you about "making the content accessible to all students." Can you tell me a bit about what that phrase means to you?
  - How were you thinking about making content accessible in the context of this discussion?
8. \*\*Were there particular issues in your class that you were you thinking about when anticipating what could happen to **marginalize** particular groups of students?
  - Were there any particular group(s) of students you were thinking about when you were thinking about risks of marginalization?
  - Was race or racism something you were thinking about as a potential issue here?
    - If so, how? If not, why not?
    - If you were not thinking about race or racism at the time when you were doing this planning, thinking about it now, do you see marginalization by race as a plausible risk or something that might be important to anticipate? Why or why not?
    - What do you think racial marginalization would look like in the context of a math discussion in your field placement?
9. The next part of the planning template asks you to think about how you might **position** particular students, **acknowledge competence**, and broaden ideas about who and what counts as smart in math. Can you tell me about some of the factors that you were considering here?
  - Did you have particular students in mind that you wanted to acknowledge or position as competent?

- If so, how/why did you decide to focus on those students?
  - Did children’s social identities or any broader patterns in how people of given identities tend to be positioned in math classrooms shape your thinking?
- If not, was there a reason that you were not planning to highlight anyone in particular?
- Were there particular moves you planned to make to acknowledge students’ competence, position students as capable, or to broaden children’s ideas about who or what is “smart” in math?
- What were you hoping to accomplish with those moves?

**10.** This next prompt asks about attending to **relationships**. I recognize that relationship-building has likely looked quite different in remote learning than it would if you were meeting children in person.

- Can you tell me a bit about the work that you’ve done to build relationships with students more generally this year? Do you see that work happening in and around your math teaching, or at other times of the day?
- How did you think about your relationships with students in the context of this specific discussion?
- Both Sensemakers and Math Methods have called for thinking about **identity**. As you planned to attend to your relationships with students in this discussion, did you think about your own identity or the identities of your students? If so, what did you think about?

**11.** **\*\*Were there any discretionary spaces that you anticipated coming up during this discussion? It’s okay if the answer is no, or if you didn’t think about the phrase “discretionary spaces” per se.**

- If so, what were they?
  - How or why do you see that as a discretionary space?
  - What are some of the potential implications of different moves or decisions that you / a teacher might make in that discretionary space?
- If not, tell me more about how you are thinking about what a discretionary space is. Are there questions or uncertainties that you have about this concept?

Planning: Instructional Sequence

***If the participant used one of the provided plans:** For this discussion, you were provided a relatively complete plan for the instructional sequence. However, in order to turn a written plan into actual enacted teaching, there are lots of decisions that individual teachers need to make (e.g., how to display the math task and record student ideas).*

**12.** What decisions did you make in making sense of this written plan and adapting it to your context? What sorts of things did you consider or weigh in making those decisions?

***If the participant drafted their own plan:***

**13.** Tell me about your process in developing your plan. What decisions did you make, and what did you consider or weigh in making those decisions?

--

**14.** **\*\*Was there anything specific that you planned to do during this discussion as a result of thinking about race and racism or in an effort to disrupt patterns of racism? Again, it’s okay if the answer is no — I’m just curious. (This may or may not be represented in the written plan.)**

- If so, what did you plan to do?

- How did you consider race and racism in planning that move?
- What did you hope to accomplish with that move?

15. Were there any other goals, plans, or questions that you had in mind going into this discussion that we haven't talked about? If so, what are they?

**\*\*JUMP TO THIS SECTION WITH 50 MINUTES REMAINING**

Enactment

Say: *Now we're going to shift gears a little bit and look together at the video of your discussion. There are two big reasons for this.*

- *First, some time has passed since you enacted this and it can be hard to recall your thinking and decision-making in specific moments after the fact. Re-watching the video is one way to kind of step back into the moment and try to recreate what was going on. It can also spark some new thinking or reflection on what occurred.*
- *The second reason is that there are many things teachers are thinking about and juggling in any given moment that are not visible to an observer. This gives you a way to highlight specific moments in your math teaching and elaborate on what you were thinking about or wrestling with in that moment.*

*Remember that my goal here is to understand your thinking and perspective, not to evaluate you.*

*I'm going to ask you to pull up your video on Edthema and share your screen (select 'share computer audio') to play the video. As we're watching, I'm going to ask you to pause whenever something strikes you that you'd like to talk about. Again, I am particularly interested how you might be making connections between issues of race and racism and the work of math teaching, but I recognize that there a lot of other things you were likely attending to. Think about moments you might want to narrate what you were thinking or deciding in the moment and pause the video when you want to talk.*

**16. [As needed] At stopping points:**

- Can you tell me what's going on in this moment?
- Why did you choose to pause here?
- What do you remember thinking about in the moment?
- What are you noticing, thinking about, or wondering now?
- I heard you say something about \_\_\_\_\_, but I lost track of \_\_\_\_\_ / lost the thread with how that connects to race/racism. Can you help me retrace the connection you're making?
- I noticed that you \_\_\_\_\_. Can you tell me what you were thinking about here?
  - Was this at all related to thinking about race and racism?
    - If so, how?
    - If not, why not?
- In the interest of time, let's move on. There are a couple of questions I really want to hear your thoughts on.

**\*\*TRANSITION HERE WITH 30 MINUTES REMAINING**

17. We likely won't have time to watch your entire discussion. Is there anything that happens in the remaining part of the video that you'd like to make sure we see or talk about? Feel free to skip to that spot.



**\*\*TRANSITION HERE WITH 25 MINUTES REMAINING**

18. Having just re-watched your video, is there anything that we haven't talked about or that you hadn't thought about before (perhaps when writing your analysis) that you're noticing or thinking about now?
19. [If not already addressed] Often time times in teaching, things change in the moment when it comes to enacting the plan. What are some things that shifted between your plan and your enactment, and why do you think that is? Was there anything that happened that you hadn't anticipated / that surprised you?
20. In re-watching your video, were there any **discretionary spaces** that you noticed?
  - How or why do you see these as discretionary spaces?
  - What are some of the potential implications of different moves or decisions you might've made?
21. Thinking about my study focus now, are there any parts of your discussion that make you think about **race and racism**? This may or may not be something you were thinking about in the moment (could be a connection you just made or something you just realized in re-watching the video).
  - If yes, how do you see race and/or racism as related to what's happening here?
  - If not, why not?

Reflecting on Teaching

Say: *Now I'd like to turn to the written analysis that you did connected to this discussion. Can you pull it up and share your screen again? I'm curious to hear if there's anything you would like to elaborate on, or any further thoughts you're having now after re-watching the video and discussing it.*

22. [If time] After re-watching your video, is there any part of your analysis and self-appraisal that you would like to say more about? If so, what would you like to add?
23. [If time] *Ask intern to elaborate on something specific that they wrote in analysis/self-appraisal.*
24. [If time / applicable] Is there anything specific that you wrote in your analysis/self-appraisal that you see as related to issues of race and racism? (may be a place where you were thinking about race/racism but didn't use those words)
  - If so, what did you write? How do you see that as related to issues of race and racism?
  - If not, is there anything that you would do add to your self-appraisal now, in retrospect, as a result of thinking about race and racism? If so, what would you do add? Why?
25. [If not already addressed] If you were to re-do this discussion, is there anything that you would **do differently**? Why or why not?
26. **\*\*What did you take away** or learn from this discussion that you will keep in mind moving forward, for math discussions that you lead in the future?
27. Is there anything else you would like me know about this discussion and how you are reflecting on it now?

**\*\*JUMP TO THIS SECTION WITH 15 MINUTES REMAINING**

**Current Ideas about Race, Racism, and Math Teaching**

28. **\*\*Stepping back from your discussion, I'd like to revisit the overarching theme of this study. Do you feel like there have been any significant changes or **shifts** in your thinking about race, racism, and math teaching?**
- If so, what has changed for you and why?
  - Can you give an example of something you thought before that you think about differently now? What do you think prompted that shift in your thinking?
  - [If applicable] In our last interview, you talked about **anti-racism** and wanting to be an anti-racist teacher. How are you thinking about that now? What does being an anti-racist teacher mean to you?
29. What **entry points** have you found most useful for thinking about race and racism in the context of math teaching, if any? (e.g., acknowledging competence, patterns of over-punishment, etc.)
- Thinking about Sensemakers and Math Methods, what has been most helpful in supporting your thinking about race, racism, and math teaching? (e.g., readings, concepts, examples, assignments, etc.)
  - [If the opportunity presents itself] You mentioned *Troublemakers* / **Carla Shalaby's visit** during the last Math Methods class session. Can you say more about what you took away from the book / her visit? Do you see *Troublemakers* / Carla Shalaby's talk as being about race/racism? Why or why not?
30. What **tensions or challenges** have you experienced in trying to really think about race and racism in the context of math teaching, if any? What **questions or wonderings** do you still have?
31. Thinking about your participation in this dissertation research, what are you walking away with? What take-aways or questions are on your mind, here at the conclusion of the study?

**Closing**

**Say:** *Let's stop there. I can hardly believe this is our last interview. Thank you so much for be so generous with your time and with sharing your thinking. I've really enjoyed talking with you over the past year, and I've learned a lot.*

**\*\*Ask the participant whether they still have their gift card from September.** If not / if gift card is from old provider, ask the participant to send an email with their preferred address for a new gift card.

*I'll be in touch to confirm when your gift card has been requested.*

*Again, thank you so much for your time, and your willingness to share your experiences and perspectives during this study! I really appreciate your participation. I hope our paths cross again in the future. Take care.*

**After the Interview:**

- Complete a post-interview reflection
- Make revisions to interview protocol; print a new version for next interview
- Download and save Zoom recordings (audio and video files)
- Organize information to request gift card reload / mailing

**Appendix F**  
**Table of Sample Codes**

<b>Code</b>	<b>Definition</b>	<b>Example of Coded Data</b>
Direct race talk	Talk that includes explicit race words, such as the words <i>race</i> and <i>racism</i> and labels for racial groups.	“Due to <i>institutionalized racism</i> , some students are positioned as contributors, while others are silenced or act to silence their peers.” (Alex, Analyzing Competence Assignment, Sensemakers, emphasis added)
Direct race talk – Labeling in racial terms	Characterizing a person, group of people, practice, or pattern using direct racial terms, such as referring to a “pattern of racism” or describing a person as white, Black, etc.	“I think I could have done more to encourage <i>students of color</i> to participate and engage with the discussion.” (Jason, Discussion Analysis, Math Methods, emphasis added)
Direct race talk – Naming whiteness	Referring to whiteness, white supremacy, or white identity.	“If I’m a white teacher and there’s a white student, I able to identify with them more and see their ideas as more... like contributive to the class.” (Margaret, Round 2 Interview, 4/10/20)
Direct race talk – Racial analysis	Talk that seeks to explain or unpack a racialized pattern. Includes informal theorizing about how racial inequities came to be, are maintained, or might be challenged and addressed.	“In any situation with a child of a minority, there's a chance for the situation to be inequitable to them. They're automatically, because of our society and the systematic racism that we have, they're at a disadvantage and that you can't ignore that. I feel like any lesson that you give, any assumption that you make— You can make the same assumption about a white kid and a Black kid, and that assumption could make that Black kid be put into a separate classroom, at a lower grade level, a lower reading level, and that other kid might just get the benefit of the doubt, that they're having a bad day or something.” (Rachael, Round 1 Interview, 2/21/20)
General equity, justice language	Talk about issues of equity and justice that could include, but does not	“What made me wanna go into education is this <i>commitment to all students</i> and helping them be the best version of themselves, and

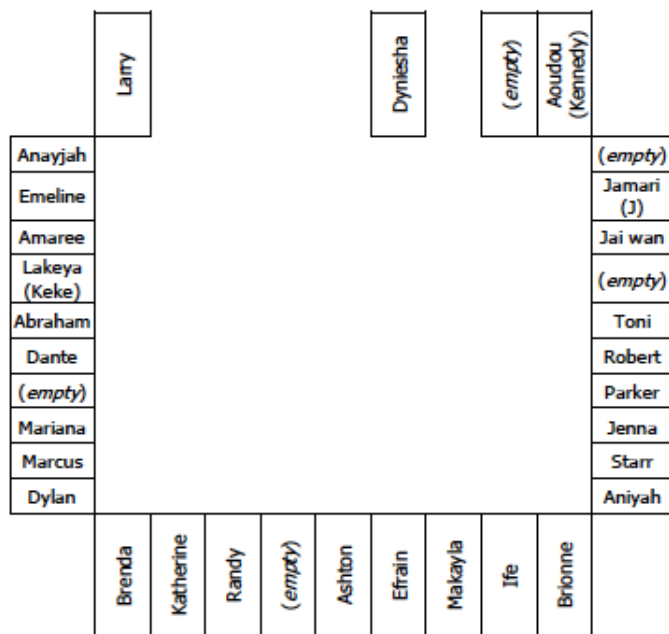
	explicitly specify, attention to race or racism.	I think that that's been strengthened throughout the program and along the lines of what I was talking about just a second ago, in that <i>all students have these strengths</i> that can be built upon and noticed and named to help them become better at the content, and also the other skills that we're focusing on in the classroom, and part of that includes feeling comfortable in their own identities and all parts of those identity groups and feeling accepted in the classroom.” (Evelyn, Round 3 Interview, 9/28/20, emphasis added)
General equity, justice language – Umbrella terms	Words or phrases that seek to encompass or cut across multiple forms and systems of oppression (including racism), such as <i>in/equity, in/justice, patterns of oppression, patterns of marginalization, de/humanization, etc.</i>	“I think one scaffold could be for those particular students that are getting marginalized or in danger of getting marginalized, let them know at the beginning of the discussion in a private chat or something like, ‘I am gonna be calling on you, so make sure you are paying attention, make sure your camera is on.’” (Jason, Round 4 Interview, 12/9/20)
General equity, justice language – Generic good, bad	Framing practices as universal goods (i.e., beneficial for all students) or generally problematic or harmful. Often tied to the social and emotional needs and experiences of all students.	“I think in math we typically associate smartness with getting the answer quickly and if the answer was right or not, but <i>with acknowledge competence it’s focusing on recognizing the other areas that students can be knowledgeable in.</i> ” (Margaret, Round 2 Interview, 4/10/20, emphasis added)
General equity, justice language – Superficial use of justice concepts	Making use of equity- and justice-oriented concepts and language in superficial, flattened, or over-simplified ways.	“So what questions do you have for _____?” I would use this question because like I mentioned previously, <i>it gives so much power and agency</i> to both the student at the board, as well as the students in their seats.” (Rachael, Analyzing Participation Assignment, Math Methods, emphasis added)
Indirect, could be about race	Talk that could be interpreted as being about race or racism but does not use direct racial language.	“If we’re not sensitive to where our students are coming from and what their background is, then we can misinterpret what they’re doing.” (Jason, Round 2 Interview, 4/9/20)
Indirect, could be about race – Coded language	Language that, on the surface, does not refer to race, but as used in context, carries racial meaning.	“So it was completely opposite from when I grew up, right? So it was in [neighboring town] and it's a public charter school, and

		the clientele, very low SES, I just..." (Stacey, Round 1 Interview, 2/28/20)
Indirect, could be about race – Implying shared referent	Using a pronoun like "it" or a phrase like "these issues" to stand in for or allude to race or racism.	"It has been difficult since I've been here 'cause we have to explicitly talk about it and I don't know how to. And so that's kind of been more of an issue for me too, is 'cause I'm not used to it and I'm not used to what to say. And I know sometimes I might not say the right things." (Stacey, Round 1 Interview, 2/28/20)
Indirect, could be about race – Naming students	Referring to students by name, possibly to implicitly invoke a student's racial identity. Often done with students from the Toni and Aniyah video.	"At 1:20, the teacher interrupted a pattern of racism and sexism by validating Toni's question and by focusing on the content of her question and by not misinterpreting or overreacting to the way in which Toni posed her question" (Jason, Analyzing Participation Assignment, Math Methods)
Indirect, could be about race – Possible compressed reference	General talk about an issue or pattern that was framed or discussed in direct racial terms in the math teaching course sequence, such as the idea of reading children in the Toni and Aniyah video.	"I think from that video and the progression of that video over time, it's like you can see how different people are checking in throughout the video, and when they do check in, how they're contributing. I think that the series of conversations that we've had as a class have been really eye-opening as far as calling out specific details of the video that we hadn't seen before." (Alex, Round 4 Interview, 12/15/20)
Indirect, could be about race – Race-inclusive terms	Terms that could conceivably include attention to race or racism but are not direct racial terms, such as <i>identity, culture, bias, assumptions, etc.</i>	"I think that the classes in general have just made me more aware of how like <i>culture</i> and <i>cultural identities</i> impact the way that we as people perceive like other people's actions." (Evelyn, Round 4 Interview, 12/10/20, emphasis added)

Note: Subcodes are listed using the format "Parent code –Subcode."

**Appendix G**  
**Transcript of the “Toni and Aniyah Video”**

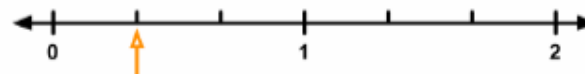
**Seating Arrangement**



**August 5, 2014:**

Students have worked independently on the number line problem shown below. The discussion starts with the teacher eliciting from students the incorrect answers that younger children would likely give. The clip starts at the point that the teacher asks students to explain what they believe the answer to be.

What number does the orange arrow point to? \_\_\_\_\_



Explain how you know.

- 
- 1 Teacher: Who would like to try to explain what you think the answer is? And show us your reasoning by coming up to the board?
  - 2
  - 3
  - 4 Who'd like to come up to the board and try to tell- And
  - 5 you know, it might not be right. That's okay because
  - 6 we're learning something new.
  - 7 I'd like someone to come up and sort of be the teacher
  - 8 and explain how you are thinking about it. Who'd like
  - 9 to try that this morning?
  - 10 Okay, Aniyah? When someone's presenting at the
  - 11 board, what should you be doing?
  - 12 Students: Looking at them.
  - 13 Teacher: Looking at that person- Uh-huh?
  - 14 Aniyah: You want me to write it?
  - 15 Teacher: You're trying to mark what you think this number is and
  - 16 explain how you figured it out.
  - 17 Listen closely and see what you think about her
  - 18 reasoning and her answer. (Aniyah writes  $\frac{1}{7}$  by the
  - 19 orange line).
  - 20 Aniyah: I put one-seventh because there's-
  - 21 Toni: Did she say one-seventh?
  - 22 Aniyah: Yeah. Because there's seven equal parts, like one, two,
  - 23 three, four, five, six, and then seven. (Uses her fingers
  - 24 to count the parts on the number line).
  - 25 Teacher: Before you agree or disagree, I want you to ask
  - 26 questions if there's something you don't understand
  - 27 about what she did.

28 No agreeing and disagreeing. Just- All you can do right  
29 now is ask Aniyah questions. Who has a question for  
30 her?  
31 Okay, Toni, what's your question for her?  
32 Toni: Why did-  
33 Teacher: Go ahead, it's your turn.  
34 Toni: Why did you pick one-seventh?  
35 Student: You did not.  
36 Teacher: Let's listen to her answer now. That was a very good  
37 question. Can you show us again how you figured that-  
38 why you decided one-seventh?  
39 Aniyah: First, I thought it might be seven because there's seven  
40 equal parts.  
41 Teacher: Did you write one-seventh? I can't see very well from  
42 here.  
43 Aniyah: Uh-huh. Yes.  
44 Teacher: Yes? Okay.  
45 Okay, anymore questions for Aniyah? In a moment,  
46 we're going to talk about what you think about her  
47 answer, but first, are there any more questions where  
48 you're not sure what she said, or you'd like to hear it  
49 again or something like that? Lakeya?  
50 Lakeya: If it start at the- Oh.  
51 Teacher: Talk to her, please.  
52 Lakeya: If you start at the zero, how did you get one-seventh?  
53 Aniyah: Well, I wasn't sure it was one-seventh, but first, I  
54 thought that the seven equal parts.  
55 Teacher: Okay, would some- You'd like to ask another question,  
56 Dante?  
57 Dante: Yeah.  
58 Teacher: Yes, what?  
59 Dante: So, if it's at the zero, how did you know that if like if I  
60 took it and put it at the- Hold on. Which line is- What  
61 if it didn't like- What if the orange line wasn't there,  
62 and you had to put it where the one is? What if the  
63 orange line wasn't there? And how would you still know  
64 it was one-seventh to put it where the orange line is  
65 now?  
66 Aniyah: I don't know.  
67 Teacher: Okay. Does everyone understand how Aniyah was  
68 thinking?  
69 Student: Yes.  
70 Teacher: Yes? Okay. You can sit down now. We're going to try  
71 to get people to comment. Do you want to take  
72 comments up there? Would you like to stand there and  
73 take the comments, or do you want to sit down and  
74 listen to the discussion?  
75 Teacher: What would you prefer?  
76 Aniyah: Sit down.  
77 Teacher: Sit- You'd like to sit down? Okay. So let's talk about  
78 her answer. Does someone else want to explain why  
79 it's one-seventh in your own way? Or does anyone  
80 have a different answer you'd like to give? Who'd like  
81 to say something now?  
82 Okay, Katherine, do you want to go up?  
83 Katherine: Yeah, I think it's one-fourth.  
84 Teacher: Why don't you come up?  
85 Where are your eyes supposed to be?  
86 Student: Looking at the teacher.  
87 Katherine: Am I doing the right answer at least?  
88 Teacher: Yeah, you can mark it and explain your thinking.  
89 So I'm going to put Aniyah's name- Is everyone's eyes-  
90 Are everyone's eyes up here?  
91 Student: Yes.



92	Teacher:	Dante, up here.	125		
93		So, this is Aniyah. ( <i>Writes Aniyah by <math>\frac{1}{7}</math></i> ). Okay, now	126		
94		Katherine is going to explain her thinking.	127		<i>the tick marks on the number line as the parts, then counts the tick mark at the 0 as one and the tick mark at one-third as two).</i>
95		It's Katherine's turn right now. Dante? Dante? Look	128	Teacher:	Okay. Questions, all you can do right now is ask
96		up there, please. Thank you.	129		questions. You can't agree or disagree. Does anyone
97	Katherine:	I think it's one-fourth because this is one whole and	130		want to know- ask her any questions about how she
98		there's one, two, three- and there's four equal parts.	131		came up with two-fourths. Actually, let's try, maybe- I
99		( <i>Points to the 1 as the whole, then counts the tick</i>	132		have one question here, and then I have a question for
100		<i>marks from 0 to 1 as the parts on the number line</i> ).	133		the class. In a moment, I'm going to ask you to explain
101	Teacher:	So you can write one-fourth. You can write it right	134		Katherine's reasoning. So Dante is asking a question
102		here. ( <i>Katherine writes <math>\frac{1}{4}</math> by the orange line</i> ).	135		now.
103		Jai wan? Shh.	136	Dante:	How did you know- I mean- yeah- why did you think
104		Okay, so this is Aniyah's and this is Katherine's. ( <i>Writes</i>	137		that her answer was wrong and how did you- why did
105		<i>Katherine by <math>\frac{1}{4}</math></i> ).	138		you think it was two-fourths and how did you get two-
106	Katherine:	I think it's one-fourth-	139		fourths from one-seventh?
107	Teacher:	Talk to the class.	140	Katherine:	I thought it was two-fourths because over here it has
108		Can everyone be listening to Katherine and make sure	141		like two wholes, and we only want one whole, and
109		you understand her reasoning?	142		there's one, two, three- ( <i>Points to the 2 as two wholes,</i>
110	Katherine:	It's two-fourths. ( <i>Writes a 2 over the 1 in <math>\frac{1}{4}</math> to make it</i>	143		<i>then counts the tick marks on the number line as parts</i>
111		<i><math>\frac{2}{4}</math></i> ). Oh wait, no. Wait. Yeah, it's two-fourths.	144		<i>between 0 and 1</i> ). And there's four parts equaling one
112	Teacher:	Katherine thinks it's one-fourth. Tell us one more time	145		whole, so- And there's kind of like one, two, and these
113		why.	146		two parts are together, so it's kind of like two-fourths.
114	Katherine:	Well, I switched my mind, it's two-fourths.	147		( <i>Counts the tick mark at the 0 as one and the tick mark</i>
115	Teacher:	You did just change your mind?	148		<i>at one-third as two</i> ).
116	Katherine:	Yeah.	149	Teacher:	Dante, did you understand what she said?
117	Teacher:	Okay. You can change the number, and then tell us	150	Dante:	Yes.
118		your thinking.	151	Teacher:	Can you explain it?
119	Katherine:	Okay.	152	Dante:	She said that two parts- So, what she did is- Okay, I
120	Teacher:	Cross it off and write the number you think it is then.	153		wasn't listening.
121		( <i>Katherine crosses off <math>\frac{2}{4}</math> and writes <math>\frac{2}{4}</math> next to it</i> ).	154	Teacher:	Okay, well, that's a problem because you asked a great
122	Katherine:	I think it's two-fourths because there are two parts-	155		question, but you didn't listen carefully to the answer.
123		there are four parts in total, and these two parts are-	156		Can someone explain how Katherine got two-fourths?
124		and this is like one and two, so two-fourths. ( <i>Points to</i>	157		Okay, Lakeya?
			158	Lakeya:	Because it is like you start from the zero, and that's
			159		one-fourth, and then where the orange arrow is, that's
			160		two-fourths, because it's four parts until you get to
			161		four-fourths, which is equal to one.

162	Teacher:	Okay. And you counted the lines? The one at the zero and the one at the one-fourth? Okay.	196		the zero's line in there, so like I kinda like one, two, three. ( <i>Points to the tick mark at 0, then counts the three parts between 0 and 1</i> ).
163			197		
164	Katherine:	Yes.	198		
165	Teacher:	Two-fourths.	199	Teacher:	Just a second. A little bit hard to hear right now because he's the one presenting. Okay?
166			200		
167		Okay, so now, I'm going to just make these numbers a little bigger- No talking over here, girls, okay? Look up at the board.	201		
168			202		Could you do that again? And can you speak to the class when you're presenting, please?
169		So, Katherine says- I'm going to make this a little darker- Two-fourths, and Aniyah says one-seventh.	203	Jamari:	Uh-huh. I think it's one-third because I did not count the zero, and I also counted like one, two, three. ( <i>Counts the three parts between 0 and 1</i> ).
170			204		
171	Katherine:	Can I go sit?	205		
172	Teacher:	You can- You want this?	206	Teacher:	Could you show us the one, two, three that you're looking at?
173	Katherine:	No, I'm like can I go-	207		
174	Teacher:	You can sit down. Okay, who'd like to- Who'd like to share another possibility of what the number at the orange would be?	208	Jamari:	Like one, two, three. ( <i>Counts the tick marks at one-third, two-thirds, and one on the number line</i> ).
175			209		
176			210	Teacher:	Okay. And then what? How did you decide that it was one-third?
177		So, Aniyah got one-seventh by counting equal parts like this. ( <i>Points to the parts on the number line</i> ).	211		
178			212	Jamari:	I decided it was one-third 'cause I counted like the one 'cause I don't count zero 'cause I-
179		Katherine got two-fourths by counting fourths. ( <i>Points to the tick marks on the number line between 0 and 1</i> ).	213		
180			214	Teacher:	Okay, questions for Jamari?
181		She said this is the whole. ( <i>Points to the region between 0 and 1 on the number line</i> ). And then she counted four parts and counted one-fourth, two-fourths. ( <i>Counts the tick mark at the 0 as one-fourth and the tick mark at one-third as two-fourths</i> ).	215		
182			216		Dante, let's have someone else ask a question this time. Who has a question for Jamari?
183			217		Marcus?
184			218	Marcus:	How'd you know like to skip the zero?
185			219	Jamari:	Because like on the steps for naming a fraction correctly, it shows that D cannot equal zero, so I thought like on a number line like zero would just not count.
186		So that's two different possible numbers. Who has a different number you think could go there and could explain your reasoning?	220		
187			221		
188			222		
189		Okay. Jamari, can you go up?	223	Teacher:	Did you understand what he said?
190		Listen carefully to Jamari's number and his reasoning.	224	Marcus:	Uh-huh.
191	Jamari:	I think it's one-third. ( <i>Writes <math>\frac{1}{3}</math> on the poster</i> ).	225	Teacher:	Okay, so let's stop for a minute. We have three different answers up here. Kennedy, did you want to say something?
192	Teacher:	Okay, are you ready to explain your reasoning, Jamari?	226		
193		Can you explain your reasoning to the class?	227		
194	Jamari:	'Cause I- at first I thought it was like one-half or something like 'cause I didn't really count the zero, like			
195					

228 Kennedy: Why did you think like- Did you have to- You said that  
229 you can't count the zero, then that means you can't  
230 count the one, right? So you only-

231 Jamari: You can count the one 'cause the one is one. It's one  
232 whole.

233 Kennedy: Alright.

234 Dante: So how did-

235 Teacher: Okay, Dante?

236 Dante: How did you know to sk- I mean, what if you didn't  
237 skip the zero?

238 Jamari: If I didn't skip the zero, it would be one-fourth.

## References

- Adichie, C. N. (2009, July). *The danger of a single story* [TEDGlobal 2009].  
[https://www.ted.com/talks/chimamanda\\_adichie\\_the\\_danger\\_of\\_a\\_single\\_story?language=en](https://www.ted.com/talks/chimamanda_adichie_the_danger_of_a_single_story?language=en)
- Aguirre, J. M., Mayfield-Ingram, K., & Martin, D. B. (2013). *The impact of identity in K-8 mathematics: Rethinking equity-based practices*. The National Council of Teachers of Mathematics, Inc.
- Aguirre, J. M., Turner, E. E., Bartell, T. G., Kalinec-Craig, C., Foote, M. Q., Roth McDuffie, A., & Drake, C. (2013). Making connections in practice: How prospective elementary teachers connect to children's mathematical thinking and community funds of knowledge in mathematics instruction. *Journal of Teacher Education*, 64(2), 178–192.  
<https://doi.org/10.1177/0022487112466900>
- Aguirre, J. M., Zavala, M. del R., & Katanyoutanant, T. (2012). Developing robust forms of pre-service teachers' pedagogical content knowledge through culturally responsive mathematics teaching analysis. *Mathematics Teacher Education and Development*, 14(2), 113–136.
- Alsup, J. (2006). *Teacher identity discourses: Negotiating personal and professional spaces*. Lawrence Erlbaum Associates, Inc.
- Ambady, N., Shih, M., Kim, A., & Pittinsky, T. L. (2001). Stereotype susceptibility in children: Effects of identity activation on quantitative performance. *Psychological Science*, 12(5), 385–390. <https://doi.org/10.1111/1467-9280.00371>
- Ambrose, R. (2004). Initiating change in prospective elementary school teachers' orientations to mathematics teaching by building on beliefs. *Journal of Mathematics Teacher Education*, 7(2), 91–119. <https://doi.org/10.1023/B:JMTE.0000021879.74957.63>
- Ambrose, R., Clement, L., Philipp, R., & Chauvot, J. (2004). Assessing prospective elementary school teachers' beliefs about mathematics and mathematics learning: Rationale and development of a constructed-response-format beliefs survey. *School Science and Mathematics*, 104(2), 56–69.
- Amos, Y. T. (2016). Voices of teacher candidates of color on white race evasion: 'I worried about my safety!' *International Journal of Qualitative Studies in Education*, 29(8), 1002–1015. <https://doi.org/10.1080/09518398.2016.1174900>
- Andone, D., McLaughlin, E. C., Spells, A., & Sayers, D. M. (2022, January 8). *Ahmaud Arbery's killers sentenced to life in prison for 25-year-old Black man's murder*. CNN.

<https://www.cnn.com/2022/01/07/us/ahmaud-arbery-sentencing-killers-mcmichael-bryan/index.html>

Annamma, S. A., Jackson, D. D., & Morrison, D. (2017). Conceptualizing color-evasiveness: Using dis/ability critical race theory to expand a color-blind racial ideology in education and society. *Race Ethnicity and Education*, 20(2), 147–162.  
<https://doi.org/10.1080/13613324.2016.1248837>

Annamma, S., & Morrison, D. (2018). Identifying dysfunctional education ecologies: A DisCrit analysis of bias in the classroom. *Equity & Excellence in Education*, 1–18.  
<https://doi.org/10.1080/10665684.2018.1496047>

Apollon, D. (2011). *Don't call them "post-racial": Millennials' attitudes on race, racism and key systems in our society*. Applied Research Center.

Appiah, K. A. (2020, June 18). The case for capitalizing the “B” in Black. *The Atlantic*.  
<https://www.theatlantic.com/ideas/archive/2020/06/time-to-capitalize-blackand-white/613159/>

Aronson, B. A. (2017). The white savior industrial complex: A cultural studies analysis of a teacher educator, savior film, and future teachers. *Journal of Critical Thought and Praxis*, 6(3), 9270485. <https://doi.org/10.31274/jctp-180810-83>

Artiles, A. J. (2011). Toward an interdisciplinary understanding of educational equity and difference: The case of the racialization of ability. *Educational Researcher*, 40(9), 431–445. <https://doi.org/10.3102/0013189X11429391>

Association of Mathematics Teacher Educators. (2017). *Standards for preparing teachers of mathematics* (p. 199). [amte.net/standards](http://amte.net/standards)

Atkins, T. D. (2020). #ForTheCulture: Generation Z and the future of legal education. *Michigan Journal of Race & Law*, 26(1), 115–170.

Au, W. (2016). Meritocracy 2.0: High-stakes, standardized testing as a racial project of neoliberal multiculturalism. *Educational Policy*, 30(1), 39–62.  
<https://doi.org/10.1177/0895904815614916>

Averill, R., Anderson, D., Easton, H., Maro, P. T., Smith, D., & Hynds, A. (2009). Culturally responsive teaching of mathematics: Three models from linked studies. *Journal for Research in Mathematics Education*, 157–186.

Ball, D. L. (1988a). *Knowledge and reasoning in mathematical pedagogy: Examining what prospective teachers bring to teacher education* [Dissertation]. Michigan State University.

Ball, D. L. (1988b). Unlearning to teach mathematics. *For the Learning of Mathematics*, 8(1), 40–48.

- Ball, D. L. (1989). *Breaking with experience in learning to teach mathematics: The role of a preservice methods course* (pp. 1–16). National Center for Research on Teacher Education.
- Ball, D. L. (1993). With an eye on the mathematical horizon: Dilemmas of teaching elementary school mathematics. *The Elementary School Journal*, 373–397.
- Ball, D. L. (2018, April 15). *Just dreams and imperatives: The power of teaching in the struggle for public education*. American Education Research Association Presidential Address, New York, NY.
- Ball, D. L., & Cohen, D. K. (1999). Developing practice, developing practitioners: Toward a theory of professional education. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the learning profession: Handbook of policy and practice* (pp. 3–32). Jossey-Bass.
- Ball, D. L., & Forzani, F. M. (2009). The work of teaching and the challenge for teacher education. *Journal of Teacher Education*, 60(5), 497–511.  
<https://doi.org/10.1177/0022487109348479>
- Ball, D. L., Lubienski, S., & Mewborn, D. (2001). Research on teaching mathematics: The unsolved problem of teachers' mathematical knowledge. In V. Richardson (Ed.), *Handbook of research on teaching* (4th ed., pp. 433–456). Macmillan.
- Ball, D. L., Thames, M. H., & Phelps, G. (2008). Content knowledge for teaching: What makes it special? *Journal of Teacher Education*, 59(5), 389–407.  
<https://doi.org/10.1177/0022487108324554>
- Ball, D. L., & Wilson, S. M. (1996). Integrity in teaching: Recognizing the fusion of the moral and intellectual. *American Educational Research Journal*, 33(1), 155–192.
- Banaji, M. R., & Greenwald, A. G. (2013). *Blindspot: Hidden biases of good people*. Bantam Books.
- Banks, J. A. (2009). Multicultural education: Dimensions and paradigms. In J. A. Banks (Ed.), *The Routledge international companion to multicultural education*. Taylor & Francis Group.
- Barker, C., & Jane, E. A. (2016). *Cultural studies: Theory and practice* (5th ed.). SAGE Publications Ltd.
- Bartell, T. G. (2011). Caring, race, culture, and power: A research synthesis toward supporting mathematics teachers in caring with awareness. *Journal of Urban Mathematics Education*, 4(1), 50–74.
- Bartell, T. G. (2013). Learning to teach mathematics for social justice: Negotiating social justice and mathematical goals. *Journal for Research in Mathematics Education*, 44(1), 129.  
<https://doi.org/10.5951/jresematheduc.44.1.0129>

- Bartell, T., Wager, A., Edwards, A., Battey, D., Foote, M., & Spencer, J. (2017). Toward a framework for research linking equitable teaching with the Standards for Mathematical Practice. *Journal for Research in Mathematics Education*, 48(1), 7–21.  
<https://doi.org/10.5951/jresmetheduc.48.1.0007>
- Battey, D., & Franke, M. (2015). Integrating professional development on mathematics and equity: Countering deficit views of students of color. *Education and Urban Society*, 47(4), 433–462.
- Battey, D., & Leyva, L. A. (2016). A framework for understanding whiteness in mathematics education. *Journal of Urban Mathematics Education*, 9(2), 49–80.
- Battey, D., & Leyva, L. A. (2018). Making the implicit explicit: Building a case for implicit racial attitudes to inform mathematics education research. In T. G. Bartell (Ed.), *Toward equity and social justice in mathematics education* (pp. 21–42). Springer.
- Battey, D., Leyva, L. A., Williams, I., Belizario, V. A., Greco, R., & Shah, R. (2018). Racial (mis)match in middle school mathematics classrooms: Relational interactions as a racialized mechanism. *Harvard Educational Review*, 88(4), 455–482.  
<https://doi.org/10.17763/1943-5045-88.4.455>
- Beauchamp, C., & Thomas, L. (2009). Understanding teacher identity: An overview of issues in the literature and implications for teacher education. *Cambridge Journal of Education*, 39(2), 175–189. <https://doi.org/10.1080/03057640902902252>
- Bell, D. (1992). *Faces at the bottom of the well: The permanence of racism*. Basic Books.
- Bell, L. A. (2002). Sincere fictions: The pedagogical challenges of preparing white teachers for multicultural classrooms. *Equity & Excellence in Education*, 35(3), 236–244.  
<https://doi.org/10.1080/713845317>
- Berchini, C. (2016). Structuring contexts: Pathways toward un-obstructing race-consciousness. *International Journal of Qualitative Studies in Education*, 29(8), 1030–1044.  
<https://doi.org/10.1080/09518398.2016.1189620>
- Berliner, D. (2011). Rational responses to high stakes testing: The case of curriculum narrowing and the harm that follows. *Cambridge Journal of Education*, 41(3), 287–302.  
<https://doi.org/10.1080/0305764X.2011.607151>
- Best, A. L. (2003). Doing race in the context of feminist interviewing: Constructing whiteness through talk. *Qualitative Inquiry*, 9(6), 895–914.  
<https://doi.org/10.1177/1077800403254891>
- Bishop, A. J. (1988). *Mathematical enculturation: A cultural perspective on mathematics education*. Kluwer Academic Publishers.

- Bloome, D., Carter, S. P., Christian, B. M., Otto, S., & Shuart-Faris, N. (2010). *Discourse analysis and the study of classroom language and literacy events: A microethnographic approach*. Routledge.
- Boaler, J. (2002). *Experiencing school mathematics: Traditional and reform approaches to teaching and their impact on student learning* (Revised and expanded edition). Lawrence Erlbaum Associates, Publishers.
- Boaler, J. (2016). *Mathematical mindsets*. Jossey-Bass.
- Boaler, J., & Staples, M. (2008). Creating mathematical futures through an equitable teaching approach: The case of Railside School. *Teachers College Record*, 110(3), 608–645.
- Bobis, J., Way, J., Anderson, J., & Martin, A. J. (2016). Challenging teacher beliefs about student engagement in mathematics. *Journal of Mathematics Teacher Education*, 19(1), 33–55. <https://doi.org/10.1007/s10857-015-9300-4>
- Boerst, T. A., Shaughnessy, M., DeFino, R., Blunk, M., Farmer, S. O., Pfaff, E., & Pynes, D. (2020). Preparing teachers to formatively assess: Connecting the initial capabilities of preservice teachers with visions of teaching practice. In C. Martin, D. Polly, & R. Lambert (Eds.), *Handbook of Research on Formative Assessment in Pre-K Through Elementary Classrooms*: (pp. 89–116). IGI Global. <https://doi.org/10.4018/978-1-7998-0323-2>
- Bonds, M., Farmer-Hinton, R. L., & Epps, E. G. (2009). African Americans' continuing struggle for quality education in Milwaukee, Wisconsin. *The Journal of Negro Education*, 78(1), 55–69.
- Bonilla-Silva, E. (1997). Rethinking racism: Toward a structural interpretation. *American Sociological Review*, 62(3), 465. <https://doi.org/10.2307/2657316>
- Bonilla-Silva, E. (2001). *White supremacy and racism in the post-civil rights era*. Lynne Rienner Publishers, Inc.
- Bonilla-Silva, E. (2002). The linguistics of color blind racism: How to talk nasty about Blacks without sounding “racist.” *Critical Sociology*, 28(1–2), 41–64.
- Bonilla-Silva, E. (2015). The structure of racism in color-blind, “post-racial” America. *American Behavioral Scientist*, 59(11), 1358–1376. <https://doi.org/10.1177/0002764215586826>
- Bonilla-Silva, E. (2018). *Racism without racists: Color-blind racism and the persistence of racial inequality in the America* (5th ed.). Rowman and Littlefield.
- Bonilla-Silva, E. (2019). “Racists,” “class anxieties,” hegemonic racism, and democracy in Trump’s America. *Social Currents*, 6(1), 14–31. <https://doi.org/10.1177/2329496518804558>



- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77–101. <https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. M. Camic, D. L. Long, A. T. Panter, D. Rindskopf, & K. J. Sher (Eds.), *APA handbook of research methods in psychology, Vol 2: Research designs* (pp. 57–71). American Psychological Association. <https://doi.org/10.1037/13620-004>
- Britzman, D. P. (2003). *Practice makes practice: A critical study of learning to teach* (Revised). State University of New York Press.
- Brown, A., & Reed, N. (2017). Doing Whiteness in the classroom: White liberal pedagogy and the impossibility of antiracist subjectivity. In *White women's work: Examining the intersectionality of teaching, identity, and race* (pp. 87–106). Information Age Publishing, Inc.
- Brown, G. (2017). The Millennials (Generation Y): Segregation, integration and racism. *The ABNF Journal, 28*(1), 5–8.
- Brown, K. D. (2013). Trouble on my mind: Toward a framework of humanizing critical sociocultural knowledge for teaching and teacher education. *Race Ethnicity and Education, 16*(3), 316–338. <https://doi.org/10.1080/13613324.2013.832921>
- Brown, K. D. (2018). Race as a durable and shifting idea: How black millennial preservice teachers understand race, racism, and teaching. *Peabody Journal of Education, 93*(1), 106–120. <https://doi.org/10.1080/0161956X.2017.1403183>
- Brown, K. D., & Brown, A. L. (2019). Does teacher education matter? *Teachers College Record: The Voice of Scholarship in Education, 121*(6), 1–4. <https://doi.org/10.1177/016146811912100611>
- Bruce-Raeburn, A. (2021, February 9). *Opinion: Why diversity, equity, and inclusion alone won't dismantle structural racism in globaldev*. Devex. <https://www.devex.com/news/opinion-why-diversity-equity-and-inclusion-alone-won-t-dismantle-structural-racism-in-globaldev-98984>
- Bullock, E. C. (2017). Only STEM can save us? Examining race, place, and STEM education as property. *Educational Studies, 53*(6), 628–641. <https://doi.org/10.1080/00131946.2017.1369082>
- Bullock, E. C. (2018). Intersectional analysis in critical mathematics education research: A response to figure hiding. *Review of Research in Education, 42*, 122–145. <https://doi.org/10.3102/0091732X18759039>
- Carey, S. (2000). Science education as conceptual change. *Journal of Applied Developmental Psychology, 21*(1), 13–19.

- Carter Andrews, D. J., Castro, E., Cho, C. L., Petchauer, E., Richmond, G., & Floden, R. (2019). Changing the narrative on diversifying the teaching workforce: A Look at historical and contemporary factors that inform recruitment and retention of teachers of color. *Journal of Teacher Education*, 70(1), 6–12. <https://doi.org/10.1177/0022487118812418>
- Case, K. A., & Hemmings, A. (2005). Distancing strategies: White women preservice teachers and antiracist curriculum. *Urban Education*, 40(6), 606–626. <https://doi.org/10.1177/0042085905281396>
- Castagno, A. E. (2008). “I don’t want to hear that!”: Legitimizing whiteness through silence in schools. *Anthropology & Education Quarterly*, 39(3), 314–333. <https://doi.org/10.1111/j.1548-1492.2008.00024.x>
- Cazden, C. B., & Beck, S. W. (2003). Classroom discourse. In A. C. Graesser, M. A. Gernsbacher, & S. R. Goldman (Eds.), *Handbook of discourse processes* (pp. 165–198). Lawrence Erlbaum Associates, Inc.
- CDC. (2020, December 10). *Introduction to COVID-19 racial and ethnic health disparities*. Centers for Disease Control and Prevention. <https://www.cdc.gov/coronavirus/2019-ncov/community/health-equity/racial-ethnic-disparities/index.html>
- Charalambous, C. Y. (2015). Working at the intersection of teacher knowledge, teacher beliefs, and teaching practice: A multiple-case study. *Journal of Mathematics Teacher Education*, 18(5), 427–445. <https://doi.org/10.1007/s10857-015-9318-7>
- Charmaz, K. (2004). Grounded theory. In S. N. Hesse-Biber & P. Leavy (Eds.), *Approaches to Qualitative Research* (pp. 496–521).
- Cho, J., & Trent, A. (2006). Validity in qualitative research revisited. *Qualitative Research*, 6(3), 319–340. <https://doi.org/10.1177/1468794106065006>
- Chou, V., & Tozer, S. (2008). What’s urban got to do with it? The meanings of “urban” in urban teacher preparation and development. In F. P. Peterman (Ed.), *Partnering to prepare urban teachers: A call to activism* (pp. 1–20). Peter Lang Publishing.
- Cineas, F. (2020, July 16). Protests for Black lives are still happening. *Vox*. <https://www.vox.com/2020/7/16/21325275/black-lives-matter-protests-are-still-happening>
- Clark, L. M., DePiper, J. N., Frank, T. J., Nishio, M., Campbell, P. F., Smith, T. M., Griffin, M. J., Rust, A. H., Conant, D. L., & Choi, Y. (2014). Teacher characteristics associated with mathematics teachers’ beliefs and awareness of their students’ mathematical dispositions. *Journal for Research in Mathematics Education*, 45(2), 246–284.
- Clotfelter, C. T., Ladd, H. F., & Vigdor, J. (2005). Who teaches whom? Race and the distribution of novice teachers. *Economics of Education Review*, 24(4), 377–392. <https://doi.org/10.1016/j.econedurev.2004.06.008>

- Cochran-Smith, M. (1991). Learning to teach against the grain. *Harvard Educational Review*, 61(3), 279–311. <https://doi.org/10.17763/haer.61.3.q671413614502746>
- Cochran-Smith, M. (2000). Blind vision: Unlearning racism in teacher education. *Harvard Educational Review*, 70(2), 157–190.
- Cochran-Smith, M. (2003). The multiple meanings of multicultural teacher education: A conceptual framework. *Teacher Education Quarterly*, 7–26.
- Cochran-Smith, M. (2010). Toward a theory of teacher education for social justice. In A. Hargreaves, A. Lieberman, M. Fullan, & D. Hopkins (Eds.), *Second International Handbook of Educational Change* (pp. 445–467). Springer Netherlands. [https://doi.org/10.1007/978-90-481-2660-6\\_27](https://doi.org/10.1007/978-90-481-2660-6_27)
- Cochran-Smith, M., & Fries, K. (2005). Researching teacher education in changing times: Politics and paradigms. In M. Cochran-Smith & K. M. Zeichner (Eds.), *Studying teacher education: The report of the AERA panel on research and teacher education* (pp. 69–110). Lawrence Erlbaum Associates, Inc.
- Cochran-Smith, M., Villegas, A. M., Abrams, L., Chavez-Moreno, L., Mills, T., & Stern, R. (2015). Critiquing teacher preparation research: An overview of the field, part II. *Journal of Teacher Education*, 66(2), 13.
- Cohen, C. J., Fowler, M., Medenica, V. E., & Rogowski, J. C. (2017). *The “woke” generation? Millennial attitudes on race in the US* (p. 45). GenForward University of Chicago.
- Cohen, D. K. (1990). A revolution in one classroom: The case of Mrs. Oublier. *Educational Evaluation and Policy Analysis*, 12(3), 311–329. <https://doi.org/10.2307/1164355>
- Cohen, D. K. (2011). *Teaching and its predicaments*. Harvard University Press.
- Cohen, D. K., Raudenbush, S. W., & Ball, D. L. (2003). Resources, instruction, and research. *Educational Evaluation and Policy Analysis*, 25(2), 119–142.
- Cohen, E. G., & Lotan, R. A. (1995). Producing equal-status interaction in the heterogeneous classroom. *American Educational Research Journal*, 32(1), 99–120.
- Cohen, E. G., Lotan, R. A., Scarloss, B. A., & Arellano, A. R. (1999). Complex instruction: Equity in cooperative learning classrooms. *Theory Into Practice*, 38(2), 80–86. <https://doi.org/10.1080/00405849909543836>
- Collins, P. H. (1998). It’s all in the family: Intersections of gender, race, and nation. *Hypatia*, 13(3), 62–82. <https://doi.org/10.1111/j.1527-2001.1998.tb01370.x>
- Consuegra, E., Engels, N., & Willegems, V. (2016). Using video-stimulated recall to investigate teacher awareness of explicit and implicit gendered thoughts on classroom interactions. *Teachers and Teaching*, 22(6), 683–699. <https://doi.org/10.1080/13540602.2016.1158958>

- Cooney, T. J., Shealy, B. E., & Arvold, B. (1998). Conceptualizing belief structures of preservice secondary mathematics teachers. *Journal for Research in Mathematics Education*, 29(3), 306. <https://doi.org/10.2307/749792>
- Copur-Gencturk, Y., Cimpian, J. R., Lubienski, S. T., & Thacker, I. (2020). Teachers' bias against the mathematical ability of female, Black, and Hispanic Students. *Educational Researcher*, 49(1), 30–43. <https://doi.org/10.3102/0013189X19890577>
- Coughlan, R. W. (2018). Divergent trends in neighborhood and school segregation in the age of school choice. *Peabody Journal of Education*, 93(4), 349–366. <https://doi.org/10.1080/0161956X.2018.1488385>
- Crenshaw, K. (1989). Demarginalizing the intersection of race and sex: A Black feminist critique of antidiscrimination doctrine, feminist theory, and antiracist politics. *University of Chicago Legal Forum*, 1989(1), 139–167.
- Cross, B. E. (2005). New racism, reformed teacher education, and the same ole' oppression. *Educational Studies*, 38(3), 263–274. [https://doi.org/10.1207/s15326993es3803\\_6](https://doi.org/10.1207/s15326993es3803_6)
- Cvencek, D., Meltzoff, A. N., & Greenwald, A. G. (2011). Math-gender stereotypes in elementary school children: Gender stereotypes. *Child Development*, 82(3), 766–779. <https://doi.org/10.1111/j.1467-8624.2010.01529.x>
- D'Ambrosio, U. (1985). Ethnomathematics and its place in the history and pedagogy of mathematics. *For the Learning of Mathematics*, 5(1), 44–48.
- Daniszewski, J. (2020, July 20). Why we will lowercase white. *The Associated Press: The Definitive Source*. <https://blog.ap.org/announcements/why-we-will-lowercase-white>
- Darby, D., & Rury, J. L. (2018). *The color of mind: Why the origins of the achievement gap matter for justice*. The University of Chicago Press.
- Davies, B., & Harré, R. (1990). Positioning: The discursive production of selves. *Journal for the Theory of Social Behaviour*, 20(1), 43–63. <https://doi.org/10.1111/j.1468-5914.1990.tb00174.x>
- Davis, J., & Martin, D. B. (2008). Racism, assessment, and instructional practices: Implications for mathematics teachers of African American students. *Journal of Urban Mathematics Education*, 1(1), 10–34.
- de Freitas, E. (2008). Troubling teacher identity: Preparing mathematics teachers to teach for diversity. *Teaching Education*, 19(1), 43–55. <https://doi.org/10.1080/10476210701860024>
- de Freitas, E., & Sinclair, N. (2014). *Mathematics and the body: Material entanglements in the classroom*. Cambridge University Press.

- DeCuir, J. T., & Dixson, A. D. (2004). “So when it comes out, they aren’t that surprised that it is there”: Using critical race theory as a tool of analysis of race and racism in education. *Educational Researcher*, 33(5), 26–31.
- Delpit, L. (2012). *“Multiplication is for white people”*: Raising expectations for other people’s children. The New Press.
- Dewey, J. (1938). *Experience and education*. Simon and Schuster.
- DiAngelo, R. (2010). Why can’t we all just be individuals?: Countering the discourse of individualism in anti-racist education. *Interactions: UCLA Journal of Education and Information Studies*, 6(1).
- DiAngelo, R. (2018). *White fragility: Why it’s so hard for white people to talk about racism*. Beacon Press.
- Diversity in Mathematics Education Center (DiME). (2007). Culture, race, power, and mathematics education. In F. K. Lester, Jr. (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 405–434). Information Age Publishing.
- Domínguez, M. (2020). Cultivating epistemic disobedience: Exploring the possibilities of a decolonial practice-based teacher education. *Journal of Teacher Education*, 002248712097815. <https://doi.org/10.1177/0022487120978152>
- Dumas, M. J. (2016). Against the dark: Antiblackness in education policy and discourse. *Theory Into Practice*, 55(1), 11–19. <https://doi.org/10.1080/00405841.2016.1116852>
- Dunleavy, T. K. (2015). Delegating mathematical authority as a means to strive toward equity. *Journal of Urban Mathematics Education*, 8(1), 62–82.
- Dutro, E., & Cartun, A. (2016). Cut to the core practices: Toward visceral disruptions of binaries in PRACTICE-based teacher education. *Teaching and Teacher Education*, 58, 119–128. <https://doi.org/10.1016/j.tate.2016.05.001>
- Dyson, A. H., & Genishi, C. (2005). *On the case: Approaches to language and literacy research*. Teachers College Press.
- Elliott, V. (2018). Thinking about the coding process in qualitative data analysis. *The Qualitative Report*. <https://doi.org/10.46743/2160-3715/2018.3560>
- Epstein, R., Blake, J. J., & González, T. (2017). *Girlhood interrupted: The erasure of Black girls’ childhood*. Georgetown Law Center on Poverty and Inequality.
- Epstein, S. E. (2019). Voices of ambivalence: White teachers’ reflections on race talk. *The Urban Review*, 51(3), 477–502. <https://doi.org/10.1007/s11256-019-00497-3>
- Erickson, F. (1986). Qualitative methods in research on teaching. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (Third, pp. 119–161). Simon and Schuster Macmillan.

- Erickson, F. (2006). Definition and analysis of data from videotape: Some research procedures and their rationales. In A. Skukauskaitė, E. Grace, G. Camilli, J. L. Green, & P. B. Elmore (Eds.), *Handbook of complementary methods in education research* (3rd ed., pp. 177–192).
- Evans-Winters, V. E., & Twyman Hoff, P. (2011). The aesthetics of White racism in pre-service teacher education: A critical race theory perspective. *Race Ethnicity and Education, 14*(4), 461–479. <https://doi.org/10.1080/13613324.2010.548376>
- Ewing, E. L. (2020, July 2). I'm a Black scholar who studies race. Here's why I capitalize 'White.' *Zora*. <https://zora.medium.com/im-a-black-scholar-who-studies-race-here-s-why-i-capitalize-white-f94883aa2dd3>
- Fasching-Varner, K. J. (2013). “Uhh, you know,” don't you?: White racial bonding in the narrative of white pre-service teachers. *Educational Foundations, Summer-Fall*, 21–41.
- Featherstone, H., Crespo, S., Jilk, L., Oslund, J., Parks, A., & Wood, M. (2011). *Smarter together! Collaboration and equity in the elementary math classroom*. National Council of Teachers of Mathematics.
- Feiman-Nemser, S. (2012). *Teachers as learners*. Harvard Education Press.
- Feiman-Nemser, S., & Remillard, J. (1005). *Perspectives on learning to teach* (p. 35). National Center for Research on Teaching, Michigan State University.
- Felton-Koestler, M. D. (2017). Mathematics education as sociopolitical: Prospective teachers' views of the What, Who, and How. *Journal of Mathematics Teacher Education, 20*(1), 49–74. <https://doi.org/10.1007/s10857-015-9315-x>
- Fennema, E., Peterson, P. L., Carpenter, T. P., & Lubinski, C. A. (1990). Teachers' attributions and beliefs about girls, boys, and mathematics. *Educational Studies in Mathematics, 21*(1), 55–69. <https://doi.org/10.1007/BF00311015>
- Ferguson, A. A. (2001). *Bad boys: Public schools in the making of black masculinity*. The University of Michigan Press.
- Flynn, J. E. (2015). White fatigue: Naming the challenge in moving from an individual to a systemic understanding of racism. *Multicultural Perspectives, 17*(3), 115–124. <https://doi.org/10.1080/15210960.2015.1048341>
- Foley, C. (2018, February 9). *School segregation: A modern issue* [Senior inquiry]. Celebration of Learning, Rock Island, IL. <https://digitalcommons.augustana.edu/celebrationoflearning/2018/presentations/21>
- Foote, M. Q., & Gau Bartell, T. (2011). Pathways to equity in mathematics education: How life experiences impact researcher positionality. *Educational Studies in Mathematics, 78*(1), 45–68. <https://doi.org/10.1007/s10649-011-9309-2>

- Foote, M. Q., Roth McDuffie, A., Turner, E. E., Aguirre, J. M., Bartell, T. G., & Drake, C. (2013). Orientations of prospective teachers toward students' family and community. *Teaching and Teacher Education, 35*, 126–136. <https://doi.org/10.1016/j.tate.2013.06.003>
- Forzani, F. M. (2014). Understanding “core practices” and “practice-based” teacher education: Learning from the past. *Journal of Teacher Education, 65*(4), 357–368.
- Frank, T. J., Powell, M. G., View, J. L., Lee, C., Bradley, J. A., & Williams, A. (2021). Exploring racialized factors to understand why Black mathematics teachers consider leaving the profession. *Educational Researcher, 50*(6), 381–391. <https://doi.org/10.3102/0013189X21994498>
- Frankenberg, R. (1993). *White women, race matters: The social construction of whiteness*. University of Minnesota Press.
- Frankenberg, R. (1997). Introduction: Local whitenesses, localizing whiteness. In R. Frankenberg (Ed.), *Displacing whiteness: Essays in social and cultural criticism*. Duke University Press.
- Gadd, R., Wilkes, C. E., & Ball, D. L. (in preparation). *Making the move: Exploring the work involved in teaching practices to disrupt patterns of oppression*.
- Gazdag, E., Nagy, K., & Szivák, J. (2019). “I spy with my little eyes...” The use of video stimulated recall methodology in teacher training – The exploration of aims, goals and methodological characteristics of VSR methodology through systematic literature review. *International Journal of Educational Research, 95*, 60–75. <https://doi.org/10.1016/j.ijer.2019.02.015>
- Gee, J. P. (1992). *The social mind: Language, ideology, and social practice*. Bergin & Garvey.
- Gee, J. P. (2012). *Social linguistics and literacies: Ideology in discourses* (4th ed.). Routledge.
- Gillespie, D., Ashbaugh, L., & Defiore, J. (2002). White women teaching white women about white privilege, race cognizance and social action: Toward a pedagogical pragmatics. *Race Ethnicity and Education, 5*(3), 237–253. <https://doi.org/10.1080/1361332022000004841>
- Girvan, E. J., Gion, C., McIntosh, K., & Smolkowski, K. (2017). The relative contribution of subjective office referrals to racial disproportionality in school discipline. *School Psychology Quarterly, 32*(3), 392–404. <https://doi.org/10.1037/spq0000178>
- Golash-Boza, T. (2016). A critical and comprehensive sociological theory of race and racism. *Sociology of Race and Ethnicity, 2*(2), 129–141. <https://doi.org/10.1177/2332649216632242>
- Goldin, S. (2010). *Studenting: An historical and sociological study* [Dissertation]. University of Michigan.

- Goldin, S., Khasnabis, D., & Atkins, S. (2018). Mining gems, nurturing relationships, building teacher practice. *School Community Journal*, 28(2), 189–212.
- Goldin, S., Khasnabis, D., O'Connor, C., & Hearn, K. (2021). Tangling with race and racism in teacher education: Designs for counterstory-based parent teacher conferences. *Urban Education*, 56(9), 1399–1428. <https://doi.org/10.1177/0042085919894042>
- Gomez, M. L. (2014). Examining discourses of an aspiring teacher of color in the figured world of schooling. *Teacher Education Quarterly*, 45–62.
- Goodwin, C. (1994). Professional vision. *American Anthropologist*, 96(3), 606–633.
- Gray, J. M. (2018, December 10). The limits of representation. *The Harvard Crimson*. <https://www.thecrimson.com/column/better-left-unsaid/article/2018/12/10/gray-limits-of-representation/>
- Gregory, A., & Roberts, G. (2017). Teacher beliefs and the overrepresentation of Black students in classroom discipline. *Theory Into Practice*, 56(3), 187–194. <https://doi.org/10.1080/00405841.2017.1336035>
- Grossman, P. (Ed.). (2018). *Teaching core practices in teacher education*. Harvard Education Press.
- Grossman, P., Compton, C., Igra, D., Ronfeldt, M., Shahan, E., & Williamson, P. W. (2009). Teaching practice: A cross-professional perspective. *Teachers College Record*, 111(9), 2055–2100.
- Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education. *Teachers and Teaching*, 15(2), 273–289. <https://doi.org/10.1080/13540600902875340>
- Grossman, P., & McDonald, M. (2008). Back to the future: Directions for research in teaching and teacher education. *American Educational Research Journal*, 45(1), 184–205. <https://doi.org/10.3102/0002831207312906>
- Grossman, P., & Pupik Dean, C. G. (2019). Negotiating a common language and shared understanding about core practices: The case of discussion. *Teaching and Teacher Education*, 80, 157–166. <https://doi.org/10.1016/j.tate.2019.01.009>
- Grossman, P., Smagorinsky, P., & Valencia, S. (1999). Appropriating tools for teaching English: A theoretical framework for research on learning to teach. *American Journal of Education*, 108(1), 1–29. <https://doi.org/10.1086/444230>
- Grossoehme, D., & Lipstein, E. (2016). Analyzing longitudinal qualitative data: The application of trajectory and recurrent cross-sectional approaches. *BMC Research Notes*, 9(1), 136. <https://doi.org/10.1186/s13104-016-1954-1>



- Guin, K. (2004). Chronic teacher turnover in urban elementary schools. *Education Policy Analysis Archives*, 12(42), 1–30.
- Gutiérrez, R. (2018). Why we need to rehumanize mathematics. In *Annual perspectives in mathematics education: Rehumanizing mathematics for students who are Black, Latinx, and Indigenous* (pp. 1–12). National Council of Teachers of Mathematics.
- Gutstein, E. (2003). Teaching and learning mathematics for social justice in an urban, Latino school. *Journal for Research in Mathematics Education*, 34(1), 37–73.  
<https://doi.org/10.2307/30034699>
- Gutstein, E. (2006). *Reading and writing the world with mathematics: Toward a pedagogy for social justice*. Routledge.
- Gutstein, E. (2012). Mathematics as a weapon in the struggle. In *Opening the cage* (pp. 23–48). Springer. [http://link.springer.com/chapter/10.1007/978-94-6091-808-7\\_2](http://link.springer.com/chapter/10.1007/978-94-6091-808-7_2)
- Haddix, M. (2010). No longer on the margins: Researching the hybrid literate Identities of Black and Latina preservice teachers. *Research in the Teaching of English*, 45(2), 97–125.
- Haddix, M. M. (2012). Talkin’ in the company of my sistas: The counterlanguages and deliberate silences of Black female students in teacher education. *Linguistics and Education*, 23(2), 169–181. <https://doi.org/10.1016/j.linged.2012.01.003>
- Haddix, M. M. (2016). *Cultivating racial and linguistic diversity in literacy teacher education: Teachers like me*. Routledge.
- Hall, S. (1996). New ethnicities. In D. Morley & K.-H. Chen (Eds.), *Stuart Hall: Critical dialogues in cultural studies* (pp. 442–451). Routledge.
- Hancock, S. D., & Warren, C. A. (Eds.). (2017). *White women’s work: Examining the intersectionality of teaching, identity, and race*. Information Age Publishing, Inc.
- Hannah-Jones, N. (2019, August 18). The 1619 project, introduction. *The New York Times Magazine*, *The 1619 Project*, 14–22.
- Harper, F. K., Maher, E. M., & Jung, H. (2021). Whiteness as a stumbling block in learning to teach mathematics for social justice. *Investigations in Mathematics Learning*, 13(1), 5–17.
- Harris, C. I. (1993). Whiteness as property. *The Harvard Law Review*, 106(8), 1707–1791.
- Harris, E. A. (2020, June 5). People are marching against racism. They’re also reading about it. *The New York Times*. <https://www.nytimes.com/2020/06/05/books/antiracism-books-race-racism.html>
- Haseman, J., Zaiets, K., Thorson, M., Procell, C., Petras, G., & Sullivan, S. J. (2020, June 18). Tracking protests across the USA in the wake of George Floyd’s death. *USA Today*.

<https://www.usatoday.com/in-depth/graphics/2020/06/03/map-protests-wake-george-floyds-death/5310149002/>

- Haviland, V. S. (2008). "Things get glossed over": Rearticulating the silencing power of whiteness in education. *Journal of Teacher Education*, 59(1), 40–54.
- Hayes, C., & Fasching-Varner, K. J. (2015). Racism 2.0 and the death of social and cultural foundations of education: A critical conversation. *Educational Foundations*, 103–119.
- Hein, G. (1991). *Constructivist learning theory*.  
<http://www.exploratorium.edu/IFI/resources/research/constructivistlearning.html>
- Helms, J. E. (1984). Toward a theoretical explanation of the effects of race on counseling: A Black and White model. *The Counseling Psychologist*, 12(4), 153–165.
- Hesse-Biber, S. N., & Leavy, P. (2011). *The practice of qualitative research* (2nd ed.). SAGE Publications, Inc.
- Hiebert, J., Carpenter, T. P., Fennema, E., Fuson, K. C., Wearne, D., Murray, H., Olivier, A., & Human, P. (1997). *Making sense: Teaching and learning mathematics with understanding*. Heinemann.
- Hogeland, W. (2021, October 30). *The historians are fighting: Inside the profession, the battle over the 1619 project continues*. Slate. <https://slate.com/news-and-politics/2021/10/1619-project-historians-controversy-gordon-wood-woody-holton.html>
- Holland, D., Lachicotte, Jr., W., Skinner, D., & Cain, C. (1998). *Identity and agency in cultural worlds*. Harvard University Press.
- Horn, I. S., & Kane, B. D. (2019). What we mean when we talk about teaching: The limits of professional language and possibilities for professionalizing discourse in teachers' conversations. *Teachers College Record*, 121(060304), 1–32.
- Hottinger, S. N. (2016). *Inventing the mathematician: Gender, race, and our cultural understanding of mathematics*. SUNY Press.
- Huinker, D. (Ed.). (2020). *Catalyzing change in early childhood and elementary mathematics: Initiating critical conversations*. National Council of Teachers of Mathematics.
- Hulse, C. (2022, January 13). Sinema rejects changing filibuster, dealing Biden a setback. *New York Times*. <https://www.nytimes.com/2022/01/13/us/politics/sinema-voting-rights-bill.html>
- Irizarry, J. G. (2007). "Home-growing" teachers of color: Lessons learned from a town-gown partnership. *Teacher Education Quarterly*, 87–102.

- Irizarry, Y. (2015). Selling students short: Racial differences in teachers' evaluations of high, average, and low performing students. *Social Science Research*, 52, 522–538. <https://doi.org/10.1016/j.ssresearch.2015.04.002>
- Jackson, K. J. (2009). The social construction of youth and mathematics: The case of a fifth-grade classroom. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 175–199). Routledge.
- Jacobs, L.-A. (2021). *“Telling another kind of story”: Enduring tensions in preparing secondary English language arts teachers for antiracist pedagogical change at the personal, instructional, and curricular levels* [Dissertation]. University of Michigan.
- Jacobs, V. R., Lamb, L. L., & Philipp, R. A. (2010). Professional noticing of children's mathematical thinking. *Journal for Research in Mathematics Education*, 169–202.
- Jacobs, V. R., Lamb, L. L., Philipp, R. A., & Schappelle, B. P. (2011). Deciding how to respond on the basis of children's understandings. In M. G. Sherin, V. R. Jacobs, & R. A. Philipp (Eds.), *Mathematics teacher noticing: Seeing through teachers' eyes* (pp. 97–116). Routledge.
- Jilk, L. M. (2016). Supporting teacher noticing of students' mathematical strengths. *Mathematics Teacher Educator*, 4(2), 188–199. <https://doi.org/10.5951/mathteaceduc.4.2.0188>
- Joseph, N. M., Frank, T. J., & Elliott, T. Y. (2021). A call for a critical–historical framework in addressing the mathematical experiences of Black teachers and students. *Journal for Research in Mathematics Education*, 52(4), 476–490. <https://doi.org/10.5951/jresematheduc-2020-0013>
- Jupp, J. C., Leckie, A., Cabrera, N. L., & Utt, J. (2019). Race-evasive White teacher identity studies 1990–2015: What can we learn from 25 years of research? *Teachers College Record*, 121(121303), 1–58.
- Jupp, J. C., & Lensmire, T. J. (2016). Second-wave white teacher identity studies: Toward complexity and reflexivity in the racial conscientization of white teachers. *International Journal of Qualitative Studies in Education*, 29(8), 985–988. <https://doi.org/10.1080/09518398.2016.1189621>
- Kalinec-Craig, C. A., Bannister, N., Bowen, D., Jacques, L. A., & Crespo, S. (2021). “It was smart when:” Supporting prospective teachers' noticing of students' mathematical strengths. *Journal of Mathematics Teacher Education*, 24(4), 375–398. <https://doi.org/10.1007/s10857-020-09464-2>
- Kavanagh, S. S., & Danielson, K. A. (2019). Practicing justice, justifying practice: Toward critical practice teacher education. *American Educational Research Journal*, 1–37. <https://doi.org/10.3102/0002831219848691>

- Kazemi, E., Ghouseini, H., Cunard, A., & Turrou, A. C. (2016). Getting inside rehearsals: Insights from teacher educators to support work on complex practice. *Journal of Teacher Education*, 67(1), 18–31.
- Kendi, I. X. (2016). *Stamped from the beginning: The definitive history of racist ideas in America*. Bold Type Books.
- Kendi, I. X. (2019). *How to be an antiracist*. One World.
- Kennedy, M. (2016). Parsing the practice of teaching. *Journal of Teacher Education*, 67(1), 6–17. <https://doi.org/10.1177/0022487115614617>
- Kennedy, M. M. (1999). The role of preservice teacher education. In L. Darling-Hammond & G. Sykes (Eds.), *Teaching as the Learning Profession: Handbook of Teaching and Policy* (pp. 54–86). Jossey-Bass.
- Kenny, L. D. (2000). Doing my homework: The autoethnography of a white teenage girl. In F. W. Twine & J. W. Warren (Eds.), *Racing research, researching race: Methodological dilemmas in critical race studies* (pp. 111–133). New York University Press.
- Khasnabis, D., Goldin, S., Perouse-Harvey, E., & Hanna, M. O. (2019). Race and the Mona Lisa: Reflecting on antiracist teaching practice. *The Educational Forum*, 83(3), 278–293. <https://doi.org/10.1080/00131725.2019.1599656>
- Khasnabis, D., Goldin, S., & Ronfeldt, M. (2018). The practice of partnering: Simulated parent–teacher conferences as a tool for teacher education. *Action in Teacher Education*, 40(1), 77–95. <https://doi.org/10.1080/01626620.2018.1424658>
- Kim, R. (2021). Under the law: ‘Anti-critical race theory’ laws and the assault on pedagogy. *Phi Delta Kappan*, 103(1), 64–65. <https://doi.org/10.1177/00317217211043637>
- King, J. E. (1991). Dysconscious racism: Ideology, identity, and the miseducation of teachers. *The Journal of Negro Education*, 60(2), 133–146. <https://doi.org/10.2307/2295605>
- King, Jr., M. L. (1963). *Video Transcript for Archival Research Catalog (ARC) Identifier 2602934: The March, Part 3 of 3*. National Archives and Records Administration. [www.archives.gov](http://www.archives.gov)
- Koestler, C. (2012). Beyond apples, puppy dogs, and ice cream: Preparing teachers to teach mathematics for equity and social justice. In A. A. Wager & D. W. Stinson (Eds.), *Teaching Mathematics for Social Justice: Conversations with Educators* (pp. 81–97). National Council of Teachers of Mathematics.
- Kohli, R. (2009). Critical race reflections: Valuing the experiences of teachers of color in teacher education. *Race Ethnicity and Education*, 12(2), 235–251. <https://doi.org/10.1080/13613320902995491>

- Kokka, K. (2020). Social justice pedagogy for whom? Developing privileged students' critical mathematics consciousness. *The Urban Review*. <https://doi.org/10.1007/s11256-020-00578-8>
- Kumashiro, K. K. (2000). Toward a theory of anti-oppressive education. *Review of Educational Research*, 70(1), 25–53.
- Ladson-Billings, G. (1994). *The dreamkeepers: Successful teachers of African American children* (1st ed.). Jossey-Bass.
- Ladson-Billings, G. (1999). Just what is critical race theory and what's it doing in a nice field like education? In L. Parker, D. Deyhle, & S. Villenas (Eds.), *Race is... Race isn't: Critical race theory and qualitative studies in education* (pp. 7–27). Westview Press.
- Ladson-Billings, G. (2000). Racialized discourses and ethnic epistemologies. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (2nd ed., pp. 257–277). SAGE Publications, Inc.  
[http://www.academia.edu/4027209/Racialized\\_Discourses\\_and\\_Ethnic\\_Epistemologies](http://www.academia.edu/4027209/Racialized_Discourses_and_Ethnic_Epistemologies)
- Ladson-Billings, G. (2013). Critical race theory—What it is not! In M. Lynn & A. D. Dixson (Eds.), *Handbook of Critical Race Theory in Education* (pp. 34–47). Routledge.  
<https://doi.org/10.4324/9780203155721.ch3>
- Ladson-Billings, G. (2014). Culturally relevant pedagogy 2.0: A.k.a. the remix. *Harvard Educational Review*, 84(1), 74–84.
- Ladson-Billings, G. (2018). The social funding of race: The role of schooling. *Peabody Journal of Education*, 93(1), 90–105. <https://doi.org/10.1080/0161956X.2017.1403182>
- Ladson-Billings, G., & Tate, W. F. (1995). Toward a critical race theory of education. *Teachers College Record*, 97(1), 47–68.
- Lampert, M. (1985). How do teachers manage to teach? Perspectives on problems in practice. *Harvard Educational Review*, 55(2), 178–194.
- Lampert, M. (1990). When the problem is not the question and the solution is not the answer: Mathematical knowing and teaching. *American Educational Research Journal*, 27(1), 29. <https://doi.org/10.2307/1163068>
- Lampert, M. (1998). Studying teaching as a thinking practice. In J. G. Greeno & S. V. Goldman (Eds.), *Thinking practices in mathematics and science learning* (pp. 53–78). Lawrence Erlbaum Associates, Inc.
- Lampert, M. (2001). *Teaching problems and the problems of teaching*. Yale University Press.
- Lampert, M. (2010). Learning teaching in, from, and for practice: What do we mean? *Journal of Teacher Education*, 61(1–2), 21–34. <https://doi.org/10.1177/0022487109347321>

- Lampert, M., Franke, M. L., Kazemi, E., Ghouseini, H., Turrou, A. C., Beasley, H., Cunard, A., & Crowe, K. (2013). Keeping it complex: Using rehearsals to support novice teacher learning of ambitious teaching. *Journal of Teacher Education*, 64(3), 226–243.
- Lang, C. (2001). When does it get any easier?: Beginning teachers' experiences during their first year of teaching. *Waikato Journal of Education*, 7(1), 85–97. <https://doi.org/10.15663/wje.v7i1.434>
- Langer-Osuna, J. M. (2011). How Brianna became bossy and Kofi came out smart: Understanding the trajectories of identity and engagement for two group leaders in a project-based mathematics classroom. *Canadian Journal of Science, Mathematics and Technology Education*, 11(3), 207–225. <https://doi.org/10.1080/14926156.2011.595881>
- Lanham, D., & Liu, A. (2019). *Not just a typographical change: Why Brookings is capitalizing Black* (p. 1). Brookings. <https://www.brookings.edu/research/brookingscapitalizesblack/>
- Larnell, G. V., Bullock, E. C., & Jett, C. C. (2016). Rethinking teaching and learning mathematics for social justice from a critical race perspective. *Journal of Education*, 196(1), 19–29.
- Lave, J., & Wenger, E. (1991). *Situated learning: Legitimate peripheral participation*. Cambridge University Press.
- Lawrence, S. M. (1997). Beyond race awareness: White racial identity and multicultural teaching. *Journal of Teacher Education*, 48(2), 108–117.
- Lee, C. D. (2007). *Culture, literacy, and learning: Taking bloom in the midst of the whirlwind*. Teachers College Press.
- Leonard, J., & Evans, B. R. (2012). Challenging beliefs and dispositions: Learning to teach mathematics for social justice. In A. A. Wager & D. W. Stinson (Eds.), *Teaching mathematics for social justice: Conversations with educators* (pp. 99–111). National Council of Teachers of Mathematics.
- Leonard, J., & Moore, C. M. (2014). Learning to enact social justice pedagogy in mathematics classrooms. *Action in Teacher Education*, 36(1), 76–95. <https://doi.org/10.1080/01626620.2013.861371>
- Leonard, J., Moore, C. M., & Brooks, W. (2014). Multicultural children's literature as a context for teaching mathematics for cultural relevance in urban schools. *The Urban Review*, 46(3), 325–348. <https://doi.org/10.1007/s11256-013-0264-3>
- Leonardo, Z. (2004). The color of supremacy: Beyond the discourse of 'white privilege.' *Educational Philosophy and Theory*, 36(2), 137–152. <https://doi.org/10.1111/j.1469-5812.2004.00057.x>
- Leonardo, Z. (2013). *Race frameworks: A multidimensional theory of racism and education*. Teachers College Press.

- Leonardo, Z., & Boas, E. (2013). Other kids' teachers: What children of color learn from white women and what this says about race, whiteness, and gender. In M. Lynn & A. D. Dixson (Eds.), *Handbook of Critical Race Theory in Education* (pp. 313–323). Routledge. <https://doi.org/10.4324/9780203155721-34>
- Leonardo, Z., & Broderick, A. A. (2011). Smartness as property: A critical exploration of intersections between whiteness and disability studies. *Teachers College Record*, *113*(10), 2206–2232.
- Lewis, A. E. (2004). “What group?” Studying whites and whiteness in the era of “color-blindness.” *Sociological Theory*, *22*(4), 623–646. <https://doi.org/10.1111/j.0735-2751.2004.00237.x>
- Lewis, A. E., & Diamond, J. B. (2015). *Despite the best intentions: How racial inequality thrives in good schools*. Oxford University Press.
- López, G. R. (2003). The (racially neutral) politics of education: A critical race theory perspective. *Educational Administration Quarterly*, *39*(1), 68–94. <https://doi.org/10.1177/0013161X02239761>
- Lortie, D. C. (1975). *Schoolteacher: A sociological study* (2nd ed.). The University of Chicago Press.
- Louie, N. (2017). The culture of exclusion in mathematics education and its persistence in equity-oriented teaching. *Journal for Research in Mathematics Education*, *48*(5), 488. <https://doi.org/10.5951/jresematheduc.48.5.0488>
- Louie, N. (2020). Agency discourse and the reproduction of hierarchy in mathematics instruction. *Cognition and Instruction*, *38*(1), 1–26. <https://doi.org/10.1080/07370008.2019.1677664>
- Louie, N., Adiredja, A. P., & Jessup, N. (2021). Teacher noticing from a sociopolitical perspective: The FAIR framework for anti-deficit noticing. *ZDM – Mathematics Education*, *53*(1), 95–107. <https://doi.org/10.1007/s11858-021-01229-2>
- Louie, N. L. (2018). Culture and ideology in mathematics teacher noticing. *Educational Studies in Mathematics*, *97*(1), 55–69. <https://doi.org/10.1007/s10649-017-9775-2>
- Love, B. L. (2019). *We want to do more than survive: Abolitionist teaching and the pursuit of educational freedom*. Beacon Press.
- Lukacs, C. (2021, January 1). Diversity, equity, and inclusion in action: How institutions are undertaking award-winning initiatives that celebrate diversity and build equitable and inclusive communities. *Currents*. <https://www.case.org/resources/issues/january-february-2021/diversity-equity-and-inclusion-action>
- Madison, D. S. (2012). Introduction to critical ethnography: Theory and method. In *Critical ethnography: Methods, ethics, and performance* (pp. 1–16). SAGE.

- Mapping Black Lives Matter protests around the world. (2020, June 22). In *Here and Now*. WBUR. <https://www.wbur.org/hereandnow/2020/06/22/mapping-black-lives-matter-protests>
- Martell, C. C. (2017). Approaches to teaching race in elementary social studies: A case study of preservice teachers. *The Journal of Social Studies Research*, 41(1), 75–87. <https://doi.org/10.1016/j.jssr.2016.05.001>
- Martin, D. B. (2003). Hidden assumptions and unaddressed questions in mathematics for all rhetoric. *The Mathematics Educator*, 13(2), 7–21.
- Martin, D. B. (2006). Mathematics learning and participation as racialized forms of experience: African American parents speak on the struggle for mathematics literacy. *Mathematical Thinking and Learning*, 8(3), 197–229.
- Martin, D. B. (2007). Beyond missionaries or cannibals: Who should teach mathematics to African American children? *The High School Journal*, 91(1), 6–28.
- Martin, D. B. (2009a). Liberating the production of knowledge about African American children and mathematics. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of black children* (pp. 3–36). Routledge.
- Martin, D. B. (2009b). Researching race in mathematics education. *Teachers College Record*, 111(2), 295–338.
- Martin, D. B. (2012). Learning mathematics while Black. *Educational Foundations*, 26(1/2), 47–66.
- Martin, D. B. (2015). The collective Black and “Principles to Actions.” *Journal of Urban Mathematics Education*, 8(1), 17–23.
- Martin, D. B. (2019). Equity, inclusion, and antiblackness in mathematics education. *Race Ethnicity and Education*, 22(4), 459–478. <https://doi.org/10.1080/13613324.2019.1592833>
- Martin, D. B., Price, P. G., & Moore, R. (2019). Refusing systemic violence against Black children: Toward a Black Liberatory Mathematics education. In J. Davis & C. C. Jett (Eds.), *Critical race theory in mathematics education* (pp. 32–55). Routledge.
- Marx, S. (2006). *Revealing the invisible: Confronting passive racism in teacher education*. Routledge.
- Mason, A. M. (2016). Taking time, breaking codes: Moments in white teacher candidates’ exploration of racism and teacher identity. *International Journal of Qualitative Studies in Education*, 29(8), 1045–1058. <https://doi.org/10.1080/09518398.2016.1174899>
- Massey, D. S., & Denton, N. A. (1993). The construction of the ghetto. In *American apartheid: Segregation and the making of the underclass* (pp. 17–59). Harvard University Press.



- Matias, C. E. (2013). Check yo'self before you wreck yo'self and our kids: Counterstories from culturally responsive White teachers? . . . To culturally responsive White teachers! *Interdisciplinary Journal of Teaching and Learning*, 3(2), 68–81.
- Matias, C. E., & Zembylas, M. (2014). 'When saying you care is not really caring': Emotions of disgust, whiteness ideology, and teacher education. *Critical Studies in Education*, 55(3), 319–337. <https://doi.org/10.1080/17508487.2014.922489>
- May, S., & Sleeter, C. (2010). Introduction. In S. May & C. Sleeter (Eds.), *Critical multiculturalism: Theory and praxis*. Taylor & Francis Group.
- McCarty, T. L., Wyman, L. T., & Nicholas, S. E. (2013). Activist ethnography with Indigenous youth: Lessons from humanizing research on language and education. In D. Paris & M. T. Winn (Eds.), *Humanizing research: Decolonizing qualitative inquiry with youth and communities* (pp. 81–103). SAGE Publications.
- McDonald, M. A. (2005). The integration of social justice in teacher education: Dimensions of prospective teachers' opportunities to learn. *Journal of Teacher Education*, 56(5), 418–435. <https://doi.org/10.1177/0022487105279569>
- McDonald, M. A. (2010). Social justice teacher education and the case for enacting high-leverage teaching practices. *Teacher Education and Practice*, 23(4), 452–455.
- McIntosh, P. (1989). White privilege: Unpacking the invisible knapsack. *Peace and Freedom*, July/August, 10–12.
- McIntyre, A. (1997). *Making meaning of whiteness: Exploring racial identity with white teachers*. State University of New York Press.
- Meiners, E. R. (2002). Disengaging from the legacy of Lady Bountiful in teacher education classrooms. *Gender and Education*, 14(1), 85–94. <https://doi.org/10.1080/09540250120098861>
- Menter, I. (1989). Teaching practice stasis: Racism, sexism and school experience in initial teacher education. *British Journal of Sociology of Education*, 10(4), 459–473. <https://doi.org/10.1080/0142569890100406>
- Merriam, S. B. (2001). *Qualitative research and case study applications in education*. Jossey-Bass.
- Merriam, S. B., & Tisdell, E. J. (2016). *Qualitative research: A guide to design and implementation* (4th ed.). Jossey-Bass.
- Michael, A., Coleman-King, C., Lee, S., Ramirez, C., & Bentley-Edwards, K. (2017). Naming the unnamed: White culture in relief. In S. D. Hancock & C. A. Warren (Eds.), *White women's work: Examining the intersectionality of teaching, identity, and race*. Information Age Publishing, Inc.

- Milner, H. R. (2007). Race, culture, and researcher positionality: Working through dangers seen, unseen, and unforeseen. *Educational Researcher*, 36(7), 388–400.  
<https://doi.org/10.3102/0013189X07309471>
- Milner, H. R. (2017). Opening commentary: The permanence of racism, critical race theory, and expanding analytic sites. *Peabody Journal of Education*, 92(3), 294–301.  
<https://doi.org/10.1080/0161956X.2017.1324656>
- Milner, H. R. (2018, October 25). *Disrupting punitive practices and policies: Rac(e)ing back to teaching, teacher preparation, and Brown*. Fifteenth Annual AERA Brown Lecture, Washington, D.C.
- Milner, H. R., Cunningham, H. B., Delale-O'Connor, L., & Kestenberg, E. G. (2019). “*These kids are out of control*” *Why we must reimagine “classroom management” for equity*. Corwin.
- Milner, H. R., & Laughter, J. C. (2015). But good intentions are not enough: Preparing teachers to center race and poverty. *The Urban Review*, 47(2), 341–363.  
<https://doi.org/10.1007/s11256-014-0295-4>
- Moll, L. C., & Greenberg, J. B. (1990). Creating zones of possibilities: Combining social contexts for instruction. In L. C. Moll (Ed.), *Vygotsky and education: Instructional implications and applications of sociohistorical psychology* (pp. 319–348). Cambridge University Press.
- Monroe, C. R. (2005). Why are “bad boys” always Black?: Causes of disproportionality in school discipline and recommendations for change. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 79(1), 45–50.  
<https://doi.org/10.3200/TCHS.79.1.45-50>
- Montellaro, Z., & Daniels, E. (2021, March 25). ‘*They are, in effect, supporting racism*’: *Black leaders zero in on Dems’ filibuster holdouts*. Politico.  
<https://www.politico.com/news/2021/03/25/voting-rights-filibuster-477905>
- Mosley, M. (2010). ‘That really hit me hard’: Moving beyond passive anti-racism to engage with critical race literacy pedagogy. *Race Ethnicity and Education*, 13(4), 449–471.  
<https://doi.org/10.1080/13613324.2010.488902>
- Munter, C., Stein, M. K., & Smith, M. S. (2015). Dialogic and direct instruction: Two distinct models of mathematics instruction and the debate(s) surrounding them. *Teachers College Record*, 32.
- Myers, K. A., & Williamson, P. (2001). Race talk: The perpetuation of racism through private discourse. *Race and Society*, 4(1), 3–26. [https://doi.org/10.1016/S1090-9524\(02\)00032-3](https://doi.org/10.1016/S1090-9524(02)00032-3)
- Nasir, N. S. (2002). Identity, goals, and learning: Mathematics in cultural practice. *Mathematical Thinking and Learning*, 4(2–3), 213–247.  
[https://doi.org/10.1207/S15327833MTL04023\\_6](https://doi.org/10.1207/S15327833MTL04023_6)

- Nasir, N. S., Atukpawu, G., O'Connor, K., Davis, M., Wischnia, S., & Tsang, J. (2009). Wrestling with the legacy of stereotypes: Being African American in math class. In D. B. Martin (Ed.), *Mathematics teaching, learning, and liberation in the lives of Black children* (pp. 231–248). Routledge.
- Nasir, N. S., McKinney de Royston, M., O'Connor, K., & Wischnia, S. (2017). Knowing about racial stereotypes versus believing them. *Urban Education, 52*(4), 491–524. <https://doi.org/10.1177/0042085916672290>
- Nasir, N. S., & Shah, N. (2011). On defense: African American males making sense of racialized narratives in mathematics education. *Journal of African American Males in Education, 2*(1), 24–45.
- Nasir, N. S., Snyder, C. R., Shah, N., & Ross, K. M. (2012). Racial storylines and implications for learning. *Human Development, 55*(5–6), 285–301. <https://doi.org/10.1159/000345318>
- National Council of Supervisors of Mathematics (NCSM), & TODOS: Mathematics for ALL (TODOS). (2016). *Mathematics education through the lens of social justice: Acknowledgement, actions, and accountability*.
- National Council of Teachers of Mathematics (NCTM). (2014). *Principles to actions: Ensuring mathematical success for all*. Author.
- National Research Council. (2000). *How people learn: Brain, mind, experience, and school*. National Academy Press.
- National Research Council (NRC). (2001). *Adding it up: Helping children learn mathematics*. National Academies Press. <https://doi.org/10.17226/9822>
- Navarro, O., Quince, C. L., Hsieh, B., & Deckman, S. L. (2019). Transforming teacher education by integrating the funds of knowledge of teachers of Color. *Review of Education, Pedagogy, and Cultural Studies, 41*(4–5), 282–316. <https://doi.org/10.1080/10714413.2019.1696616>
- Neumayer-Depiper, J. (2013). Teacher identity work in mathematics education. *For the Learning of Mathematics, 33*(1), 9–15.
- Nieto, S. (1995). From brown heroes and holidays to assimilationist agendas: Reconsidering the critiques of multicultural education. In C. E. Sleeter & P. McLaren (Eds.), *Multicultural education, critical pedagogy, and the politics of difference* (p. 30). SUNY Press.
- Noblit, G. W. (1993). Power and caring. *American Educational Research Journal, 30*(1), 23–38.
- Noel, B. (2018). *Good moves for bad habits: Interrupting normative practice to disrupt racialized inequity* [Dissertation]. University of Michigan.

- Oakes, J., Wells, A. S., Jones, M., & Datnow, A. (1997). Detracking: The social construction of ability, cultural politics, and resistance to reform. *Teachers College Record*, 98(3), 482–510.
- O'Brien, E. (1999). *Whites doing antiracism: Discourse, practice, emotion, and organizations* [Dissertation]. University of Florida.
- O'Brien, E. (2000). Are we supposed to be colorblind or not? Competing frames used by whites against racism. *Race and Society*, 3(1), 41–59. [https://doi.org/10.1016/S1090-9524\(01\)00020-1](https://doi.org/10.1016/S1090-9524(01)00020-1)
- Ohito, E. O. (2016). Making the emperor's new clothes visible in anti-racist teacher education: Enacting a pedagogy of discomfort with white preservice teachers. *Equity & Excellence in Education*, 49(4), 454–467. <https://doi.org/10.1080/10665684.2016.1226104>
- Oluo, I. (2019). *So you want to talk about race*. Seal Press.
- Omi, M., & Winant, H. (1994). *Racial formation in the United States: From the 1960s to the 1990s* (2nd ed.). Routledge.
- Orfield, G., Ee, J., Frankenberg, E., & Siegel-Hawley, G. (2016). *Brown at 62: School segregation by race, poverty and state* (p. 9). Civil Rights Project / Proyecto Derechos Civiles, UCLA.
- Orfield, G., & Lee, C. (2005). *Why segregation matters: Poverty and educational inequality*. <http://escholarship.org/uc/item/4xr8z4wb.pdf>
- Pajares, M. F. (1992). Teachers' beliefs and educational research: Cleaning up a messy construct. *Review of Educational Research*, 62(3), 307–332.
- Parker, L., & Lynn, M. (2002). What's race got to do with it? Critical race theory's conflicts with and connections to qualitative research methodology and epistemology. *Qualitative Inquiry*, 8(1), 7–22.
- Perouse-Harvey, E. (2020). *Speaking up for ALL kids: Developing pre-service general education teachers as advocates through critical coursework and simulated IEP meetings* [Dissertation]. University of Michigan.
- Perry, I. (2022). *South to America: A journey below the Mason-Dixon to understand the soul of a nation*. HarperCollins.
- Peshkin, A. (1988). In search of subjectivity—One's own. *Educational Researcher*, 17(7), 17–21.
- Petit, M. M., Laird, R. E., Marsden, E. L., & Ebby, C. B. (2016). *A focus on fractions: Bringing research to the classroom* (2nd ed.). Routledge.

- Philip, T. M. (2011). An “ideology in pieces” approach to studying change in teachers’ sensemaking about race, racism, and racial justice. *Cognition and Instruction*, 29(3), 297–329. <https://doi.org/10.1080/07370008.2011.583369>
- Philip, T. M., Rocha, J., & Olivares-Pasillas, M. C. (2017). Supporting teachers of color as they negotiate classroom pedagogies of race: A study of a teacher’s struggle with “friendly-fire” racism. *Teacher Education Quarterly*, 59–79.
- Philip, T. M., Souto-Manning, M., Anderson, L., Horn, I., Carter Andrews, D. J., Stillman, J., & Varghese, M. (2019). Making justice peripheral by constructing practice as “core”: How the increasing prominence of core practices challenges teacher education. *Journal of Teacher Education*, 70(3), 251–264. <https://doi.org/10.1177/0022487118798324>
- Philipp, R. A. (2007). Mathematics teachers’ beliefs and affect. In F. K. Lester, Jr. (Ed.), *Second handbook of research on mathematics teaching and learning* (pp. 257–315). National Council of Teachers of Mathematics.
- Philippou, G. N., & Christou, C. (1998). The effects of a preparatory mathematics program in changing prospective teachers’ attitudes towards mathematics. *Educational Studies in Mathematics*, 35(2), 189–206.
- Phillips, H. (2020, May 9). *Performative allyship is deadly (here’s what to do instead)*. Forge. <https://forge.medium.com/performative-allyship-is-deadly-c900645d9f1f>
- Piaget, J. (1970). Piaget’s theory. In P. H. Mussen (Ed.), *Carmichael’s handbook of child psychology* (pp. 703–732). Wiley.
- Picower, B. (2009). The unexamined Whiteness of teaching: How White teachers maintain and enact dominant racial ideologies. *Race Ethnicity and Education*, 12(2), 197–215. <https://doi.org/10.1080/13613320902995475>
- Picower, B. (2021). *Reading, writing, and racism: Disrupting whiteness in teacher education and in the classroom*. Beacon Press.
- Picower, B., & Kohli, R. (Eds.). (2017). *Confronting racism in teacher education: Counternarratives of critical practice*. Routledge.
- Pollock, M. (2004). *Colormute: Race talk dilemmas in an American school*. Princeton University Press.
- Pollock, M., Deckman, S., Mira, M., & Shalaby, C. (2010). “But what can I do?”: Three necessary tensions in teaching teachers about race. *Journal of Teacher Education*, 61(3), 211–224. <https://doi.org/10.1177/0022487109354089>
- Powell, A. B. (2002). Ethnomathematics and the challenges of racism in mathematics education. In P. Valero & O. Skovsmose (Eds.), *Proceedings of the Third International MES Conference* (pp. 1–15).

- Price, J. H., & Everett, S. A. (1997). Teachers' perceptions of violence in the public schools: The Metlife survey. *American Journal of Health Behavior*, 21(3), 178-186.
- Price, J. N., & Ball, D. L. (1998). Challenges of liberatory pedagogy in mathematics and teacher education. *Theory Into Practice*, 37(4), 256–264.  
<https://doi.org/10.1080/00405849809543814>
- Reeder, S., Utley, J., & Cassel, D. (2009). Using metaphors as a tool for examining preservice elementary teachers' beliefs about mathematics teaching and learning. *School Science and Mathematics*, 109(5), 290–297. <https://doi.org/10.1111/j.1949-8594.2009.tb18093.x>
- Reinholz, D., & Shah, N. (2018). Equity analytics: A methodological approach for quantifying participation patterns in mathematics classroom discourse. *Journal for Research in Mathematics Education*, 49(2), 140–177.  
<https://doi.org/10.5951/jresematheduc.49.2.0140>
- Reinholz, D., & Shah, N. (2021). Equity and equality: How data visualizations mediate teacher sensemaking about racial and gender inequity. *Contemporary Issues in Technology and Teacher Education*, 21(3), 646–669.
- Richardson, V. (1996). The role of attitudes and beliefs in learning to teach. In J. Sikula (Ed.), *Handbook of research on teacher education* (Second, pp. 102–119). Macmillan.
- Richardson, V. (2003). Preservice teachers' beliefs. In J. Raths & A. C. McAninch (Eds.), *Teacher beliefs and classroom performance: The impact of teacher education* (pp. 1–22). Information Age Publishing.
- Riegle-Crumb, C., & Humphries, M. (2012). Exploring bias in math teachers' perceptions of students' ability by gender and race/ethnicity. *Gender & Society*, 26(2), 290–322.  
<https://doi.org/10.1177/0891243211434614>
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In J. V. Wertsch, P. del Rio, & A. Alvarez (Eds.), *Sociocultural studies of mind* (pp. 139–164).
- Rolón-Dow, R. (2005). Critical care: A color(full) analysis of care narratives in the schooling experiences of Puerto Rican girls. *American Educational Research Journal*, 42(1), 77–111. <https://doi.org/10.3102/00028312042001077>
- Rothstein, R. (2017). *The color of law: A forgotten history of how our government segregated America*. Liveright Publishing Corporation.
- Rousseau, C., & Tate, W. F. (2003). No time like the present: Reflecting on equity in school mathematics. *Theory Into Practice*, 42(3), 210–216.  
[https://doi.org/10.1207/s15430421tip4203\\_7](https://doi.org/10.1207/s15430421tip4203_7)
- Rovine, N. (2020, June 7). Engage in non-optical allyship for Black Lives Matter. *UWIRE Text*.  
<https://link.gale.com/apps/doc/A625940169/ITOF?u=umuser&sid=ITOF&xid=1051e1e3>

- Rowe, V. C. (2009). Using video-stimulated recall as a basis for interviews: Some experiences from the field. *Music Education Research*, *11*(4), 425–437. <https://doi.org/10.1080/14613800903390766>
- Rudman, L. A., & Ashmore, R. D. (2007). Discrimination and the Implicit Association Test. *Group Processes & Intergroup Relations*, *10*(3), 359–372. <https://doi.org/10.1177/1368430207078696>
- Rudnick, D. L. (2019). Walking on egg shells: Colorblind ideology and race talk in teacher education. *Multicultural Education Review*, *11*(3), 216–233. <https://doi.org/10.1080/2005615X.2019.1644043>
- Sachs, J. (2005). Teacher education and the development of professional identity: Learning to be a teacher. In P. Denicolo & M. Kompf (Eds.), *Connecting policy and practice: Challenges for teaching and learning in schools and universities* (pp. 5–21). Routledge.
- Saldaña, J. (2002). Analyzing change in longitudinal qualitative data. *Youth Theatre Journal*, *16*(1), 1–17. <https://doi.org/10.1080/08929092.2002.10012536>
- Saldaña, J. (2016). *The coding manual for qualitative researchers* (3rd ed.). SAGE.
- Schön, D. A. (1987). *Educating the reflective practitioner: Toward a new design for teaching and learning in the professions*. Jossey-Bass.
- Sensoy, Ö., & DiAngelo, R. (2017). *Is everyone really equal? An introduction to key concepts in social justice education*. Teachers College Press.
- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, *27*(2), 4–13. <https://doi.org/10.2307/1176193>
- Sfard, A. (2001). There is more to discourse than meets the ears: Looking at thinking as communicating to learn more about mathematical learning. *Educational Studies in Mathematics*, *46*(1–3), 13–57.
- Shah, N. (2017). Race, ideology, and academic ability: A relational analysis of racial narratives in mathematics. *Teachers College Record*, *42*.
- Shah, N. (2019). “Asians are good at math” is not a compliment: STEM success as a threat to personhood. *Harvard Educational Review*, *89*(4), 661–702.
- Shah, N., & Coles, J. A. (2020). Preparing teachers to notice race in classrooms: Contextualizing the competencies of preservice teachers with antiracist inclinations. *Journal of Teacher Education*, 1–16. <https://doi.org/10.1177/0022487119900204>
- Shah, N., & Leonardo, Z. (2016). Learning discourses of race and mathematics in classroom interaction. In I. Esmonde & A. N. Booker (Eds.), *Power and privilege in the learning sciences: Critical and sociocultural theories of learning* (pp. 50–69). Routledge.

- Shalaby, C. (2017). *Troublemakers: Lessons in freedom from young children at school*. The New Press.
- Sherman, A. N. (2017). *White preservice teachers' considerations of race in teaching: Limited experience or lack of desire?* [Preliminary Exam]. University of Michigan.
- Sheth, M. J. (2019). Grappling with racism as foundational practice of science teaching. *Science Education*, 103(1), 37–60. <https://doi.org/10.1002/sce.21450>
- Shulman, L. (1986). Paradigms and research programs in the study of teaching: A contemporary perspective. In M. C. Wittrock (Ed.), *Handbook of research on teaching* (3rd ed., pp. 3–36). Macmillan Publishing Company.
- Shulman, L. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1–23. <https://doi.org/10.17763/haer.57.1.j463w79r56455411>
- Simic-Muller, K., Fernandes, A., & Felton-Koestler, M. D. (2015). “I just wouldn’t want to get as deep into it”: Preservice teachers’ beliefs about the role of controversial topics in mathematics education. *Journal of Urban Mathematics Education*, 8(2). <http://ed-osprey.gsu.edu/ojs/index.php/JUME/article/view/259>
- Simson, D. (2014). Exclusion, punishment, racism and our schools: A critical race theory perspective on school discipline. *UCLA Law Review*, 61(506), 506–563.
- Skiba, R. J., Michael, R. S., Nardo, A. C., & Peterson, R. L. (2002). The color of discipline: Sources of racial and gender disproportionality in school punishment. *The Urban Review*, 34(4), 317–342.
- Skinner, Louie, & Baldinger. (2019). Learning to see students’ mathematical strengths. *Teaching Children Mathematics*, 25(6), 338. <https://doi.org/10.5951/teacchilmath.25.6.0338>
- Sleeter, C. (1992). Resisting racial awareness: How teachers understand the social order from their racial, gender, and social class locations. *Educational Foundations*, 6, 7–32.
- Sleeter, C. (2001). Preparing teachers for culturally diverse schools: Research and the overwhelming presence of Whiteness. *Journal of Teacher Education*, 52(2), 94–106. <https://doi.org/10.1177/0022487101052002002>
- Sleeter, C. (2008). Critical family history, identity, and historical memory. *Educational Studies*, 43(2), 114–124. <https://doi.org/10.1080/00131940801944587>
- Sleeter, C. (2016). Wrestling with problematics of whiteness in teacher education. *International Journal of Qualitative Studies in Education*, 29(8), 1065–1068. <https://doi.org/10.1080/09518398.2016.1174904>
- Sleeter, C. E. (2011). Becoming white: Reinterpreting a family story by putting race back into the picture. *Race Ethnicity and Education*, 14(4), 421–433. <https://doi.org/10.1080/13613324.2010.547850>



- Smith, M. S., & Stein, M. K. (2018). *5 Practices for orchestrating productive mathematics discussions* (Second). The National Council of Teachers of Mathematics, Inc.
- Smolkowski, K., Girvan, E. J., McIntosh, K., Nese, R. N. T., & Horner, R. H. (2016). Vulnerable decision points for disproportionate office discipline referrals: Comparisons of discipline for African American and White elementary school students. *Behavioral Disorders, 41*(4), 178–195.
- Solomon, R. P., Portelli, J. P., Daniel, B., & Campbell, A. (2005). The discourse of denial: How white teacher candidates construct race, racism and ‘white privilege.’ *Race Ethnicity and Education, 8*(2), 147–169. <https://doi.org/10.1080/13613320500110519>
- Solórzano, D. G., & Yosso, T. J. (2002). Critical race methodology: Counter-storytelling as an analytical framework for education research. *Qualitative Inquiry, 8*(1), 23–44.
- Solorzano, D., & Yosso, T. J. (2001). From racial stereotyping and deficit discourse toward a critical race theory in teacher education. *Multicultural Education, 2*–8.
- Souto-Manning, M., & Emdin, C. (2020). On the harm inflicted by urban teacher education programs: Learning from the historical trauma experienced by teachers of color. *Urban Education, 1*–33. <https://doi.org/10.1177/0042085920926249>
- Souto-Manning, M., & Winn, L. “Torry.” (2019). Toward shared commitments for teacher education: Transformative justice as an ethical imperative. *Theory Into Practice, 58*(4), 308–317. <https://doi.org/10.1080/00405841.2019.1626619>
- Steele, C. M., & Aronson, J. (1995). Stereotype threat and the intellectual test performance of African Americans. *Journal of Personality and Social Psychology, 69*(5), 797–811.
- Stigler, J. W., & Hiebert, J. (1999). *The teaching gap: Best ideas from the world’s teachers for improving education in the classroom*. Free Press.
- Stinson, D. W. (2004). *Mathematics as “gate-keeper”(?): Three theoretical perspectives that aim toward empowering all children with a key to the gate*. [http://scholarworks.gsu.edu/msit\\_facpub/19/](http://scholarworks.gsu.edu/msit_facpub/19/)
- Stinson, D. W. (2008). Negotiating sociocultural discourses: The counter-storytelling of academically (and mathematically) successful African American male students. *American Educational Research Journal, 45*(4), 975–1010. <https://doi.org/10.3102/0002831208319723>
- Stipek, D. J., Givvin, K. B., Salmon, J. M., & MacGyvers, V. L. (2001). Teachers’ beliefs and practices related to mathematics instruction. *Teaching and Teacher Education, 17*(2), 213–226.
- Stockero, S. L., Leatham, K. R., Ochieng, M. A., Van Zoest, L. R., & Peterson, B. E. (2020). Teachers’ orientations toward using student mathematical thinking as a resource during

- whole-class discussion. *Journal of Mathematics Teacher Education*, 23(3), 237–267. <https://doi.org/10.1007/s10857-018-09421-0>
- Stovall, D. A. (2014). “Bringing a little bit of heaven to humanity”: Raising hell while interrupting traditional methods for the purpose of justice. In R. N. Brown, R. Carducci, & C. R. Kuby (Eds.), *Disrupting qualitative inquiry: Possibilities and tensions in educational research* (pp. 173–188). Peter Lang.
- Sztajn, P. (2003). Adapting reform ideas in different mathematics classrooms: Beliefs beyond mathematics. *Journal of Mathematics Teacher Education*, 6(1), 53–75.
- Tatum, B. D. (1997). *“Why are all the Black kids sitting together in the cafeteria?” and other conversations about race*. Basic Books.
- Taylor, P. C. (2004). *Race: A philosophical introduction*. Polity Press.
- TeachingWorks. (2019). *High-leverage practices*. TeachingWorks. <http://www.teachingworks.org/work-of-teaching/high-leverage-practices>
- Thompson, A. (1998). Not the color purple: Black feminist lessons for educational caring. *Harvard Educational Review*, 68(4), 522–555. <https://doi.org/10.17763/haer.68.4.nm436v83214n5016>
- TODOS: Mathematics for ALL (TODOS). (2020). *The mo(ve)ment to prioritize antiracist mathematics: Planning for this and every school year*. <https://www.todos-math.org/assets/The%20Movement%20to%20Prioritize%20Antiracist%20Mathematics%20Ed%20by%20TODOS%20June%202020.edited.pdf>
- Tuck, E., & Yang, K. W. (2014). R-words: Refusing research. In D. Paris & M. T. Winn (Eds.), *Humanizing research: Decolonizing qualitative inquiry with youth and communities*. SAGE Publications. <https://doi.org/10.4135/9781544329611>
- Turner, E. E., Drake, C., McDuffie, A. R., Aguirre, J., Bartell, T. G., & Foote, M. Q. (2012). Promoting equity in mathematics teacher preparation: A framework for advancing teacher learning of children’s multiple mathematics knowledge bases. *Journal of Mathematics Teacher Education*, 15(1), 67–82. <https://doi.org/10.1007/s10857-011-9196-6>
- Turner, R. (1996). The dangers of misappropriation: Misusing Martin Luther King, Jr.’s legacy to prove the colorblind thesis. *Michigan Journal of Race & Law*, 2(101), 101–130.
- Twine, F. W. (2000). Racial ideologies and racial methodologies. In F. W. Twine & J. W. Warren (Eds.), *Racing research, researching race: Methodological dilemmas in critical race studies* (pp. 1–34). New York University Press.
- Twine, F. W., & Gallagher, C. (2008). The future of whiteness: A map of the ‘third wave.’ *Ethnic and Racial Studies*, 31(1), 4–24. <https://doi.org/10.1080/01419870701538836>

- Ullucci, K. (2010). What works in race-conscious teacher education? Reflections from educators in the field. *Teacher Education Quarterly*, 137–156.
- Ullucci, K., & Battey, D. (2011). Exposing color blindness/ grounding color consciousness: Challenges for teacher education. *Urban Education*, 46(6), 1195–1225. <https://doi.org/10.1177/0042085911413150>
- Unzueta, M. M., & Lowery, B. S. (2008). Defining racism safely: The role of self-image maintenance on white Americans' conceptions of racism. *Journal of Experimental Social Psychology*, 44(6), 1491–1497. <https://doi.org/10.1016/j.jesp.2008.07.011>
- U.S. Department of Education. (2016). *The state of racial diversity in the educator workforce*. U.S. Department of Education, Office of Planning, Evaluation, and Policy Development, Policy and Program Studies Service. <http://www2.ed.gov/rschstat/eval/highered/racial-diversity/state-racial-diversityworkforce.pdf>
- Ushomirsky, N., & Williams, D. (2015). *Funding gaps 2015: Too many states still spend less on educating students who need the most* (pp. 136–155). The Education Trust. <https://academic.oup.com/socpro/article-abstract/50/1/136/2277636>
- van Es, E. A., Hand, V., & Mercado, J. (2017). Making visible the relationship between teachers' noticing for equity and equitable teaching practice. In E. O. Schack, M. H. Fisher, & J. A. Wilhelm (Eds.), *Teacher Noticing: Bridging and Broadening Perspectives, Contexts, and Frameworks* (pp. 251–270). Springer International Publishing. [https://doi.org/10.1007/978-3-319-46753-5\\_15](https://doi.org/10.1007/978-3-319-46753-5_15)
- van Tartwijk, J., den Brok, P., Veldman, I., & Wubbels, T. (2009). Teachers' practical knowledge about classroom management in multicultural classrooms. *Teaching and Teacher Education*, 25(3), 453–460. <https://doi.org/10.1016/j.tate.2008.09.005>
- Varelas, M., Martin, D. B., & Kane, J. M. (2012). Content learning and identity construction: A framework to strengthen African American students' mathematics and science learning in urban elementary schools. *Human Development*, 55(5–6), 319–339. <https://doi.org/10.1159/000345324>
- Vaught, S. E., & Castagno, A. E. (2008). "I don't think I'm a racist": Critical Race Theory, teacher attitudes, and structural racism. *Race Ethnicity and Education*, 11(2), 95–113. <https://doi.org/10.1080/13613320802110217>
- Viesca, K. M., Torres, A. S., Barnatt, J., & Piazza, P. (2013). When claiming to teach for social justice is not enough: Majoritarian stories of race, difference, and meritocracy. *Berkeley Review of Education*, 4(2), 97–122.
- Vygotsky, L. S. (1978). *Mind in society*. Harvard University Press.
- Wager, A. A. (2010). Teacher positioning and equitable mathematics pedagogy. In M. Q. Foote (Ed.), *Mathematics teaching and learning in K-12: Equity and professional development* (pp. 77–92). Palgrave Macmillan.

- Wager, A. A. (2014). Noticing children's participation: Insights into teacher positionality toward equitable mathematics pedagogy. *Journal for Research in Mathematics Education*, 45(3), 312–350. <https://doi.org/10.5951/jresematheduc.45.3.0312>
- Walker, A. (2021, November 4). *CBSN Originals documentary explores debate over how and when race should be taught in schools* [News]. CBS News. <https://www.cbsnews.com/news/critical-race-theory-teaching-kids-cbsn-originals/>
- Ward, M. (2020, June 11). The New York Times bestseller list this week is almost entirely comprised of books about race and white privilege in America. *Business Insider*. <https://www.businessinsider.com/new-york-times-bestseller-list-books-about-race-in-america-2020-6>
- Warren, C. A. (2015). Conflicts and contradictions: Conceptions of empathy and the work of good-intentioned early career white female teachers. *Urban Education*, 50(5), 572–600. <https://doi.org/10.1177/0042085914525790>
- Watson, D. (2012). Norming suburban: How teachers talk about race without using race words. *Urban Education*, 47(5), 983–1004. <https://doi.org/10.1177/0042085912445642>
- Weinstein, C., Curran, M., & Tomlinson-Clarke, S. (2003). Culturally responsive classroom management: Awareness into action. *Theory Into Practice*, 42(4), 269–276. [https://doi.org/10.1207/s15430421tip4204\\_2](https://doi.org/10.1207/s15430421tip4204_2)
- Weissglass, J. (2002). Inequity in mathematics education: Questions for educators. *The Mathematics Educator*, 12(2), 34–39.
- Wells, A. S. (2019, April). *An inconvenient truth about the new Jim Crow of education* [Presidential address]. American Educational Research Association (AERA) Annual Meeting, Toronto, Canada. <https://www.youtube.com/watch?v=6kkLDhULMsI>
- Wertsch, J. V., & Tulviste, P. (1992). L.S. Vygotsky and contemporary developmental psychology. *Developmental Psychology*, 28(4), 548–557.
- Williams, D. G., & Evans-Winters, V. (2005). The burden of teaching teachers: Memoirs of race discourse in teacher education. *The Urban Review*, 37(3), 201–219. <https://doi.org/10.1007/s11256-005-0009-z>
- Willis, A. T. (2020). *Confronting and changing racialized patterns of not-seeing Black children: Narrowing the gap between observation and the work of teaching mathematics in the context of practice based professional development* [Dissertation]. University of Michigan.
- Wilson, M. B., & Kumar, T. (2017). Long ago and far away: Preservice teachers' (mis)conceptions surrounding racism. *International Journal of Multicultural Education*, 19(2), 182. <https://doi.org/10.18251/ijme.v19i2.1346>

- Wood, M. B. (2013). Mathematical micro-identities: Moment-to-moment positioning and learning in a fourth-grade classroom. *Journal for Research in Mathematics Education*, 44(5), 775. <https://doi.org/10.5951/jresmetheduc.44.5.0775>
- Woodson, A. N., & Bristol, T. J. (2020). Male teachers of color: Charting a new landscape for educational research. *Race Ethnicity and Education*, 23(3), 281–287. <https://doi.org/10.1080/13613324.2019.1663912>
- Word, C. O., Zanna, M. P., & Cooper, J. (1974). The nonverbal mediation of self-fulfilling prophecies in interracial interaction. *Journal of Experimental Social Psychology*, 10, 109–120.
- Yeh, C., Ellis, M. W., & Hurtado, C. K. (2017). *Reimagining the mathematics classroom: Creating and sustaining productive learning environments*. National Council of Teachers of Mathematics.
- Yoon, I. H. (2012). The paradoxical nature of whiteness-at-work in the daily life of schools and teacher communities. *Race Ethnicity and Education*, 15(5), 587–613. <https://doi.org/10.1080/13613324.2011.624506>
- Young, E. Y. (2011). The four personae of racism: Educators' (mis)understanding of individual vs. systemic racism. *Urban Education*, 46(6), 1433–1460. <https://doi.org/10.1177/0042085911413145>
- Zeichner, K. (2012). The turn once again toward practice-based teacher education. *Journal of Teacher Education*, 63(5), 376–382. <https://doi.org/10.1177/0022487112445789>
- Zembylas, M. (2003). Emotions and teacher identity: A poststructural perspective. *Teachers and Teaching*, 9(3), 213–238. <https://doi.org/10.1080/13540600309378>