# Children's Beliefs about the Race-Based Inheritance of Skills: Examining the Roles of Children's Age and Racial Background

**by**

**Amber D. Williams**

**A dissertation submitted in partial fulfillment**
**of the requirements for the degree of**
**Doctor of Philosophy**
**(Psychology)**
**In the University of Michigan**
**2015**

**Doctoral Committee:**

**Professor Stephanie Rowley, Co-Chair**
**Professor Robert Sellers, Co-Chair**
**Professor Susan Gelman**
**Associate Professor Deborah Rivas-Drake**

## Dedication

To mom, dad, and Darian

To papa and gramps and all of my ancestors, whose sacrifices made this day possible.

**Acknowledgements**

I am extraordinarily thankful to God for allowing me to make it to this point. It has not been easy, but I am thankful that Your grace, mercy, and the many blessings you have graciously provided, which have given me the strength to run this race. Never has my faith been tested more than over the past 5 years, but I am thankful that You have been there every step of the way, proving Your word true and demonstrating to me that Your grace is sufficient.

Dr. Stephanie Rowley, thank you for being one of my biggest cheerleaders from day one! Thank you for taking a chance on me, even when you had so many other students to mentor. Even though I still find it hard to believe as ardently in myself as you believe in me, it has been a great comfort that someone I admire so much has faith in my potential as a scholar. Your calm nature has most certainly helped me calm my own neurosis so many times; meetings with you are truly magical! Thank you for pushing my thinking in such a supportive and helpful manner. I look forward to many more years of collaboration! No matter how far I go, or how long it's been, you will always be my advisor, mentor, and role model.

Dr. Robert Sellers, thank you for taking me on as a graduate student and pushing me to be the best scholar I could be, to think critically about the work I do, to take seriously my responsibility as a researcher; thank you for teaching me that the work and the communities are too important to conduct anything less than the most rigorous and thoughtful work. Thank you for caring so much about students of color, for opening your home to us (especially for Thanksgiving!), for fighting for our success; I hope that wherever I end up, I can do your

legacy justice. You are such a wonderful example of someone who practices what he preaches. I'm so happy to have you in my corner!

Dr. Susan Gelman, thank you for your willingness to be so incredibly instrumental in helping me design my dissertation and for stepping in as, what to me has felt like a third advisor. Your willingness to read drafts of my work, provide professional advice, and all in a timely manner while you had many other grad students and responsibilities is so greatly appreciated. I am so lucky to have not 2, but 3 awesome mentors!

Dr. Deborah Rivas-Drake, thank you so much for agreeing to be on my committee, even though you had just gotten to Michigan! Having read and admired your work for much of my early graduate career, it was truly an honor to be able to get such invaluable feedback from someone whose work is as rigorous and impactful as yours.

Steven Roberts, thank you for being such a great colleague and friend and for all of your help and advice throughout the dissertation process. You have been instrumental in bringing this project to fruition, and I know this will be the first of many collaborative projects to come.

To those who made this project possible, including the staff members, administrators, and directors at Camp Haven, Camp on the Move, Parkridge, Bethel AME, Saline Public Schools, the Museum of Natural Science, and Christian Tabernacle Baptist Church, parents and children who participated, the National Science Foundation and Rackham graduate school who provided monetary support for this research, and Research Assistants Sara Miller and Nadine Tayeb, thank you all for your support and hard work in making this project a reality.

Mom, you are and have always been my best friend. There are so many things to thank you for, but most of all, thank you for being my shoulder to cry own, for believing in me when I couldn't believe in myself, for your longsuffering patience with me, for encouraging me to keep

going when I felt like giving up. I can only hope that I can be as good a mother someday as you have been to me. Thank you. To me you truly are the hands of God.

Dad, you were my original racial socialization agent. Thank you for teaching me the importance of knowing my history and the importance of faith and a relationship with God. Thank you for always being proud of me, for always encouraging me, for telling me the truth (even when I didn't want to hear it), but also managing to still support and allow me to become my own person. I love you more than words can express.

Darian, I hope you know how incredibly proud I am of you. Though I will never forget bringing you back from the hospital, being so proud that I could finally be a big sister, I am also so excited to see you grow up to be such a kind and intelligent young man.

Grammy, Grandma, Aunt Debra, Uncle Mervin, Aunt Karen, Aunt Sandy, Aunt Sheila, Uncle Stacy, and my entire amazing family, thank you for your prayers, your encouragement, and all of your unwavering support. I am so lucky to have you all; your belief in me has kept me going many days and nights over this graduate school journey.

Dr. Felecia Webb, thank you for being the big sister I never had. I could not have asked for someone more caring, understanding, and patient to help me through some of the darkest, and most wonderful, days of the dissertation phase.

Dr. Sarah Trinh, the night when we took an introvert break at Teresa's birthday party I knew for sure we would be very good friends. I know that our friendship, and by extension introvert night/extreme [*insert city we live in*], will continue until we're both old and gray.

Adrian Gale, thanks for being a great writing buddy and an even better friend. So glad I could have someone to go to for great advice, to complain to, and to laugh with about crazy rap lyrics and even crazier rapper interviews.

Bridget Richardson, I'm so glad that we came into Seller's lab together; I couldn't have chosen a better person to start graduate school with. To many more celebrations at Mélange, you visiting me in Texas, and a part 2 vacation in Vancouver.

Jodi Levy, thank you for being one of my best friends for almost a decade. It has been an absolute life-saver to be able to go through graduate school with one of my best friends who is so conveniently 4 hours away in one of my favorite cities.

Alvine Nintai, I am eternally grateful to God that we met very randomly 7 years ago. Though we've been apart for over half of those years, our friendship continues to go strong. Thank you for always accepting me exactly as I am and for making my hills look a lot less steep.

Sijuola Odumabo, world's best roommate, I miss you so much; thanks for being such a great, funny, intelligent, and supportive friend, always looking out for me and giving me great advice. Let's please see each other all the time while I'm in Texas.

Dr. Mikki Hebl, thank you for being my first academic advisor and mentor, thank you for introducing me to research and being the reason I went into academia, and thank you for all of the care packages! They always came at the exact right time.

Rowley Lab, I seriously love you all, special mention to Nkemka Anyiwo, Aixa Marchand, Josi Banales, Latisha Ross, and Dr. Fantasy Lozada. You all may not know it, but there were many times when you've made me laugh and lifted me up when I was feeling down, and I am again, so thankful to Stephanie for creating such an amazingly supportive and productive lab space. I am more than confident that the lab will continue to be such a space with you all at the helm.

Seller's Lab, where it all began, I learned so much in those early days and continue to be amazed by the work and the amazing scholars being produced by this lab. Special thank you to Dr. Lori Hoggard and Dawn Espy for being amazing friends and colleagues.

To those who went before me, including Dr. Meeta Banerjee, Dr. Teresa Nguyen, Dr. Jillian Lee-Wiggins, Dr. Jonathan Lane, Dr. Alvin Thomas, Dr. Monica Foust, Dr. Elan Hope, Dr. Christy Byrd thank you for all of the guidance, mentoring, accountability, encouragement, and most importantly the friendship that you all have provided. Thank you for paving the way.

To those who have traveled this journey with me, including Dr. Wylie Wan, Dr. Matthew Kim, William Hartmann, Lanice Avery, Latisha Ross, Faheemah Mustafaa, Dr. Tamarie Macon, Esohe Osai, Yasmin Cole-Lewis, and Patty Kuo, I could not have asked for a more wonderful group of people with whom to travel this often tiring and arduous journey to a Ph.D. Thank you for all the work sessions, the pity parties, the shoulders to cry on, and all of the fun and laughter.

To those still on the journey to a Ph.D., including Casta Guillaume, Chauncey Smith, Elise Hernandez, Natasha Johnson, Seanna Leath, and Richard Smith, you guys are amazing and I know your futures are bright. Please know I'm here if you ever need anything.

My home church family, Christ Temple Apostolic Church, one of the most difficult tasks of my graduate career has been attempting to find a church that held a candle to what I had at home. Special thanks to Pastor David Allen, First Lady Regina Allen, Mother Jacobs, and Mother Lynette Hunter for the support, encouragement, prayers, and love. May God reward you above and beyond your wildest dreams. There are no words to express what your love and support mean to me not only over the past 5 years, but also over the past 27.

Last, but certainly not least, thank you to Bethany Daigle, Andria Livingston, Lauren Pierce, Jessica Edwards, and Lizbeth Garcia, the friends who have known me and who I have

known the longest; it has been roughly 15-20 years and we still love each other. That is friendship. May we meet for brunch or dinner at least once/year no matter where we end up. Thank you all for reminding me of who I am and where I come from.

# TABLE OF CONTENTS

## LIST OF FIGURES

## LIST OF APPENDICES

**Abstract**

Research shows that children believe that a child will have the same skin color as his or her biological parents, even when they have been adopted by other-race parents (Hirschfeld, 1995). However, research has not yet explored whether children believe that additional individual traits are inherited by virtue of inheriting race (the innate potential of race). Understanding whether children use race to guide their judgments regarding the skills individuals possess may shed light on the development of racial essentialist thinking and may also have implications for children's understanding of and developing beliefs about racial stereotypes.

This study aimed to understand whether children believe in the innate potential of race; in other words, do children believe race is implicated in the traits individuals inherit or learn? This study also aimed to understand whether children's beliefs differ, depending on their racial group membership and age. In order to explore this, I showed 80 Black and White children (ages 4-12) stories in which Black and White target children were adopted by same- or other-race parents. Children were asked whether the target children would have the same skills as either their biological or adoptive parents.

Results showed that children's beliefs differed depending on a number of factors, including participant race, participant age, target child race, and the order in which they saw the trials. For example, the youngest Black children believed in innate potential more for White target children than for Black target children, while the oldest Black children believed in innate potential more for Black target children than for White target children. Further, results suggested

that children applied innate potential to target children more when the first story they were told featured a Black target child adopted by White parents.

These results have important implications for our understanding of the development of racial essentialism in children. Specifically, this study demonstrates that children do, under certain circumstances, utilize race to guide their judgments regarding individuals' characteristics. This study provides further evidence that children's beliefs about race are highly contextual and may depend heavily on children's racial group membership and stage of development.

# CHAPTER I

## Introduction

"Brown people drive old cars." The words of a biracial 4-year-old girl, understandably alarmed her African American mother, who wrote an article in the Black online magazine *The Root* about her fears that her daughter might "come to more conclusions…to equate brown people with having less, doing less, being less…what if this observation about brown people and old cars also leads to her stereotyping in other more potentially harmful ways, i.e. white people are successful and black people are unsuccessful?" (Fields, 2009). These questions by an alarmed mother form the foundation for the research questions addressed here, which can be broadly conceptualized as exploring whether, at what point, and under what circumstances children make judgments about the characteristics and behaviors of others based on their racial background.

The subject of children's attitudes about race has become a topic of great concern and fascination, not only in scientific and academic communities, but also in popular discourse. In addition to the above article, CNN conducted a series of studies on a weeks-long segment entitled "Kids on Race," recruiting researchers such as Drs. Melanie Killen and Margaret Beale-Spencer to design studies (Cooper, 2010). These studies included vignettes in which children were asked about the helping and harming behaviors of two children from different racial backgrounds, in addition to a doll study similar to those conducted by Clark and Clark (1947; 1950). Additionally, in 2009, Newsweek ran as their cover story an article entitled "Is Your Baby

Racist? Exploring the Roots of Discrimination," discussing Dr. Rebecca Bigler's work on the development of stereotyping and prejudice among children (Bronson & Merryman, 2009). This collision between academia and popular culture has raised awareness regarding children's racial attitudes, due to the widespread belief that understanding children's attitudes will illuminate the development of these racial attitudes across the lifespan and provide useful tools for improving such attitudes. This narrative posits that adulthood may be too late in development to try to reduce prejudice, stereotyping, and discrimination, due to the evidence that such behaviors and attitudes are very difficult to change once they are obtained (Aboud, 1988). However, because early attitudes may be more malleable to change, childhood, and even infancy and toddlerhood, may be the best points in development to start understanding and shaping racial attitudes.

Despite the recent publicity, there is still a great deal of research to be done in order to fully understand how children conceptualize race, how they use race as an inductive tool, and what contextual and individual factors influence the development of children's attitudes and beliefs. The aim of this study was to explore these issues, examining whether and under what circumstances Black and White children between the ages of 4 and 12 believe that certain individual traits and characteristics are attributable to individuals' racial background.

Much of the current research on these topics has focused on either the social or cognitive aspects of children's racial attitudes. Much of the work focusing on social aspects of racial attitudes has examined the ways in which children's racial background and social context predict their racial attitudes, particularly their in-group/out-group preferences, and their stereotyping (Aboud, 1988; Clark, 1947; 1950; McKown & Weinstein, 2003; Rowley, Kurtz-Costes, Mistry, and Feagans, 2007; Kurtz-Costes, Defreitas, Halle, & Kinlaw, 2011). On the other hand, cognitive psychologists have more often explored how universal aspects of cognition (e.g.,

essentialist thought) – and age-related changes in those cognitive concepts – may influence children's attitudes about race. Recent studies, particularly in social-cognitive developmental psychology, have attempted to address the weaknesses in both areas that result from their relative independence and isolation. These studies have explored the ways in which both the context and development may influence the way children think about race (e.g., Diesendruck, Golfein-Elbaz, Rhodes, Gelman, & Neumark, 2013; Kinzler & Dautel, 2012; Rhodes & Gelman, 2009). While this burgeoning field has advanced our understanding of children's conceptualization and use of race in vital and important ways, more research is needed in order to have a comprehensive understanding of the ways in which children's racial attitudes and cognition develop, stabilize, and/or change over middle childhood, including the examination of how context and individual differences influence these processes. This study aims to address these gaps by exploring how both children's age and racial background may influence their attitudes about how race may influence the traits individuals possess.

**Cognitive-Developmental Approaches to Understanding Children's Conceptualizations of Race**

Researchers have explored the cognitive bases of children's conceptualization of race as a meaningful category, often focusing on age differences in the extent to which children essentialize race. Psychological essentialism has been defined as the belief that a category is immutable, innate, and objectively correct; members of essentialist categories are also said to have an "essence" or non-obvious, underlying properties that give them their characteristics and group membership (Gelman, 2003; Gelman, 2004). For example, by age 4, children tend to essentialize animal categories, believing that even if a cat is raised by dogs, it will still "meow" as opposed to bark (Gelman, 2004; Wellman & Gelman, 1991). According to Gelman (2004),

essentialism can be described as involving the combination of three related concepts: innate potential, inductive potential, and underlying structure. Innate potential is the belief that certain categories have properties that are immutable and inherited (e.g., a dog barks because of its essence, which is not changed by the environment). Inductive potential represents the belief that knowledge of the traits of one member of an essential category can extend to other members of that category, thus essential categories are inductively rich. Finally, underlying structure posits that members of essential categories have an "essence," or something inside of them, that makes them who they are. This could be conceptualized in biological ways (e.g., blood, genetics), but is not necessarily a biological concept. The "essence" can be a placeholder, which prompt individuals to believe that, even though people may be perceptually different, because of what is on the inside, they still belong to the essential category (e.g., Black people whose skin color is very fair are still Black because of their "essence").

Research has shown that children, as in the example above, tend to essentialize members of different animal species, (i.e., cats and dogs), but tend not to essentialize items in non-living categories (e.g., tables and chairs) (e.g., Rhodes & Gelman, 2009). Recently, more researchers have examined essentialism of social categories such as race and gender, given that these social categories are not objectively correct, but rather are socially constructed and subject to change according to the sociopolitical history and current state of the society in which they operate. However, many adults treat social categories, like gender and race, as essential categories (Haslam, Rothschild, & Ernst, 2000), though there is also variability in the extent to which adults do this (Martin & Parker, 1995).

Essentialism of social categories may promote more negative racial attitudes for several reasons. First, essentialism may promote "us" vs. "them" thinking, given that essentialized

categories are often seen as discrete and having important, fundamental differences. Thus, children who believe race is an essential category may believe that racial categories mark important differences between individuals and promote more thinking regarding the in/out-group, which may then lead to in-group biases, stereotyping, and prejudicial thinking and behavior. For example, children who essentialize race may be less likely to befriend an individual of another racial group. Indeed, researchers have theorized that essentialist thinking with regard to race is one trait that promotes prejudice and stereotyping (Bigler & Liben, 2006), and research has shown that essentialist thinking is related to higher stereotype endorsement (Pauker, Ambady, & Apfelbaum, 2010). Additionally, research with adults shows believing racial groups are biologically based reduced desire for cross-race friendship and promoted justification of racial inequality (Williams & Eberhardt, 2008).

Studies of essentialism of social categories have extended to understanding these concepts in children. Researchers have used measures examining children's beliefs about heritability and stability of racial phenotype in order to provide evidence that children apply the concepts of innate potential and underlying structure to race. For example, Hirschfeld (1995a) explored children's beliefs about the race-based innate potential of physical characteristics, specifically skin color, by presenting a story in which a child is switched at birth and grows up with other-race parents. With this study paradigm, Hirschfeld examined whether children believe that race is an inherited and stable characteristic or a characteristic that is obtained via the environment or socialization. He concluded that children as early as age 4 believe that skin color, and by extension race, is an inherited and stable characteristic.

While research has mainly examined essentialism of social categories as a whole, research suggests that children may essentialize sub-groups within social categories differently.

Hirschfeld (1995b), for example, found that children in the fifth grade were more likely to believe that the skin color of a child with one White and one Black parent would be Black than they were to believe that such a child would be White or "intermediate" (e.g., multiracial). This research suggests that children may believe that minority/less privileged groups carry more innate potential than do majority/more privileged groups, a concept known as hypodescent (also known as the one-drop rule). Haslam et al. (2000) also found that a sample of undergraduates (participant race was not reported) reported that race as a category was objective and natural, but believed that Blackness was more inductively informative and coherent than Whiteness. Thus, children may essentialize Black people more than White people. I will explore this possibility in this study.

These studies demonstrate that children do believe in the innate potential of the physical aspects of race, specifically skin color. Further, children may not apply innate potential, and essentialism more generally, equally among racial groups. They may, instead, apply principles of hypodescent, essentializing less privileged racial groups more than more privileged ones. While the extant studies have been vital to our current breadth of knowledge regarding children's racially essentialist attitudes, they also raise more questions. First, do children's racial essentialist beliefs differ according to individual differences, such as child's racial background? Second, does children's endorsement of innate potential go beyond physical characteristics to more psychological and behavioral traits? Finally, do children apply innate potential differentially to different racial groups? The current study will aim to address these questions in part.

**Social Approaches to Understanding Racial Preferences in Childhood**

The cognitive development literature on racial essentialism, while informative, has often included a limited sample of children from which to draw generalizable conclusions. For example, many studies include exclusively or primarily upper middle-class White samples. However, the social approaches, which have mainly focused on children's racial preferences and racial stereotyping, have shown that individual and contextual differences are important factors to consider when studying children's racial attitudes (e.g., Aboud, 1988; Ambady, Shih, Kim, & Pittinsky, 2001; Clark & Clark, 1947; 1950; McAdoo, 1985; Kurtz-Costes et al., 2011; Pauker, Ambady, & Apfelbaum).

Researchers who take primarily social approaches to studying children's racial attitudes have mainly focused on racial preferences and stereotyping, and from this research, two main findings have been reported. First, Black and White children differ with regard to their racial attitudes. White children tend to have high in-group preferences that increase until about 5 or 6 years of age, at which point in-group preferences decrease around the age of 7 or 8 (Aboud, 1988; Raabe & Beelmann, 2011). On the other hand, research has found greater variation in the racial/ethnic preferences of Black children. Studies have most often shown young Black children to be relatively neutral in their racial preferences, followed by a number of children who have in-group preferences, and a significant minority of children who have out-group preferences (specifically for Whiteness) (Aboud, 1988).

In the stereotyping literature, researchers find that children learn societal stereotypes about their own group before they learn stereotypes about out-group members (Ambady et al., 2001; McKown & Weinstein, 2003). For example, in their study of children's stereotype awareness McKown and Weinstein (2003) found that African American and Latino children were more aware of academic stereotypes of African American and Latino underachievement

than were White and Asian children. This suggests that stigmatized groups may know more about in-group stereotypes for a number of reasons, including that they may be exposed more frequently to these stereotypes or are predisposed to notice portrayals of their own groups in society.

Second, research has shown that children's racial preferences are related to contextual factors, specifically, the racial composition of their school or environment. For example, Clark and Clark (1947; 1950) found that racial composition of the environment was associated with Black children's preferences for a Black or White doll. Black children in a Northern, multiracial school were more likely to prefer a White doll than were Black children in a Southern, all Black school. Additionally, Horowitz (1936) found that White children in a communist community had more neutral preferences than their counterparts outside of the communist community (but inside the US) (Horowitz, 1936 as cited in Cross, 1991). This research demonstrates the importance of examining the relations among racial attitudes and social/demographic factors such as racial background of the child and racial composition of the child's environment. Given research asserting the importance of these factors, this study aims to add to the existing literature on children's cognitive development by exploring how Black and White children may differ in their attitudes about the race-based innate potential of non-physical characteristics and what underlying processes may account for potential differences (e.g., racial socialization, exposure to diversity).

**Research Combining Social and Cognitive Aspects of Racial Conceptualization**

While much of the current research on the cognitive and social aspects of racial attitudes in childhood has been separate, some studies have examined how children's own development as well as the social context may influence children's racial attitudes. These studies have often

found that the nature of age differences with regard to children's racial attitudes is often highly dependent on contextual- and individual-level factors. For example, Rhodes and Gelman (2009) found that 5-year-old (predominantly White) children, regardless of context, did not essentialize racial categories. However, by the age of 10, the extent to which children essentialized race depended on the community in which they lived. Rhodes and Gelman (2009) found that older children living in a rural, conservative community were more likely to essentialize race than were older children from a more liberal, educated community. Other research has also explored both age and cross-cultural differences in children's racial attitudes. Diesendruck et al. (2013) found that 10-year-old children in Israel essentialized race less than their 5-year-old counterparts. However, 10-year-old children in the US essentialized race more than their 5-year-old counterparts. These studies demonstrate the importance of attending to both age- and context-related factors when examining children's racially essentialist beliefs.

Finally, Kinzler and Dautel (2012) examined the ways in which White and Black children reasoned about language and race as essential categories. In order to explore this, they asked Black and White children ages 5 and 10 whether a White English-speaking child would grow up to be a White French-speaking man or a Black English-speaking man in order to examine whether children believed language or race was stable across the lifespan. They found that White children at age 5 believed that language would remain stable while Black children recognized that race would remain stable. White children did not recognize until ~10 years that race (or skin color) is a stable property, while language is learned. This suggests that Black children may develop sophisticated knowledge of race and racial inheritability earlier than do White children.

These studies demonstrate that the treatment of social categories as natural or essential is heavily dependent on not only context, but also the racial background of the children in the study

sample. Thus, social categories differ from living categories such as animals and plants (which tend to be essentialized) and inanimate objects (which tend not to be essentialized) in that the degree to which social categories are essentialized is largely dependent on a number of factors. The dependence of social category essentialism on context may be due to the fact that social categories are, by definition, socially constructed. Thus, the meaning placed on them is dependent on the society or community in which such categories exist. While previous studies have moved the field forward in important ways, gaps in our understanding of children's racial attitude development remain.

First, much of the current research has focused on the physical aspects of race in order to understand the extent to which children essentialize race, and more specifically, apply innate potential to race (Giménez & Harris, 2002; Hirschfeld, 1995a; Hirschfeld, 1995b; Kinzler & Dautel, 2012). However, it is possible that children may believe that skin color is a stable and inherited trait (i.e., that skin color does not change over time and is inherited), but not believe that race as a social construct (i.e., that one is born into the racial category "Black" or "White" and cannot move outside that category) is essential. Additionally, the genetic basis of skin color (at least to a certain extent – there are also environmental influences) is generally agreed upon as fact by adults in both lay and scientific communities (Griffiths, Miller, Suzuki, Lewontin, & Gelbart, 2000). Children may be simply demonstrating their sophisticated understanding of the biological inheritance of physical traits when they say that skin color is both inherited and immutable. This, however, does not necessarily indicate that children subscribe to the belief that a person with brown skin is a categorically "Black" or "African American" individual.

One method of measuring children's beliefs about the innate potential of race as a social category would be to examine their beliefs about how non-physical traits may be innate to

individuals of different racial groups. Given that non-physical traits, like skills, are not directly related to race, exploring children's attitudes about how such traits are connected to racial background may help tease apart children's knowledge of biological processes (e.g., skin color transmission) and their essentialism of race as a social category.

**Rationale for the Current Study**

Previous research has been helpful in increasing our understanding of children's reasoning and attitudes about racial categories. This study seeks to add to the extant literature by exploring the innate potential of race in terms of whether behavioral traits are seen as inherited and immutable as a result of individuals' racial background. In other words, do children believe that individuals inherit characteristics, like skills, via their inheritance of their racial group membership?

This study explores this question by examining whether and under what circumstances children attribute certain skills to racial inheritability, thus exploring the extent to which children apply innate potential to race. Specifically, this study will explore whether children view the skills of in-group and out-group members as inherited and connected to their racial background. Using the adoption methodology developed by Gelman & Welman (1991), Solomon, Johnson, Zaitchik, & Carey (1996), and Springer (1996), children will hear stories about children who have been adopted by a different set of parents and will then be asked whether the child in the story (i.e., the target child) will be like their adoptive or biological parents with regard to their skills.

This methodology will allow me to tease apart whether children believe that certain characteristics are due to biological inheritance (innate potential/biological parentage) or socialization (growing up in the same household/adoptive parentage). In this study, I seek to

understand how target children's race may affect whether they are perceived to be more "essential" (specifically with regard to innate potential) as well as how the race of their adoptive parents (whether the adoptive parent is of the same race or a different race from their adopted children) may affect perceptions of their innate potential. For example, target children adopted by parents of a different race may be seen as essentially different from their adoptive parents and thus, not the same as them in terms of their skills. Children who are adopted by parents of the same race may be given more leeway to be influenced by their environment.

Additionally, this study is unique in that it will evaluate whether individual (i.e., racial background) *and* developmental (i.e, age) differences exist in the extent to which children apply innate potential to the target children. Thus, this study will include Black and White children between the ages of 4 and 12. Few recent studies on children's social-cognitive attitudes about race have explored minority children's attitudes, with most using samples of mostly upper-middle class White children. Given research showing that differences in racial background, environment, and age relate to children's racial attitudes (Kinzler & Dautel, 2012; Rhodes & Gelman, 2009), our understanding of children's racial attitudes may be skewed and incomplete. Research on Black children's and other minority children's racial attitudes is also often dated (Clark & Clark, 1947; 1950; McAdoo, 1985). Thus, new studies of minority children's racial attitudes are needed. Further, few studies have explored children's attitudes in as wide an age group as will be explored here; thus, this study will provide more information regarding the developmental trends and changes in children's innate potential.

Research question 1 asks whether children will generally be adoptively biased (that is, will they believe the target child is more like their adoptive parents) with regard to inheritance of skills. In other words, do children believe skills are inherited or learned? I will explore this by

examining the extent to which children judge the target children, regardless of target and adoptive parent race, to be like their adoptive parents above chance levels.

Research question 2A explores whether children are more adoptively biased toward the target children adopted by same-race parents compared to children adopted by cross-race parents. Thus, I will examine the extent to which children may apply innate potential (i.e., the belief that essential category members inherit traits that are stable over time) exclusively to target children adopted by cross-race parents. As noted above, children may believe that adoptive parents who are of a different race than the target child are too different to have an impact on the target child. Thus, are children more adoptively biased toward target children adopted by same-race parents versus cross-race parents?

Research question 2B explores whether the target children's racial background will factor into the extent to which children apply innate potential to them. Given research on older children's use of hypodescent (Hirschfeld, 1995b), some children may believe that innate potential applies more to Black target children than White target children. Thus, are children more adoptively biased toward Black target children than White target children?

Research question 3A explores whether Black and White children differ in the extent to which they are adoptively biased. Given the findings of prior research (e.g., Kinzler & Dautel), Black and White children may differ in the extent to which they apply innate potential to the target children. Thus, are White children more adoptively biased toward target children than Black children?

Research question 3B explores the extent which children's differential application of innate potential to Black and White target children may depend on the participants' racial background. For example, children may treat in-group members differently than out-group

members, creating a cross-over effect by which Black children believe Black (vs. White) target children are more malleable to their environment, while White children believe that White (vs. Black) target children are more malleable to their environment. Thus, are differences in Black and White children's adoptive biases dependent on the race of the target child?

Research question 4 explores the developmental processes by examining how children ages 4-6, 7-9, and 10-12 may apply innate potential differently, given research showing that American children may essentialize race more as they age. Thus, are there age differences in the extent to which children are adoptively biased toward the target children?

As a guide for how specific terms and concepts will be operationalized and defined, for this study I am operationalizing the innate potential of race primarily as the extent to which children (i.e., participants) believe that target children will be like their adoptive parents. Adoptive bias is defined as how often participants choose the adoptive parents over the biological parents as those the target children will be like. Children who express higher levels of adoptive bias are considered to believe in the innate potential of race to a lesser extent than children who express lower levels of adoptive bias. Higher adoptive bias may also be referred to as higher flexibility. Biological bias may also be used to refer to children's beliefs about the innate potential of race. Biological bias is defined as how often children believe the target children will be like their biological parents. Higher biological bias is being defined as higher innate potential. Biological bias may also be referred to as target children being more "biologically bound" and in terms of higher inflexibility attitudes among participants.

# CHAPTER II

## Literature Review

### Children's Essentialism and Categorization

**Essentialism of Natural and Social Categories.** One of the most basic and fundamental abilities that children develop is the ability to categorize the world around them. Children begin early on to realize the importance of organizing the society in which they live into meaningful categories, enabling them to make quick inductive conclusions about the individuals and items they encounter on a daily basis. Without this ability, too much cognitive space and time would be devoted to deciphering the use and meaning of everything and anyone with whom one comes into contact. Research has shown that children use categories to make important distinctions and predictions regarding the causal attributes, biological and physical characteristics, and objectivity or naturalness of certain categories (Gelman, 2003). This research has also shown that children are particularly sensitive to the differences between living (i.e., members of society that are alive) and non-living kinds (i.e., inanimate/man-made objects), believing that living kinds have certain internal and non-obvious properties that cause their group membership (Gelman, 1988; Gelman & Kremer, 1991). Generally, children believe that living kinds contain essences that cause them to have the attributes they possess and that, because of their essence, living kinds are objective, natural categories (Rhodes & Gelman, 2009).

For example, research has found that, around 4 years of age, and possibly earlier, children understand that a leaf-bug will be more like a bug than a leaf, even though the leaf-bug looks more perceptually like a leaf. Thus, this categorization supersedes perceptual anomalies

(Gelman & Markman, 1986; 1987; Heyman & Gelman, 2000b). This finding provides evidence that children believe that members of essential categories have inductive potential, such that knowing information about one item in an essential category can be extrapolated to other items in that category (Gelman, 2004). Additionally, by the age of 6, and sometimes as early as 4, children predict that a kangaroo raised by goats would still have a pouch and be really good at hopping because pouches and hopping are inherent to kangaroos (Gelman & Wellman, 1991). Thus, children understand that essential categories have innate potential, traits that are immutable and biologically based, even when members of that category are not explicitly taught or exposed to those traits (Gelman, 2004; Gelman & Wellman, 1991).

Finally, by 2 years of age (and with increasing sophistication until roughly 8), children believe that an inside "essence" (which may be thought of as a placeholder, for which children do not have a specific name or concrete understanding) causes external behaviors and traits; this is referred to as an underlying structure (Gelman, 2004; Gelman & Wellman, 1991). Thus, essentialism can be understood as encompassing principles of inductive potential, innate potential, and underlying structure. While children often essentialize different species of animals, there are items they do not essentialize, specifically, those things that are not alive or not considered to have essences with biological underpinnings. For example, a table may be changed or manipulated in such a way that it could be made into a chair, because tables and chairs are human creations and thus, can be manipulated to fit human needs. Because of this, artifacts kinds are not considered objective or natural (Gelman, 2004; Gelman & Wellman, 1991; Rhodes & Gelman, 2009).

Researchers have since become interested in whether children, and adults, essentialize social categories, that is, categories that are often treated as objective, natural kinds (essential

categories), but which have few or no differences rooted in biology or genetics (e.g., there are fewer genetic differences between racial groups than within racial groups) (e.g., Cosmides, Tooby, & Kurzban, 2003). Thus, studying the essentialism of social categories may provide important information on how children (1) use and learn about social categories and (2) develop prejudice and stereotype knowledge and endorsement about certain social categories. Additionally, essentialism has been linked to negative racial attitudes (Bigler & Liben, 2006; Pauker et al., 2010; Williams & Eberhardt, 2008), and thus it is important to understand the extent to which children believe race is an essential social category, given that ameliorating such attitudes may promote more positive racial attitudes and more openness to cross-race friendships.

While children's categorization of living and non-living kinds has been well documented in the social cognitive literature (Gelman & Wellman, 1991; Gelman, 2003; Rhodes & Gelman, 2009; Springer & Keil, 1989; Wellman & Gelman, 1992), children's treatment of social categories has become a more recent topic of discussion within the scientific community (Kinzler & Dautel, 2012; Rhodes & Gelman, 2009; Shutts, Roben, & Spelke, 2013). These categories, including race, gender, and age among many others, are unique in that while they are often treated as objective categories in society, they are not as objective, discrete, or informative as society treats them according to scientific study. Additionally, there may be more variation in children's attitudes about racial essentialism given that race has not been treated as a natural category as long in human evolutionary history as other social categories like gender (Cosmides et al., 2003). However, from the declaration that Black slaves were 3/5 of a person, to the Jim Crow area, to the US census only allowing one race to be marked per person up until the year 2000, there are many ways in which American society treats race as a natural, objective category. Additionally, social categories, while not objective, continue to have very real implications for

societies in which they exist, including stratification and marginalization of individuals in less privileged social categories. Moreover, because they involve the separation of humans into separate categories, social categories have direct relevance for the way children interact with other people and the assumptions they make regarding the behaviors and attributes those individuals possess.

Generally, research has shown that children only pay attention to a small number of social categories (Bigler & Liben, 2006), including gender (Diesendruck et al., 2013; Gelman & Taylor, 2000), age (Shutts, Banaji, & Spelke, 2010), and language/accent (Kinzler & Dautel, 2012; Kinzler, Shutts, DeJesus, & Spelke, 2009). Children often essentialize these categories, prefer individuals from their own category membership, and become knowledgeable about stereotypes around these social categories. Additionally, children's level of essentialist reasoning about these categories often relates to their attitudes about individuals in that category (i.e., levels of prejudice and stereotyping) (Kinzler et al., 2009; Pauker et al., 2010). Children's treatment of these categories has been shown to be distinct from their treatment of living kinds and non-living kinds, in that children's beliefs about them as essential categories has been shown to be dependent on factors such as age, racial background of the child, and environment. For example, with regard to gender, young children around the age of 4-5 often treat gender categories as natural, believing that individuals in a faraway land who treated gender categories more flexibly were objectively wrong. However, by the age of 10, children in a more educated, liberal community were more flexible with regard to gender than children in a more rural, conservative community (Rhodes & Gelman, 2009).

Race is another relevant social category along which much stratification occurs in the United States. However, research examining the extent to which children essentialize and use

race as a category in order to make decisions about friendships and preferences has been inconclusive. Even more so than gender and language/accent, studies have shown that children's attitudes about race are dependent on factors such as children's racial background, environment, and age (e.g., Clark & Clark, 1947, 1950; Diesendruck et al., 2013; Kinzler & Dautel, 2012; Rhodes & Gelman, 2009; Shutts, Kinzler, Katz, Tredoux, & Spelke, 2011). Some researchers posit that this may be due to the fact that, evolutionarily speaking, gender and age have been more relevant to early humans' lives, while race is a more recently salient category (Cosmides et al., 2003). Given the number of questions these details motivate, research on children's beliefs and attitudes about race and racial groups has both historically and currently been a frequently studied subject in the field of psychology.

**Children's Understanding and Use of Race as a Category**

**Self and Other Categorization.** In order to understand the extent to which children essentialize and reason about race, it is important to first note when (and whether) children are able to categorize themselves and others in terms of race. This is especially the case, given that labeling has been linked to drawing children's attention toward race, and in some cases heightening prejudice and stereotyping (Bigler & Liben, 2006; Waxman, 2010) (though not necessarily causally). Research shows that children as young as roughly 4 to 5 years of age become aware of racial labels and are able to racially categorize themselves and others (Aboud, 1988; Clark & Clark, 1939; 1940; 1947; 1950; McAdoo, 1985). This ability reaches ceiling levels around 6 or 7 years of age. These studies support Quintana's (1998) assertion that children gain an understanding of racial categorization and racial labeling by roughly 6-10 years. Children's categorization of Black and White children is especially good at this age, and their categorization for other minorities (i.e., Asian, Native American) may occur later (Aboud, 1988).

Research has not found many differences between the racial categorization abilities of White and Black children, but Black children's self-identification may begin a bit later than that of their White counterparts (Aboud, 1988). For example Kurtz-Costes et al. (2011) found in their study of Black and White girls that while most of the children in their sample claimed resemblance to a doll that was the same race and gender as themselves, 3-year-old Black girls chose the same race, same gender doll as the one that most resembled them only 32% of the time. Additionally, other research has shown that children's environment may be associated with the extent to which they are knowledgeable about racial categories. For example, Spencer (1984), in her study with Black preschoolers, found that children in a racially-mixed school had higher racial awareness than those children who grew up in a racially-homogeneous environment. Thus, children who are exposed at a young age to individuals of differing racial backgrounds may develop the ability to racially categorize earlier.

Other recent work has demonstrated that children do, by the age of 5, reliably and consistently identify themselves and others into socially "accurate" racial groups. For example, among a sample of White Australian children, Augoustinos and Rosewane (2001) showed children photos of a White child and a Black child and asked whether the representations were the same or different. Children were then asked to explain how they were different and were also asked which child looked most like them. They found that over 90% of children both ages 5-6 and 8-9 were able to differentiate the Black and White faces and were also able to correctly identify who they themselves looked most like. Additionally, Pauker et al. (2010) measured both children's ability to self-identify and their understanding of racial constancy (i.e., racial category does not change over the lifespan). Their sample was relatively racially diverse, though 76% of their sample was still European American. Their results suggested that children's racial

constancy solidified around 6-7 years of age, with the majority of children performing perfectly. It should be noted, however, that Pauker et al. (2010) did not examine racial differences in children's racial self-categorization or constancy. Thus, it is unclear whether there were racial differences in children's ability to self-identify.

Many researchers posit that labeling may be an important aspect of children's ability to categorize along both racial and other social lines, and may also be related to their levels of racial essentialism (Bigler & Liben, 2006; Waxman, 2010). For example, Waxman (2010) found that preschool-aged children's ability to categorize was related to the extent to which children believed an individual's racial background was an important indicator of external behaviors and traits (i.e., inductive potential). Children were placed in a no-label and a labeling condition. Children in the labeling condition were exposed to a White woman who was labeled as different from a Black woman (the labels were novel, not explicitly racial). Children in the no-label condition were not exposed to this labeling. Waxman found that children used race to make inferences about similarities between individuals when labeling occurred, but not when it didn't. This study provides evidence of the importance of labeling as a possible precursor to children's categorization, which then may serve as a precursor to children's own racial essentialism and other, potentially negative, racial attitudes and behaviors. However, some research asserts that mere knowledge of racial groups does not necessarily predict prejudice and stereotyping, (Bigler & Liben, 2006; Pauker et al., 2010), though it likely precedes it. Rather, perceptions of differences between ethnic groups may be more relevant for prejudice and stereotyping. However, racial awareness may relate to preferences during early childhood (preschool years to 5 or 6 years) (Aboud, 1988).

**Intra/Interracial Preferences.** One of the most prolific areas of research on children's racial attitudes has been in young children's racial preferences. As mentioned above, most of the research in this area has found that White children's in-group preferences tend to increase between roughly 3 and 6 (Aboud, 1988; Raabe & Beelmann, 2011), and these preferences decrease thereafter as White children begin to understand that individuals in their group have negative qualities and individuals in the out-group have positive qualities. Thus their thinking about individuals within racial groups becomes more flexible and nuanced as they age. Black children on the other hand, are neutral, on average, between the ages of 3 and 6, with some children displaying in-group and some out-group preferences. Their in-group preferences tend to increase thereafter (Aboud, 1988). However, within these results there is much variation and the extent to which children express racial preferences often depends on various contextual factors.

More recent research indicates that racialized thinking and preferences may occur more solidly around age 4 or older. For example, Shutts et al. (2013) found that for White children race may actually become more relevant at a later point in development than other social categories (i.e., gender). Specifically, 3-year-olds did not choose an individual of their own racial background to be their friend significantly more than chance, but they did choose a same-gender individual at greater than chance frequencies. They also asked children whether they would be more similar to someone of their own racial group or a child of another racial group with regard to liking of a social activity. Three-year-old children did not choose a same-race peer above chance. When examining third party situations (in which they were asked about the friendship and social activity preferences of another child), children predicted that the child would choose a same-race friend at marginally above chance frequencies.

By 4 years of age, children matched third person friendship preferences (of target children) for race above chance, but did not believe children of the same race would like the same social activities. This suggests that racial preferences may be salient by 4 years of age, but children's inductive potential (their belief that two groups may have certain attributes in common due to an underlying "essence") may develop later. No conclusions can be made about older children's inductive potential, but stereotyping literature may be able to shed more light on children's beliefs about inductive potential. Stereotyping may be connected to inductive potential since, like inductive potential, stereotyping involves extrapolating information about one member (or few members) to other members of a group. Given stereotyping literature showing that older children (~10) are knowledgeable of – and sometimes endorse – racial stereotypes, there is reason to believe that older children may apply inductive potential to racial groups, believing that certain traits are characteristic of a group due to racial background.

With regard to the Shutts et al. (2013) study, no conclusions can be made about the racial preferences and inductive potential attitudes of Black children, given that they were not included in this study. However, there is still reason to believe that Black children may be more likely to apply inductive potential principles to race. Evidence for this comes from research suggesting that Black children are more knowledgeable about certain racial stereotypes at an earlier age than their White counterparts (McKown & Weinstein, 2003).

The extant research on racial preferences has provided important information, but also includes several limitations. For example, much of the research on racial preferences has involved forced choice questions about whether children like a Black individual (often a doll or a line drawing) or a White individual. Children are, thus, (1) forced to choose among items that are not ecologically valid, (2) make an affective decision about individuals they do not know, and

(3) confound liking with disliking (Aboud, 1988). Additionally, much of the research on racial preference was done 30-50 years ago, making it important to better understand racial preferences with more updated measures and taking into account the racial climate of the current society.

Recently, more researchers have aimed to ameliorate these issues by studying preferences in a number of contexts, with diverse participants, and more sophisticated and nuanced measures. For example, in their study of the social preferences of predominantly White children (sample 95% White), Kinzler et al. (2009) examined whether children would use race or accent as a basis for their preference of whom they would like to be friends with. When children had the option of choosing a Black person or a White person, both with the same accent, they found racial in-group preferences as in a number of previous studies. However, they also found that children preferred to be friends with a Black person whose accent was the same as their own as opposed to being friends with a White person with a different accent. Thus, children privileged accent as a basis by which they chose friendship rather than race, when given the opportunity. The researchers theorize that, given the evolutionary significance of language and accent for knowing who was an ally for early humans children may be less likely, at least in early years, to privilege to race over language/accent. However, race may be more relevant to older children, particularly those in contexts in which race is more salient (e.g., in multiracial schools or environments where racial group sizes are highly disproportionate/unequal). Additionally, the children in this study were almost all White, and given evidence that Black children differ substantially from White children in their racial preferences (e.g., Aboud, 1988), these results may not be generalizable to non-White affluent children.

Similarly to Kinzler et al. (2009), other recent studies have examined the ways in which children privilege other social categories as important in relation to race. Kurtz-Costes, Defreitas,

Halle, & Kinlaw (2011) examined preschool-aged Black and White girls' displays of favoritism in a birthday party scenario in which children were asked to organize dolls for events that gave some dolls an advantage over others (e.g., in line for a piñata). Girls were also asked to distribute a limited number of party favors to the dolls. They found that, while White girls showed favoritism to the same-race, same-gender doll, Black girls showed more favoritism to the other-race, same-gender doll (i.e., the White doll). However, they also found that Black girls who believed the Black doll most resembled themselves also showed the Black doll more favoritism. Additionally, they found that, while White girls showed equal amounts of gender and racial in-group favoritism, Black girls showed significantly more gender favoritism than race favoritism. These results may be due to societal power dynamics that privilege White over Black individuals. Thus, Black girls may not be showing personal favoritism, but instead may actually be mimicking the social order they are exposed to in the US. However, as children age, they may be better able to recognize that their own identities differ from the identities that are most privileged in society.

One study that examined the ways in which societal power dynamics relate to children's preferences was a study in South Africa that explored the relations among relative power, majority/minority status, and preference among children. South Africa was chosen as a context because of the power dynamics in which the White minority is in a position of power relative to the Black majority. The researchers used this setting as a way to understand whether children's preferences were influenced by the relative size of racial groups (i.e., majority vs. minority status) or relative privilege of racial groups. Shutts, Kinzler, Katz, Tredoux, & Spelke (2011) found that Black and White children in multiracial schools preferred a White individual over a native Xhosa Black individual; however, they also found that Black children in the Black

township made choices at chance with regard to their preferences between Xhosa and White faces, and chose Xhosa faces more often when compared to that of the non-Xhosa Black face. This supported work by Clark and Clark (1947; 1950) that showed that Black children's racial preferences largely depend on the racial makeup of their environment. Shutts et al. (2011) found that all participants displayed significant own-gender preferences, thus showing that, for Black children, gender may be a more salient factor along which to determine preference.

Growing up in a society in which a child is a member of a relatively less privileged or marginalized group may mean that children, particularly Black children in a majority Black setting, are exposed to both positive and negative experiences with members of their own group and with members of the majority group. This may make them more neutral in their preferences. However, if the Black child is in a multiracial setting, they may have even more personal-level exposure to the power dynamics of their setting. Thus, they may feel that Whiteness is a key to power, better treatment, and more resources, especially if individuals of relative power in their own lives (e.g., White teachers and administrators) treat individuals of different racial groups differently (Aboud, 1988). This may explain higher White preference and favoritism among Black children in multiracial or majority White settings. The children in the study by Shutts et al. (2011) were as young as 3 years of age to 13 years. It is notable that such young children may possess the cognitive capacity to learn and understand the power dynamics of their society.

These results taken together indicate that Black and White children's racial preferences differ greatly, with Black children having more variation in their racial preferences than their White counterparts. This variation often depends on the environment in which the children live, with children in environments with higher White populations having greater preferences for Whiteness than children in predominantly Black environments, perhaps due to the level of

exposure children in multiracial environments have to power dynamics on an interpersonal level. Additionally, while racial preferences have been clear when the methodology involves a forced choice between a White child and a Black child, other social categories, such as gender, age, and accent/language seem to be more salient categories for children's preferences than race. Thus, it is important to note that while studies have found preferences with certain measures, children may not automatically or spontaneously be thinking about race when it comes to choosing friendships.

The research on children's racial preferences and research suggesting other social categories may be more salient for children than race, particularly for young children, raise the question: When and under what circumstances do children consider race to be an inductively important and informative category? In relation to this question, while research on children's racial preferences has been an especially prolific topic in the extant literature, there are a number of reasons to explore children's more basic "theories" about the meaning of race. For example, it is not clear whether children are simply perceptually drawn to people who look like them or if they have conceptual and theoretical beliefs about the innate potential of race. Researchers have explored this question, specifically asking whether children see race as an essential category with many focusing on children's beliefs about the innate and inductive potential of racial groups (e.g., Giménez & Harris, 2002; Hirschfeld, 1995a; 1995b; Kinzler & Dautel, 2012).

**Racial Essentialism: Innate and Inductive Potential.** Research on racial essentialism has often focused on innate potential. This aspect of essentialism posits that certain traits of essential categories (1) are characteristic of that category, (2) are immutable, and (3) are inherited. Innate potential can be best thought of in terms of the nature/nurture distinction, in which certain traits are innate to a category and others are gained through socialization and

experience. Children are believed to apply innate potential to a category when they believe category members' traits are based in "nature," passed down through inheritance and stable across the lifespan. One way in which researchers have tested children's application of innate potential, often to animal categories, is to ask children whether they believe that a certain trait is biologically based, depending on whether that trait was acquired at birth or later in the lifespan (Gelman, 2003). For example, Springer and Keil (1989) found that preschoolers were more likely to believe a trait was based in biological inheritance if that trait was functional (e.g., plays an important role in health) and inborn, rather than acquired at some other point in their lives (i.e., they were born with it instead of having acquired it in an accident).

Another way in which innate potential has been studied is through adoption or switched-at-birth tasks, in which children are asked whether an animal or individual born into one community, but raised in another would have the characteristics of the "biological" or "adoptive" family. As mentioned above, Gelman and Wellman (1991) found that children believed that kangaroos raised by goats would have the characteristics innate to kangaroos, not goats. These findings support the theory that children have certain theory-like beliefs about how biology and inheritance work, particularly when it comes to different animals and plants. As researchers have begun to study how children apply innate potential to humans and social categories, they have most often used this switched-at-birth/adoption paradigm in order to explore children's beliefs about racial categories.

Hirschfeld (1995a; 1995b) examined children's beliefs about the innate potential of race in a series of innovative studies and proposed that children indeed have a "theory" of race, in which they believe racial categories to be essential and are guided by theoretical principles rather than perceptual knowledge when thinking about race. The racial backgrounds of the children in

his samples were not formally recorded, but children attended predominantly White schools. Children in his samples were ages 3, 4, and 7, and data was analyzed separating each year; thus, there were 3 age categories: 3, 4, and 7. In his first study on children's understanding of racial background as an immutable and inheritable trait, Hirschfeld (1995a) pitted race against body build and occupation. Children were shown line drawings of a number of children who were of different racial backgrounds, occupational clothing, and body builds. Children were then shown a line drawing of an adult that matched the child in two of the three ways. Children were asked a number of questions about the relationships between the children and the adults, including (1) a stability question regarding which child was the adult when he/she was a child, (2) an inheritability question regarding which child was the offspring of the adult, and (3) a similarity question regarding which child most resembles the adult. Three-, 4-, and 5-year-old children chose the race match significantly more than the body build match in the stability and inheritability conditions, while only 4- and 7-year-olds chose race over occupation with regard to these same conditions. Indicating that older children may have a stronger sense of the inheritability and stability of racial background, while younger children may be more flexible and have lower constancy in their identity judgments.

In order to rule out the possibility that children were simply making color-matching judgments, Hirschfeld (1995a) showed children line drawings of two cars or two dogs, one dark and one light, and an adult, one Black and one White. Children were then asked which of the cars/dogs belonged to the adult. Children were at chance in their judgments of which car or dog belonged to the adult, providing further evidence that children were not simply matching color in their judgments about race, but were, rather, expressing an understanding of race as immutable and inherited. He also ruled out the possibility that children did not understand the difference

between stability and inheritability by showing children line drawings of two racially matched children, one a girl and one a boy. Children were asked (1) which child was that of the adult or (2) which child was the adult when he/she was a child. Children at all ages realized that the adult would have been the same-sex child at a younger age, but were at chance with regard to the question of which child would be the offspring of the adult. This demonstrates that children can distinguish inheritability and immutability, and understand that race as a category subsumes both qualities, further demonstrating that children as young as 3 or 4 apply innate potential principles to race.

In his fourth study, Hirschfeld (1995a) used a switched at birth task with 5-year-old children in order to further explore whether children understood that, even in circumstances under which a child is adopted and taken care of by a set of interracial parents, children will resemble their birth parents. Participants were told a story about two infants, one Black and one White, who had been accidentally switched at birth when they were born in a hospital. Participants were then shown line drawings of a Black school-aged child, a White school-aged child, and an "intermediate" (i.e., multiracial) school-aged child and were asked which child each infant would grow up to be. Seventy-two percent said that both infants would grow up to be the child who was the same race as the biological parents, while the other 28% claimed one child would look like that biological parents and the other would look like the adoptive parents. No children consistently chose the "nurture" answer, such that both the white and black infant would grow up to be the same race as the adoptive parents. No analyses were conducted exploring whether children who were split in their answers differed on the White or Black child (i.e., did children consistently say the Black child would grow up to be White, while the White child would remain White or vice versa?). Additionally, there was no mention of whether any children

chose the intermediate child. Interestingly, children did not explain their answers in terms of biological processes, indicating that children may not be consciously aware of why biological parents and children resemble one another, even when they do not grow up in the same household.

Hirschfeld (1995a) performed a final study in which he sought to understand whether younger children, ages 3, 4, and 5, would understand these processes. The study paradigm was changed in three ways. First, in order to make it clearer to children that biological processes were involved, Hirschfeld told children that the infant came out of one mother's "tummy." Second, he emphasized that the family the child grew up with was nurturing and loving, so that children understood that the child was an integrated member of the adoptive family. Third, he also tested whether children understood biology in cases in which children had not seen a photo of the infant. Thus, children could not rely on perceptual similarities between the target child and the target infant to make determinations about the race of the target child. In the procedure, children were told the story of a Black child born to a Black couple and adopted by a White couple and in a separate story, they were told of a White child adopted by Black parents. Participants were then shown line drawings of a Black and White school-aged child and were then asked which child was the infant the respective couples gave away/adopted. The results were striking, as there was a clear difference between 3- and 4-year-olds, with 4- and 5-year-olds choosing the "nature" option (matching the biological parent and child race), while 3-year-olds did not. Justifications were largely similar to those of study four, in that only 34% of 5-year-olds and 37% of 4-year-olds justified their answers in terms of the skin or hair color of the birth parents.

Giménez and Harris (2002) further examined these processes in children in their study of Spanish children's beliefs about the innate potential of race. Giménez and Harris (2002) claimed

that Hirschfeld's (1995a) study fell short in three main ways. First, they claimed that Hirschfeld only truly examined inheritance in the last of his studies (the interracial adoption task). Second, they cite that only one third of the children in his study explained their answers in terms of the skin and/or hair color of the biological parents. Third, they claimed that he did not tease apart whether children believed that biological parents and their children would be similar with regard to biological characteristics (i.e., skin color) and/or non-biological characteristics (i.e., clothing color). The authors claimed that, "Arguably, young children mistakenly assume that offspring have a global visible resemblance to their biological parents" (p. 309).

Thus, in their study, they accounted for these factors by pitting clothing color against skin color, such that children either matched a child with an individual with the same skin color, but different clothing color or vice versa. Children were asked to justify their answers and were also given counter-suggestions, in which they had to further justify their belief about whether their answers were correct or incorrect. Children were asked to match the mother/father with the correct daughter/son. They found that 75% of children correctly paired the mothers/fathers and daughters/sons based on skin rather than clothing color. This proportion increased with age. They also found that children's explanations for their answers became increasingly sophisticated over time, with few 3-year-olds mentioning physical characteristics, and the majority of 4-yearolds and most 5- and 6-year-olds doing so. They also found that children's coherence (the rate with which they matched their explanations and their answers on the task) increased with age, with only 10% of 3-year-olds giving coherent answers, 60% of 4-year-olds doing so, and over 90% of 5- and 6-year-olds doing so.

In another task, children were additionally given a switched-at-birth task in which they were told a story about a Black couple who had to give their child to a White couple because

they were very poor. Children were then asked to identify the child from the story (who had not yet been revealed), who had now grown up. It was assumed that if children understood rules of biology, they would choose the Black child as the child the Black couple had and that the White couple raised. They found that, overall, children chose the Black child the majority of the time, but this varied with age, with roughly half of 3- and 4-year-olds giving the correct answers and the majority of 5- and 6-year-olds giving the correct answer. Regarding their explanations, most children (more than half of 5- and 6-year-olds, half of 4-year-olds, and roughly a quarter of 3-year-olds) gave physical explanations, while some children gave (the more accurate) biological explanations. As children aged, they became more likely to give biological explanations, but even at 6 years, children only gave this explanation 35% of the time (Giménez & Harris, 2002).

Children were also asked open-ended questions about the possibility of changing their racial category and how this might happen. For example, questions included "Could you change your skin color? How would you do it?" The only age difference in children's explanations came from 6-year-olds, 68% of whom claimed that due to physical and/or biological differences, one could not change his/her skin color. This was a significant increase from 5-year-olds who only cited these reasons 45% of the time. Finally, Giménez and Harris (2002) also examined intra-individual coherences (children's consistency in giving "correct" answers throughout the study), and found that while 72% of 5-year-olds and 68% of 6-year-olds were highly consistent, only 12% and 32% of 3- and 4-year-olds were highly consistent, respectively. These results indicate that around the age of 5 children become better at understanding biological inheritance in terms of racial categorization, but that children's explicit understanding may occur later. Nonetheless, even without explicit understanding, by the age of 5, and in many cases 4, children do seem to

understand the innate potential of skin color, even in the face of competing information (i.e., clothing color), demonstrating that their understanding is not only perceptual.

Hirschfeld (1995b) also examined how children's reasoning about multiracial children may further illuminate the extent to which their reasoning about race is influenced by societal ideas about racial inheritance. Specifically, he examined whether children's beliefs resembled adults' regarding hypodescent (i.e., the one-drop rule), that is, the belief that an individual who is the offspring of a more privileged and less privileged group will be more similar to the less privileged group. Thus, certain racial groups are proposed to have higher innate potential and contribute more to the identity of the offspring. The sample included White second and fifth graders as well as White adults. He asked adults and children whether a child born to a Black parent and a White parent would be Black, White, or something else. Younger (2nd grade) children's task differed in that they were given novel labels in place of Black and White, given that few of them understood the term "race" or racial terminology (similar to Waxman, 2010). Additionally, to reduce social desirability effects, Hirschfeld (1995b) asked adults what people generally believed, even if their personal beliefs were different.

Adults were significantly more likely (above chance and more likely than the fifth grade children) to say that people generally believed that the child would be Black. Although fifth grade children chose the White child at below chance levels, they were more likely than adults to say that the child would be White. Fifth graders were also more variable in their choices, with 64% of participants saying that the offspring of a Black woman and White man would be "something else" and 46% saying that the offspring of the White woman and Black man would be "something else." Second grade children, on the other hand, often gave gender-based answers, claiming that the child would be the race of the mother, as mothers, who carry children, may be

seen as having a more direct link to the children. Thus, adults reported that people generally would ascribe to rule of hypodescent. Children were less knowledgeable of these norms, and may have based their answers on other factors, such as perceptions of how much each parent contributed to the child based on parent gender.

Hirschfeld (1995b) then did a resemblance task in which he showed children a photo of a multiracial couple (one Black and one White) and showed them three children: a phenotypically Black and White child and a phenotypically multiracial child. He then asked them which child belonged to the couple. In contrast to the labeling study, adults believed that the phenotypically multiracial child would belong to the couple above chance, second graders were at chance with regard to which child they believed belonged to the couple, and fifth graders believed that the Black child would belong to the couple. Children were also shown a same-race couple with different hair colors, and three children: one with blonde hair, one with brown hair, and one with intermediate hair. He again asked which child belonged to the couple. Hirschfeld (1995b) found that, in this condition, children were no more likely to choose one infant over another. These results suggest that children may apply the one-drop rule to race (and by extension, innate potential to Blackness), but not to hair color, suggesting that children think of race as an essential category, particularly as they age.

In another study, Hirschfeld (1995b) examined similar processes, but with animals. He found that, similar to the hair color condition, children did not make the same color judgments with animals that they did with the human targets. Specifically, younger children (2$^{nd}$ grade) did not choose one animal over another as belonging to the "animal couple" (i.e., an dark animal, a light animal, and an intermediate animal). Fifth graders on the other hand chose the intermediate

animal as belonging to the animal couple, as opposed to their choice of the Black child as the child the offspring of a multiracial couple would most resemble.

This provides evidence that children may have beliefs about the innate potential of race, and more specifically, the innate potential of Blackness. Children, particularly White children given the racial composition of these study samples, may have differing beliefs about the level of essentialism of individuals within a racial category in addition to their beliefs about the essentialism of race as a category. Hirschfeld (1995b) also examined these relations with Black and White children in an integrated community and found that 7-year-olds in this community believed that the child would be an intermediate color. When compared to children in the predominantly White community, children in the integrated community were more likely to say that the offspring of a multiracial couple would have an intermediate skin color between the two. When they examined the relations between race of participant and their beliefs about the phenotype of the multiracial target child, there were no differences, which Hirschfeld (1995b) posited to mean that "the crucial distinction may be between cultural environments in which the children live rather than each child's individual racial status" (p. 1432). Thus, as demonstrated in the research on racial preferences, racial makeup of the environment appears to be an important predictor of children's racial attitudes and may in fact account for racial background differences in children's attitudes.

Research has also examined the extent to which children believe race is more or less essential than other social categories. Additionally, while Hirschfeld's study did not find racial background differences in their study, other studies have found that Black and White children may reason differently about racial essentialism, and more specifically, about innate potential. Kinzler and Dautel (2012) examined racial differences in children's beliefs about the essential

nature of race by pitting it against another category that children often deem important (i.e., language/accent). They asked 5-6-year-old Black and White children whether a White child who spoke English would grow up to be either a Black man who spoke English or a White man who spoke French. Thus, children had to make a decision regarding which was stable over time. They found that 5-6-year-old White children believed that the White child who spoke French would grow up to be a Black man who spoke French, thus, privileging language as an essential category over race. However, 5-6-year-old Black children privileged race as an essential category, believing that the White child speaking English would grow up to be a White man who spoke French, thus, recognizing that language is learned while skin color is an immutable trait. The authors then ran this same study with 9-10-year-old White children and found that virtually all children chose the race match over the language match. Thus, Black children, for whom race may be more relevant in every day life, were more likely to essentialize race in terms of innate potential, while only older White children did so.

Rhodes and Gelman (2009) examined children's beliefs about the essentialism of race in a different way than the previous studies. Instead of focusing solely on the innate potential of skin color, they focused on children's belief that certain categories were objectively accurate and correct, thus focusing on a more global aspect of essentialism. They told children a story about a person from a faraway land, in which people did things very differently from our own society. Children were then asked whether the things that were done differently in this faraway land were ok (they might be correct for that society) or if they were wrong (they could not be correct). It was surmised that children who answered that the rules of the faraway land would be ok believed those categories were not essential, but if they believed the people in the faraway land were wrong, this would be evidence that children believed that category was essential. They examined

children's acceptance and rejection of four separate categories: (1) artifacts, (2) animals, (3) gender, and (4) race. Their participants were 5, 7, 10, and 17-year-old predominantly White students in either a rural, more conservative community or from an urban, liberal community.

They found that children reliably rejected flexible categorization for animals and either did not reject or actually accepted (above chance) flexible categorizations of artifacts. With regard to race, however, children's answers varied by age and environment. They found that younger children (5 and 7 years of age) were at chance in their beliefs about whether a different racial categorization was acceptable or not, while 10- and 17- year-old children's answers differed by the community in which they lived. Older children in the rural community rejected flexible racial categorization, whereas children in the more midsize, liberal community actually reliably accepted these more flexible race categories. While they did not have enough power to make definitive conclusions, they also found that parents' level of conservativism was significantly related to the rural community children's answers, thus providing one explanation as to why they may have found these environmental differences. Conservativism may predict children's racial essentialism because such a leaning may encourage more rigid categorizations with clear lines of disctinction and separation. Thus, Rhodes and Gelman (2009) found, in contrast to Hirschfeld's work, that children are not in fact predisposed to a universal or innate theory of race. This may suggest that children believe in the innate potential of skin color, as opposed to race as a social category (brown skin is innate/Blackness is not). Additionally, cultural input may play a crucial role in children's racial attitudes, rather than overarching or universal cognitive processes, as proposed by Aboud (1988) and others.

In a similar study, Diesendruck et al. (2013) further examined the role of cultural input in children's attitudes by asking 5- and 10-year-old children in the US (60% White) and in Israel

(Jewish children from various cultural backgrounds) about the potential flexibility of various categories. These categories included nonsocial categories (i.e., animals and artifacts), physical-based social categories (i.e., race and gender), and symbol/clothing-based categories (i.e., occupation and ethnicity). For race, children matched Black and White individuals; for ethnicity, they matched Israeli and Arab individuals. Children were first asked which of the adults matched one another in order to confirm that children could match the photos for gender and race spontaneously. They found that children were for the most part able to do this (though Israeli children correctly categorized more for the animals, occupation, and ethnicity than for race). Similar to Rhodes and Gelman (2009) children were then asked whether an alternative grouping in another country would be possible. In the US, children rejected the change for artifact significantly more than for occupation and also rejected category flexibility significantly more for ethnicity than for artifacts or race. In Israel, children rejected alternative categories for ethnicity more than any other type, suggesting that this may be a particularly relevant category for Israeli children (particularly given that the ethnicities included Arab and Israeli individuals). In their examination of interactions with race, country, and category, they found that 10-year-old American children essentialized race more than their 5-year-old counterparts (53% compared to 25%), while 10-year-old Israeli children essentialized race less than their 5-year-old counterparts (43% compared to 69%). This study, again, demonstrates the importance of understanding the relations among racial background, cultural input, and racial essentialism. Specifically, children in the US may recognize more subtle cultural norms around racial essentialism as they age and may internalize these norms, the content of which may depend on the environment in which children are raised.

These research studies result in four overarching findings. First, this research indicates that children understand that skin color is immutable and heritable as early as 4 years and more solidly and consistently by 5 years. However, other research shows that children's in-group beliefs about skin color may differ from their beliefs about racial categories, particularly in relation to their beliefs about the objective accuracy of racial categories in the US. Second, children's essentialism of race as a category varies greatly by the environment in which they live and their racial background, suggesting the importance of cultural input. Third, with regard to age differences in children's racial attitudes, even though children's racial preferences decrease with age, their essentialism of race may increase. As suggested above, this may depend heavily on the cultural input children receive. More specifically, it seems that early on, children do not essentialize race, but as they age, they may pick up on subtle cues about the importance of race as a category (e.g., the number of racially diverse friends parents have), and internalize those cues.

Finally, children may essentialize subgroups within social categories more than other subgroups. For example, research shows that some children and adults see Blackness as more essential to offspring identity than Whiteness, following the societal norm of the one-drop rule (Hirschfeld, 1995b; Ho et al., 2011). The idea that children may essentialize racial subgroups differently is supported by work that shows that adults essentialize subgroups of social categories to a different extent. For example, in their research, Haslam et al. (2000) found that adults in their study tended to apply different aspects of essentialism to social category subgroups. They asked adults to rate each separate group (e.g., Black and White people) on a number of characteristics related to two tenets of essentialism: the belief that certain groups have an underlying structure that pulls them together and the belief that certain categories allowed for

inferences about the traits and behaviors of individuals in that category (i.e., inductive potential). They also asked adults to rate group members on a second factor, which was the objectivity or naturalness of the category. They found that adults rated race (i.e., both White and Black people) as high on naturalness, but rated White individuals as low on underlying structure and inductive potential, while they rated Black people significantly higher on these factors. Additionally, Ho et al. (2011) found that adults (both Black and White) rated an individual who was described as half White and half Black as well as an individual who was described as half Asian and half White as more minority than White, despite explicit knowledge of the individual's racial background to the contrary. These research findings suggest that, while social categories as a whole may be viewed as essential, individuals within subgroups of these social categories may be differentially essentialized; specifically, individuals of relatively less privilege within a social category may be seen as more essential than individuals in positions of more privilege.

While the research done on essentialism has become increasingly prolific and informative over the past decade, there are a few limitations of the extant literature. Most notably, the vast majority of these studies, particularly those done with children, have samples of children that are often White and upper middle class, making these studies less generalizable, particularly given evidence that racial background and environment, are important predictors of children's racial attitudes (Diesendruck et al., 2013; Hirschfeld, 1995b; Kinzler & Dautel, 2012; Rhodes & Gelman, 2002). Additionally, these limited samples make it difficult to tease apart the different factors that may affect children's attitudes. For example, in the case of children's differential essentialism of Black and White people, this may be a universal phenomenon by which individuals apply hypodescent to individuals of relatively less privilege, or it could be a cross-racial effect, by which White children see Blackness as more essential, while Black children see

Whiteness as more essential. Though Ho et al. (2011) did not find any racial background differences, children's attitudes may differ. Thus, more diverse samples are needed in order to make more accurate claims about the ways in which children essentialize race.

**Stereotyping and Determining Psychological and Behavioral Characteristics.** Closely related to one aspect of essentialism, namely inductive potential (i.e., the belief that racial background provides rich inferences for an individuals' behaviors and traits), is racial stereotyping. Bigler and Liben (2006) in their Developmental Intergroup Theory, described the process by which stereotyping may occur. They describe stereotypes as "a cognitive structure that contains the perceiver's knowledge, beliefs, and expectancies about some human group" (Hamilton & Trolier, 1986, p. 133 as cited in Bigler & Liben, 2006). They claimed that four factors contribute to the psychological salience of a social group: perceptual discriminability of social groups (e.g., skin color), proportional group size (e.g., majority/minority status), explicit labeling and use of social groups (e.g., checking off "Black" on a census form), and implicit use of social groups (e.g., segregation, not explicit, but relevant and continual).

While these factors make a social group psychologically salient, this does not necessarily mean that children will be prejudiced or develop stereotypes about these groups. Four separate factors contribute to prejudice and stereotyping in children: essentialism, ingroup bias, explicit attributions (e.g., Black people are good at basketball), and implicit attributions. A prime example of implicit attributions comes from the biracial child described above, who explained to her mother that "Brown people drive old cars" (Fields, 2009). While no one may have explicitly told her that Brown people drive old cars, she may have surmised this from what she had observed in her environment. Additionally, children may pick up essentialist beliefs about race, particularly if they notice segregation (i.e., White people typically live with, become friends

with, and marry other White people). Researchers have explored children's stereotype development, specifically examining the age at which children become knowledgeable of racial stereotypes, whether children endorse these stereotypes, whether essentialism is related to stereotyping, and finally whether children's stereotyping is related to their racial background.

McKown and Weinstein (2003) explored children's stereotype consciousness between the ages of 6 and 10 with a diverse group of children (e.g., Asian, Black, Latino, and White children). They performed a two-part study to examine children's stereotype consciousness, defined here as stereotypes that children know, but do not necessarily endorse (Stangor & Schaller, 1996 as cited in McKown & Weinstein, 2003). The first part included a vignette in which two groups of people (Greens and Blues) live in an imaginary land. In each vignette, a Green child must choose between a Green and a Blue child to study with or must choose someone to be on a spelling team. In the first vignette they saw, children were not told any additional information; before the second, they were told that the Greens do not think the Blues are smart. This was done in order to determine whether children could apply broad stereotypes to interpersonal situations. Children were then asked who they thought the target child would choose and were also asked who the target child thinks is smarter. Children were asked to justify their answers. Researchers found that as children got older, more of them were able to apply broad level stereotypes to interpersonal situations, from 18% at 6 to 93% at 10.

Following these questions, children were asked whether the events were indicative of a real world situation (e.g., academic stereotypes about Black underperformance). Children who mentioned anything about ethnic tensions in the US (e.g., White people don't think Black people are as smart), were considered to be aware of broadly held stereotypes. The research showed that as children aged, they were more aware of broadly held stereotypes; however, at each age,

children to whom the stereotype applied (i.e., from a stigmatized group) were more aware of broadly held stereotypes than were children to whom the stereotype did not apply (i.e., Black and Latino children at each age were more aware of stereotypes than White and Asian children). Thus more than half of stigmatized children knew about broadly held stereotypes by 9, while over half of non-stigmatized children were aware by 10. This study suggests that children become more aware of the stereotyped implicit attributes of groups as they age, but that the children most stigmatized by such stereotypes may become aware of them earlier on.

More evidence for the idea that children may learn earlier about stereotypes that are about their group comes from Ambady et al. (2001) who examined stereotype threat in Asian boys and girls between ages 5 and 13. In their study, they also measured "implicit" stereotype awareness by asking children which of two children, one Asian and one White, was better at math. In their measure of stereotype awareness, they found that, implicitly, Asian American girls and boys endorsed the stereotype, indicating that the Asian child would be the best at Math. However, when explicitly asked whether Asian or White people as a whole were better at Math, children said that they were equally good. The authors claim that this indicates that children, similar to adults, do not explicitly express stereotypic beliefs, but when asked implicitly, they do express them. There are several limitations to this theory, most importantly that children may answer differently in a forced choice situation in which they know nothing about the individuals involved (and for whom the only difference is racial background), than when they are asked to evaluate group-level characteristics. Additionally, children's choice of the Asian child may reflect in-group bias or knowledge of broadly held stereotypes. Nonetheless, given the high rates with which students chose the Asian child as the one who was good at math (between 69% and

85% of the time), this may indicate an understanding of group stereotypes as young as 5 years of age.

With a sample of slightly older children, Rowley et al. (2007) examined the relations between stereotype endorsement, the extent to which children personally believe stereotypes are true, and group status (i.e., whether the stereotype was about their own group vs. a racial out-group) in White and Black children in 4th, 6th, and 8th grade. They found that among Black participants, 4th graders endorsed their own group as better at math, but in 6th and 8th grade, they endorsed academic stereotypes that White people are smarter than Black people, while White participants in every grade endorsed these stereotypes. Additionally, both Black and White participants believed that Black people would be better in music than White people, but this effect became more evident in later grades. Finally, Black and White participants also believed that Black people were better at sports than White people.

Rowley et al. (2007) also found that the extent to which Black and White participants endorsed stereotypes depended on whether the stereotypes was about their group or another group, and whether the stereotype was positive or negative. Thus, Black participants rated Black people as better at music and sports than White people to a greater extent than did White participants. Additionally, White participants rated White people as better at academics than Black people to a greater extent than did Black participants. Additionally, while young children (specifically Black 4th graders) expressed more in-group preferences (i.e., claimed that their group was the best regardless of the stereotype), middle school children were more likely to endorse societal stereotypes about racial groups. This indicates, that as children age, they may internalize stereotypes about their groups and other groups, but may also utilize a protective mechanism by rating their group more positively relative to out-group members' ratings.

Bigler, Averhart, and Liben (2003) also sought to further understand 1st and 6th grade Black children's beliefs about racial stereotypes about their own group, both broadly and specifically in relation to occupational differences. Children were exposed to a total of 39 jobs with pictures of workers associated with each job. Twelve of these jobs were novel jobs that the children had never heard of, and along with these, descriptions and photos of workers accompanied these as well. Children were shown photos that included either four Black workers, four White workers, or two White and two Black workers. Two workers were women and two were men. Children were then asked a series of questions about the status of each job, including "How hard do you think it is to learn to be a business executive?" and "How much money do you think a politician makes?" Children were given question-appropriate 5-point scales to answer each question. Children were also asked how much they would like to perform each job and were asked explicitly about broadly held stereotypes (e.g., Who usually does the job of being a teacher?). Children were given the option of: only Black people, only White people, and both Black and White people.

Overall, they found that children were less likely to say that Black people performed high status jobs. When taking into account SES, children from lower SES backgrounds felt that Black people would perform low and medium status jobs to a greater extent than did children from higher SES backgrounds. Overall, children also reported that Black individuals would be less likely to perform high status jobs as compared to medium status jobs and would be less likely to perform medium status jobs than low status jobs. Importantly, with regard to the novel jobs, younger children rated those jobs with only White workers as more prestigious than jobs in which only Black workers were shown. Older children of a lower SES background displayed the same pattern. The same pattern emerged for those occupations displayed by two White people

and two Black people; thus, more White workers symbolized a higher status job, particularly for younger children and older children from a lower SES background. Older children from higher SES backgrounds did not rate novel occupations with only White workers higher in status than jobs with only Black workers.

These results also interacted with children's aspirations to work in those jobs, such that higher SES children were more likely than lower SES children to want to work in a job depicted by all White individuals. Additionally, younger children also aspired more to jobs portrayed by all White individuals than did older children. Thus, overall, children aspired more often to jobs portrayed by either all White or some White individuals than to jobs portrayed by all Black individuals. Interestingly, no children explicitly endorsed racial stereotypes. When asked who usually performs each job, children did not choose any one racial group significantly more than the other. Thus, while children expressed understanding and endorsement of stereotypes in their judgments of occupational status, this may have been an implicit understanding. This research indicates that as early as 6-7 years of age, children are knowledgeable of racial disparities in the workforce, which may have an impact on their occupational aspirations as well.

Augoustinos and Rosewarne (2001) also examined the differences between endorsement and knowledge of stereotypes in a sample of 5-6- and 8-9-year-old White children in Australia. Children rated Black and White faces on a number of traits (e.g., clean, good, nice, good-looking, dirty, bad, naughty). Children were first asked what people in Australia as a whole thought about the Black or White target child. The authors made sure children understood the task by showing children a map of Australia and explaining that there were many people in Australia. Children were then told to discuss what most Australians thought, and were specifically told not to talk about what *they* thought. Following this, they were asked about their

own personal opinion. Children rated the targets' traits on a 3-point scale from very to not at all. They found that the 5-6-year-old children endorsed positive traits for White people and negative traits for Black people, and that there was no significant difference between their knowledge and endorsement of stereotypes.

For 8-9-year-olds, children's endorsement and knowledge diverged, such that they were more likely to say that other people had these negative stereotypes than to say that these stereotypes were a part of their own personal belief system. Specifically, children were more likely to endorse positive traits, but were less likely to endorse negative traits (in comparison to simply being knowledgeable of these stereotypes). Children were especially likely to endorse positive stereotypes when they were applied to Black individuals, but were more likely to say that negative stereotypes about Black people were stereotype knowledge rather than endorsement. Thus, younger children were more likely to endorse negative stereotypes while older children did not endorse them, but did acknowledge that they knew those stereotypes (e.g., how other people feel).

Researchers have also examined the extent to which children's racial essentialism (operationalized here as the extent to which children believe that racial categories are objective and natural) relates to their stereotyping. As discussed above, Bigler and Liben (2006) proposed that research (see Gelman, 2003) shows that children see members of categories they essentialize as having certain non-observable properties that bind them together. It is therefore likely that if children believe that race is an essential category, they may also conclude that individuals in each category have certain properties in common, which are based in underlying similarities (i.e., inductive potential). These properties could be directly related to race (i.e., skin color) and

researchers including Hirschfeld (1995a; 1995b) and others have examined essentialism in terms of such characteristics.

However, children may also conclude that individuals of different racial backgrounds possess common characteristics that may also be psychological or behavioral rather than simply physical. As with the child who had made the observation that brown people drive old cars, children may begin to notice trends and correlations in the environment and begin to apply those trends broadly, particularly if they believe that race is a socially and biologically meaningful category (Bigler & Liben, 2006). For example, if a child believes race to be a salient, objective, and meaningful category, seeing eight out of every ten older cars being driven by African Americans may trigger that child to make a generalization that all brown people drive old cars; however, if the observation had been made with a non-essentialized category, such as eye or hair color, the correlation may not have been made and the stereotype consciousness would not occur. Thus, there may be connections between children's beliefs about essentialized categories and their development of stereotype knowledge and endorsement.

Pauker et al. (2010) explored these processes in their research study exploring whether children's beliefs about racial essentialism were related to their racial stereotyping. They examined the attitudes of predominantly White children ages 3-10 who were shown two photos of children of different racial backgrounds. They then asked which child was most likely to be good at a stereotypic activity (e.g., play basketball) or behave in the stereotypic manor (e.g., act aggressively) described. The stereotypes discussed included stereotypically positive and negative traits of different groups (e.g., Black people are good at basketball, but perform poorly academically). The authors included stereotypes about Asian, Black, and White people. They found children's stereotype endorsement depended on their age and whether the stereotype was

about an out-group or in-group member. Specifically, 7-10-year-olds endorsed the most out-group stereotypes, significantly more so than 3-5- and 5-6-year-olds. Both 6-7- and 7-10-year-olds were also above chance in their stereotype endorsement of out-group members. No age differences were found in the endorsement of in-group stereotypes, though only the oldest group (7-10) endorsed more in-group stereotypes than would be expected by chance.

From these results, the authors concluded that endorsement of out-group stereotypes emerge earlier than endorsement of in-group stereotypes among White children. This contrasts with McKown and Weinstein's (2003) finding that stigmatized children knew out-group stereotypes before in-group stereotypes. This suggests that minority children may have more knowledge of stereotypes due to their stigmatized and minority position in American society; however, it should be noted that the two studies measured different stereotyping concepts: endorsement (Pauker et al., 2010) and knowledge of stereotypes (McKown & Weinstein, 2003).

Given the age-related changes in children's endorsement of out-group stereotypes, Pauker et al. (2010) examined the extent to which out-group stereotyping was related to children's ability to spontaneously categorize individuals according to race using a sorting task, as well as their use of race as a justification for sorting individuals in that manner. Use of race as a justification for sorting was taken as evidence that race was a salient category for children. They found that sorting by race (but not racial justification) was significantly related to out-group stereotyping. This suggests that simply noticing differences (racial justifications for sorting) is not sufficient, and that using race to organize the world (racial sorting) is perhaps a better predictor of the tendency to stereotype out-group members.

Finally, they also measured racial essentialism by asking children whether they believed someone could change their racial category, whether another individual might be able to change

their racial category, and whether they could justify their answers using biological reasoning (e.g., you are born that way and you cannot change). They found that whereas 3-5-year-olds were not consistent in their answers (often using superficial reasoning or not providing a rationale at all), the oldest children, 6-10-year-olds, were highest in their essentialist reasoning. They also found that only essentialist reasoning about others was related to out-group stereotyping. Essentialist reasoning about the self was associated with a decrease in out-group stereotyping (Pauker et al., 2010). This suggests that children may reason differently about out-group members compared to their reasoning about in-group members in terms of their racial essentialist attitudes and that such attitudes may have important implications for other relevant racial attitudes (e.g., stereotype endorsement).

The Pauker et al. (2010) study is limited in that racial essentialism was defined as synonymous to racial constancy. Because racial categories were not explicitly discussed, attitudes about skin color were confounded with attitudes about race (i.e., "you can't change your skin" and "White mommies have White babies" were coded the same way). Thus, non-essentialist answers, such as people could change their skin color if they changed their clothes or painted their skin, were categorically incorrect answers. However, this study provides an important understanding of when children begin to endorse stereotypes for out-group and in-group members and suggests that racial essentialism may be linked to out-group stereotyping. More research is needed in order to substantiate this claim.

These studies suggest four main findings. First, children learn stereotypes about their own group before learning stereotypes about other racial groups. Second, as children age, they become more knowledgeable of stereotypes, often becoming most knowledgeable of group stereotypes around the age of 6 or 7 and becoming increasingly knowledgeable through roughly

10 years. Third, essentialism may be a predictor of children's endorsement of racial stereotypes; however, these results have not been conclusive because of possible limitations in the measurement of essentialism in the Pauker et al. (2010) study. However, despite these limitations, there is still reason to believe that essentialism might be related to stereotype endorsement. In adults, Bastian and Haslam (2006) found that essentialism (described as beliefs about the immutability, biological basis, discreteness, and informativeness of social categories), over and above other factors often related to stereotyping, was related to stereotype endorsement.

Finally, divergence between personal endorsement of stereotypes and knowledge of stereotypes occurs around 8 year of age. Thus, young children may be more susceptible to internalization of stereotypes they hear, while older children (perhaps due to social desirability pressures) tend to acknowledge knowing certain stereotypes without necessarily endorsing them. There is also some evidence that as children age, they may be more prone to answering in socially desirable ways. For example, Baron and Banaji (2006) found that, while implicit pro-White attitudes did not change with age (i.e., from 6 to 10 years to adulthood), explicit pro-White attitudes declined over the same period, indicating that as children age, they may be more aware of (and internalize) the social norms sanctioning racial stereotyping and prejudice.

**Explanations for Race and Age Differences in Children's Racial Attitudes**

Research examining the mechanisms by which racial and age differences in racial attitudes occur is vital to our understanding of the specific factors and experiences that serve to develop and transform children's racial attitudes. We know that Black children, in some cases, differ from White children in their racial attitudes (Aboud, 1988; Kinzler & Dautel, 2012; McKown & Weinstein, 2003; Rowley et al., 2007), but we know little about why. Potentially, Black and White children's daily lives and experiences may differ in ways that drive differences

in how they theorize about race as a category. Research has shown, for example, that Black children receive greater amounts of racial socialization than do White children (Brown, Tanner-Smith, Lesane-Brown, & Ezell, 2006). White parents may be more hesitant to discuss race in the home for fear of biasing their children against individuals of different races. Black parents may be more likely to discuss race in their home, not only directly with their child, but also indirectly by discussing racial events in front of their child. These conversations may make race more salient for Black children. These factors may lead to the better and earlier understanding of race and racial stereotypes found in Black children, who may have more experience with racial conversations at an earlier age than their White counterparts.

Finally, the environments in which Black and White children live may account for racial background differences, especially given research showing that context can be an important predictor of racial attitudes (Clark & Clark, 1947, 1950; Hirschfeld, 1995b; Rhodes & Gelman, 2009). As mentioned above, Black children may be more likely to attend schools in which they are minorities than are White children, and thus, their exposure to individuals of different racial groups, and their often token status, may make race particularly salient at an earlier age. In these contexts, Black children may observe preferential treatment, distribution of resources, and other inequalities that make them aware of racial dynamics at an earlier age than their White counterparts. White children may live in less diverse settings in which they do not have to think about race. White children's more critical attitudes about race may thus be delayed in response to the limited cultural input.

Additionally, research on age differences in children's attitudes have raised questions about which universal cognitive abilities, if any, relate to children's racial attitudes. Some researchers have proposed that the previously documented age-related changes in children's

racial attitudes are due to advances in domain-general cognitive abilities over time, including multiple classification and concrete operational thinking (Aboud, 1988; Bigler & Liben, 2006). For instance, Quintana (1998) discussed these advances in his theory of racial identity in children, as did Bigler and Liben (2006) in their Developmental Intergroup Theory.

Quintana (1998) proposed that children's understanding of race goes through domain-general stages of change. He proposed that in level 0, between the ages of 3 and 6, children's racial attitudes and preferences are not directed at anyone in particular and may simply be related to children's socialization to believe that light is good and darkness is bad (though Hirschfeld, 1995a and Giménez and Harris, 2001 both demonstrate that children as young as 4 do distinguish between color and race). He also posits that these attitudes are related to a more pervasive societal belief that certain racial groups are superior to others. Thus, while younger children have more in-group preferences (at least for White children), these attitudes do not necessarily relate to their social behaviors.

In the next stage, level 1, between the ages of 6 and 10, children begin to understand racial terms and move from a purely external understanding of race to one that is more meaningful and includes essentialist reasoning, understanding of ancestry, and making connections between race and behaviors/social characteristics. However, children at this age are still limited in that their attitudes are literal. Thus, the characteristics they apply to ethnicity are not usually internal and psychological characteristics (e.g., limited to statements like "Mexican people eat Mexican food"). In this stage, children's decreasing reliance on external and perceptual features as cues to an individual's racial identity is due to advances in their cognition from preoperational to operational, by which they are able to focus on internal and external features and consider dual perspectives (Quintana, 1998).

In level 2 (ages 10-14), children begin to understand the social aspects of racial/ethnic group membership, and how it informs children's interaction with others. Children also begin to notice more non-obvious and non-ethnicity specific differences in ethnic characteristics, for example, children begin to note stratification around socioeconomic status and discuss prejudice and discrimination in more personal ways. Children may also be able to note stereotypes about their own group and others. Finally, in level 3 (adolescence) children become aware of their own racial identity and what it means for who they are. Because adolescence is a time during which children may be particularly involved in exploring their own identity and the group in which they fit, they may identify themselves more or less with their own group. Adolescents in this stage may also assess the pride of others in their group (Quintana, 1998).

Additionally, Bigler and Liben (2006) discussed cognitive advances that may play a role in the development of stereotyping and prejudice. Specifically, they proposed Piagetian cognitive advances such as perspective-taking, classification skills, nominalism, and probability judgments may enable children to make more sophisticated observations about race, some of which may promote, and some of which may ameliorate, prejudice and stereotyping. For example, children who can classify along multiple dimensions may be able to see the commonalities among individuals of different racial groups and differences among individuals in the same racial group. Perspective-taking may promote children to understand that discrimination is wrong, but may also promote more social desirability that may mask children's true attitudes. Additionally, they hypothesized that children's ability to co-construct the information they receive from others increases as they age and allows for more sophisticated representation and integration of both personal beliefs and societal norms and values.

However, the diversity in children's attitudes as early as 5 years of age may signal that more domain-specific cultural input and experiences are driving age-related changes in racial attitudes. Additionally, much of the research has established that children have more theory-like abilities that go beyond perceptual and external cues much earlier than Piaget assumed (Wellman & Gelman, 1992). Thus by the age of 5 or so, children may have many of the capacities discussed by Aboud (1988), Quintana (1998), and Bigler and Liben (2006). However, other factors may be at play. Particularly, the shift from the home to the school environment as a socialization mechanism and factors such as whether children have diverse and positive experiences with out-group members may work as a change mechanism for children's racial attitudes. In the earlier years, perhaps between ages of 3 and 6, children's capacity to integrate and think critically about the messages they are sent may increase over time (i.e., consideration of social desirability). At the same time, and perhaps even more so as they age, their experiences and the specific cultural input they receive may be more relevant to the development of their racial attitudes.

**Children's Understanding of Inheritance of Physical and Non-Physical Traits**

Previous work on children's beliefs about the innate potential of race have focused on children's beliefs about the physical traits associated with race (for example skin color), but fewer researchers have explored the ways in which children reason about how psychological or behavioral traits are connected to race. In order to understand what types of traits children might consider to be racially motivated, there must be consideration of children's basic understand of which traits are generally inherited and/or learned. For example, children may be more likely to believe that eye-color is an inherited trait, whereas beliefs are learned. There is debate about children's understanding of biological and environmental processes, and a series of studies have

shown that children do have some basic understanding of the differences between learned and inherited traits, though the extent to which they are able to do so and the age at which this process becomes more sophisticated is highly debated (Gelman & Wellman, 1991; Hirschfeld, 1995; Solomon et al., 1996; Springer, 1996).

For example, Solomon et al. (1996) examined children's ability to understand processes of environmental socialization and biological inheritance in a series of studies with children between 3 and 7. Children were predominantly White. In the first study, children were told a story about a king who adopted a shepherd's child or a shepherd who adopted a king's child. Both the adoptive and biological parents were fathers. Children were then told that the adoptive parents had one trait while the biological parents had another and were then asked which trait the child would have. The traits they examined were beliefs (e.g., believes that tin cans rust/believes that tin cans do not rust) and physical traits (e.g., has green eyes/has brown eyes). These traits were chosen because they are more clearly due to environmental learning and biological processes, respectively. Children who chose the biological parents consistently as those the child would resemble were said to have a nature pattern. Children who chose the adoptive parents consistently were said to have a nurture pattern. Finally, children who chose the adoptive parent for the child's beliefs and the biological parent for the child's physical traits were said to have a "differentiated" pattern (this pattern being correct one).

They found that most children under age 7 did not show a differentiated pattern, though more 6-year-olds (thought not most) showed the differentiated pattern than would be expected by chance. Thus, most 7-year-olds and adults understood biological and environmental processes while only some 6-year-olds did. When asked about their answers, most children in the differentiated group gave biological answers at some point, as did children who showed the

nature pattern. Children who showed the nurture pattern, however, did not have coherent answers, for the most part, indicating that they may not have had a clear strategy for their answers. They also found that children's understanding of which traits were stable across that lifespan could not account for their beliefs about the inheritability of physical traits and beliefs. In other words, children did not misunderstand the inheritance task because they did not know certain traits (e.g., liver location and/or skin color) could not change over the lifespan. Children, ages 6-7 overall did understand that body-related traits could not change across the lifespan. Thus, authors theorized that this study provides evidence that children did not fail the adoption task in study 1 because they did not understand the differences between physical traits and beliefs, but rather because they do not fully understand the biological processes involved in inheritance of traits.

In their second study, in which they asked children whether certain traits could change/were immutable in order to make sure this did not account for children responses in the adoption paradigm, Solomon et al. (1996) also examined whether desirability of the traits related to children's beliefs about the immutability of traits. They found that children's responses were related to the desirability of traits, such that children were more likely to say that a trait could change from worse to better than better to worse. For example, children believed that "Fred" could go from being angry to laughing a lot, but were less likely to say that Fred could go from laughing a lot to being angry. Thus, children's preferences for the response items, as well as the desirability of a given response item, affected children's beliefs about whether a given beliefs could change. These results suggest that if children are asked whether a target child will be like his/her biological parents vs. his/her adoptive parents, they may choose based on the desirability of the traits instead of based on their understanding of inheritance and socialization.

In study 3, Solomon et al. (1996) replicated study 1, but with mothers as the parents instead of fathers, since children may be more familiar with mothers' biological relationship to their children. Additionally, children were not shown photos of the infant, as not to bias their answers (they were simply asked about what hypothetical traits the child would have). Finally, the task was shortened to accommodate children, from 18 to 9 traits. Given the easier nature of this task, all age groups, including preschoolers, 6- and 7-year-olds, were in the differentiated group (i.e., gave nature responses for physical traits and nurture responses for beliefs) at greater than chance levels, though less than half of preschoolers and 6-year-olds (in number) were differentiated in their responses. Thus, at least some preschool-aged children understand biological processes (to an extent). Finally, children showing the differentiated pattern were more likely to give biological explanations for matching physical traits with biological parents and environmental explanations for matching beliefs with adoptive parents (a selective pattern of explaining answers).

In study 4, Solomon et al. (1996) replicated study 1 with preschoolers only, and removed the idea that the child went from a shepherd's child to that of a king (a princess). Children may have seen this as a fundamental transformation and thus, children were simply told that one mother died and another mother took the child. Children were then asked about the beliefs and physical features of the child and found that preschoolers did not show a differentiated pattern, but half of them fell into a nurture pattern and 4 into a biological pattern. Two preschoolers showed a semi differentiated pattern. The authors conclude that preschoolers, thus, do not have a sophisticated understanding of the biological and environmental nature of traits.

However, other researchers have argued that even preschool aged children have a sophisticated understanding of inheritance and learning and claim that demand characteristics of

the research conducted by Solomon et al. (1996) masked children's more advanced abilities. Springer (1996), for example, told children between the ages of 4 and 7 (with 4-5-year-olds categorized as preschoolers) three stories, one that matched study 1 in the Solomon et al. (1996) experiments, and two that were modified to lessen demand characteristics. Springer (1996) proposed that children may have believed that the child transformed completely by becoming a princess. Thus, in the first modified story, children were told of a child who was adopted, but this time, no transformation was discussed (children were not told the child "became" a princess) and the adoptive parent's gender was different from that of the baby. In the second modified story, children were told a switched-at-birth story, similar to that used in Hirschfeld's (1995a) fifth experiment. Children were then asked, similar to participants in Solomon et al. (1996), whether the child in the story would be similar to the adoptive or biological parents with regard to physical and non-physical (i.e., beliefs and preferences) traits. Springer (1996) also asked children whether they knew where babies come from, theorizing that children who knew about basic reproductive processes would better understand inheritance.

Springer (1996) found that with the original story, only 7-year-olds were above chance with regard to their understanding that the child's physical properties would match those of the biological parents. With the modified story, both 6- and 7-year-olds were above chance. Finally, all age groups, including preschoolers, were above chance when they were told the switched-at-birth story. With regard to children's beliefs about non-physical traits, both 6- and 7-year-olds understood that the child would have the beliefs and preferences of the adoptive parents when participants were told the original story. In both the modified and the switched-at-birth stories, all age groups, including preschoolers, understood these nurture processes above chance. When taken together, they found that preschoolers were more likely to show a "differentiated" pattern

(discussed above) in the switched-at-birth story than in the modified story and more likely to show this pattern in the modified story than in the original story. They also found that this pattern of matching children's physical, but not non-physical, traits with their biological parents was only seen among children who understood where babies come from.

In his second study, Springer (1996) examined whether children understand biological processes, even in the absence of physical resemblance. He proposed that a true understanding of inheritance requires that children understand that the reproductive process does not necessitate physical resemblance. In this study preschoolers, 6-, and 7-year-olds were included and only children who demonstrated knowledge of where babies grow were interviewed. Children were told four stories, two of the stories included photos and two did not. Within each pair, children were told (1) of a child who does not live with or look like his/her parents, but grew inside of the woman, and (2) of a child who did look like and live with his/her parents, but did not grow inside of the woman. Children were then asked whether the child was *really* that of the couple. They found that, in all age groups, children were above chance in giving a "differentiated" response. Thus, they believed that the child was only really that of the couple when the child came from the mother's womb, even though the child did not look like the parents. Though all children were above chance on this task, older children were more accurate than were younger children. There was no effect of condition (verbal vs. pictorial).

These studies demonstrate that preschool-aged children (ages 4-5) understand what it means to inherit certain traits and learn or acquire other traits through experience or socialization. This understanding is even stronger if children have a basic understanding of reproduction (i.e., that babies come from inside a mother instead of being obtained at a hospital or somewhere else). These results hold even when children are given perceptually conflicting

information. Additionally, given work by Hirschfeld (1995a) and Giménez and Harris (2002) suggesting that children do indeed understand that race is inherited, even when competing color-related information is presented (i.e., the Black child and White parent have clothing that is the same color), children do have some understanding of the biological and environmental processes involved in the inheritance of human characteristics. What has been less explored however, is how children make decisions when the characteristics discussed are less clearly categorized as either nature or nurture. For example, Solomon et al. (1996) explicitly chose beliefs (environmental) and physical characteristics (biological) given the clarity with which each fits into a nature vs. nurture paradigm. However, asking children about less clearly categorized characteristics may help tease apart their beliefs and interpretation about race as a category. Given the ambiguity of such characteristics, children may be faced with a decision that relies more heavily on their subjective interpretations of how race factors into the relationships among the child, the biological parents, and the adoptive parents. Work regarding interpretations around the inheritability of ambiguous categories has been conducted with adults.

Jayaratne, Gelman, Feldbaum, Sheldon, Petty, & Kardia (2009) asked adults whether certain traits (e.g., intelligence, sexual orientation, nurturance, and violence) were a matter of genetics, environment, or choice. They found differences in the ways in which Black and White adults made attributions with regard to the potential genetic bases of these characteristics. For example, while White participants were varied with regard to their attributions of characteristics, Black participants were overall more likely to endorse choice as the basis for the characteristics. The authors note that this may be due to the awareness that Black people have regarding past justification of discrimination and prejudice using genetic and biological explanations (e.g. eugenics). The authors also suggest that, given the recent use of environment or "culture" to

explain social inequalities (e.g., the Moynihan Report), Black people may be less willing to attribute traits to environment. This research further supports the idea that individuals' beliefs about the inheritability of ambiguous traits may be informed by lay theories about race, historical injustices, and political beliefs.

These studies indicate that children, at least by the age of 5 or 6, and arguably as early as 4, understand inheritance. However, given the variability in adults' classification of certain traits, children may also express variability when thinking about the potentially race-based inheritance of certain traits like skills. Similar to Hirschfeld's (1995b) findings regarding children's reasoning about hypodescent, children may believe that certain racial groups are more essential, or contribute more to offspring, than do other racial groups. In accordance with cultural norms in the US, children may reason that Blackness is more essential, and that Black people contribute more biologically than do White people. However, these processes may differ for Black and White children.

**The Present Study**

The present study has three specific aims: (1) To understand whether and to what extent children apply innate potential to race, (2) To understand whether Black and White children apply innate potential to race in different ways, and (3) To understand how children's beliefs about the innate potential of race changes with age. I explore the extent to which children believe in the innate potential of race by examining whether they believe interracially adopted target children (vs. intraracially adopted children) are more similar to their biological parents (vs. their adoptive parents) with regard to a novel set of skills. This study extends our understanding of children's conceptualization of race in 3 primary ways.

First, previous studies examining the innate potential of race have focused on the inheritability of skin color, which is conceptually different from children's understanding of the social implications of US-specific racial categories. This study explores whether children believe that there are social as well as physical implications to an individual's racial identity, specifically with regard to their skills. Here, I utilize language that emphasizes traits that are both novel and ambiguous as to whether they are learned (unlike beliefs) or inherited (unlike eye or skin color). Given that the traits I examine are novel, this ensures that I avoid using traits that children may already have stereotypic knowledge about (e.g., Black people are better at sports; White people are better at academics). Additionally, Solomon et al. (1996) found in their studies of children's beliefs about the inheritance and learning of traits that children answered in different ways depending on whether they liked a particularly trait or belief and on whether a trait or belief was objectively wrong/right. Thus, using novel traits allows me to control for variable, including likeability and previous understanding or knowledge of the trait.

Second, this study examines how Black and White children may differ in their beliefs about the innate potential of race with regard to skills. Many previous studies examining children's racial essentialism have included exclusively or primarily White samples. Given previous research showing that Black and White children's experiences with and beliefs about race may differ (Aboud, 1988; Kinzler & Dautel, 2012), it is important to study individuals of different racial backgrounds in order to have a fuller and more complete understanding of children's cognition around race and racial essentialism.

Third, I explore the developmental underpinnings of children's racial essentialist attitudes. Much of the current research has explored children's attitudes between the ages of 4 and 10. The current study focuses on 4-12-year-olds, given that much previous research has

shown that the developmental trends in children's racial attitudes often depend on many different factors. These factors include in-group racial preferences, which have been shown to decrease between 4 and 10 years (Aboud, 1988; Raabe & Beelmann, 2011), implicit racial biases, which remain stable between 6 and 10 years (Baron & Banaji, 2006), and racial essentialist attitudes, which increase between 3 and 10 years (Diesendruck et al., 2013; Kinzler & Dautel, 2012; Pauker et al., 2010; Rhodes & Gelman, 2009). Thus, this study examines the attitudes of children ages 4 to 12 in order to better understand at what point in development children develop beliefs about the innate potential of race. Notably, much of the extant research has ended their exploration of age differences at 10 years. Given that much change occurs around this period, I explore whether children's attitudes stabilize or change to a greater degree after age 10 (hence, the 10 to 12 age category). Twelve years of age was chosen as a point that would extend our current understanding of children's racial attitudes and that may also provide a foundation for understanding adolescent racial attitude development.

In terms of the study procedure, this study has the potential to confound children's beliefs about nature versus nurture and their beliefs about racial inheritability. Given that I ask about the inheritability of certain traits, there is a possibility that differences in Black and White children's attitudes could be interpreted as Black and White children simply having different beliefs about the inheritability of traits. This would not necessarily implicate the role of race in inheritability interpretations. In order to account for this possibility, I included a control condition, in which children will be shown intraracially adopted target children. This provides a baseline at which to compare children's attitudes about the inheritability of certain traits, even in the face of competing environmental influences (e.g., adoption into another environment).

In order to further ensure that we captured children's true attitudes about the race-based inheritance of traits, we ask a control question as well. Namely, Springer et al. (1996) provided research showing that children who knew that babies grow inside their mothers (instead of outside) performed better on a nature/nurture task, in which children were asked whether adopted children would have physical traits of the biological parents and beliefs of the adoptive parents. Thus, given that I want to ensure that children understand the task and have a basic understanding of how biological parents and children relate to each other, children's understanding that babies grow inside mothers was added as a control. Only children who understand that babies grow inside their mothers are retained in the current sample.

**Research Questions**

*Research Question 1.* Are children more adoptively biased, generally, with regard to skills?

*Research Question 2A.* Are children more adoptively biased toward target children adopted by same-race children than toward target children adopted by cross-race parents?

*Research Question 2B.* Are children more adoptively biased toward White target children than toward Black target children?

*Research Question 3A.* Are Black children more adoptively biased toward that interracially and intraracially adopted children than White children?

*Research Question 3B.* Are differences in Black and White children's adoptive biases dependent on the race of the target child?

*Research Question 4.* Are there age differences in the extent to which children are adoptively biased toward the target children?

**Hypotheses**

With respect to research question 1, few researchers have explored the extent to which children believe certain characteristics to be inherited and others to be learned. Those that have explored children's attitudes about inheritance have primarily explored more clearly biological and learned characteristics, such as hair and eye color or beliefs (Solomon et al., 1996; Springer, 1996). Evidence from Jayaratne et al. (2013) would suggest that Black and White children may differ in their beliefs about the origins of characteristics, with Black children having more adoptive bias and White children being at chance with regard to their attributions. However, I am hesitant to make a strong prediction based on Jayaratne and colleagues' (2013) study, given that their sample was comprised of adults as opposed to children. Thus, this question is primarily exploratory.

With regard to research question 2A, I predict that children will have more adoptive bias for the intraracially adopted children compared to the interracially adopted children. Children may believe that racial groups are distinct and mark important and fundamental differences between individuals in different racial groups (racial essentialist thinking). Thus children may indicate that interracially adopted individuals are too different from their adoptive parents to be influenced by them, while children may be at chance or more adoption biased in their judgments of intraracially adopted individuals.

With respect to research question 2B, I hypothesize that, given research showing that children expect the minority parent to contribute more to the traits of a child when one parent is White and one is a minority (Hirschfeld, 1995b), children will expect a Black child's traits to be more biologically based than a White child's. In line with the hypothesis for research question 2A, I expect that we will only find target child race differences in the interracial trials, given that

participants may be primed to think about the essential nature of race more when the adoptive parents are of a different race than the target children.

For research question 3A, the results in this study may be similar to and consistent with those found by Kinzler and Dautel (2012). Their study of children's beliefs about the stability of physical characteristics is similar in some ways to the current paradigm, given that it examines the innate potential of skin color utilizing a stability paradigm similar to our adoption paradigm. In their study, they found that Black children knew at an earlier age that race, not language, was stable across the lifespan. Given these findings and because race is more salient for Black children, they may be more likely to attribute skills of interracially adopted children to inheritability rather than environment. Thus, they may be more likely to apply innate potential to race, given its prevalence in their lives. Younger White children may be less knowledgeable about racial differences and, thus, may show either neutral or environmentally based choices with regard to the characteristics of the interracially adopted target children (i.e., they may be more adoptively biased). Older White children, who may be more knowledgeable about societally sanctioned racial differences, may show the same pattern as the Black participants and be more likely to attribute skills to biology than to environment (i.e., be less adoptively biased), particularly for the interracially adopted target children.

There is, however, reason to believe the results here may differ from the results of Kinzler and Dautel's (2012) study, given that they examined the inheritability of physical racial characteristics (i.e., skin color) that are "easier" traits to characterize as genetic or biologically inheritable. Additionally, Kinzler and Dautel (2012) explored the stability of traits as opposed to the inheritability of traits, which, although interrelated, are not necessarily interchangeable (Hirschfeld, 1995a). Given the intentional ambiguity of these traits, and the switched-at-

birth/adoption measure being utilized for the current study, there are other potential competing hypotheses. These possibilities are addressed by the research question 2B.

Research question 2B asks whether there may be an interaction between racial background of the participant and target child. White children may be more adoptively biased toward an interracially adopted White target child than a Black target child, whereas Black children may be more adoptively biased toward an interracially adopted Black target child than a White target child. Thus, children may attribute characteristics to environment with regard to their own racial group, but may apply innate potential to out-group members. The second possibility is that, due to the salience of race in their lives and higher rates of exposure to White children, Black children may have a higher capacity for perspective taking. Thus, Black children may be more flexible and less likely to apply innate potential both interracially adopted Black *and* White target children, being either neutral in their answers, or choosing environment over biology. White children, however, may be more flexible with regard to in-group members and may be more likely to apply innate potential to out-group members. That is, they may attribute the characteristics to racial background when the target is Black, but attribute them to environment when the target is White. Partial support for this theory that Black children, and minority children in general, may have a higher capacity for perspective-taking at an earlier age comes from Aboud (1998):

> "After 7 years of age, White children were more willing to see negative qualities in Whites along with the positive, and to see positive qualities in Blacks along with the negative. This ambivalence in White children is viewed as mature because it is thought to reflect a certain emotional and cognitive flexibility. In contrast the ambivalence expressed by Blacks is often viewed as maladjustive because it is thought

> to reflect a lack of strong attachment or a lack of certainty about one's attachment. Perhaps because developmental psychologists do not expect to see cognitive flexibility at such an early age, they interpret the ambivalence as uncertainty. *It may, however, be a form of flexibility that stems from social adaptability*" (p. 38; emphasis added).

Additionally, Jayaratne et al. (2009) found that Black adults were more likely to attribute a number of traits to choice, while White adults were more variable in their answers, depending on the trait being evaluated. Black and White children's responses may also reflect these differences. Thus, Black children's experiences in a society in which they are not the majority may force them to learn earlier about ethnic differences in addition to ethnic similarities and may, thus, allow them the flexibility to think about how both Black and White children might be similarly influenced by biological and environmental factors.

The fourth research question asks whether children between the ages of 4 and 12 will view race-based inheritability of traits differently. With regard to age, given past research showing that as White children get older they tend to essentialize race more, at least in some environments (Diesendruck et al., 2013; Gelman & Rhodes, 2009), I predict that 10-12-year-olds will be more essentialist (choose the biological parent more often, specifically in cases in which the target child has been adopted by *cross-race* parents) than 7-9-year-olds who will be more essentialist than 4-6-year-olds.

# CHAPTER III

## Method

### Sample and Recruitment

Participants were thirty-three 4-6-year-old children ($M_{age}$=5.90; 12% Black [N=4], 88% White [N=29]; 59% female), thirty-three 7-9-year-old children ($M_{age}$=8.24*;* 27% Black [N=9], 73% White [N=24]; 39% female), and fourteen 10-12-year-old children ($M_{age}$=11.19*;* 57% Black [N=8], 43% White [N=6]; 36% female). Four children were excluded from the current sample because they reported that babies grow outside instead of inside their mothers. Table 1 displays the demographic breakdown by race, age, and gender. Children were recruited from summer camp programs, churches, and a museum in a mid-sized Midwestern city. Children were compensated with a token gift for their participation.

I first contacted recruitment sites, including summer camps, museums, and churches; programs then provided permission for us to recruit parents with children participating in their programs. In some cases, program participation was incentivized with a $100 donation. Program directors and contacts provided permission for data collection and recruitment. Parents were recruited through email and in person. Parents were contacted a maximum of three times and were able to sign the consent form either in person, on hard copy, or online. Consent forms included screening information such as racial background of the child, racial background of the biological parents, and child age. Interviewers visually determined whether the child was a boy or girl and matched the script by the child's gender (scripts either involved female or male target

children). Once parents signed the consent form, children participated either during their summer program, at the museum, or at the university laboratory.

**Procedure**

I used the adoption/switched-at-birth paradigm utilized in previous studies (Gelman & Wellman, 1991; Hirschfeld, 1995; Solomon et al., 1996; Springer et al., 1996). Children were told 6 stories about target children who were born to one set of parents but adopted by another set of parents who were either of the same racial background (intraracial adoption) or of a different racial background (interracial adoption) than the target child. Children were told each story one by one, via a PowerPoint presentation. Each slide displayed three photos, one of the target child, one of the biological parents (a couple), and one of the adoptive parents (a couple). Photos were presented in succession as the story mentioned them; thus, a photo of the adoptive parents appeared once the story began to discuss the adoptive parents. Photos were therefore presented in the following order: biological parents, adoptive parents, then target child.

In each PowerPoint presentation, there were 6 slides to represent the 6 stories: 2 stories/slides discussed Black children adopted by White parents, 2 stories discussed White children adopted by Black parents (interracial conditions), 1 story discussed a Black child adopted by Black parents, and 1 story discussed a White child adopted by White parents (intraracial conditions). Photos were pre-tested with adults using Amazon Mechanical Turk to match for age, attractiveness, and racial background (see Appendix A for pre-test questions). Pre-test results showed that over half of participants believed the individuals in the photos were of the intended racial background (i.e., Black or White; Range=58%-100%, *M*=92% intended identification). Most couples were perceived to be between the ages of 20 and 35. All children, except one, were perceived to be between ages 5 and 10 (one child was perceived to be between

8 and 10 by 58% of the sample). All couples were seen as nurturing or very nurturing by at least 50% of the sample (*M*=75%); all children were seen as happy or very happy by at least 50% of the sample (*M*=91%).

In some cases, children also played an iSpy game between each story as a distractor task. All children were shown this iSpy game except children at the museum location, in order to keep the study length to 10 minutes as prescribed by the museum, and children at one church, at which time the iSpy book was not available due to unforeseen circumstances.

In the story, children were told about a couple who had a child (i.e., target child), but the child never lived with his/her birth parents and now lives with another set of parents (the adoptive family: see Appendix C for full script). This story emphasized (1) that the child was given to the adoptive family right after he/she was born and (2) that the child was fully integrated into the adoptive family (was loved and well taken care of). This was done in order to make sure children understood that the child did not spend any significant amount of his/her life with the biological parents and to make sure that they also understood this child was treated like a true family member by the adoptive family rather than simply a visitor. Children were then asked about which parents they believed the target child would be most similar to with regard to his/her ability to play a novel game the participants had never heard of. Thus, children were told that each set of parents were really good at a specific skill (i.e., "Mr. and Mrs. Richardson are really good at this new game called womwom"). Children were then asked whether they thought the child would have the characteristics of the biological or adoptive parents (e.g., "Do you think Bridget is really good at jimjam like Mr. and Mrs. Smith or womwom like Mr. and Mrs. Richardson?").

The gender of the target child was matched with the participant. Additionally, all adoption stories were counterbalanced (i.e., the Black child adopted by White parents and White child adopted by Black parents). However, all children saw the *interracial trials* first. Thus, children either saw a Black interracially adopted target child or a White interracially adopted target child first. Intraracial trials were, therefore, always either presented in the middle or at the end, but never at the beginning. Manipulation questions were also asked, both about the original study and about the skills each parent possesses, in order to ensure that children were listening and accurately understood the information. I also used novel (i.e., made-up) words in place of specific skills, since previous research indicates that children are more likely to side with outcomes that make sense or that they prefer (Solomon et al., 1996). These words were matched for the number of syllables.

After children listened to stories, children were asked an additional open-ended question in order to further probe their understanding of adoption. I asked children whether they knew where babies grow, given that previous research has suggested that children's understanding that babies grow in "mommies' tummies" and are not delivered by a stork or obtained at the hospital relates to their understanding of ancestry and adoption (Springer et al., 1996). The study took roughly 15 minutes to complete. After the study, parents were often given either a note saying their child took part in the study that day or a form explaining the purpose and implications of the study in more detail, for their information.

# CHAPTER IV

# Results

## Analysis Plan

First, the dependent variable here, and throughout the analyses will be identified as the extent to which participants were "adoptively biased." This refers to the extent to which participants believed the target children would be like their adoptive parents (versus their biological parents) with regard to the novel skills and is indicated by higher scores.

First, in preparing the data for analysis, I added children's responses to the two interracial trials – four trials total – for Black and White target children (i.e., the responses to the first and second story about a Black child adopted by White parents were aggregated; the same was done for the interracially adopted White child). Children were thus allowed one of three response options: 0 (always chose the biological over the adoptive parent), 1 (chose the adoptive parent over the biological parent once out of 2 possible times), 2 (always chose the adoptive over the biological parents).

The intraracial trials were on a different scale compared to the interracial trial, since there was only one trial for the intraracially adopted Black and White target children (as opposed to two for the Black and White interracially adopted target children). So children saw two intraracial adoption trials, one of a Black child adopted by Black parents and one of a White child adopted by White parents. These two trials were examined separately in order to compare children's treatment of the Black and White intraracially adopted target children. Thus, children

had two possible response options for these two trials: 0 (chose the biological over the adoptive parent) and 1 (chose the adoptive parent over the biological parent).

For our first set of analyses, one-sample t-tests allowed us to examine the extent to which children generally believed the target children would be like their adoptive or biological parents by comparing children's responses to chance (in the case of the interracial adoptions, the response options were 0, 1, and 2, and thus we compared children's responses to 1 using the one-sample t-test). Thus, if a child's mean is 0, that child would be more likely than chance (here chance equals 1; conceptually equal to 50%) to believe the targets would be like their biological parents. If a child's mean is 2, that child would be more likely than chance to believe the targets would be like their adoptive parents. For the intraracial adoption target conditions, the response options were 0 and 1 and thus, the means were compared to .5 (chance in this case). Thus, my one-sample t-test included chance comparisons for four conditions: interracially adopted Black children, interracially adopted White children, intraracially adopted Black children, and intraracially adopted White children.

Secondly, paired-samples t-tests were conducted in order to examine whether there were target child race differences in the extent to which children generally believed the target children would be more like their adoptive parents than their biological parents. One paired-samples t-test was conducted for the intraracial conditions (to compare children's beliefs about the Black targets versus the White targets) and another was conducted for the interracial conditions. In order to directly compare the means for the interracial and intraracial conditions, I multiplied the responses to the intraracial trials by 2 in order to make the response scales comparable. Thus, I compared the intraracially and interracially adopted Black targets, and separately compared the interracially and intraracially adopted White targets.

I used a repeated measures general linear model in order to examine how the independent variables (see below) predicted the dependent variable – the extent to which children believed the interracially adopted target children would resemble their adoptive parents – and answer the remaining research questions. As mentioned above, the response options for the dependent variable were in the interracial trials were 0, 1, and 2; for the intraracial trials the response options were 0 and 1. Repeated measures GLM was used, though the outcome for the intraracial trials was binary, because this analysis takes into account the correlational nature of the data (each individual has multiple correlated within-individual responses) in contrast to similar analyses such as logistic regression.

The experimental design of the independent variables was 2 x 2 x 2 x 3 (Participant Race [Black, White] x Target Race [Black, White] x Order [Black child adopted by White parents first, White child adopted by Black parents first][1] x Participant Age [4-6, 7-9, 10-12]), with participant race and age as the between group variables and target race as the within group variable. I found order effects in a number of interactions with both the inter- and intraracial trials; because of this, I decided to retain it in the Repeated-Measures General Linear Model (GLM). In probing the interactions, I ran a Mixed Linear Model using Stata, which allowed me to examine all possible pairwise comparisons within each interaction. The same was done for the intraracial trials, in which the only difference was the number of response options: 0 and 1. We decided not to add a correction because this is not available in Stata and, because of the complicated nature of the interactions, would be likely to increase Type 2 error.

[1] As mentioned above, children always saw the *interracial trials* first. Children either saw a Black interracially adopted target child or a White interracially adopted target child first. "Order" therefore always refers to interracially adopted target children.

Finally, I examined whether the individual groups involved in each interaction were above, below, or at chance with regard to their judgments. Again, using one-sample t-tests, I examined whether children's judgments were significantly above the mid-point, indicating the target child would more like the adoptive parents than the biological parents, or significantly below the midpoint, indicating the target child would be more like the biological parents than the adoptive parents. In order to examine this, I split the sample into the relevant demographic (e.g., 4-6-, 7-9-, and 10-12-year-old children for an interaction involving age) and then used a series of one-sample t-tests, comparing scores to the mid-point (1 for interracial trials; .5 for intraracial trials) in order to assess whether there were any significant differences from chance.

**Interracial Trials**

**Research Question 1.** My first research question asked whether children, overall, were more adoptively biased; that is, did participants believe the target children would be more like their adoptive parents than their biological parents? Using the one-sample t-tests, I found that both Black and White target children were judged to be more like the adoptive parents than their biological parents. The statistics for each condition are as follows: Interracially adopted Black children ($M$=1.49, SD=.73), [$t(79)$=5.98, $p$<.001]; interracially adopted White children ($M$=1.48, SD=.75), [$t(79)$=5.70, $p$<.001]. Figure 1 displays these chance comparisons. I found no differences in children's judgments of Black or White interracially adopted target children using the paired-samples t-tests.

**Research Question 2A.** This research question asked whether children saw the intraracially adopted target children as more like their adoptive parents than the interracially adopted target children. First, overall, both interracially and intraracially adopted Black and White children were seen as more like their adoptive parents at above chance levels. When

directly comparing the interracial and intraracial trials, I found that there were no differences between them with regard to children's adoptive biases, for either the Black or White targets.

**Research Question 2B.** Research question 2B asked whether the race of the target child would factor into children's adoptive biases. I answered this question using the repeated measures general linear model. Though there was no main effect of target child race, all of the interactions with the interracial targets involved target child race. Here, I discuss each interaction in terms of target child race differences.

The first two-way interaction was between target child race and age group [$F(2, 68) = 4.81$, $p$=.011]. The 4-6-year-old children had significantly more adoptive bias for the Black target children ($M$=1.45 SD=.75) than for the White target children ($M$=1.27 SD=.84) $p$=.016. Participants ages 4 to 6 ($M$=1.45 SD=.75) also believed the Black target children would be more like their adoptive parents than would be expected by chance [$t(32)=3.46$, $p$=.002]. However, these participants did not believe the White target children would be more like their adoptive parents than would be expected by chance. Figure 2 displays this interaction, while figure 3 displays the chance differences in this interaction. This indicates that for the youngest children, Black target children were more like their adoptive parents than White target children.

The second two-way interaction exploring how target child race related to children's biases was between target child race and order (Black or White interracially adopted child first) [$F(1, 68) = 4.70$, $p$=.034]. Specifically, children who saw the Black target child first had significantly more adoptive bias for the White target children ($M$=1.43 SD=.86) than for the Black target children ($M$=1.30 SD=.92) $p$=.037. Additionally, participants who saw the Black target child first believed the White target children would be like their adoptive parents significantly more than would be expected by chance ($M$=1.43 SD=.86) [$t(30)=2.77$, $p$=01], but

these same participants were at chance in relation to Black target children. This indicates less adoptive bias for the Black target, specifically when the first child was a Black interracially adopted target child. Figure 4 displays this interaction, and figure 5 displays the chance comparisons for this interaction.

I also found a significant three-way interaction among race of the target child, order, and age group [$F(2, 68) = 3.42$, $p$=.039]. For ease of interpretation, below the differences are broken down by age as to focus on the ways in which children who were matched in age took into account the race of the target child when judging the extent to which the target children would be like their adoptive or biological parents.[2] Figure 6 displays within age-group differences, and figure 7 displays the chance differences.

***4-6-year-old children.*** This section explores how 4-6-year-old children took target child race into account when making judgments about the target child – within the context of the interaction among target child race, age group, and order. Among 4-6-year-old children who saw the White target child first, children had significantly more adoptive bias for the Black target children ($M$=1.65 SD=.57) than for the White target children ($M$=1.35 SD=.78) $p$=.001. These results indicate that the youngest group was more biologically biased (they believed the target would be more like their biological parents) toward the racial group of the first child they saw, in this case particularly when the first target child was White.

With regard to chance analyses, 4-6-year-old children believed the Black ($M$=1.65 SD=.57) and White target children ($M$=1.35 SD=.78) would be like their adoptive parents above chance, but only when they saw the White target first, [$t(23)$=1.65, $p$<.001] and [$t(22)$=2.15,

[2] Only significant group differences relevant to the research questions were discussed here. Thus, no cross-order, cross-age group differences are in this section. However, these differences are displayed in Figure 8.

*p*=.043], respectively. These results suggest that the youngest age group was more adoptively biased toward the Black (and White) target children when the White target was shown first; however, when the Black target was shown first, 4-6-year-old children were at chance in their judgments of whether the Black or White child would be like their adoptive or biological parents. This suggests that seeing the Black child first may have primed the youngest children to be more biologically biased, generally, relative to when children saw the White child first.

***7-9-year-old children.*** In the context of the interaction among age group, target race, and order, among children ages 7-9, judgments regarding the target child did not depend on target child race. Additionally, with respect to chance analyses, 7-9-year-old children who saw either the Black target first (*M*=1.69 SD=.70) and White target first (*M*=1.53 SD=.62), believed the Black child would be more like their adoptive parents by chance, [*t*(15)=3.91, *p*=.001] and [*t*(16)=3.50, *p*=.003], respectively. Children ages 7 to 9 also believed the White target children would be like their adoptive parents above chance, regardless of whether they saw the Black target child (*M*=1.69 SD=.70) [*t*(15)=3.91, *p*=.001] or the White target child first (*M*=1.71 SD=.47) first [*t*(16)=6.20, *p*<.001].

***10-12-year-old children.*** In the context of the interaction among age group, target race, and order, among children ages 10-12, judgments regarding the target child did depend on target child race, but also depended on order. Thus, these effects will be discussed in further detail in the below section on order effects.

**Research Question 3A.** Research question 3A asked whether participant race would factor into children's adoptive biases. I answered this question using the General Linear Model. There was no main effect of participant race; however, there was an interaction among target

race, participant race and age, which addressed research question B (discussed below). Thus, my hypothesis regarding question 3A was not confirmed.

**Research Question 3B.** Research question 3B asked whether there may be an interaction between target and participant race with regard to the DV (adoptive biases). I answered this question using the General Linear Model. Though there was no 2-way interaction between target child race and participant race, there was a three-way interaction among participant race, target child race, and age [$F(2, 68) = 4.58$, $p$=.014], which informs our understanding of how target race and participant race influence children's judgments. Below the differences are broken down by age as to focus on the ways in which participant and target race relate to children's judgments regarding the extent to which the target children would be like their adoptive parents.[3] Figure 9 displays within age-group differences, and figure 10 displays the chance comparisons.

***4-6-year-old children***. This section explores how target and participant race influenced 4-6-year-old children's judgments about the target children – within the context of the interaction among target child race, participant race, and age group. First, Black 4-6-year-old children had significantly more adoptive bias for the Black target children ($M$=1.25 SD=.96) than for the White target children ($M$=.50 SD=1.00) $p$=.004. White 4-6-year-old children ($M$=1.38 SD=.78) had significantly more adoptive bias for the White target children than did Black children of the same age ($M$=.50 SD=1.00) $p$=.033. White children of this age also had significantly more adoptive bias for the Black target children ($M$=1.48 SD=.74) than the 4-6-year-old Black children had for the White target children ($M$=.50 SD=1.00) $p$=.022. Additionally, only White children ages 4 to 6 believed both the Black ($M$=1.48 SD=.74) and White target children

[3] Only significant differences relevant to the research questions were discussed here. Thus, no cross-participant race, cross-age group differences are in this section. However, these differences are displayed in Figure 11.

(*M*=1.38 SD=.78) would be like their adoptive parents above chance, [*t*(28)=3.52, *p*=.001] and [*t*(28)=2.64, *p*=.014], respectively. Black children ages 4 to 6 were at chance in their judgments of both the White and Black target children. These results indicate that Black children were more flexible (i.e., adoptively biased) with in-group target children than out-group target children. They also displayed more in-group flexibility/out-group rigidity (i.e., more adoptive bias for the in-group/Black target children and more biological bias for the out-group/White target children) than did White children. White children also displayed more adoptive bias overall, given the findings from the chance comparisons.

***7-9-year-old children***. Regarding the within-group differences among the 7-9-year-old children, I found one significant difference: Black 7-9-year-old children had significantly more adoptive bias for the White target children (*M*=2.00 SD=.00) than White 7-9-year-old children had for the Black target children (*M*=1.50 SD=.84) *p*=.042. This result is in contrast to the results among the 4-6-year-old children and indicates more out-group rigidity among White children in the middle age group than in Black children of the same age.

Additionally, Black 7-9-year-olds believed the Black target children would be like their adoptive parents above chance (*M*=1.89 SD=.33) [*t*(8)=8.00, *p*<.001]. Black 7-9-year-old participants' chance comparisons with regard to the White target child could not be calculated due to lack of variation, but results indicated that they all believed the White target children would be like their adoptive parents (*M*=2.00 SD=.00). Among White 7-9-year-olds, children believed both the Black (*M*=1.50 SD=.72) and White targets (*M*=1.58 SD=.65) would be like their adoptive parents above chance, [*t*(23)=3.39, *p*=.003] and [*t*(23)=4.37, *p*<.001], respectively. Thus, all children ages 7-9 generally felt the target children would be like their adoptive parents.

***10-12-year-old children***. Exploring within-group differences among the 10-12-year-olds, I found that the Black 10-12-year-old children had significantly more adoptive bias for the White target children ($M$=1.38 SD=.74) than for the Black target children ($M$=1.13 SD=.83) $p$=.022. This is also in contrast to the youngest group, with more out-group than in-group flexibility (i.e., adoptive bias) among Black 10-12-year-olds.

**Research Question 4.** Research question 4 asked whether age may relate to children's adoptive biases regarding the target children. In the General Linear Model, I found a main effect of age group [$F(2, 68) = 5.29$, $p$=.007]. However, upon examining specific significant differences among age groups, using a posthoc Tukey test, I found no specific group differences. This may be due to issues with the small sample sizes in some of the cells. However, figure 12 displays this main effect, with the middle age group visually having the highest adoptive bias. I also explored chance comparisons related to the main effect of age group. I did this by averaging between children's responses regarding the Black and White target children, selecting out cases by age group, and then conducting the one-sample t-tests. I found that the 4-6-year-old children [$t(32)$=3.04, $p$=.005] and 7-9-year-old children [$t(32)$=6.18, $p$<.001] believed that the target children would be like their adoptive parents above chance. However, 10-12-year-old children only believed they would be like their adoptive parents marginally above chance [$t(13)$=1.93, $p$=.075][4].

I also found three interactions involving age. The first two-way interaction was between Target Child Race and Age Group [$F(2, 68) = 4.81$, $p$=.011]. The 7-9-year-old children ($M$=1.70 SD=.59) had significantly more adoptive bias for the White target children than did 4-6-year-old

[4] Marginal results were typically not included and were only discussed where relevant to a specific issue or question.

children (*M*=1.27 SD=.84) *p*=.003. Figure 2 displays this interaction. Additionally, children ages 7-9 believed the Black (*M*=1.61 SD=.66) and White target children (*M*=1.70 SD=.59) would be more like their adoptive parents than would be expected by chance [*t*(32)=5.29, *p*<.001] and [*t*(32)=6.84, *p*<.001], respectively. Figure 3 displays these chance comparison. Thus, while both children ages 4-6 and 7-9 believed the Black target children would be more like their adoptive parents above chance, only 7-9-year-old children believed the White target child would be like their adoptive parents by chance. Additionally, 7-9-year-old children believed the White target children would be more like their adoptive parents than did the 4-6-year-old children.

I also found a significant three-way interaction among race of the target child, order, and age group [*F*(2, 68) = 3.42, *p*=.039]. For ease of interpretation, below the differences are broken down by order as to focus on how age relates to children's judgments regarding the extent to which the target children would be like their adoptive parents. Figure 13 displays the within order differences, and figure 7 displays the chance comparisons.

***Black target child first.*** This section explores how age influenced children's judgments about the target children when they saw the Black target first – within the context of the interaction among target child race, order, and age group. Among children who saw the Black target child first, 7-9-year-old children (*M*=1.69 SD=.70) had significantly more adoptive bias for the Black target children than did 4-6-year-old children (*M*=1.00 SD=.94) *p*=.005. Among children who saw the Black target child first, 7-9-year-old children also had significantly more adoptive bias for the White target children (*M*=1.69 SD=.70) than 4-6-year-old children had for the Black target children (*M*=1.00 SD=.94) *p*=.005. Among these same children, 7-9-year-old children had significantly more adoptive bias for the Black child (*M*=1.69 SD=.70) than 4-6-year-old children had for the White child (*M*=1.10 SD=.99) *p*=.010. Finally, in the same group,

7-9-year-old children (*M*=1.69 SD=.70) also had significantly more adoptive bias for the White target children than did 4-6-year-old children (*M*=1.10 SD=.99) *p*=.010.

There were also differences between the oldest and middle age group. Among those who saw the Black child first, 7-9-year-old children (*M*=1.69 SD=.70) had significantly more adoptive bias for the Black target children than did 10-12-year-old children (*M*=.50 SD=1.00) *p*=.015. In this same group, the 7-9-year-old children had significantly more adoptive bias for the White target children (*M*=1.69 SD=.70) than 10-12-year-old children had for the Black target children (*M*=1.30 SD=.92) *p*=.015.

As mentioned above, of all the age groups, only 7-9-year-old who saw the Black target first believed the Black *or* White child would be like their adoptive parents above chance. As above, these results suggest that the 7-9-year-old children were more adoptively biased than their 4-6- or 10-12-year-old counterparts, particularly when seeing the Black child first.

***White target child first***. No significant age differences were found among children who saw the White child first. As discussed above, children, regardless of age, believed the Black target children would be like their adoptive parents above chance when they saw the White target child first. Both 4-6- and 7-9-year-old children also believed the White target children would be like their adoptive parents above chance when they saw a White target first. This again, suggests that children were more adoptively biased when they saw the White target first than when they saw the Black target first.

Finally, I also found a three-way interaction among target child's race, age group, and participant race [$F(2, 68) = 4.58$, $p$=.014]. Below the differences are broken down by participant race as to focus on age differences in children's judgments regarding the extent to which the

target children would be like their adoptive parents. Figure 14 displays the within participant race differences, and figure 10 shows the chance comparisons.

***Black children***. This section explores how age influenced Black children's judgments about the target children – within the context of the interaction among target child race, participant race, and age group. The 7-9-year-old Black children had significantly more adoptive bias for Black target children ($M$=1.89 SD=.33) than the 4-6-year-old Black children had for the White target children ($M$=.50 SD=1.00) $p$=.002. Additionally, 7-9-year-old Black children were also significantly more adoptively biased toward the White target children ($M$=2.00 SD=.00) than were the 4-6-year-old Black children ($M$=.50 SD=1.00) $p$=.001; 7-9-year-old Black children also ($M$=1.89 SD=.33) had significantly more adoptive bias for the Black target children than did the 10-12-year-old Black children ($M$=1.13 SD=.83). Finally, 7-9-year-old Black children had significantly more adoptive bias for the White target child ($M$=2.00 SD=.00) than the oldest Black children had for the Black target children ($M$=1.13 SD=.83) $p$=.001.

Additionally, as mentioned above Black children ages 7 to 9 believed the Black target children would be like their adoptive parents above chance. Black 7-9-year-old children also believed the White target children would be like their adoptive parents, though chance could not be calculated due to lack of variation. Neither Black 10-12- or 4-6-year-old children were above chance in any of their judgments in the context of this interaction. These results indicate that the 7-9-year-old Black children for the most part had the highest adoptive bias for Black and White target children relative to their younger and older counterparts; 7-9-year-old children were particularly more adoptive toward the White target children than the 4-6-year-old children and more adoptive toward the Black target children than the 10-12-year-old children.

***White children*.** There were no significant within-group differences among White children in the context of the interaction among target race, participant race, and age group. As described above, White 4-6- and 7-9-year-old children believed both the Black and White target children would be like their adoptive parents above chance, suggesting more adoptive bias in the youngest White children than in the youngest Black children.

**Order Effects.** Though not one of my main research questions, I did find order effects among the interracial trials in the general linear model. Below are descriptions of the main effect of order and two interactions involving differences in children's judgments based on which child target they saw first. First, I found a main effect of order [$F(1, 68) = 5.80$, $p$=.019], by which children were significantly more adoptively biased overall when they saw the White target child first ($M$=1.59 SD=.83) compared to when they saw the Black target child first ($M$=1.14 SD=.81). Figure 15 displays this main effect. I also explored chance comparisons related to the main effect of order. Similar to the age group comparisons, I did this by averaging between children's responses regarding the Black and White target children, selecting out cases by order type, and then conducting the one-sample t-tests. I found that children were above chance in their adoptive bias when they saw either the White target child or the Black target child first [$t(49)$=7.51, $p$<.001] and [$t(29)$=2.36, $p$=.025], respectively. Figure 16 displays chance comparisons relative to this main effect.

The two-way interaction between target race and order (Black or White interracially adopted child first) [$F(1, 68) = 4.70$, $p$=.034] showed that children who saw the White target child first ($M$=1.60 SD=.57) had significantly more adoptive bias for the Black target children than did the children who saw the Black target child first ($M$=1.30 SD=.92) $p$=.012. Figure 4 displays this interaction. Additionally, participants who saw the White child first believed that

both the Black (*M*=1.60 SD=.57) and White target children (*M*=1.50 SD=.68) would be more like their cross-race adoptive parents significantly more than would be expected by chance [$t(49)=7.43$, $p<.001$] and [$t(49)=5.22$, $p<.001$], respectively. However, as noted above, only White target children were perceived to be like their adoptive parents above chance when the Black target child was shown first. See figure 5 for chance differences within this interaction. Thus, when the White target child was seen first, both Black and White targets were seen as more malleable to their environment (i.e., like their adoptive parents); however, when the Black target child was seen first, only White target children were seen as more malleable. This indicates more adoptive bias when the first child was a White interracially adopted target child.

I also found a significant three-way interaction among race of the target child, order, and age group [$F(2, 68) = 3.42$, $p=.039$]. The 4-6-year-old children who saw the White target child first (*M*=1.65 SD=.57) had significantly more adoptive bias for the Black target children than did 4-6-year-old children who saw the Black child first (*M*=1.00 SD=.94) *p*=.004. The 4-6-year-old children who saw the White child first also had significantly more adoptive bias for the Black target children (*M*=1.65 SD=.57) than 4-6-year-old children who saw the Black target child first had for the White target children (*M*=1.10 SD=.99) *p*=.007. These results indicate that Black children were seen as more like their biological parents, particularly when a Black interracially adopted target child was presented first. Additionally, as noted above, 4-6-year-old children believed the Black and White target children would be like their adoptive parents above chance, only when they saw the White child first.

There were also order differences in the extent to which 10-12-year-old children had adoptive biases. For example, 10-12-year-old children who saw the White target child first had (*M*=1.50 SD=.68) had significantly more adoptive bias for the White target children than 10-12-

year-old children who saw the Black target child first had for the Black target children ($M$=.50 SD=1.00) $p$=.038. These results are reinforced by the fact that 10-12-year-old children in this interaction only believed the Black child would be like their adoptive parents above chance when they saw the White target child first ($M$=1.60 SD=.52), [$t$(9)=1.60, $p$=.005]. Thus, for older children, seeing the Black target child first prompted more biologically biased judgments for Black target children than seeing the White target child first prompted for judgments about White target children. Additionally, order did not affect 7-9-year-old children's judgments of the target children. Figure 6 displays the within order differences, and figure 7 shows chance comparisons.

**Intraracial Trials**

**Research Question 1**. First, as I did for the interracial adoption trials, I explored whether children's responses were significantly different from chance. I found that children believed the target children would be more like their adoptive parents above chance: Intraracially adopted Black target children ($M$=.72, SD=.45), [$t$(80)=4.29, $p$<.001]; intraracially adopted White target children ($M$=.78, SD=.42), [$t$(79)=5.85, $p$<.001]. See figure 17 for chance comparisons. I also conducted a paired-samples t-test comparing responses to the Black and White intraracially adopted target children. I found no differences in children's responses.

**Research Question 2A.** Research question 2A asked whether intraracially adopted children would be seen as more like their adoptive parents than interracially adopted children. As stated above, I found that there were no significant differences between children's attitudes regarding the interracial and intraracial trials, for either the Black or White target children. I also found that, overall, children believed the Black and White interracially and intraracially adopted target children would generally be like their adoptive parents, above chance. These results

suggest that intraracially adopted target children may not be seen as more like their adoptive parents than interracially adopted target children. More research is needed in order to answer this question with more precision, given that there were a different number of response options for the interracial and intraracial trials (3 vs. 2, respectively).

**Research Question 2B**. Research question 2B asked whether target child race was a factor in children's judgments. I did not find a main effect of target child race. However, I did find a two-way interaction between order and target child race within the intraracial trials [$F(1, 68) = 8.29$, $p=.005$]. Specifically, children who saw the Black child first had marginally more adoptive bias for the White target child ($M=.83$ SD=.38) than for the Black target child ($M=.70$ SD=.47) $p=.056$. This result is similar to those find within the interracial trials within the target race by order interaction, though for the intraracial trials, it did not reach significance.

Additionally, chance analyses showed that all participants who saw either the Black ($M=.70$ SD=.47) or White target child first ($M=.74$ SD=.44), believed the Black target children would be like their adoptive parents above chance [$t(30)=2.08$, $p=.046$] and [$t(49)=3.83$, $p<.001$], respectively. Additionally, participants who either saw the Black ($M=.83$ SD=.38) or White target child first ($M=.74$ SD=.44), believed the White target children would be like their adoptive parents above chance [$t(29)=4.82$, $p<.001$] and [$t(49)=3.83$ $p<.001$], respectively. Thus, unlike the interracial trials, though there were some target race differences in children's judgments, children generally believed all of the intraracially adopted target children would be like their adoptive parents. Figure 18 displays this interaction, and figure 19 displays for chance comparisons within this interaction.

**Research Question 3A.** Research question 3A asked whether participant race would factor into children's adoptive biases. There was no main effect of participant race; however,

there was an interaction among target race, participant race and order, which addressed research question 3B (discussed below). Thus, my hypothesis regarding question 3A was not confirmed in the intraracial trials.

**Research Question 3B.** I found a three-way interaction among participant and target child race and order in which children saw the trials [$F(1, 68) = 8.29$, $p$=.005]. Figure 20 displays this interaction, and figure 21 displays the chance comparisons. Specifically, Black children who saw the White target child first had significantly more adoptive bias for the Black target children ($M$=.92 SD=.28) than for the White target children ($M$=.69 SD=.48) $p$=.042. Finally, Black children who saw the Black child first had significantly more adoptive bias for the White target children ($M$=1.00 SD=.00) than for the Black target children ($M$=.63 SD=.52) $p$=.003. These results suggest that the race of the first interracially adopted target child prompted participants to view target children of that racial background as more biologically bound – that is to believe that child would be more like their biological parents – throughout all trials, including the intraracial trials. These match the results found in the interracial trials, since the child seen first was deemed, particularly by the Black children, as more biologically bound.

Additionally, Black ($M$=.92 SD=.28) and White participants ($M$=.68 SD=.47) who saw the White child first believed the Black target children would be like their adoptive parents above chance [$t(12)$=5.50, $p$<.001] and [$t(36)$=2.52, $p$=.031]. Additionally, White children who saw either Black ($M$=.77 SD=.43) or White target child first ($M$=.76 SD=.43) believed the White target children would be like their adoptive parents above chance [$t(21)$=2.98, $p$=.007] and [$t(36)$=3.59, $p$<.001], respectively. Black participants who saw the Black target first could not have their chance comparisons of the White target children calculated due to lack of variation ($M$=1.00 SD=.00). Thus, the only at chance judgment in this interaction was Black children's

judgments of Black target children when they saw the Black target child first. This supports the above evidence that these results are similar to those found in the interracial trials.

**Research Question 4.** Research question 4 asked whether age would factor into children's adoptive biases. There was no main effect of age and no interactions involving age within the intraracial target trials.

**Order Effects**. In the three-way interaction among participant race, target race, and order [$F(1, 68) = 8.29$, $p$=.005], I found one order difference in children's judgments of the target children. Black children who saw the White child first ($M$=.92 SD=.28) had significantly more adoptive bias for the Black target child than did Black children who saw the Black child first ($M$=.63 SD=.52) $p$=.025. Additionally, as mentioned above Black children believed the Black target children would be like their adoptive parents above chance only when they saw the White target child first. This indicates that Black children were seen as more like their biological parents when the Black interracially adopted target was shown first. Figure 20 displays this interaction, and figure 21 shows the chance comparisons.

**Posthoc Analyses**

Due to lack of adequate power, given low sample sizes for some cells, some of these results could be considered pilot data in nature, and thus should be interpreted with caution. For example, there were only four Black children ages 4 to 6; additionally, only two 4-6-year-old Black children saw the White child first and two saw the Black child first (order effects). Because of this, I conducted supplemental posthoc analyses exploring the attitudes of participants in cells with more sufficient sample sizes. These participants were White 4-6- and 7-9-year-olds.

First, I used one-sample t-tests to examine children's attitudes regarding whether the target children would be like their adoptive parents above chance. I found that, similar to the larger sample, White 4-6- and 7-9-year-olds believed the Black and White interracially adopted target children would be like their adoptive parents above chance ([$t(52)=4.93$, $p<.001$] and [$t(52)=4.75$, $p<.001$], respectively). Figure 22 displays these chance analyses. White 4-6- and 7-9-year-olds also believed the Black and White intraracially adopted target children would be like their adoptive parents above chance ([$t(53)=2.90$, $p=.005$] and [$t(52)=5.20$, $p<.001$], respectively). Figure 23 displays these chance analyses. Additionally, I performed four paired-samples t-tests, which compared means for (1) the Black and White interracially adopted target children, (2) the Black and White intraracially adopted target children, (3) the Black interracially and intraracially adopted target children, and (4) the White interracially and intraracially adopted target children. Again, similar to the larger sample, White 4-6- and 7-9-year-olds did not differ in their beliefs about the Black and White interracially and intraracially adopted target children, with respect to any of the comparisons.

Secondly, I conducted the Repeated Measures General Linear Model and found one marginally significant three-way interaction among target race, age group, and order specifically for the interracial trials [$F(1, 49) = 3.65$, $p=.062$]. I found that White 4-6-year-olds who saw the White target child first marginally believed that the Black target children ($M=1.62$ SD=.59) would be more like their adoptive parents than the White target children ($M=1.38$ SD=.74) $p=.054$. I also found that the 4-6-year-old White children who saw the White target child first ($M=1.62$ SD=.59) had marginally more adoptive bias for the Black target children than those who saw the Black target children first ($M=1.13$ SD=.99) $p=.091$. Figure 24 displays group differences for this interaction.

I also conducted chance comparison analyses. I found that the 4-6-year-old White children who saw the White target child first believed both the Black and White target children would be like their adoptive parents above chance ([$t(20)=4.81$, $p<.001$] and [$t(20)=2.36$, $p=.029$], respectively). Among those 4-6-year-old White children who saw the Black child first, neither Black nor White target children were perceived to be like their adoptive parents above chance. I also found that 7-9-year-old White target children who saw the White child first believed the Black target children would be like their adoptive parents marginally above chance [$t(11)=2.16$, $p=.054$] and believed the White target children would be like their adoptive parents significantly above chance [$t(11)=3.92$, $p=.002$]. When they saw the Black child first, 7-9-year-old White children believed the Black and White children would be like their adoptive parents above chance ([$t(11)=2.55$, $p=.027$] and [$t(11)=2.55$, $p=.027$], respectively). Figure 25 displays the chance comparisons for this interaction.

Thus, the youngest White children tended to be marginally more adoptively biased toward the target child belonging to the racial group they did *not* see first and more biologically biased toward the target child belonging to the racial group they saw first. I also conducted a Repeated Measures General Linear Model for the intraracial trials and found no significant main effects or interactions.

# CHAPTER V

## Discussion

### Research Questions 1: Beliefs about Inheritance vs. Learning of Skills

This study aimed to understand the extent to which children's age, racial background, as well as the race of the target children influenced children's beliefs about the innate potential of race with regard to novel skills. The first research question explored whether children would generally believe that the target children would be like their adoptive parents above chance. I found that children, overall, judged both interracially and intraracially adopted children as more like their adoptive parents at greater than chance levels. This provides evidence that, at baseline, children largely believed that skills were learned rather than inherited regardless of the race of the adoptive parents. This contributes to our understanding of how children think about the extent to which certain traits are inherited or learned. While previous research, including that by Solomon et al. (1996) and Springer (1996) examined more clearly biological (eye color) and learned (beliefs) traits, this study demonstrates that, generally, children believe skills (particularly games) are learned. However, children's attitudes about the extent to which interracially and intraracially adopted target children were like their adoptive parents was largely dependent on the age and race of the participants as well as the race of the target child.

### Research Question 2A: Effect of Adoptive Parent Race (Interracial vs. Intraracial Adoption)

Research question 2A asked whether children would view the interracially adopted and intraracially adopted children differently. First, as mentioned above, children generally believed

both the interracially and intraracially adopted children would be like their adoptive parents above chance levels. Additionally, when directly compared, I found no significant differences in children's attitudes about either interracially or intraracially adopted target children. Finally, we found similar effects of target child race, participant race, and order in the intraracial trials as we found in the interracial trials. Namely, in both conditions, children, especially Black children, showed more adoptive bias toward the White child either when they were older (interracial trials) or when they saw the Black child first (intraracial trials). Order effects and age effects will be explored in more detail below.

Finding these differences among the intraracial trials was counter to my hypothesis that we would only see such results in the interracial trials. The lack of significant differences between children's attitudes about the interracial and intraracial trials were also counter to my hypothesis that there would be more adoptive bias for the intraracially adopted target children than for the interracially adopted target children. One explanation for our findings with the intraracial trials may be that Black children are essentialized to be bound to their biological parents, regardless of the race of their adoptive parents. Thus, it doesn't matter whether the adoptive parents are White or Black, but rather that the Black children are less flexible and malleable to their environment. These results may, however, be stronger in the interracial conditions, where we saw more variability in children's responses dependent on their age, race, race of the target, and the order in which they viewed the stories. Additionally, the one group difference in the target race by order interaction within the intraracial trials was only marginally significant. There may, therefore, be a carry-over effect among the intraracial trials, whereby the effects were stronger in the interracial trials, but were still present in the intraracial trials. Relatedly, a second explanation for the similar order effects I found among the inter and

intraracial trials may relate to a potential priming effect by which children were more likely to think about race when they saw interracial adoptions before they saw the intraracial adoptions (given that all children saw the interracial adoptions first). This priming effect may have carried on beyond the interracial trials to the intraracial trials.

**Research Question 2B: Effects of Target Race**

Research question 2B asked whether White target children would be seen as more like their adoptive parents than the Black target children. I did not find evidence of a main effect of target child race; however, whether target race factored into children's attitudes was dependent on children's age, racial background, and the race of the child they saw first. Generally speaking, Black target children were perceived to be more like their adoptive parents than White target children (1) among the youngest children generally, (2) specifically among the youngest Black children, and (3) among the children who saw the White target child first. White children were perceived to be more like their adoptive parents than Black target children (1) among the oldest Black children and (2) among the children who saw the Black target child first. We found such results in both the interracial and intraracial trials, though to a greater extent in the interracial trials.

Previous work has shown that adults believe that Blackness is in some ways a more essential category than Whiteness (Haslam et al., 2000). Additionally, Hirschfeld (1995b) showed that older White children perceived that Black children born to an interracial couple (one White, one Black) would be Black, even when given a multiracial option. However, the current study in some ways contradicts these findings, demonstrating that children's race matters for how target race and development relate to their judgments regarding innate potential. Specifically, it seems that, in young Black children, Black target children may be seen as more

flexible (i.e., like their adoptive parents) due to in-group bias – that is, young Black children's in-group preferences may also prompt them to believe in-group members are more malleable to their environment (i.e., adoptive bias) than out-group members. Among older Black children, however, this affect may be different, given their knowledge of societal racial stereotypes about Black children, which older Black children may have the cognitive capacity to understand further. This affect is discussed in more detail below, given its relevance for research question 3B.

**Research Questions 3A and 3B: Effects of Target Child Race and Participant Race**

The third research question asked whether participants' race would relate to the extent to which they believed the target children would be like the adoptive parents (3A) and whether such differences may be influenced by the race of the target child, thus resulting in a target race by participant race interaction (3B). There was no main effect of participant race on children's responses to either the interracial or intraracial adoption trials (thus, hypotheses for question 3A were not confirmed); however, as mentioned above, I did find that the extent to which participant race and target child race related to outcomes depended on children's development (for interracial trials) and order (for intraracial trials).

As mentioned above, many of the target race differences were in relation to Black children's judgments of the target children. Specifically, in the interracial trials, Black children showed more in-group flexibility/out-group rigidity when they were ages 4 to 6, but showed more out-group flexibility when they were ages 10 to 12.

In terms of the 4-6-year-old children, this may suggest that out-group application of innate potential (or in-group flexibility) may occur due to exposure to individuals of their same racial group in terms of their neighborhoods (higher Black populations) and other important

aspects of their environment (attending a historically Black church) at an early age. This was particularly notable in the current sample, given that many of the Black participants were interviewed at historically Black churches and many were from a city with a 29% Black population. This may also occur before formal schooling, at which point children may be more likely to be exposed exclusively to their parents' friends and/or their parents' friends' children. Due to research showing that adults tend to have close friends of their same race (Public Religion Research Institute, 2014).

Additionally, children may be receiving more exclusive input from their parents regarding race, who may socialize them in ways that encourage racial pride; this may make race more salient in their lives and they may, thus, believe that race is an important category. In this way, higher in-group flexibility/application of innate potential may be a "side effect" of positive racial socialization, which has often been demonstrated to be a positive factor for young Black children in a society in which they are historically marginalized (Banerjee, Harrell, & Johnson, 2011). Given these factors, the youngest children's attitudes may indicate less of prejudiced or negative racial attitudes toward White children and more of a belief regarding the flexibility of the in-group, due to exposure to many different types of people in the in-group.

Interestingly, older Black children, ages 10-12, believed that White target children were more influenced by their adoptive parents than were Black target children. This may suggest that the oldest Black children are beginning to understand *societal* attitudes that regard Black people as more essential than their White counterparts (Haslman et al., 2000). Thus, the oldest children may have a higher cognitive capacity to recognize nuanced and subtle messages about race that are transmitted through society in the form of segregation, media representation, and socialization at both school and at home. Thus, for example, children who notice Black and

White people live in different neighborhoods or that Black people are only portrayed in specific and limiting ways on television may also see Black people as more bound to their genetic or biological roots.

White children's attitudes were not as dependent on the race of the target child or on their age. This may be because race may not be as salient to White children and thus they may be unaware at age 10 of the ways in which Black individuals are perceived to be bound to their biology to a greater degree than White children in the larger societal context. This would be consistent with the findings of McKown and Weinstein (2003), which showed that Black and Latino children knew at an earlier age about stereotypes about their group relative to their White counterparts. Additionally, White children in this particular context may not apply innate potential to race. Previous research in a very similar context has shown that younger and older White children in this particular region did not display essentialist attitudes (Rhodes & Gelman, 2009). Thus, our results are consistent with their findings.

**Research Question 4: Effect of Age**

With regard to age, overall, I found that children between the ages of 7 and 9 were most adoptively biased, with younger and older children's judgment being generally less adoptively biased and more dependent on the race of the target child and of the participant. Again, these results were strongest (1) among Black children and (2) when children saw the Black child first. Specifically, Black children showed more in-group flexibility (i.e., in-group adoptive bias) when they were ages 4 to 6. By ages 7 to 9, they were more adoptively biased – even in some cases relative to their White counterparts – toward both Black and White target children. Finally, by 10 to 12, Black children showed more out-group flexibility. There are a number of possible explanations for this finding.

First, the U-shaped pattern we saw in the responses of the different age groups (see figure 12) may suggest that children's attitudes about innate potential are qualitatively different for the youngest and oldest children. Thus, the meaning of 4-6-year-old children's application of innate potential may differ in important ways from 10-12-year-old children's application of innate potential. The relatively high adoptive bias among the 7-9-year-olds may be the result of more exposure to individuals of different racial groups resulting from increased time spent in the school context. Additionally, children at this age may be further able to recognize the influence of the environment in individuals' lives, due to more exposure to and experience with environmental change and an increasingly sophisticated mental capacity to recognize such changes. However, children at this age may still be developing a capacity to notice implicit racial cues in the environment that would lead to the application of innate potential to race and/or more essentialist attitudes, which have been shown to develop later, and which are also highly contextual (Diesendruck et al., 2013; Rhodes & Gelman, 2009).

Additionally, because these developmental trends were particularly strong amongst Black children, this may suggest age differences in the extent to which Black children are noticing, interpreting, and utilizing race, given its salience in their lives as children in a society that privileges Whiteness. Thus, as mentioned above, Black children age, they may have further cognitive capacity to detect nuances involved in racial issues such as segregation and implicit/covert racism, which may cause them to draw conclusions regarding both essentialism in general, and about essentialism of Black people specifically. Additionally, Heyman and Gelman (2000a) found that children began to mention nature justifications (e.g., genes) in order to explain individuals' psychological traits by the fourth grade. This may be due to teaching in school regarding biology and may allow for such concepts to act as stand-ins for the concept of

an “essence” or underlying structure. Thus, the older children may be combining their rudimentary knowledge of biological processes and their knowledge of societal attitudes about race. Therefore, the youngest Black children may be expressing sentiments related to the salience of race in their lives and exposure to individuals of their same racial group whereas the oldest Black children may be expressing sentiments related to their more nuanced understanding of race in society and their more advanced, though still limited, understanding of biology.

Interestingly, I only found developmental differences in the interracial trials. Again, this may be due to the interracial trials prompting more nuanced racial attitudes due to more obvious nature by which race is involved in the interracial adoptions. Such nuance may prompt more contextual and developmental differences among the interracial trials.

**Order Effects**

Though not hypothesized, I did find order effects that had important implications for children’s judgments of target children in both the intra- and interracial trials. Namely, children were overall more biologically biased toward both Black and White target children when they saw the Black child first. Though not a part of the main research questions, this finding is important in that it suggests children are more primed to think about race in an essentialist manner when they are exposed to a Black child who has been adopted by White parents. This finding is in line with adult research showing that Blackness is more essentialized in certain.

Haslam and colleagues’ (2000) findings, for example, showed that adults believed that race as a category was a natural or objective category; however, they found that participants believed that Blackness was more informative than Whiteness and that Black people were more similar to one another than White people (forming a coherent, more uniform group), or that knowing that someone is Black would provide more information about their characteristics than

knowing someone is White. Additionally, in the United States, marginal groups, specifically Black individuals have historically been said to contribute more to the phenotype and genotype of an individual with both Black and White ancestry (e.g., hypodescent or the one-drop rule) (e.g., Ho et al., 2011). Thus, seeing a Black individual may have prompted children to think about race in a more essential manner across the trials they viewed.

Additionally, among 4-6-year-olds, children who saw the White child first were more adoptively biased toward the Black targets than children who saw the Black child first were toward the White child. This suggests that, at least in terms of the interracial trials, the effect of seeing a Black child first not only carried over to the youngest participants' judgments of Black children, but also to their judgments of White children. Thus, seeing the Black child first may have primed children to think about race in essential terms when they saw either the Black or the White child. Future research may use priming methods in order to further explore how attitudes about innate potential may depend on the contextual salience of race, salience that may be heightened by proximity to or interaction with individuals in marginalized groups.

**Posthoc Analyses**

I also separated out the White 4-6- and 7-9-year-old children's responses, in order to analyze data with cells that had sufficient sample sizes. These results from this smaller sample were somewhat similar to those of the larger sample. First, we only found differences among the 4-6-year-old White children, with no group differences among the 7-9-year-old White children. Additionally, group differences in children's attitudes seemed to center around their attitudes about the Black targets specifically. For example, children who saw the White child first were more likely to believe the Black target children would be like their adoptive parents (1) compared to White target children and (2) compared to children (participants) who saw the Black

child first. These results were marginal, and thus, should be interpreted with caution. However, interestingly, they also match the patterns of the larger sample. Thus, with larger sample sizes, these results may be more well-established.

Interestingly, in this case, 4-6-year-old White children who saw the White target first showed out-group flexibility, believing the Black target children would be more like their adoptive parents compared to White target children. Because these results are marginal, I am hesitant to make strong claims about this finding; however, seeing the Black child may have, again, primed participants to think in less adoptively biased (and more biological) ways, similar to the larger sample. Further, children may have generally been more biologically biased toward the racial group of the first target child they saw and then made an assumption that the child of another racial background would be different from the first. More research is needed in order further understand and establish these results.

**Limitations and Future Directions**

The current study provides further understanding of the ways in which essentialism, and specifically innate potential, may emerge in children. Specifically, unlike many previous studies that have not explored the ways in which participant race and age factor into children's racial essentialist attitudes, this study demonstrates that attitudes regarding the innate potential of race are highly influenced by developmental and identity.

Though this study adds to the literature, there are limitations that provide guidance for future research. First, some of the cell sizes were much smaller than is ideal for such a complicated experiment and set of analyses and should be interpreted with caution. Specifically, the number of White children (N=59), compared to the number of Black children (N=21), was uneven, as was the number of 4-6- (N=33) and 7-9-year-old children (N=33) compared to the

number of 10-12-year-old children (N=14), which contributed to a lack of adequate power for some of the relevant analyses. For example, upon examining observed power, the power for the target race main effect and the target race by child race interaction for the interracial and intraracial trials was very low (.06 and .05, respectively for interracial trials; .14 and .09, respectively for the intraracial trials), indicating that more participants are needed. However, the observed power for the results presented here ranged from .57 to .81.

Related to participant characteristics, the majority of the White participants were from one midsized, highly educated, and majority White Midwestern city; whereas though many of the Black participants were from this same area, some of these data were collected in a smaller suburb with a higher Black population (U.S. Census Bureau, 2010a; 2010c), which may have bearing on the current findings. For example, White children growing up in a relatively liberal and highly educated city may be exposed to individuals of different racial backgrounds more often than individuals in more rural areas. Such children may also have been taught about race in such a way that they understand that race is not a natural or objective category, but rather a social construction (e.g., skin color is not categorical or discrete, but, rather, is related to melanin content in one's skin). Rhodes & Gelman's (2009) research supports this hypothesis, given their findings that children in a very similar context (e.g., upper middle class and highly educated) did not have essentialist attitudes about race, regardless of age; however, older children in a more rural area were more likely to view race as objectively correct or natural. This may have been due to higher levels of conservatism in the rural town, given that conservatism was found to be related to beliefs in the objective correctness of racial categories.

On the other hand, many of the Black participants attended historically Black churches and/or lived in a city where 29% of the population is Black (U.S. Census Bureau, 2010c), more

than double the national representation (U.S. Census Bureau, 2010b). This may have provided young Black children with more exposure to individuals of their same racial group, individuals with whom they may be more familiar. This level of exposure may have provided children with evidence of flexibility for their own group relative to out-group members. Future research should aim to reduce, and more importantly, account for differences among participants so that the factors that contribute to children's essentialist attitudes may be further understood in a more precise and mechanistic manner. As has been demonstrated by previous studies (Horowitz, 1936 as cited in Cross, 1991; Clark and Clark, 1947; 1950; Rhodes & Gelman, 2009), children's attitudes and beliefs about race may be very dependent on a number of contextual factors. One potential factor may be exposure to individuals of different racial backgrounds, due to the potential of exposure to demonstrate flexibility through interactions with individuals who have varying characteristics despite belonging to the same racial group. Given research showing that cross-group friendships reduce negative racial attitudes (Pettigrew & Tropp, 2006), future studies may explore how various types of exposure (i.e., friendships, classrooms, etc.) to both racial in-group and out-group members may influence children's attitudes about the innate potential of race.

Secondly, socialization and instruction by teachers and parents regarding race may also shape children's beliefs about whether or not race is an important and meaningful category. For example, children whose educators and parents teach them about the lack of scientific or biological bases of racial categories may be less likely to apply innate potential to racial groups.

Though I had planned on exploring the underlying mechanisms by which Black and White children's attitudes may differ, I did not have enough data from parents for a sufficient analysis. However, there is arguably little reason to believe that racial differences in children's

attitudes are innate or genetic, and thus, it is important to explore the mechanisms by which Black and White children's attitudes may diverge in meaningful ways. As hypothesized before, the extent to which race is salient and relevant in the lives of Black children, as evidenced by work suggesting minority children know in-group stereotypes earlier than do White children (McKown & Weinstein, 2003), may be an important mechanism to consider. For example, because race is likely more salient for Black children than White children, this may lead Black children to consider race to be an important category to a greater extent than White children.

However, the geographical location, including the racial composition of the child's environment, socioeconomic status, and parenting practices, including racial socialization (or lack thereof), are also important considerations when exploring how children develop racial attitudes. For example, Black children growing up in the same majority White city as White children may come away with very different beliefs and attitudes due to their minority status, even though they occupy the same space. For White children, majority White spaces may allow them more flexibility and individuality because their race is not as salient and because they interact with many White individuals with different characteristics. For Black children, being a minority in a majority White space may make race more salient and may lead to expectations of similarities among Black children. Such circumstances may lead to higher application of innate potential in Black children. Thus, future research should explore the ways in which the larger context may influence children's attitudes.

Though not necessarily a limitation, future research should explore a range of other attitudes in a similar manner to Jayaratne et al. (2010), who explored, not only skills, but different sub-skills (e.g., math and sports ability), as well as other characteristics such as violence and nurturance, with adults. Such research may further provide insight into children's essentialist

attitudes about race relative to different types of characteristics. This study provides more information about children's baseline attitudes, without utilizing pre-existing skills about which children may already know, and potentially endorse, racial stereotypes; however, future research should also examine stereotyped skills, which provide a more ecologically valid understanding of children's racial essentialism and how it is related to their recognition and endorsement of stereotyping.

Finally, this study did not examine longitudinal trends, but rather, age differences in children's responses. Thus more research is needed to explore whether these results represent cohort effects or genuine developmental differences. For example, young Black children's in-group flexibility may signify a difference in the attitudes of young children growing up in the age of Obama, given that 4-6-year-old children have never known a world in which a Black man was not president. Thus young Black children may feel more pride in their own racial background, given that they may feel more represented and included in mainstream institutions – institutions from which Black people have been historically ostracized. However, it may be that as children age, they have higher cognitive capacity to understand both societal norms and stereotypes about race, which are often subtle and thus, may require the capacity for more nuanced thought and observation. Again, future research is needed to further explore the contextual and developmental natural of racial essentialist attitudes.

**Conclusion**

Despite these limitations, this study contributes greatly to our understanding of the development of essentialist attitudes and how race, both of the target and of the participant, influence children's attitudes and judgments. Few studies have explored the demonstrably contextual nature of essentialist attitudes across childhood, including all of middle childhood.

Overall, we found that children were deemed to be most similar to their adoptive parents. However, under certain circumstances, Black children specifically were seen as relatively less influenced by their environment, especially when children saw the Black child first, and when the participants were Black. This trend was also seen most among the 10-12-year-old children, and least among the 7-9-year-old children who believed for the most part that all target children, Black and White, would be like their adoptive parents.

Consistent with Kinzler and Dautel (2012), Black children showed more essentialist attitudes at an earlier age; however, inconsistent with their work, in which they found that older children understood race to be a consistent category, we did not find as much variation in White children, whose attitudes were not as dependent on age, order, or target race and were often adoptively biased. The lack of racial essentialism in White children may be consistent with previous research showing that, in certain communities, essentialist thinking may not be as prevalent (Diesendruck et al., 2013; Rhodes & Gelman, 2009). Thus, an important consideration is the geographic location of the participants, who were in similar communities as those described as being from a relatively more urban community in Rhodes & Gelman (2009). Those participants in their study did not express racially essentialist attitudes, though by age 10, children in the more rural community did express such attitudes. Likewise, Diesendruck et al. (2013) found that children in the US started to express relatively more essentialist attitudes about race by age 10, while racially essentialist attitudes decreased in Israel. Thus, the children in our study may not be in communities that promote more racially essentialist attitudes. Further, race may not be a salient part of White children's lives in these communities.

In terms of Black children's attitudes, the youngest age group seemed to express more in-group bias, viewing the Black targets as malleable and flexible; the second age group expressed

more neutrality, believing all children to be flexible to their environment; finally, the third age group may have expressed societal knowledge of racial essentialism, especially of Black individuals. This explanation is consistent with the adult literature, showing that Black individuals are essentialized, in certain ways, to a greater degree than White individuals (Haslam et al., 2000). However, our findings with the youngest age group contrast with the literature that contends that Black children are neutral and sometimes pro-White in their in-group preferences. While we did not measure in-group preferences, there may be reason to believe that preference for your own group would lead you to deem your group less bound to biological beginnings and more malleable to the environment. Thus, the youngest children may be expressing an in-group bias that may be the result of a number of factors, including racial composition of the environment and parental racial socialization, which has been shown to predict adolescent racial attitudes (Neblett, Smalls, Ford, Nguyen, & Sellers, 2009). More research is needed in order to specifically understand what aspects of the environment may contribute to essentialist attitudes and the potential relations between essentialism and in-group preferences.

Finally, though we hypothesized that children would essentialize interracially adopted children at greater rates than intraracially adopted children, we found similar results for both groups, though more variation was found for the interracial adoption trials. For both the intra and interracial adoption trials, children essentialized the targets they saw first more than those they saw in later trials, and this was particularly true for the Black targets. This once again lends further credence to the idea that Black targets are seen as *particularly* biologically bound – relatively speaking – and priming participants to think about race more in those instances than when the first individual they saw was White. Additionally, the race of the adoptive parents may not matter so much as the fact that the children are less malleable to their environment. Jayaratne

et al. (2010) found in adults racial differences in the extent to which individuals used explanations like choice, environment, or genetics to explain various human traits. Thus, environmental and genetic explanations may not need to involve cross-race individuals in the environment to invoke more essentialist thinking in individuals, depending on their racial background and, likely also, on their context.

Thus, this study demonstrates the contextual nature of essentialist attitudes and suggests that more studies are needed examining, not only the contextual nature of essentialist attitudes, but also the parental practices that may lead to such attitudes. Additionally, more work is needed to explore how essentialist attitudes may be related to other relevant racial attitudes and behaviors, including willingness to befriend individuals of other racial groups, racial preferences, and racial stereotyping. Research has already shown that essentialism may be negative for children, given that it is related to stereotyping (Pauker et al., 2010). In adults as well, racial essentialism is related to justification of inequality, presumably due to the fact that racial differences are deemed natural and meaningful and therefore connected to relevant abilities and characteristics (Williams & Eberhardt, 2008). Thus, this study provides more knowledge regarding the developmental and contextual factors that contribute to children's racially essentialist attitudes, adding to a growing body of literature that will produce solutions for reducing essentialist attitudes at an early age.