Intergroup Dialogue Pedagogy, Processes, and Outcomes:
The Moderating Role of Epistemological Development

by

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ABSTRACT

With intergroup conflict on the rise in the U.S., we are reminded of the critical role higher education can play in preparing individuals for life in an increasingly diverse, complex, and polarized society. Developed in the late 1980s, the University of Michigan's unique approach to intergroup dialogue (IGD) brings together students from different identity groups who share a history of strained relationships and have lacked opportunities to speak to each other in meaningful ways.

Since its inception, this particular approach to IGD has been studied extensively, focusing primarily on processes associated with interpersonal relationships and intrapersonal identity. Less attention has been given to students' fundamental assumptions of knowledge, knowing, and other aspects of their epistemological development. Guided by the theory of self-authorship, along with multiple theories of epistemological development, this study focuses on the relationship between students' epistemological development and the key pedagogical features, communication processes, psychological processes, and intended outcomes scholars and practitioners have identified over the last three decades of IGD research, theory building, and practice. The complex relationships among these pedagogical features, processes, and outcomes are captured in the critical-dialogic theoretical framework of intergroup dialogue, which also guides this study.

To explore the possible moderating role of epistemological development in these relationships, I conducted t-tests and used two structural equation modeling techniques (path

analysis and multiple group analysis) to analyze a sample of 720 IGD students who participated in the Multi-University Intergroup Dialogue Research Project (MIGR). I used a composite score of student responses to five measures of "openness to multiple perspectives" as a proxy measure of students' epistemological development.

The results of my analyses indicate that the relationships between IGD's pedagogical features, communication processes, psychological processes, and intended outcomes (intergroup understanding, empathy, collaboration, and action) are moderated in multiple ways based on students' level of openness to multiple perspectives. Increases in IGD's various processes and outcomes were most directly (though not exclusively) associated with pedagogy and cognition for students who were less open to multiple perspectives and with communication and emotion for students who were more open to multiple perspectives.

The results of this study illustrate how the critical-dialogic theoretical framework of intergroup dialogue operates differently for students based on a particular epistemological disposition. This refined understanding of how the IGD experience varies based on students' openness to multiple perspectives has implications for IGD curriculum, facilitation, and facilitator training. Future research could analyze whether other dimensions of development (e.g., interpersonal, intrapersonal) also moderate the processes and outcomes associated with IGD.

The results of this study also have implications for student development theory. Previous research has produced mixed evidence as to whether one's intrapersonal and interpersonal development is moderated by one's epistemological development. Given that IGD's various processes and outcomes, which are primarily interpersonal and intrapersonal in nature, were moderated by epistemological dispositions, the results of this study offer support for the moderating role of epistemological development.

CHAPTER I

INTRODUCTION

Intergroup Relations and Higher Education in a Shifting Social Landscape

Though some forms of social inequality and inequity have decreased in recent years and throughout U.S. history, intergroup conflict remains salient across a variety of social identities, including race/ethnicity (Bobo, 2011), gender (Lorber, 2012), religion (Blumenfeld, Joshi, & Fairchild, 2009), age (Nelson, 2002), sexual orientation (Kantor, 2009), socioeconomic status (Bartels, 2008), ability status (Davis, 2006), and citizenship status (Glenn, 2011). In some ways, intergroup relations may be as amicable as they have ever been, yet living in an increasingly globalized world with unprecedented technological capacity (e.g., internet, social media) to share thoughts and feelings instantly (along with misinformation and prejudices) creates the potential for intergroup conflict to become a part of daily life like never before (Stephan, 2008).

Demographic trends make these observations all the more worthy of our attention. Over the last 30 years, working-class wages in the U.S. have remained constant, while 80% of net income gains have gone to the top 1% of the income distribution, accentuating a socioeconomic divide (Bartels, 2008). As past projections of increased racial diversity have come to fruition, racial hostility and violence have intensified as well (Pettigrew, 1998b). In the coming decade, the U.S. is projected to continue to become more racially diverse (Hussar & Bailey, 2013), a trend that will lead to racial minorities making up the majority of the population between 2040 and 2045 (Bobo, 2011; Dougherty, 2008). Similar shifts in age and religious representation are projected as well: The number of individuals 60 years and older will double by 2050 as the

number of younger individuals decreases by 25%, and the percentage of those currently in the religious majority (Christians) will decrease from 78% to 66% as the number of religious minorities increases from 22% to 34% (Pew Research Center, 2015). Demographic shifts bring with them both challenges (e.g., intergroup conflict) and opportunities (e.g., diverse perspectives in policy-making), making it imperative that society is adequately prepared to take advantage of these opportunities and address associated challenges.

Among the many institutions that could be utilized to prepare society in such a way, some suggest that higher education is "best suited to the task of improving intergroup relations" (Gurin, Nagda, & Zúñiga, 2013, p. 23), and that its purpose is to "prepare future citizens to reconstruct society so that it better serves the interests of all groups of people" (Sleeter & Grant, 1999, p. 189). Given the racial segregation and uneven distributions of social identities in neighborhoods and schools nationwide (Denvir, 2011; Iceland, 2004), as well as the withdrawal from social interaction and distrust of neighbors that can develop in diverse neighborhoods (Putnam, 2007), colleges have the potential to offer an experience with diversity that many incoming students have yet to experience and support to students as they navigate this new environment, reflect upon what they believe, form relationships in college, and make sense of who they are (Baxter Magolda, 2001). Indeed, it is higher education's potential to provide an optimal blend of both challenge and support (Baxter Magolda, 2004; Sanford, 1962) during students' development into adulthood that makes higher education uniquely suited to this task.

Preparing students for a diverse world has been promoted in national reports on higher education (Association of American Colleges and Universities, 2015; The National Task Force on Civic Learning and Democratic Engagement, 2012), along with college and university mission statements (Morphew & Hartley, 2006). Though higher education has much to offer in

this regard, this coming together of diverse individuals on college campuses can lead to conflict, including legal cases related to college admission (National Conference of State Legislatures, 2013), harassment and discrimination of minorities (Caplan & Ford, 2014; Rankin, Weber, Blumenfeld, & Frazer, 2010), decreased well-being among students who experience such oppression (Arbona & Jimenez, 2014), and higher attrition among these students (Rankin et al., 2010; Rigali-Oiler & Kurpius, 2013). Furthermore, in the coming decades, postsecondary institutions will experience demographic shifts that mirror those happening in the broader society, leading to racial/ethnic minorities making up the majority of enrollments at public institutions by 2050 (Lopez, 2006). Students most often arrive at college with minimal preparation to successfully navigate such diversity (Baxter Magolda & King, 2012; King & Shuford, 1996), meaning that higher education's mission to prepare students to thrive in an increasingly diverse world may first depend upon its ability to prepare students to thrive on its increasingly diverse campuses.

Creating diverse campuses–though a critical step–is only the first step to such preparation (Gurin, Dey, Hurtado, & Gurin, 2002). Furthermore, beyond simply providing students with diversity-related academic content, institutions need to facilitate meaningful interactions among diverse groups of students, and students must engage with such material and interactions to maximize their learning and development (Gurin, Sorensen, Lopez, & Nagda, 2015; Hurtado, 2005). As students engage with course content and diverse peers, their prior learning and preconceived notions are challenged by new information and competing claims, which requires students to reconcile and reconstruct what they know (a cognitive process), how they view themselves (an intrapersonal process), and how they relate with others (an interpersonal process) (Baxter Magolda & King, 2012).

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Therefore, in addition to the dissemination of content and the development of students' academic and professional skills, colleges and universities need to develop students holistically to best prepare them for life in a diverse world (Gurin et al., 2013; Heifitz, 1998; King & Baxter Magolda, 2005; Oblinger & Verville, 1998). Students are better able to cultivate skills related to global citizenship as they develop cognitively (e.g., knowledge acquisition, epistemological development), interpersonally (e.g., moral and civic development) and intrapersonally (e.g., racial/ethnic and gender identity development) (Baxter Magolda & King, 2012). Holistic development across these three domains leads to what Kegan (1994) referred to as "self-authorship," which he defined as "an internal identity . . . that can coordinate, integrate, act upon, or invert values, beliefs, convictions, generalizations, ideals, abstractions, interpersonal loyalties, and intrapersonal states" (p. 185). Reliance on this internal identity for reasoning and meaning-making, as opposed to deference to authority figures alone (Gurin et al., 2002), is integral to both the holistic development of students and the diversity initiatives of higher education (Baxter Magolda, 2008).

Intergroup Dialogue in Higher Education

In order to expose students to greater diversity and promote student development, postsecondary institutions create and refine a variety of educational programs that take place both within and outside of the classroom (King & Lindsay, 2004). Though such programs have generally been found to accomplish their intended purposes, they often have noteworthy limitations. For example, diversity coursework has been found to be associated with a variety of important diversity outcomes (Bowman, 2010; Nelson Laird, Engberg, & Hurtado, 2005), but can be limited in its ability to facilitate meaningful interactions among students. Other more experiential programs like residential life (Duncan, Boisjoly, Levy, Kremer, & Eccles, 2003) and

study abroad (Bennett, 2008) are perhaps better suited to provide such interactions (along with other developmentally-rich experiences), but it is difficult to discern the extent to which students in those programs genuinely engage with the opportunities afforded them (Gurin et al., 2013).

Dialogue, an approach that has increased in prevalence in recent years, is intended to overcome many of these hurdles by (1) providing students academic content related to diversity and social justice, (2) creating opportunities for them to interact with diverse peers, and (3) facilitating their engagement with both content and peers in a deliberate and structured way (Devane & Holman, 2007; Hernandez-Gravelle, O'Neil, & Batten, 2012). These programs allow students to engage in difficult conversations and activities related to controversial topics, thus exposing them to new information and competing claims, which can facilitate development.

Though there are numerous ways in which such dialogues can be facilitated, some approaches have been implemented, evaluated, and refined over time (McCoy & McCormick, 2001; McCoy & Sherman, 1994; Parker, 2006; Saunders, 1999). The most rigorously assessed and carefully refined method of dialogue practiced in higher education is intergroup dialogue (IGD) (Hurtado, 2001; Gurin et al., 2013; Zúñiga, Nagda, Chesler, & Cytron-Walker, 2007), which is the primary focus of this study. IGD is defined by Zúñiga, et al. (2007) as:

> a face-to-face facilitated learning experience that brings together students from different social identity groups over a sustained period of time to understand their commonalities and differences, examine the nature and impact of societal inequalities, and explore ways of working together toward greater equality and justice. (p. 2)

A variety of design elements distinguish IGD from other forms of dialogue (Nagda, Gurin, Sorensen, Gurin-Sands, & Osuna, 2009), including personal and sustained engagement across difference, structured activities and dialogic methods, deliberate sequencing of dialogue and learning, and the balancing of social identities among participants (Hurtado, 2001) and co-facilitators (Maxwell, Nagda, & Thompson, 2011; Quaye, 2012).

In many ways, IGD's unique design elements are linked to the theoretical foundation upon which it has been built and refined since the 1980s. Allport's (1954) contact theory—which asserts that four conditions must exist to facilitate positive group interaction: (a) equal status among groups, (b) group cooperation toward (c) a common goal, and (d) approval of authorities for groups to interact—is often cited in the literature as justification for IGD's balance of power among participants and co-facilitators. Pettigrew's (1998a) reformulation of Allport's theory revealed "friendship potential" as necessary to successful intergroup contact, which supports the sustained contact students experience (typically over a semester) as part of IGD.

While theories such as these were utilized to design IGD in the 1980s, scholars have since developed IGD-specific theoretical frameworks to explain how IGD brings about its intended outcomes. IGD is designed to increase intergroup understanding, intergroup relationships, and intergroup collaboration and action (Gurin et al., 2013) in order to "strengthen individual and collective capacities to promote social justice" (Zúñiga et al., 2007, p. 16).[1] Research suggests that IGD accomplishes this by increasing students' personal and social identity awareness, knowledge of social systems, ability to build relationships across difference and conflict, and capacity for sustained communication (Nagda, Kim, & Truelove, 2004; Schoem, Hurtado, Sevig, Chesler, & Sumida, 2001; Zúñiga et al., 2007).

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[1] Though IGD scholars and practitioners have not explicitly aligned themselves with a specific definition of social justice, their discussion of social justice generally reflects the definition provided in *The Encyclopedia of Diversity and Social Justice*: "a social circumstance in which historical inequities between peoples based on various dimensions of social identity (e.g., race, class, gender) have been remedied so that measureable proportional equality across all peoples exists" (Clark & Fasching-Varner, 2015, p. 670). IGD scholars are explicit, however, in presenting IGD as a form of *social justice* education (e.g., recognizing one's socialization and contribution to oppressive systems [Gurin et al., 2013; Zúñiga et al., 2007], developing one's capacity to interrupt oppression) as opposed to *diversity* education (a focus on unity and tolerance).

When these findings are viewed through the lens of Kegan's (1994) self-authorship, a connection between IGD's promotion of social justice and the facilitation of participants' cognitive, interpersonal, and intrapersonal development is illuminated. This promotion of social justice through student development is also illustrated in Gurin et al.'s (2013) critical-dialogic theoretical framework of intergroup dialogue, which is the most comprehensive IGD-specific framework to date (see Figure 1.1; the evolution of this framework over the last two decades is described in detail in Chapter II).
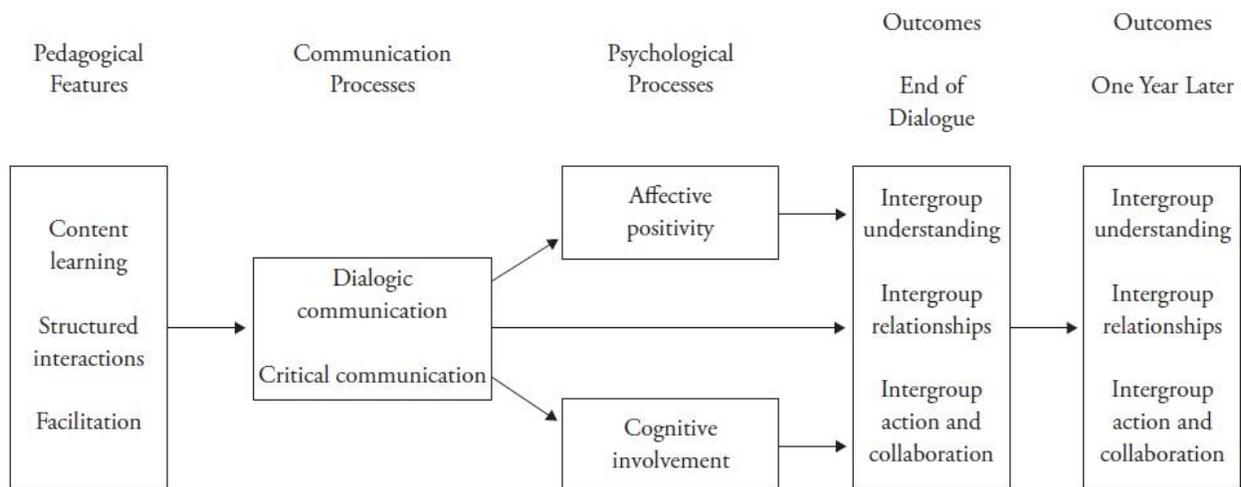
Figure 1.1 A critical-dialogic theoretical framework of intergroup dialogue.
Source: Gurin, P., Nagda, B. R. A., & Zúñiga, X. (2013). *Dialogue across difference: Practice, theory, and research on intergroup dialogue*. New York, NY: Russell Sage Foundation, p. 76.

In summary, the framework describes how IGD's particular pedagogical features promote communication that is both dialogic (e.g., focused on lived experience) and critical (e.g., oriented towards addressing systems of inequality). As students communicate with each other in these ways in a structured, facilitated setting, they are able to experience positive feelings associated with IGD (affective positivity), and they engage in complex thinking related to their own identities and society as a whole (cognitive involvement). Collectively, these forms of communicative, emotional, and cognitive engagement can foster intergroup understanding, intergroup relationships, and intergroup collaboration and action, both throughout the semester

and in participants' lives thereafter (Gurin et al., 2013). From a self-authorship standpoint, we can see how these three intended outcomes are brought about via cognitive processes (e.g., content learning, cognitive involvement), interpersonal processes (e.g., dialogic communication, critical communication, structured interactions), and intrapersonal processes (e.g., identity engagement, a form of cognitive involvement in Gurin and colleagues' framework) (King & Baxter Magolda, 2005).

A Next Step for Intergroup Dialogue Research

In this dissertation, I argue that analyzing IGD's theoretical framework, as well as the research upon which it is based, through the lens of self-authorship can lead to new understanding of IGD and improved practice. This claim is based on (a) my review and integration of the IGD and self-authorship literatures (Chapter II) and (b) my quantitative analysis of a theoretical framework I developed based on this literature review and integration. This theoretical framework was designed to serve as a first step towards a greater understanding of the relationship between students' development capacity and IGD's pedagogy, processes, and outcomes.

More specifically, my dissertation focuses on students' *epistemological* development, a key component of *cognitive* development, which describes the evolution of individuals' assumptions regarding the nature of knowledge and knowing. Decades of research and theory development have illuminated processes by which students transition from dualistic thinking to the recognition of the contextual nature of knowledge (Baxter Magolda, 1992; Belenky, Clinchy, Goldberger, & Tarule, 1986; Kitchener & King, 1981, 1990; Perry, 1981). Though such transitions are generally accompanied by disequilibrium that can be difficult for students, they have the potential to create in students both the ability and desire to more fully own their

convictions and beliefs by weighing evidence, critically assessing claims, and not merely deferring to trusted authorities.

I focus this dissertation on epistemological development for several reasons. First, though it is reasonable to assume that the interwoven strands of cognitive, interpersonal, and intrapersonal development are equal partners in the development of self-authorship, this remains an empirical question. Some evidence does support the assumption of equal partners (Abes, Jones, & McEwen; 2007; Baxter Magolda, 2001; Torres & Hernandez, 2007), however, some evidence suggests that epistemological development may be what King (2010) referred to as the "strong partner" (p. 167) in the development of self-authorship (King & Kitchener, 1994; Guthrie, King, & Palmer, 2000; Endicott, Bock, & Narvaez, 2003; Torres & Baxter Magolda, 2004). In the context of IGD, the strong partner perspective would suggest that the interpersonal and intrapersonal processes and development associated with IGD (illustrated in Figure 1.1) may be disproportionately influenced by participants' epistemology. That is, the epistemological domain may "provide a foundation without which development in the other domains is restricted" (King, 2010, p. 177). The second reason I focus on epistemological development is because IGD theory and research has focused primarily on the interpersonal and intrapersonal aspects of IGD, with less emphasis given to cognitive (specifically, epistemological) considerations. Both of these reasons are described in greater detail in Chapter II.

Research Question

The conceptual overlap of self-authorship and IGD, the prominent role of epistemological development in the holistic development of students, and the apparent lack of emphasis on epistemology in IGD theory and research raises the following question: *What are the relationships among students' epistemological development and the major pedagogical features*

of IGD, its communication, cognitive, and affective mediating processes, and its intended outcomes? To explore this question as part of this dissertation, I review and integrate the IGD, self-authorship, and epistemological development literatures (see Chapter II) in order to analyze (see Chapter III) how Gurin et al.'s (2013) theoretical framework operates differently for students with varying epistemological dispositions (see Chapters IV and V).

Organization of this Dissertation

This dissertation is divided into five chapters. In Chapter I, I have introduced IGD and its relevance to both higher education and the broader society, along with the theories of self-authorship and epistemological development, in order to provide context for my research question and the contributions of this study. In Chapter II, I provide more thorough reviews of the IGD, self-authorship, and epistemological development literatures, along with my proposal of a theoretical framework of IGD that (a) represents an integration of these different literatures and (b) informed my analyses. In Chapter III, I describe the methods I used to answer my research question, including an overview of the Multi-University Intergroup Dialogue Research Project (MIGR) dataset I used in this study. In Chapter IV, I present the results of my analyses. In Chapter V, I discuss the implications of those results for IGD theory, research, and practice. I also discuss implications regarding the role of epistemological development as a strong partner in self-authorship development.

Contributions of this Study

The contributions of this study are two-fold. Given the conceptual alignment of self-authorship and IGD, mixed evidence supporting epistemology's role as a strong partner upon which other forms of development depend, and the lesser emphasis of IGD scholarship on epistemology, my analyses of the role of epistemological development in IGD processes and

outcomes is a fruitful area of research and theory-building. For example, a better awareness and understanding of epistemology's role in IGD could lead to a more refined theoretical framework for IGD, as well as the creation of structured activities (for students) and training (for facilitators) that are relatively easy to implement, yet could have a profound impact on the IGD experience.

This study also represents a response to King's (2010) call for an "extended conversation" (p. 183) related to the possible strong partner role of epistemological development in students' development of self-authorship. In fact, my review of the literature suggests that this study would be the first empirical response to that request. Thus, given this study's self-authorship implications, the findings and implications reported herein are relevant to scholars and practitioners in a variety of student-related endeavors (beyond IGD alone) that are intended to promote the holistic development of college students and/or social justice outcomes.

CHAPTER II

LITERATURE REVIEW

The purpose of this study was to examine the relationship between students' epistemological development and the pedagogy, processes, and outcomes associated with intergroup dialogue (IGD). In this chapter, I provide the rationale for this line of inquiry and the research question presented in Chapter I.

This chapter begins with a review of IGD pedagogy, theory, and research. First, I integrate the perspectives of IGD scholars regarding IGD's specific pedagogical components, processes, and outcomes. Second, I provide an account of IGD's practical and theoretical origins and evolution over the past 60 years and the empirical studies that drove this evolution over that time, thus providing requisite context for the analyses I conduct in this study. I then describe the theory of self-authorship, which encompasses three interrelated forms of development (epistemological, interpersonal, and intrapersonal) that are especially relevant to IGD participants, processes, and outcomes. I also discuss evidence associated with the possible role of epistemological development as a "strong partner" of self-authorship development (King, 2010) in order to illuminate the role of epistemology in IGD. I then provide an overview and synthesis of four prominent epistemological development theories in order to identify themes that are most useful in integrating epistemological development theory and IGD theory, practice, and research. Based on my review of the IGD, self-authorship, and epistemological development literatures, I conclude this chapter by proposing a theoretical framework that serves as a theoretically-derived starting point for my analyses, which are described in detail in Chapters III and IV.

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Intergroup Dialogue Practice, Theory, and Research

Intergroup Dialogue in Practice

IGD is a specific form of dialogue that originated at the University of Michigan in the 1980s, a time when structured opportunities for intergroup interactions were limited (Duster, 1993; Hurtado, 1992), and students wanted more courses and programs that acknowledged and promoted diversity (Gurin, Nagda, & Zúñiga, 2013). Today, IGD is offered on over 120 campuses as extracurricular, co-curricular, and for-credit experiences (Gurin, Sorensen, Lopez & Nagda, 2015) and has received recognition from a variety of professional organizations (Zúñiga, Nagda, Chesler, & Cytron-Walker, 2007).

IGD brings together students from two different social identity groups who share a history of strained relationships and have lacked opportunities to speak to each other in meaningful ways (Nagda, Gurin, Sorensen, Gurin-Sands, & Osuna, 2009). Groups of 10-18 students of diverse and equally represented social identities meet consistently for 10-15 weeks (typically over a semester) to dialogue on topics related to race/ethnicity, gender, class, religion, and other identities (Zúñiga et al., 2007). Specifically, IGD is centered on personal and social-identity-related experiences (Zúñiga, Mildred, Varghese, DeJong, & Keehn, 2012), as opposed to academic content only, as is the case in many other classroom pedagogies (Asher, 2003).

Another distinguishing feature of IGD is that it is co-facilitated by two trained facilitators (typically faculty, professionals, and/or undergraduate/graduate students) whose social identities are representative of the identities present in the group (Maxwell, Nagda, & Thompson, 2011). The focus of *dialogue* on personal and identity-based conversation distinguishes it from *discussion* (exchanging ideas) and *debate* (proving one's claims, disproving others' claims) (Nagda & Zúñiga, 2003), making it an interaction with which students are typically less familiar.

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As opposed to assuming the role of teachers, co-facilitators are considered co-learners who guide the dialogue, help it remain focused on personal experiences, and ensure that multiple perspectives are able to be shared and heard (Gurin et al., 2013; Nagda & Zúñiga, 2003).

Each week, students are assigned readings that prepare them for the 2-3 hour dialogue session (Nagda et al., 2009). In each session, structured activities (e.g., sharing testimonials, small intergroup or intragroup caucuses) serve as means to personal reflection and dialogue among participants (Ford & Malaney, 2012). After each activity, co-facilitators lead the group in a dialogue regarding what participants learned about the topic at hand, how they felt as they participated in the activity, and what they learned about intergroup dynamics.

Looking beyond each individual session and considering IGD as a semester-long process, each IGD course is intended to move students through four phases: (1) forming and building relationships (2-3 sessions), (2) exploring differences and commonalities (3-4 sessions), (3) discussing controversial topics (3-5 sessions), and (4) action planning and alliance building (2-3 sessions) (Zúñiga et al., 2007). In the first 2-3 sessions, students get to know each other, learn principles of dialogue, and co-create the "ground rules" for their semester together. In the following 3-4 sessions, participants learn about the role of social identities in society, and they explore the differences and commonalities among the social identities represented in the group. Having become more familiar with each other, and having learned about the principles of dialogue and the role of social identities in society, the next 3-5 sessions are devoted to students dialoging about controversial topics (e.g., immigration, police discrimination), focusing on group members' personal experiences with each topic. Having spent the semester engaged in these intergroup processes, the final 2-3 sessions focus on how students can be allies in promoting social justice. Students are also assigned a final paper inviting them to reflect upon their

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experience (e.g., initial hopes, fears, understanding; their group's interactions) and crystallize what they will take away from it (e.g., current hopes, fears, understanding; dialogue and interpersonal skills) (Gurin-Sands, Gurin, Nagda, & Osuna, 2012). By the end of the semester, the goal is that IGD has not only enhanced intergroup relationships, but increased participants' desire and ability to promote social justice in the future–both individually and in collaboration with people from other social identity groups (Gurin et al., 2013).

The evolution of IGD practice from the 1980s to today has been strongly influenced by the theoretical foundation upon which IGD was originally built, as well as subsequent theory building that describes how IGD accomplishes its intended outcomes. I provide an account of these theoretical underpinnings in the following section.

Intergroup Dialogue Theories, Framework, and Associated Research

Origins: Contact Theory and Intergroup Contact Theory (1954-2000). Our understanding of this particular IGD pedagogy can be traced back to scholarship produced almost a century ago that, in fact, did not focus on pedagogy, college students, or higher education. Influenced by the need to integrate Black and White soldiers into platoons during World War II, there was scholarly interest in interracial contact from the 1930s to the 1950s, and many studies were conducted to better understand this phenomenon (Dovidio, Gaertner, & Kawakami, 2003; Pettigrew, 1998a). From his review of this disparate body of literature, Allport (1954) identified four conditions that, if present, promote positive and productive intergroup contact and, if absent, can lead to negative consequences: (a) equal status among groups, (b) group cooperation, (c) a common goal, and (d) approval of authorities for groups to interact.

Allport's (1954) "contact theory" was supported empirically by over two dozen empirical studies over the next forty years (see Pettigrew & Tropp, 2006 for a review). Scholars also began

to identify additional conditions for positive intergroup contact. Some examples include stereotype disconfirmation (Cook, 1978); individuals possessing initial views of a different group that are not too negative (Hewstone & Brown, 1986); and individuals voluntarily engaging in contact, sharing a common language, and living in a prosperous economy (Wagner & Machleit, 1986). Scholars also began to identify conditions associated with negative intergroup contact, such as competition between groups, involuntary contact, the status of one group decreasing because of contact with the other group, frustration, disagreements related to morality, perceptions of out-group members as invaders, and differences in religion (Amir, 1976).

Eventually, however, limitations of contact theory became apparent. In Pettigrew's (1998a) reformulation of contact theory, which would become known as *intergroup* contact theory (IGCT), he identified and sought to address four limitations of Allport's (1954) original theory. First, although the addition of new conditions may appear to be a sign of theoretical advancement, scholars became concerned that contact theory was simply becoming a "laundry list" (Pettigrew, 1998a, p. 69) of conditions that had varying (and unknown) levels of impact on intergroup contact (Dovidio et al., 2003; Stephan, 1987). As more conditions were put forth, the ability to create this growing list of conditions in real-life intergroup contexts decreased, and questions arose as to which conditions were "essential" (Pettigrew, 1998a, p. 70) to positive intergroup contact, as opposed to simply "facilitating" (but not essential to; p. 70) such contact.

A second limitation of contact theory was its inability to offer explanations as to *how* its four conditions promoted positive intergroup contact. This limitation was closely related to the third limitation Pettigrew (1998a) identified, which was the inability to determine the temporal sequence of the relationships observed in the contact theory literature. Specifically, it was

unclear whether intergroup contact promoted prejudice reduction (as scholars claimed), or if individuals with already-positive intergroup dispositions self-selected into intergroup contact.

The fourth limitation was contact theory's limited generalizability to contexts outside of individual instances of intergroup contact. For example, it was unknown whether prejudice reduction among groups in one context (e.g., playing on the same sports team) meant that similar prejudice reduction among those groups would be observed if similar conditions were present in a different context (e.g., day-to-day interactions). Furthermore, if a person decreased their prejudice toward a *member* of a particular group (e.g., an immigrant), it was unclear whether this would lead that person to have less prejudice toward that member's *group* (e.g., other immigrants). Finally, it was also unclear whether the reduction of prejudice toward one group (e.g., immigrants) might lead to the reduction of prejudice toward other groups (e.g., Muslims).

In his efforts to address these limitations, Pettigrew made contributions to the intergroup contact literature that would play an integral role in the design and theoretical frameworks of IGD. For example, Pettigrew's (1997) quantitative study of over 3,800 individuals led to the addition of a fifth condition of successful intergroup contact: The contact must be such that there is potential for friendships to develop (Pettigrew, 1998a). A few years later, Pettigrew and Tropp's (2000) meta-analysis of the intergroup contact literature revealed significant relationships between Allport's (1954) four original conditions, Pettigrew's friendship potential, and a decrease in intergroup biases among both majority and minority group members. These results provided strong justification to refocus scholarly attention on these five conditions, thus helping provide a sense of resolution and guidance regarding scholars' "laundry list" concern.

Regarding contact theory's limited ability to describe how its four conditions promote positive intergroup contact, Pettigrew's (1998a) review of the literature identified four processes

that mediated the impact of these conditions on prejudice reduction: learning about the outgroup, changing behavior, generating affective ties and empathy, and ingroup reappraisal. Learning about the outgroup captures the connection between contact and attitude change: The more one learns about different groups via contact, the more negative views and stereotypes can be disconfirmed. Changing behavior describes how intergroup contact can require individuals to act in new and more positive ways (e.g., tolerate or be accepting of others in a given context). Generating affective ties speaks to how intergroup contact can lead to positive emotions and relationships, which, in turn, can change attitudes and reduce prejudice. As these three processes run their course, ingroup reappraisal occurs as individuals recognize that the various norms and ideals of their own group(s) are not the only appropriate norms and ideals.

As for his third concern related to the temporal sequence of relationships, Pettigrew (1997) used a non-recursive structural equation model (SEM) to analyze the directional pathways between individuals' ($N = 3806$) levels of friendships and prejudice. The strength of the path (relationship) from friendship to prejudice (-.16) was slightly stronger than the strength of the path from prejudice to friendship (-.11), which is somewhat inconclusive. However, the overall study indicated that the influence of IGCT's five conditions on prejudice came after and built upon individuals' pre-existing characteristics. This provided support for the impact of the five conditions on prejudice reduction and intergroup friendships, thus ameliorating (though not completely resolving) the self-selection concern among scholars (Pettigrew, 1998a).

In response to the fourth concern of contact theory's limited generalizability across contexts and groups, Pettigrew's (1998a) review of the literature identified three strategies that, when implemented sequentially, can increase generalizability: decategorization, salient categorization, and recategorization. First, a period of time in which in groups are decategorized

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can decrease the salience of group identities, differences, and, therefore, negative feelings or

stereotypes associated with them (Byrne, 1971; Brewer &Miller, 1984). With negative views and

stereotypes diminished, if identity can become reemphasized (salient categorization), individuals

can associate newfound positive feelings and experiences with other group(s) (Hewstone &

Brown, 1986; Weber & Crocker, 1983; Wilder, 1984). With more positive feelings in place

between groups, groups can recategorize themselves as members of a "common ingroup"

(Gaertner, Dovidio, Anastasio, Bachman, & Rust, 1993, p. 2), thus blurring the lines between "us"

and "them" (Perdue, Dovidio, Gurtman, & Tyler, 1990, p. 475).

Table 2.1 illustrates how the evolution of contact theory aligns with the creation and

refinement of IGD. In the following section, I summarize how scholars interested in intergroup

contact in higher education built on IGCT to describe the processes by which higher education

programs can improve intergroup relations.

Table 2.1. Juxtaposition of Intergroup Contact Theory Components and Intergroup Dialogue
Design Elements

IGCT Components	Examples of Corresponding IGD Design Elements
Four Original Conditions	
1. Equal Status	Equal representation among participants and facilitators
2. Group Cooperation	Adherence to group-established ground rules
3. Common Goal(s)	Learning from each other, promotion of social justice
4. Approval From Authorities	Interactions sanctioned by facilitators and institution
Fifth Condition	
5. Friendship Potential	Small group (10-18 participants), meet for 10-15 weeks
Four Processes	
1. Learning About Outgroup	Readings, facilitated activities, structured interactions
2. Changing Behavior	Using dialogue principles, intergroup collaboration and action
3. Affective Ties	Personal experiences shared (beyond debate and discussion)
4. Intergroup Reappraisal	Readings, facilitated activities, structured interactions
Three Strategies	
1. Decategorization	IGD's Four Phases: Phase One
2. Salient Categorization	IGD's Four Phases: Phases Two & Three
3. Recategorization	IGD's Four Phases: Phase Four

Transitioning to an IGD-Specific Framework (1998-2004). At the turn of the century, questions remained regarding the implementation and facilitation of IGCT's various conditions, processes, and strategies. For example, Pettigrew and Tropp (2000) concluded their meta-analysis of the contact theory literature by asking:

> But how can we create optimal contact situations? This is the point where social psychology and sociology meet. Social-structural changes in our institutions are necessary to provide opportunities for optimal intergroup contact on a scale sweeping enough to make a societal difference . . . . As one example, American university campuses, with their revival of intergroup conflict and discrimination in recent years, illustrate what can happen when institutions do not make the necessary structural changes to adapt to a more diverse community. (p. 111)

The authors' use of American university campuses as an example is noteworthy, as is their observation that multiple strands of literature and knowledge would need to be integrated to take full advantage of contact theory. Based on their review and integration of the literature, Dovidio et al. (2004) put forth a conceptual framework describing how various higher education interventions (multicultural education, IGD, cooperative learning, and moral and values education) lead to the reduction of bias, stereotypes, negative affect, and discrimination (see Figure 2.1). Dovidio and colleagues' motivation for starting a scholarly discourse on a higher-education-specific framework echoes the concerns of Pettigrew and Tropp (2000; quoted above): "Structurally . . . the contact hypothesis has represented a list of loosely connected and diverse conditions, rather than a unifying conceptual framework that explains *how* these prerequisite features achieve their effects" (Dovidio et al., 2004, p. 258). In this sense, Dovidio and colleagues, much like Pettigrew (1998a), called for a greater level of specificity and utility than IGCT could provide, particularly as it pertained to intergroup relations programs in higher education.

Program/ Training/ Intervention | Approach/ Component | Mediating Mechanism Process | Target of Change (Bias)

Multicultural Education

Intergroup Dialogues

Cooperative Learning

Moral & Values Education

Enlightenment
Knowledge
Meta-Information
Models
Perspectives

Contact
Interaction
Cooperation
Equal Status
Supportive Norms
Personalization

Cognitive
Social Categorization
Social Knowledge
Standards

Emotional
Empathy
Self-Directed Emotion

Prejudice

Stereotypes

Negative Affect

Discrimination

Figure 2.1 From intervention to outcome: The intervening role of content and mediating processes on the reduction of bias.
Source: Dovidio, J. F., Gaertner, S. L., Stewart, T. L., Esses, V. M., ten Vergert, M., & Hodson, G. (2004). From intervention to outcome: Processes in the reduction of bias. In W. G. Stephan & W. P. Vogt (Eds.), *Education programs for improving intergroup relations: Theory, research and practice*. New York, NY: Teachers College Press, p. 245.

In their framework, Dovidio et al. (2004) identify similarities among intergroup interventions in higher education. First, such programs provide diversity-related content that can lead to enlightenment in participants, which the authors define as "expanding the knowledge that people have of other groups or altering people's perspective of their relations with others" (p. 257). Second, intergroup programs can provide preferable conditions for intergroup contact. Third, the combination of enlightenment and ideal conditions leads to cognitive and emotional processes that mediate the impact of the intervention on its intended outcomes. From this framework, IGD scholars would begin to formulate and refine an IGD-specific framework intended to capture how IGD's content, contact, and cognitive and emotional processes work together to accomplish its social justice and student development outcomes.

Early Iterations of the IGD-Specific Framework (2004-2009). Intergroup relations research spans many fields and disciplines, including communication studies, social psychology,

and education, among others (Gurin et al., 2013). In describing the evolution of the IGD theoretical framework from its first iteration in 2004 to its most recent iteration in 2013 (throughout this and subsequent sections), I summarize each of the empirical studies of higher education IGDs that contributed to the framework's refinement over that time. These include peer-reviewed journal articles, dissertations, and studies included in book chapters. Non-empirical studies or other related works are described in lesser detail, as needed.

Nagda et al. (2004) were the first to develop and test a theoretical model of IGD based on their review of the IGD and intergroup relations literatures. As of their review, five studies of IGD had provided support to the nascent assumption that IGD was accomplishing its intended outcomes (Gurin, Dey, Gurin, & Hurtado, 2004; Gurin, Peng, Lopez, & Nagda, 1999; Lopez, Gurin, Nagda, 1998; Nagda & Zúñiga, 2003; Yeakley, 1998). I review each of these five studies in order to show how they collectively influenced the creation of Nagda and colleagues' initial theoretical model. I then discuss the extent to which the results of Nagda and colleagues' study supported the model they tested.

Yeakley (1998) utilized semi-structured interviews to compare the intergroup encounters of 12 students in an introductory psychology course with those of 14 students in an IGD course. By asking students to describe their previous attitudes towards other groups, the experiences that changed their attitudes, and the process by which change occurred, she was able to compare the attitude changes of students who had interacted in conditions that aligned with IGCT (IGD participants) with those of students interacting in conditions that did not do so (introductory psychology students). She found that minimal contact with minimal intimacy (the psychology course) was associated with maintaining negative attitudes towards others (at worst) or slightly

improved attitudes (at best). By contrast, the most positive attitude changes occurred in a setting with sustained, in-depth interactions (the IGD) that facilitated sharing of personal matters.

In a similar study, Lopez et al. (1998) compared 87 first-year students who enrolled in an "Introduction to Intergroup Relations" course (which included a weekly IGD on race/ethnicity) to a control group of 87 first-year students not enrolled in the course to determine the extent to which course enrollment increased students' attribution of inequality to societal systems and structures (i.e., "structural thinking" [p. 306]) as opposed to oppressed individuals' actions. By analyzing pre- and post-test survey responses, Lopez and colleagues found that students in the course showed greater structural thinking at the end of the semester than the control group. Along with their control and experimental group comparisons, they compared the pre- and post-test results of IGD participants to determine the extent to which the content and pedagogy of IGD was associated with increased structural thinking. They found that greater appreciation of and engagement in IGD content and pedagogy were associated with greater structural thinking. Furthermore, they found that the pedagogy of IGD (not the content) was especially important when it came to students' thoughts as to how inequality could be reduced.

In addition to these pre- and post-test responses, students in the Lopez et al. (1998) study completed surveys the next year (1991-1992) and at the end of their senior year (1994-1995). In a continuation of this study, Gurin et al. (1999) utilized the senior year data ($n = 128$; 74% of original sample) to analyze how students' IGD participation played a role in reversing negative attitudes and behaviors students may have been socialized to maintain, based on their respective races and genders. For example, upon graduation, white males (members of two dominant identities) who did not participate in IGD maintained negative perspectives and behaviors typically associated with these identities (e.g., thinking of diversity as divisive, negative views

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toward campus diversity policies) more than white males who participated in IGD. This finding was part of a larger trend among dominant and subordinate identities, leading the authors to conclude that IGD enhanced the positive attitudes participants had prior to IGD participation, while reducing the salience and impact of negative feelings participants may have had, given their respective identities and associated positions in broader societal power structures.

Gurin and colleagues (2004) utilized the senior year data a second time to test their hypothesis that students who had participated in IGD, when compared to the control group of non-participants, would report higher levels of nine "democratic sentiments" (e.g., perspective-taking, understanding that difference need not be divisive), civic activity during college, and anticipated civic activity after college. The authors observed increases in all 15 of the measures used to operationalize these constructs, 12 of which were statistically significant. Given that the data used to make these comparisons were collected three years after students participated in the IGD, the authors suggest that the IGD experience may have motivated participants to pursue more intergroup or diversity-related activities throughout college than the non-participant control group, which may explain the increases observed. Therefore, it is difficult to link the increases to IGD alone.

One final empirical study that is important due to its influence on Nagda et al.'s (2004) theoretical model was conducted by Nagda and Zúñiga (2003). Their sample consisted of 42 students who participated in seven-week interracial/ethnic dialogues. Using pre- and post-test survey responses, the authors tested two hypotheses: (a) Students will have greater critical social awareness, ability to engage in dialogic communication, and behavioral intentions for building bridges post-IGD and (b) the more students value the dialogic learning process, the more positive change they will show in the outcomes. The regression analyses used to test the authors' second

hypothesis yielded positive results similar to those of Lopez et al. (1998): greater valuing of IGD's structured interactions and dialogic learning process was associated with increases in outcomes. However, the authors' first hypothesis regarding outcomes generally was not supported: Only two of their nine measures had statistically significant increases from pre- to post-test. Prior to this study in 2003, the majority of IGD measures and hypotheses had provided strong support for the effectiveness of IGD. Though the authors were surprised by these conflicting results, they suggested that the shortened (only seven weeks), free-standing (not tied to a minor or major) dialogues analyzed in their study may have contributed to the mixed results.

Given that these five studies of IGD provided Nagda et al. (2004) general support for IGD's efficacy, they formulated a theory intending to capture the relationship between these processes and IGD's intended outcomes. In their study of undergraduate social work students in a required "Cultural Diversity and Justice" course (which included a weekly race/ethnicity IGD), the authors theorized that students' desire to engage in intergroup learning would mediate the effect of the combined classroom/IGD experience on student attitudes toward taking action to promote social justice (see Figure 2.2).
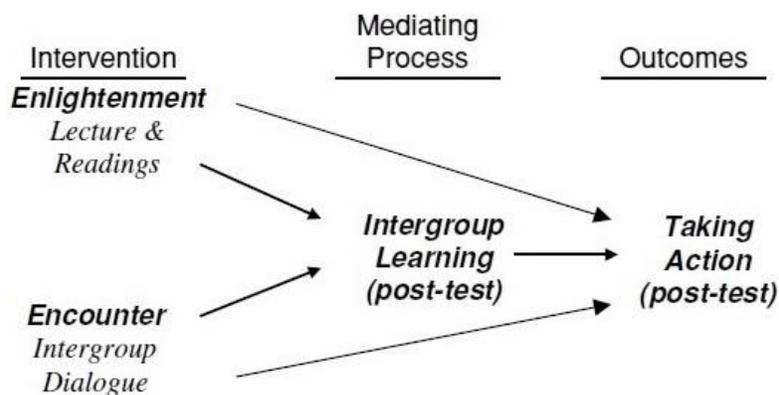
Figure 2.2 Theoretical model of intergroup learning as a mediating process from enlightenment and encounter interventions to taking action.
Source: Nagda, B. A., Kim, C. W., & Truelove, Y. (2004). Learning about difference, learning with others, learning to transgress. *Journal of Social Issues*, *60*(1), p. 201.

Nagda et al. (2004) defined intergroup learning as "a mutual and reciprocal learning" (p. 203) and measured it using three items from the *Bridging Differences* scale (Zúñiga et al., 1995): "It is important for me to educate others about the race/ethnic group(s) to which I belong," "I like to learn about the race/ethnic group(s) different from my own," and "I want to bridge differences between different race/ethnic groups." Based on Pettigrew's (1998a) ingroup reappraisal process (see Table 2.1), a fourth item was added: "As I learn more about other race/ethnic groups, I find myself wanting to learn more about my own race/ethnic group(s)."

Figure 2.2 also shows how the initial IGD model built on Dovidio et al.'s (2004) intervention-to-outcome framework (see Figure 2.1). Specifically, enlightenment and contact/encounter are found in both models, with the classroom component of the "Cultural Diversity and Justice" course representing a form of enlightenment, and its IGD component representing a form of contact/encounter. The cognitive and emotional processes in Dovidio et al.'s framework are captured in Nagda et al.'s (2004) intergroup learning construct. One noteworthy difference between models was the outcomes of interest. Whereas other intergroup relations programs in higher education may focus exclusively on the improvement of attitudes and dispositions toward others (as in the intervention-to-outcome framework), IGD focuses more so on motivating participants to take action to promote social justice (as illustrated in Figure 2.2). Though three of the five IGD studies that informed Nagda and colleagues' model provided evidence primarily related to IGD's ability to augment students' thinking (Gurin et al., 1999; Lopez et al., 1998; Yeakley, 1998), the other two studies provided additional support for IGD's ability to inspire students to take action (Gurin et al., 2004; Nagda & Zúñiga, 2003).

To test their model, Nagda et al. (2004) analyzed 175 students' pre- and post-test responses to questions related to (a) their engagement in the course's classroom and IGD

components and (b) the value they assign to each component. The authors tested two hypotheses: (a) The course would increase students' perceived importance of the intergroup learning offered in the IGD, along with their "confidence in" and "perceived importance of" taking action to reduce their own prejudice and interrupt oppressive behaviors and (b) intergroup learning would mediate the effect of the course and IGD component on those sets of outcomes.

Regarding their first hypothesis, the authors found students valuing the IGD component higher than the classroom component, and the classroom and IGD components were positively related to all of the "confidence in/importance of taking action" outcomes except "importance of" reducing one's prejudice. The authors suggest that this may be due to a ceiling effect among the students in the course, given that this variable was the highest rated among all pre-test variables and, as social work students, there may be few experiences that would have significantly increased their presumably already-high desire to reduce their own prejudice.

Regarding their second hypothesis, the course component did not have a statistically significant relationship with either "importance of" reducing one's own prejudice or "importance of" interrupting oppressive behaviors. The IGD component was associated with a statistically significant increase in the "importance of" interrupting behaviors, but not the "importance of" reducing one's own prejudice. Statistically significant relationships were observed for both of the "confidence in" outcomes for both the course and IGD components. Again, one possible explanation for the greater increases in "confidence," when compared to "importance," would be that the social work students already assigned high levels of importance to matters of diversity, but possessed lower initial levels of confidence, which subsequently increased throughout the classroom and IGD components. Ultimately, Nagda et al. (2004) concluded that their quantitative analyses generally supported this first iteration of an IGD theoretical model.

The next iteration of the IGD theoretical model (Nagda, 2006) built on the work of Nagda et al. (2004). Having observed that intergroup learning and bridging differences mediated the impact of IGD on outcomes related to taking action, Nagda sought to understand the processes that mediated IGD's impact on students' desires to engage in intergroup learning and bridge differences. Based on his review of the literature, he hypothesized that the desire to build bridges is mediated by unique communication processes IGD facilitates (see Figure 2.3).

PEDAGOGICAL PROCESS	COMMUNICATION PROCESS	PSYCHOLOGICAL PROCESS
Intergroup Dialogue Encounter	Communication Processes in Intergroup Dialogue	Bridging Differences
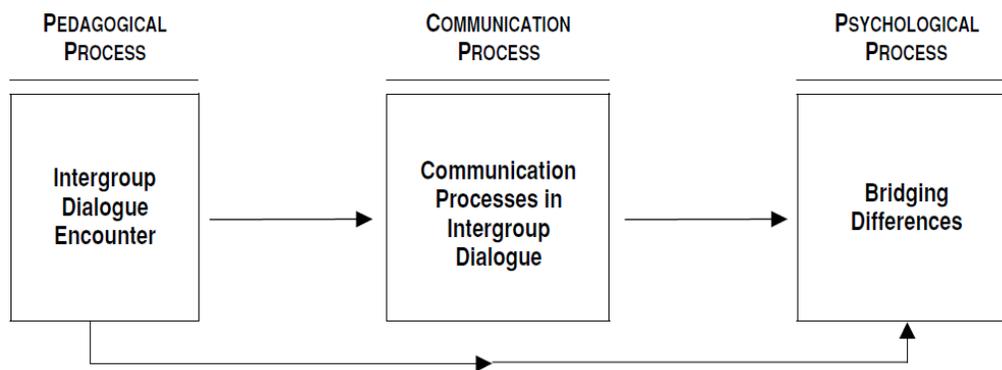
Figure 2.3 Theoretical model of intergroup dialogue: Integrating pedagogical, communication, and psychological processes.
Source: Nagda, B. A. (2006). Breaking barriers, crossing borders, building bridges: Communication processes in intergroup dialogues. *Journal of Social Issues*, *62*(3), p. 560.

Though communication processes had been found previously to play an important role in IGD (Yeakley, 1998; Nagda & Zúñiga, 2003), they had not been accounted for in the previous IGD model (Nagda et al., 2004), nor Dovidio et al.'s (2004) intervention-to-outcome model upon which the previous IGD model had been based. Given this, Nagda's (2006) two objectives were to (1) identify the communication processes IGD facilitates and (2) analyze the extent to which those processes mediate IGD's impact on students' motivation to bridge differences. To do this, he relied on much of the same data as in his and his colleagues' previous study (the pre- and post-tests surveys related to the course and IGD components, as well as the bridging differences measures; Nagda et al., 2004). In addition, Nagda developed 20 communication items in order to analyze the mediating role of communication processes, as illustrated in Figure 2.3.

A principal component analysis of the 20 communication items (with varimax rotation) revealed four factors/communication processes. Appreciating difference refers to students being able to learn about others' perspectives by listening to what they share. Engaging self refers to students genuinely engaging in dialogue and reflecting upon their own assumptions. Critical self-reflection refers to students being challenged by others to examine their perspectives in the context of privilege and oppression. Alliance building refers to students discussing what they can do to promote social justice. When these four communication processes were added to the hierarchical regression equation, the three conditions[2] that provide statistical support for mediation were met (see Baron & Kenny, 1986), supporting Nagda's (2006) model of the mediating role of these communication processes in IGD's impact on students' desire to bridge differences.

The next iteration of the IGD framework that appears in the literature was a monograph describing IGD and what had been learned through previous research and theory-building (Zúñiga et al., 2007; see Figure 2.4). Allport (1954) and Pettigrew's (1998a) conditions are present in the framework, as are Dovidio et al.'s (2004) notions of enlightenment, encounter, and cognitive and affective processes. The mediating components of bridging differences (Nagda et al., 2004; Nagda, 2006) and communication processes (Nagda, 2006) are included as well. Additional details regarding the programmatic aspects of IGD are also included, given the report's broader audience.

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[2] In the context of Nagda's (2006) study, Baron & Kenny's (1986) three conditions indicate that, first, students' ratings of the classroom and IGD components needed to be significantly related to students' motivation to engage in intergroup learning. Second, the intergroup learning, classroom, and IGD variables needed to be significantly related to each of the dependent variables. Third, the addition of intergroup learning into the regression equation needed to make the previously significant relationships between the classroom and IGD variables and the dependent variables non-significant (for full mediation) or at least substantially lower (for partial mediation).
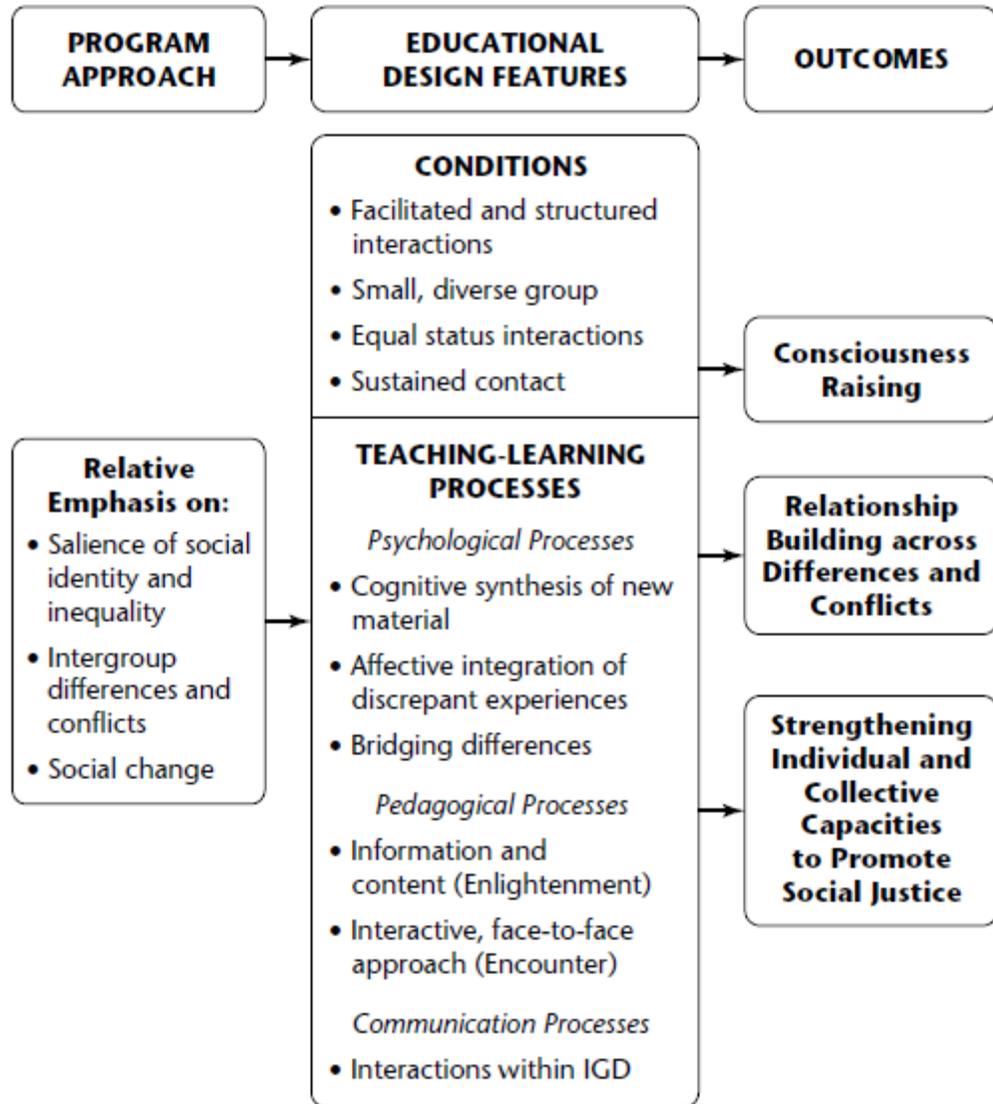
Figure 2.4 A conceptual framework for research on intergroup dialogue.
Source: Zúñiga, X., Nagda, B. A., Chesler, M., & Cytron-Walker, A. (2007). Intergroup dialogue in higher education: Meaningful learning about social justice. *ASHE Higher Education Report*, *32*(4), 1-128.

There are, however, a few new outcomes in this framework, based on previous research.

Building on Lopez et al.'s (1998) concept of structural thinking, one such outcome is

consciousness raising, referring to majority and minority participants being able to understand

the history and circumstances that have led to their privilege and oppression in society. Building

relationships across difference aligns with Nagda and Zúñiga's (2003) finding that placing

greater value in the IGD experience is associated with increased comfort in communicating

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across and bridging differences. Finally, strengthening individual and collective capacities to promote social justice is arguably IGD's primary outcome, and a few studies had supported IGD's ability to develop students in this way (e.g., Gurin et al., 2004; Nagda et al., 2004).

As of 2007, much progress had been made in addressing the limitations of Pettigrew's (1998a) IGCT and building on Dovidio and colleagues' (2004) intervention-to-outcome framework. However, there were some limitations associated with the data, methods, and research designs of the studies that had informed the development of the IGD framework.

In terms of sampling limitations, the IGD studies involved in the refinement of the IGD theoretical framework were conducted at individual, large, public universities, limiting generalizability to other institution types. Six of the seven studies drew their samples from race/ethnicity IGDs, limiting generalizability to other topics such as gender, religion, and socioeconomic status (SES). Participants in these six studies were disproportionally female, ranging from 67% to 88%. Though some form of racial equality is critical to IGD in practice, the samples in 5 of the 7 studies were between 60%-77% white. Given the intentionally small groups associated with IGD, only two studies (Nagda et al., 2004 [$N = 175$]; Nagda, 2006 [$N = 211$]) had samples larger than 87. Additionally, in these two studies, the sample included social work majors from a single institution; this is particularly important because these two studies provided the foundation for the first and second iterations of the IGD model.

From a methodological standpoint, Yeakley's (1998) study was the only qualitative study that had been included in the iterative development of the IGD framework. Given that IGD processes and outcomes can be difficult to quantify, the use of qualitative methods may have led to a more nuanced understanding of these phenomena. The use of t-tests, OLS regression, and hierarchical regression to analyze the data from the other (quantitative) studies was appropriate,

though Nagda suggests that the first (Nagda et al., 2004) and second (Nagda, 2006) iterations of the IGD model would have been better substantiated using structural equation modeling (SEM).

Six of the seven studies relied on self-reports (in most instances, retrospective reporting) of students' perceptions of the classroom and/or IGD experiences and their own development. Students' desires to provide socially desirable responses, or perhaps their belief that post-test responses would be tied to their final grade, may have led to students providing excessively favorable assessments of themselves or IGD. This limitation may also apply to Yeakley's (1998) qualitative interviews, given that they took place at the end of the semester as well. It is also noteworthy that, despite IGD's emphasis on students' behaviors and taking action, no behaviors or actions were documented in these studies (e.g., intergroup collaboration during or after IGD).

Other limitations of the IGD studies stem from their research designs. Though studies of intergroup contact are generally cross-sectional (Pettigrew & Tropp, 2006), given that IGD's outcomes of interest are related to long-term changes in attitudes and behaviors that develop over time, the limitations associated with measuring the impact of IGD at one point in time (typically immediately after the IGD) are noteworthy. Without longitudinal designs, researchers are unable to know if the effects of IGD endure to graduation and thereafter. They are likewise unable to form any conclusions regarding particular IGD processes or pedagogical features associated with long-term change. Furthermore, researchers cannot discern any changes in participants' attitudes or behaviors that only begin to emerge in the weeks, months, or years following participants' IGD experience. Two IGD studies (Gurin et al., 1999; Gurin et al., 2004) were able to test whether seniors who participated in IGD as first-year students had different attitudes than a control group who had not done so. However, the researchers were interested in whether differences existed, not the mechanisms through which those differences emerged, or at what

point in time the differences began to develop (i.e., during or sometime after students' IGD experience). In many ways, the longitudinal analyses these authors conducted represent a significant accomplishment, yet this recognition also illuminates that, as of 2007, only two studies had begun to capture the extent to which IGD produces its intended long-term outcomes.

Furthermore, these two studies (Gurin et al., 1999; Gurin et al., 2004), along with the original freshman study using the same data (Lopez et al., 1998) and Yeakley's (1998) qualitative study, were limited by their comparison groups: Students who self-selected into an IGD course were compared to students who did not. Thus, the positive results associated with IGD may have been more closely associated with students' characteristics, particularly those intrinsic motivations for enrolling in IGD. This mirrors Pettigrew's (1998a) temporal sequence concern related to intergroup contact research.

To address these limitations, Gurin et al. (2013) collaborated with nine universities as part of the Multi-University Intergroup Dialogue Research Project (MIGR) to conduct a concurrent mixed methods, longitudinal experiment that included random assignment, two control groups (non-IGD, non-IGD *and* enrolled in a diversity course), multiple IGD topics (race/ethnicity and gender), standardized curricula, multiple institution types, equal numbers of students across race/ethnicity and gender, qualitative interviews related to IGD experiences, video-recordings of dialogues, content analyses of student papers, three surveys (pre-IGD, post-IGD, and one year later), and the largest IGD sample to date ($N = 1875$; 720 IGD participants). This design enabled researchers to overcome many of the limitations of past IGD research and, therefore, refine the IGD framework in meaningful ways. I discuss this in the following section.

Refining the IGD Framework (2009-2013). The MIGR began in 2004 and culminated with the publication of the book *Dialogue Across Difference*: *Practice, Theory, and Research on*

Intergroup Dialogue (Gurin et al., 2013), which provides a report of the study and the current

iteration of the IGD framework. During the same time, five other studies were published using

MIGR data that built upon and/or refined the IGD framework. As done thus far in my review of

the IGD literature, I summarize these five studies sequentially to illuminate the evolution of the

IGD theoretical framework, concluding with findings presented in Gurin et al.'s book.

The first publication was a three-page article summarizing the results of the study (Nagda,

Gurin, Sorensen, & Zúñiga, 2009); I include it in this review for two reasons. First, it included a

new iteration of the IGD framework (see Figure 2.5), integrating processes and relationships that

had been captured in the previous two iterations (see Figures 2.3 and 2.4) and it provided a new

visual schematic upon which future iterations (presented in the following paragraphs) would be

based. Second, the article provided evidence that MIGR participants in both the race/ethnicity

and gender dialogues showed greater increases in intergroup understanding, intergroup

relationships, and intergroup collaboration than both the control group of non-participants and

the social science comparison group. Future studies (also discussed below) built on these

preliminary findings by studying processes that mediated the impact of IGD on these outcomes.

Intergroup Dialogue Pedagogy	Communication Processes (Within IGD)	Psychological Processes (Within Individuals)	Outcomes
• Active Learning • Structured Interaction • Facilitative Guidance	• Learning from Others • Engaging Self • Critical Reflection • Building Alliances/ Common Ground	• Cognitive Processes • Affective Processes	• Intergroup Understanding • Intergroup Relationships • Intergroup Collaboration

Figure 2.5 Theoretical framework of intergroup dialogue practice and research.
Source: Nagda, B. A., Gurin, P., Sorensen, N., & Zúñiga, X. (2009). Evaluating intergroup dialogue: Engaging diversity for personal and social responsibility. *Diversity & Democracy*, *12*(1), p. 5.

In the first of these studies, Nagda et al. (2009) focused on the mediating role of IGD's communication processes found by Nagda (2006) in increasing students' awareness and critique of inequality in society (an aspect of intergroup understanding) and their commitment to post-college action (an aspect of intergroup collaboration) at the end-of-semester post-test. The authors tested four hypotheses: IGD participants will increase their critique of inequality and commitment to post-college action more than participants in (a) the randomized control group and (b) social science comparison group, (c) IGD participants will report higher frequency of all four communication processes than students in the social science comparison group, and (d) greater instances of these communication processes will produce significantly greater change in the students' critique of inequality and commitment to post-college action. All four hypotheses were supported empirically.

Sorensen, Nagda, Gurin, and Maxwell (2009) later presented a new iteration of the IGD framework that would integrate Nagda et al.'s (2009) support for the relationship between communication processes and intergroup understanding and collaboration (see Figure 2.6). It should be noted that this framework is the only iteration to date suggesting that intergroup relationships partially mediate the relationship between psychological processes and intergroup understanding and collaboration, a modification that appears to be theoretically-derived. That is, the authors did not test this specific relationship or cite studies that did so, and my review of the literature likewise found no studies of this relationship.
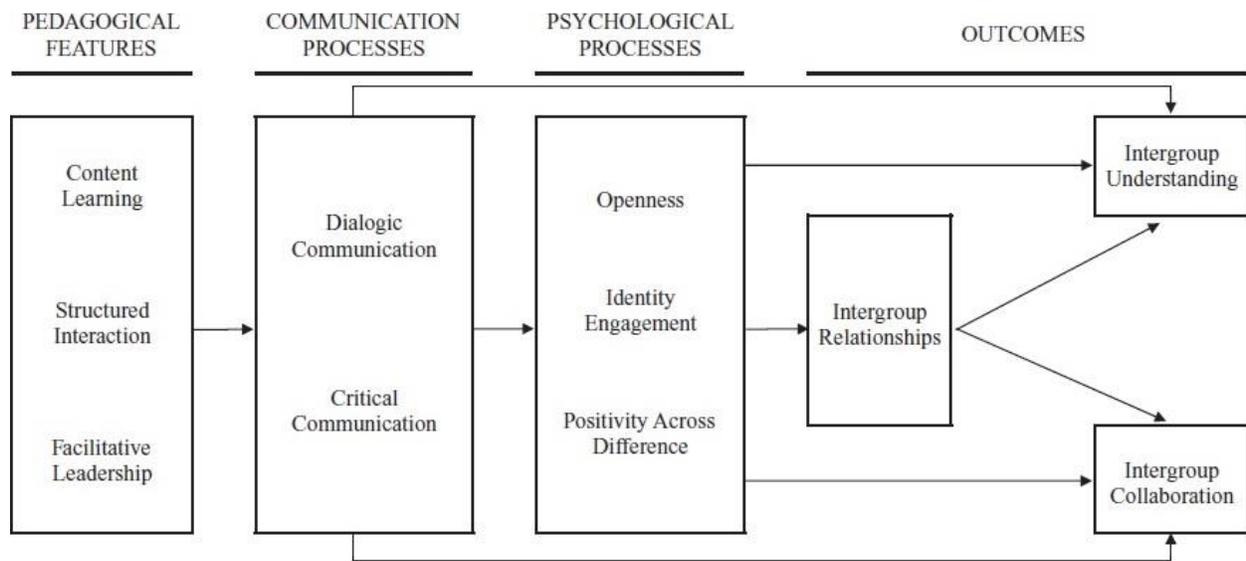
Figure 2.6 A critical-dialogic theoretical model of intergroup dialogue.
Source: Sorensen, N., Nagda, B. R. A., Gurin, P., & Maxwell, K. E. (2009). Taking a "hands on" approach to diversity in higher education: A critical-dialogic model for effective intergroup interaction. *Analyses of Social Issues and Public Policy*, *9*(1), p. 18.

Strengthening the evidence associated with many of the relationships illustrated in Figure 2.6, and addressing a methodological limitation articulated by Nagda (2006), Sorensen (2010) used SEM to test the hypothesis that IGD's pedagogical features positively predicted communication processes, which together would indirectly promote greater intergroup empathy (an aspect of intergroup relationships) *via* psychological processes. Not only was each part of his hypothesis supported statistically, he conducted separate analyses for the race/ethnicity and gender dialogues (to determine if IGD pedagogy and processes functioned differently by topic); this did not reveal statistically significant differences. However, subsequent analyses did reveal significant differences in the relationships between IGD pedagogy and processes for four groups (women of color, men of color, white women, and white men). Sorensen's efforts to determine how these relationships differed by race and gender were inconclusive due to data constraints, but he speculated that the processes captured in the IGD framework may be less applicable to those groups for whom matters of identity and social justice are already salient in daily life.

Utilizing MIGR qualitative data, Gurin-Sands et al. (2012) analyzed the extent to which IGD helps students develop commitment to social action. To operationalize this construct, the authors analyzed students' statements in their final papers related to (a) educating others in the future about inequalities in society (an aspect of intergroup understanding) and (b) future collaborative action. They also coded how often students discussed pedagogical features and psychological and communication processes of interest to the researchers (see Figure 2.7). The number of times students discussed these outcomes and features/processes became continuous variables that were used in subsequent quantitative analyses. The authors' hypotheses that IGD's pedagogy and processes would have both direct and indirect effects on how much students wrote about educating others and collaborative action was partially supported by hierarchical regression analyses. To illustrate these hypotheses visually in Figure 2.7, the authors provided an adapted version of Sorensen et al.'s (2009) framework (see Figure 2.6). The three (direct) effects that were not supported in their study are so indicated in Figure 2.7.
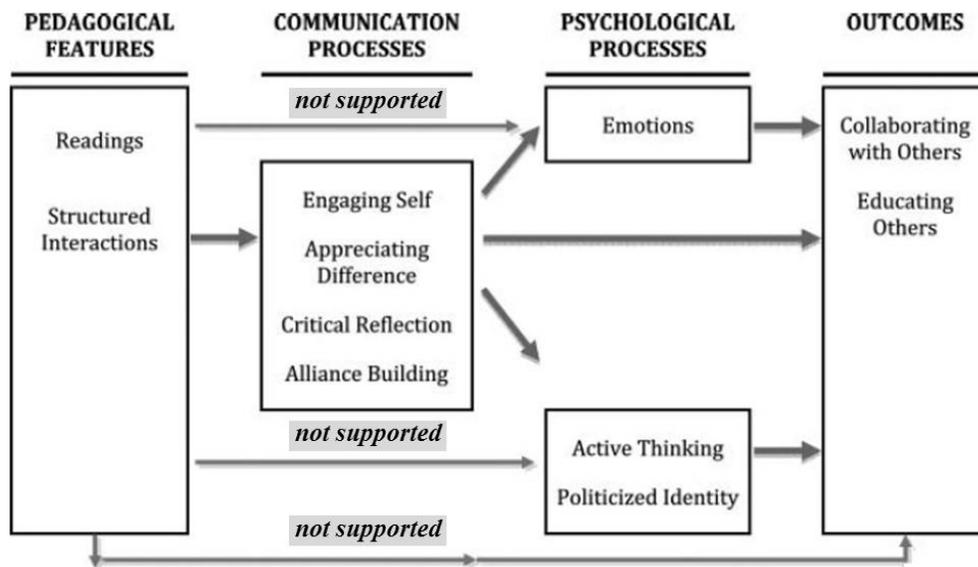
Figure 2.7 Theoretical model of how intergroup dialogue influences action.
Source: Adapted from Gurin-Sands, C., Gurin, P., Nagda, B. R. A., & Osuna, S. (2012). Fostering a commitment to social action: How talking, thinking, and feeling make a difference in intergroup dialogue. *Equity & Excellence in Education*, *45*(1), p. 63.

Another study utilizing MIGR qualitative data focused specifically on one aspect IGD's communication processes: engaged listening. For Zúñiga et al.'s (2012) analysis of post-IGD interviews ($n = 40$; 16% of all interviews), they define engaged listening as "times when participants listened to something said in their dialogue that engaged them enough to be able to remember significant details about what had been said and describe them to an interviewer after the IGD course was over" (p. 84). The authors found certain activities (testimonials, small groups/fishbowls, and hot topics dialogue) and topics (racial categorization, racism, white privilege, gender roles and relationships, sexism, male privilege) to be associated with greater engaged listening. They also identified two types of reactions to what people heard: immediate emotional and/or verbal responses and extended reflection, awareness, and learning. The authors found immediate responses to be much more common in the race/ethnicity dialogues and among women and people of color. As for extended reflection, students in the race/ethnicity IGDs reflected more on structural aspects of race and racism, whereas gender IGD participants reflected more on interpersonal gender dynamics (e.g., intimate relationships). These qualitative findings brought to IGD scholarship nuanced understanding (e.g., participant responses varying by topic) and imagery (e.g., white people/men being more hesitant to immediately respond to what their peers are saying) that may be more difficult to discern via quantitative methods.

In their book, *Dialogue Across Difference*: *Practice, Theory, and Research on Intergroup Dialogue*, Gurin et al. (2013) report the results of a variety of analyses conducted as part of the MIGR, which were guided by what would become the current iteration of the IGD framework (see Figure 1.1). In this theoretical framework (as in previous iterations), communication and psychological processes (cognitive and affective) mediate the impact of IGD's pedagogical features on its intended outcomes. Note that intergroup relationships do not partially mediate the

relationship between psychological processes and intergroup understanding and collaboration in this iteration, as suggested in Sorensen et al.'s (2009) iteration (see Figure 2.6). Gurin-Sands et al.'s (2012) hypothesized direct effects of pedagogical features on cognitive and affective psychological processes, which were not supported in their study (see Figure 2.7), are likewise not represented. In describing the results presented in this book, I will first summarize the findings related to communication processes, followed by outcomes. I will then discuss the results related to psychological processes, which serve as a natural transition to my discussion of IGD's practical, theoretical, and empirical limitations.

Building on previous quantitative studies that had analyzed students' communication processes (Nagda, 2006; Sorensen, 2010), Gurin and colleagues (2013) utilized MIGR qualitative data to identify a variety of nuances to students' interactions. Coding of students' interviews revealed a prevalence of what the authors referred to as "active processing" in students' responses, which refers to students' reflecting upon their social identities, social identity groups to which they belong, groups to which they do not belong, group dynamics of their IGD experience, and the structural aspects of inequality in society. In the interviews, some students were still processing, while others were able to articulate what the authors referred to as "active insights" related to those topics that they gained as a result of their active processing. The authors also identified multiple motives students had for speaking up (to share, question, educate, challenge, defend, comment on group dynamics, facilitate dialogue).

Analyses of the MIGR video recordings complemented these findings by providing observational data regarding the contexts (e.g., dialogue topic, particular dialogue session, particular activity within a session) in which students engaged in various communication processes. After identifying and coding six primary behaviors students engaged in (activeness in

listening, initiative in speaking, openness in sharing, inquiry, advancing a perspective, debating), regression analyses of the frequencies of these behaviors revealed a variety of trends. The most noteworthy finding was that instances of debating were greater in the race/ethnicity IGD than the gender IGD. This finding builds on Zúñiga et al.'s (2012) observation that immediate responses (as opposed to extended reflection) were more prevalent in the race/ethnicity dialogues than the gender dialogues, thus shedding additional light on the role of topic in the IGD experience.

Building on Sorensen's (2010) SEM analyses of the relationship between communication processes and intergroup empathy, Gurin et al. (2013) coded students' interviews and final papers to obtain a more nuanced understanding of how one communication process (sharing personal stories) influences students' empathy. Two forms of empathy emerged in relation to storytelling: relational empathy and critical empathy. Relational empathy describes students either relating to others emotionally (by feeling the same positive or negative feelings as them) or cognitively (by taking their perspective). Critical empathy, which is more in line with the intended outcomes of IGD, refers to students' recognition of others' positions in a system of privilege and oppression, thus making the experiences of others more than merely idiosyncratic. These findings align with the quantitative findings of Lopez et al.'s (1998) study of structural thinking and provide both practical and theoretical clarity by showing how multiple forms of empathy can be produced in IGD.

Regarding IGD's three intended outcomes, when compared to the control group of non-participants, multilevel regression analyses revealed statistically significant increases in intergroup understanding (6 measures), intergroup relationships (2 measures), and intergroup action and collaboration (9 measures) among IGD participants at the post-test and one year later. Similar results were found between IGD participants and the social science comparison group at

40

the post-test (no comparisons were made one year later). More specifically, of the 51 possible statistically significant increases that could be observed among these outcomes (17 total measures times 3 comparisons: social science comparison group post-test, non-participants post-test, and non-participants one year later), 46 had statistically significant increases.

Regarding IGD's psychological processes, comparisons between IGD participants and the social science control group regarding affective positivity (3 measures) and cognitive involvement (4 measures) were less noteworthy. Only two of these seven measures showed statistically significant increases associated with IGD participation: openness to multiple perspectives and identity involvement. However, comparisons between IGD participants and non-participants on these seven measures (post-test and one year later) yielded more positive results: 9 of 14 possible statistically significant increases were observed.

Before providing a more in-depth analysis of the 17 outcome measures and 7 psychological process measures in order to illuminate new directions for IGD, a few things should be noted. First, the results of the MIGR represent the most recent analyses of the most recent iteration of the IGD framework, thus concluding my review of the evolution of the IGD framework and the literature upon which these iterations were based. Second, the MIGR does not address all of the limitations of IGD research (e.g., high reliance on retrospective self-report data, not all IGD topics were included; only students who self-select into IGD were included). Third, despite these limitations, the literature I have reviewed provides support for IGD's ability to accomplish its intended outcomes, thus helping prepare students to participate in increasingly diverse campuses as students and in an increasingly globalized world after graduation.

Identifying Next Steps for Intergroup Dialogue Practice, Theory, and Research

The MIGR results associated with the 17 outcome measures and 7 psychological process measures leads to a noteworthy observation, both for the MIGR and this dissertation. When compared to the non-participant control group, statistically significant increases were observed among IGD participants in 23 of these 24 measures, either immediately after the IGD, one year later, or at both times. Indeed, addressing a limitation of previous research, longitudinal analyses revealed that some non-significant differences at the post-test were significant a year later, confirming that some outcomes may require additional time to develop. Thus, for only one measure were statistically significant increases not observed at any point in time among IGD participants: openness to multiple perspectives.

Of all the processes included in the IGD framework, openness to multiple perspectives is most closely connected to students' fundamental assumptions of knowledge and knowing (i.e., their epistemological development). It is defined by the MIGR researchers as "tendencies to look at issues from different viewpoints as well as a willingness to consider many sides to an issue" (Gurin et al., 2013, p. 152). To measure such tendencies, students responded to the following items adapted from Davis' (1983) perspective-taking scale (1 = not at all like me, 7 = very much like me): "I strive to see issues from many points of view," "If I am sure about something, I don't waste too much time listening to other people's arguments," "I believe there are many sides to every issue and try to look at most of them," "I am willing to listen to the variety of views that can emerge in talking about social issues and problems," and "I sometimes find it difficult to see things from the 'other person's' point of view." Thus, though these measures do not measure epistemological development directly, they do capture epistemological dispositions

students have, given their level of epistemological development (see Chapter III for further discussion on the use of these measures in this study).

One logical explanation for the lack of statistically significant increases for openness to multiple perspectives in the MIGR might have been that students had high pre-test scores on this scale and, after their IGD experience, simply retained high scores with no statistically significant increases. However, there are other scales (e.g., analytical thinking about society, critique of inequality, confidence in self-directed action) for which students had higher average pre-test scores than this scale, yet still experienced statistically significant increases both at the post-test and one year later. In this sense, though IGD had a significant influence on how students think about themselves (e.g., identity engagement) and interact with others (e.g., intergroup understanding, relationships, collaboration, action), IGD's impact on students' willingness to reshape what and how they know based on new information (i.e., epistemological development) represents a potential area of improvement.

In determining the significance of this finding, it is important to recognize its place in the IGD literature. It was found in the most rigorous IGD study to date, which was based on the most refined iteration of the IGD framework. In addition, the MIGR is one of only two IGD studies to analyze changes in students' openness to multiple perspectives directly associated with their IGD experience; the other study (Nagda & Zúñiga, 2003) reported no increases as well. Thus, this MIGR result is not only the most convincing statement on the matter, it is one of very few statements on the matter. The lack of emphasis on epistemology and epistemological development represents an area of improvement for IGD practice, theory, and research, as I discuss in the following section.

Limitations of IGD Practice, Theory, and Research

    Practice. Though IGD's national presence and empirical support have increased since its inception in the 1980s, it has not been free from critique. Some suggest such pedagogy is too interpersonal, providing insufficient sociopolitical critique (Gorksi, 2008; McPhail, 2004; Miller & Donner, 2000). Conversely, others suggest it is too critical, cognitive, and should be more positive and emotional (Brooks, 2011; Conklin, 2008). Some suggest that such experiences offer a developmental experience for those in the majority who gain from the sharing of minorities while offering little of themselves in return, thus mirroring inequalities found in society (Gorksi, 2008; Kauffman, 2010; Simpson, 2008). Given that IGDs are most often credit-bearing courses, Wood (2008) questions the use of peer facilitators, as opposed to faculty members, and the focus on personal experiences as opposed to academic content. Finally, some argue that such pedagogy has traditionally focused too little on action (Gorski, 2008; Sue, Rivera, Capodilupo, Lin, & Torino, 2010), focusing instead on merely the intent to act (McPhail, 2004).

    Given the lack of change in students' openness to multiple perspectives in the MIGR, another critique is that IGD programs may not be placing appropriate emphasis on the cognitive processes associated with such openness. Though the inclusion of assigned readings and other forms of content dissemination in IGD does represent an effort to increase *what* students know about other groups, their own groups, themselves, and society as a whole (i.e., content knowledge), disseminating content is different than attending to how students form and (do or do not) reshape what they know based on (a) their reception of this new content and (b) their overall assumptions regarding the nature of knowledge and knowing. Thus, the lack of IGD impact on the openness to multiple perspectives may be the result of how this particular form of student development is treated and understood in IGD theory and research.

Theory. Looking first at the theoretical foundation upon which the IGD frameworks were based, Pettigrew's (1998a) reformulation of Allport's (1954) contact theory does include elements related to students reconstructing what they know about other groups (learning about the outgroup, decategorization, salient categorization, recategorization) as well as their own group (ingroup reappraisal) (see Table 2.1). Similar elements are found in Dovidio et al.'s (2004) intervention-to-outcome framework (e.g., social knowledge, social categorization), including students taking others' perspectives as they describe their experiences as members of different groups (see Figure 2.1). However, aside from these more interpersonal and intrapersonal forms of categorization and appraisal, the maintenance and reconstruction processes associated with what students know about the world around them (e.g., why people live in poverty), along with their willingness and ability to consider alternative explanations, receives minimal attention in both of these frameworks.

The iterations of the IGD framework that built on Dovidio et al.'s (2004) intervention-to-outcome framework focus primarily on students' understanding of their own (intrapersonal) identities and their (interpersonal) interactions with others, though they do place some emphasis on students' knowledge and knowing. Of the four IGD communication processes identified by Nagda (2006)—which appear in each subsequent iteration of the IGD framework—three are loosely related to the cognitive capacities necessary to be open to others' perspectives. One of the four communication processes, appreciating differences, he defined as "learning about others, hearing personal stories, and hearing about different points of view in face-to-face encounters" and "an openness to learning about realities different from one's own" (p. 563). Throughout the IGD literature, this particular process focuses on the extent to which students are able to hear others' personal experiences and express appreciation for perspectives and experiences that

differ from their own. A second communication process, engaging self, includes participants

"being allowed to make mistakes and reconsider [their] opinions" (p. 562); this speaks primarily

to whether students felt their group would allow them to reconsider their convictions, and less to

whether students actually did so. Similarly, a third communication process Nagda identified,

critical self-reflection, includes "being challenged to examine the sources of my biases and

assumptions" (p. 562), which, again speaks primarily to whether students felt challenged to

examine biases and assumptions, and less to whether they did so.

Beyond these communication processes, the construct of openness to multiple

perspectives is included as a psychological process. Of all of the components of the IGD

framework, openness to multiple perspectives is arguably the most closely related to students'

epistemological state and development. Thus, it is worth briefly discussing how this construct

has been used in previous IGD research, which is helpful in interpreting its theoretical role in the

IGD framework.

Three studies of IGD treated openness to multiple perspectives as a potential outcome of

IGD, two of which observed minor increases between pre- and post-tests that were not

statistically significant (Gurin et al., 2013; Nagda & Zúñiga, 2003). The third study—Gurin and

colleagues' (2004) "democratic sentiments" study—did report statistically significant increases

in perspective-taking (when compared to a matched control group), though, as discussed

previously, the authors were limited in their ability to connect these increases to students' IGD

experience alone. In addition to treating openness to multiple perspectives as a potential outcome

of IGD, two other studies treated this construct as a mediator of IGD's intended outcomes (Gurin

et al., 2013, Sorensen, 2010). Thus, theoretically and temporally, openness to multiple

perspectives has been viewed thus far as a disposition that IGD can increase in students, which,

in turn, mediates the attainment of IGD's intended outcomes. It has not been seen as a student disposition that may moderate the communication processes, psychological processes, and intended outcomes IGD scholars have identified through previous research.

Research. As discussed, the research on IGD spans decades and has many strengths, and the MIGR dataset has enabled IGD researchers to avoid many of the significant limitations associated with research of this kind. However, one limitation of IGD research becomes apparent in the consideration of what has and has not received substantial attention in previous IGD studies. Given the intergroup nature of IGD, it is not surprising (nor inappropriate) that researchers have placed a strong emphasis on studying outcomes related to how participants interact with each other, while placing slightly less emphasis on IGD's impact on how students interpret themselves and their identities. However, lesser emphasis has been placed on matters related to openness and other epistemological processes related to knowledge and knowing.

Specifically, 15 of the 16 studies I have described in this chapter focused primarily on one or more aspects of group interaction. However, some of these studies also reported increases related to students' identity development. These include: desire to learn more about their own identity groups (Nagda et al., 2004; Nagda, 2006); considering race a salient and important part of their identity (Gurin et al., 2004; Nagda & Zúñiga, 2003); importance, centrality, pride, and sense of common fate to their identity groups (Gurin et al., 1999); awareness of their own identity development (Gurin et al., 2013); and understanding of how social identities are related to privilege and oppression (Gurin-Sands et al., 2012). Gurin et al. (2013) also analyzed the mediating role of identity engagement on IGD's intended outcomes (intergroup understanding, relationships, and collaboration and action).

Though increasing students' knowledge related to matters of social justice is prominent in IGD, only a few studies delved into matters of how students know and make sense of the world around them. Beyond the studies discussed previously that analyzed changes in openness to multiple perspectives (Gurin et al., 2004; Gurin et al., 2013; Nagda & Zúñiga, 2003), along with the studies that treated other cognitive constructs (e.g., active thinking, complexity of thinking) as mediating processes (Gurin et al., 2013; Gurin-Sands et al., 2012; Nagda, 2006; Nagda et al., 2009; Sorensen, 2010), only one study focused primarily on a cognitive outcome. As discussed, Lopez and colleagues (1998) analyzed IGD's role in increasing students' structural thinking, though they were primarily interested in the extent to which students acknowledged the role of societal structures in producing inequality, in addition to or instead of individual-level explanations. Thus, the authors were not interested in how students reconciled or made sense of these two competing explanations of inequality; rather, they focused on whether students were more prone to offer structural explanations for inequality after the IGD than prior to it.

Indeed, as I have illustrated thus far in this chapter, analyzing the extent to which IGD practice, theory, and research account for three dimensions of student development (how students understand themselves, their relationships and interactions with others, and what and how they know) is useful identifying IGD's strengths and potential next steps in practice, theory, and research. The ability to analyze IGD in this way is strengthened by decades of research related to each of these three dimensions of student development, as well as research regarding how and the extent to which these types of development are interconnected and dependent upon each other. This interconnectedness is captured in the theory of self-authorship, which I describe in detail in the following section.

The Theory of Self-Authorship

The theory of self-authorship describes how individuals make sense and meaning of their identity (the intrapersonal domain), relationships with others (the interpersonal domain), and knowledge and knowing (the epistemological domain). The term "self-authorship" first emerged as the defining feature of Kegan's (1994) fourth of five "orders of consciousness," which describe how meaning-making evolves from being driven by external authorities (e.g., parents, teachers) to being driven by "an internal identity . . . that can coordinate, integrate, act upon, or invert values, beliefs, convictions, generalizations, ideals, abstractions, interpersonal loyalties, and intrapersonal states" (p. 185) to arrive at convictions regarding oneself, one's relationships, and one's understanding of the world. In this section, I summarize the origin and evolution of self-authorship in order to illustrate its applicability to IGD and situate students' epistemological development in the broader theoretical landscape of student development.

Kegan's Orders of Consciousness

When Kegan (1982) published the first iteration of his theory, he noted the influence of constructive-developmental scholars (e.g., Kohlberg, 1984; Perry, 1981; Piaget, 1971). The constructive-developmental tradition posits that individuals are in a continuous state of interpreting their experiences and *constructing* perspectives and that how individuals interpret, construct, and make meaning of the world *develops* over time (Kegan, 1982). In addition, one of the unique features of Kegan's theory was its integration of individuals' intrapersonal (e.g., racial/ethnic identity and gender identity development), interpersonal (e.g., moral and civic development), and cognitive (e.g., epistemological development) dimensions, thus acknowledging the intertwined nature of these forms of development.

Also critical to Kegan's theory is his subject-object distinction:

"Object" refers to those elements of our knowing or organizing that we can reflect on, handle, look at, be responsible for, relate to each other, take control of, internalize, assimilate, or otherwise operate upon . . . . "Subject" refers to those elements of our knowing or organizing that we are identified with, tied to, fused with, or embedded in. We have object; we are subject. We cannot be responsible for, in control of, or reflect upon that which is subject. (Kegan, 1994, p. 32)

Kegan's research utilizing the Subject-Object Interview (Lahey, Souvaine, Kegan, Goodman, & Felix, 1988) would help refine the five orders of consciousness he published in 1994. To illustrate the concepts of subject, object, constructive, and development, consider an IGD participant who grew up in a religiously homogenous community and, as a first-year college student, is being exposed for the first time to other explanations regarding the purpose of life, life after death, and other religious topics. He experiences cognitive dissonance because this new information does not align with the only explanations he has ever known. In this sense, he is *subject* to his religious convictions because he does not have the capacity to reflect on them, perhaps because he has never needed to do so. He cannot not consciously examine his convictions (i.e., cannot make them *object*), having considered multiple possible worldviews, rather, given his upbringing, his convictions are simply a part of him (i.e., he is subject to them). However, throughout the IGD, he makes this recognition, and can make his religious convictions object; that is, he can consciously decide to maintain, revise, or discard this conviction. In this sense, he *constructed* meaning about his religious convictions both during and prior to his IGD experience, and his ability to transform his religious convictions from subject to object is an indicator of his *development* that took place during the IGD.

Kegan's (1994) five orders of consciousness provide a framework to describe how development such as this takes place throughout people's lives. The first order (immediate categories) describes the recognition in toddlers that they have control over themselves and that other objects exist independent of themselves. The second order (durable categories) describes

children's ability to organize objects in their lives into distinct categories and characteristics. Dualistic tendencies, such as rules of what is right and wrong, guide reasoning and decision-making in the second order, as does self-interest. Drago-Severson (2009) refers to this self-oriented knowing as instrumental knowing, which precedes the other-oriented, socializing knowing that aligns with Kegan's third order. Specifically, the third order (cross-categorical thinking) is highlighted by the transition from concrete thinking to abstract thinking, though sources of meaning-making are still external, and individuals seek approval from these sources (i.e., a form of socialization). Internal meaning-making, or self-authorship, is the hallmark of the fourth order (cross-categorical constructing), in which individuals are able to integrate and synthesize abstract concepts internally to construct meaning, and reliance on external sources for approval decreases. In the fifth order (transsytem), individuals are able to transcend notions of self, others, and systems to see the commonalities and interdependence upon which relationships and systems are built. Conflict or differences in perspective are viewed as means to increasing one's own understanding and self-transformation (Drago-Severson, 2009). This fifth order of consciousness is rare (Kegan & Lahey, 2009; Drago-Severson & Blum-DeStefano, 2014) and Kegan (1994) found that it generally does not occur prior to age 40.

Given that the first and second orders describe childhood and adolescence, they are less relevant to college students, as is the fifth order that is generally attained later in life. The third and fourth orders capture the transition from young adulthood to adulthood and, therefore, would be most directly applied to the study of college student development, as described in the following section.

Baxter Magolda's Self-Authorship: An Application to College Students

Building on Perry's (1981) and Belenky et al.'s (1986) studies of college student epistemology, Baxter Magolda (1992) conducted a longitudinal study of 101 first-year students at a Midwestern public university that, initially, focused on epistemological development only. She would later broaden the scope of the study to include other dimensions of development, which led to the formulation of four phases that describe how adults transition from the external orientation of Kegan's third order to the internal orientation of the fourth order (Baxter Magolda, 2001). These four phases are following formulas, crossroads, becoming the author of one's life, and internal foundation. As summarized in Table 2.2, each of these phases capture developmental progression across the epistemological, intrapersonal, and interpersonal domains.

Table 2.2. Four Phases of the Journey Toward Self-Authorship

	Following Formulas	Crossroads	Becoming the Author of One's Life	Internal Foundation
Epistemological Dimension: *How do I know?*	Believe authority's plans; how you know	Question plans; see need for own vision	Choose own beliefs; how—I know in context of external knowledge claims	Grounded in internal belief system
Intrapersonal Dimension: *Who am I?*	Define self through external others	Realize dilemma of external definition; see need for internal identity	Choose own values, identity in context of external forces	Grounded in internal coherent sense of self
Interpersonal Dimension: *What relationships do I want with others?*	Act in relationships to acquire approval	Realize dilemma of focusing on external approval; see need to bring self to relationship	Act in relationships to be true to self, mutually negotiating how needs are met	Grounded in mutuality

Source: Baxter Magolda, M. B. (2001). *Making their own way: Narratives for Transforming Higher Education to Promote Self-Development*. Sterling, VA: Stylus Publishing, p. 40.

In addition to formulating a model that linked Kegan's orders to the study of college student development, Baxter Magolda's (2001) work revealed that most entering college students are still following formulas provided by external sources (see also Baxter Magolda, King, Taylor, & Wakefield, 2012). This finding aligns with other evidence that many entering college students operate within the early levels of development (e.g., King & Kitchener, 1994; Perry, 1970).

Further support was found in self-authorship studies that focused on the development of marginalized groups (e.g., lesbians [Abes & Jones, 2004], Latinos [Torres & Hernandez, 2007], academically at-risk students [Pizzolato, 2003, 2004]), though these studies also found that students who experience marginalization are more likely to develop self-authorship prior to or early in college. This trend among oppressed identities aligns with the IGD critique that majority participants (who may be less developed than their minority peers) may be gaining more from IGD at the expense of their minority peers (Gorksi, 2008; Kauffman, 2010; Simpson, 2008).

Development from one self-authorship level to the next is generally prompted when one's meaning-making structures cannot adequately make sense of new information and experiences. Students who experience too much disequilibrium can regress as a way of coping (Perry, 1981; Taylor, 2008). In the IGD context, the aforementioned freshman with strong religious convictions and a homogenous upbringing may, in the face of disequilibrium caused by the introduction of other religious worldviews, leave the ambiguity of the crossroads (phase 2) and instead follow the formulas (phase 1) of his upbringing with greater resolve. Such developmental regression can promote debate and hinder dialogue, thus impeding the cultivation of intergroup understanding, relationships, collaboration, and action. Though one phase of development is not "better" than another from a purely scientific standpoint, both IGD (Gurin et al., 2013) and higher education more broadly (Love & Guthrie, 1999a; Baxter Magolda & King, 2012) are explicit in their intention to develop students in ways that align with self-authorship and enable students to better navigate the complexities of modern society.

Despite the significant contributions and utility of Baxter Magolda's (2001) model, there were some notable limitations to the longitudinal study upon which it was based. First, the sample of first-year students was drawn from a single selective institution, with 70% of the

incoming class being ranked in the top 20% of their respective high school graduating class. Also, of the 101 students included in the study, 98 were white, and all were traditional age.

Similar to IGD scholars' creation and use of the MIGR dataset, scholars would be able to address many of the data limitations of Baxter Magolda's (1992) study by utilizing a more diverse, mixed methods, longitudinal dataset that included a variety of institutions. The Wabash National Study (WNS) was a longitudinal study conducted from 2004 to 2010 that analyzed the interconnectedness of the three developmental domains of self-authorship and various liberal arts outcomes (King, Brown, Lindsay, & Vanhecke, 2007). The qualitative component of the WNS, including the WNS interview, drew heavily on self-authorship, along with other developmental models (Baxter Magolda & King, 2007). In the first year of the WNS, 315 first-year students (69% white, 54% female) from 6 diverse institutions were interviewed. Those interviews, along with the results of additional studies based on Baxter Magolda's (1992) longitudinal data (e.g., Baxter Magolda, 2008, 2009; Baxter Magolda & King, 2008), led to a refined self-authorship assessment consisting of three meaning-making structures (solely external, crossroads, and solely internal), which collectively include 10 developmental positions (Baxter Magolda & King, 2012). Table 2.3 summarizes these 10 positions, and Figure 2.8 illustrates students' development visually to show how it varies by individual and does not follow a fixed, linear trajectory.

Table 2.3. The Three Meaning-Making Structures and Ten Positions of Self-Authorship

Solely External	Crossroads	Solely Internal (Self-Authoring) Meaning-making
	Entering the Crossroads	
Trusting External Authority (Ea): Consistently and unquestioningly rely on external sources without recognizing possible shortcomings of this approach.	**Questioning External Authority [E(I)]:** Continue to rely on external sources despite awareness of the need for an internal voice. Realize the dilemma of external meaning-making, yet are unsure how to proceed.	**Trusting the Internal Voice (Ia):** Trust the internal voice sufficiently to refine beliefs, values, identities and relationships. Use internal voice to shape reactions and manage external sources.
Tensions with Trusting External Authority (Eb): Consistently rely on external sources, but experience tensions in doing so, particularly if external sources conflict; look to authorities to resolve conflicts.	**Constructing the Internal Voice (E-I):** Begin to actively work on constructing a new way of making meaning yet "lean back" to earlier external positions.	**Building an Internal Foundation (Ib):** Trust internal voice sufficiently to craft commitments into a philosophy of life to guide how to react to external sources.
	Leaving the Crossroads	
Recognizing Shortcomings of Trusting External Authority (Ec): Continue to rely on external sources but recognize shortcomings of this approach.	**Listening to the Internal Voice (I-E):** Begin to listen carefully to internal voice, which now edges out external sources. External sources still strong, making it hard to maintain the internal voice consistently.	**Securing Internal Commitments (Ic):** Solidify philosophy of life as the core of one's being; living it becomes second nature.
	Cultivating the Internal Voice [I(E)]: Actively work to cultivate the internal voice, which mediates most external sources. Consciously work to not slip back into former tendency to allow others' points of view to subsume own point of view.	

Source: Baxter Magolda, M. B., & King, P. M. (2012). Assessing meaning-making and self-authorship: Theory, research, and application. *ASHE Higher Education Report*, *38*(3), p. 19.
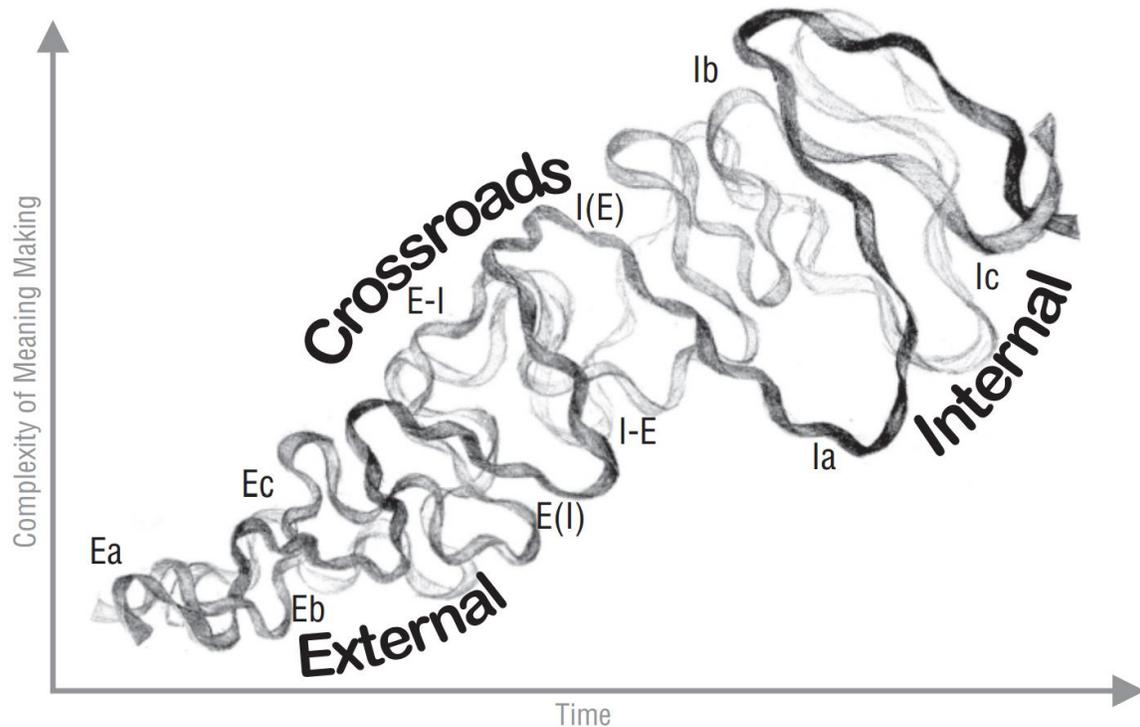
Figure 2.8 Developmental pathways toward self-authorship.
Source: Baxter Magolda, M. B., & King, P. M. (2012). Assessing meaning-making and self-authorship: Theory, research, and application. *ASHE Higher Education Report*, *38*(3), p. 18.

Limitations of the Theory of Self-Authorship

The illustration in Figure 2.8 is significant because it acknowledges one of the primary critiques of theories that rely heavily on stages, phases, or other forms of sequential ordering of phenomena. This includes self-authorship, as well as the stage/phase theories associated with the epistemological, interpersonal, and intrapersonal dimensions. The critique is that development in each of these domains and, thus, holistic development towards self-authorship, does not occur in a linear, sequential fashion as models of student development may imply (Schwartz & Fischer, 2006). Scholarship related to epistemological development (King & Kitchener, 1994, 2015; Perry, 1981), interpersonal development (Gibbs, 2014; Kohlberg, 1984; Rest, 1979), as well as intrapersonal development and self-authorship as a whole (Abes, 2012; Baxter Magolda, 2001; Torres, 2010), have supported this observation, leading to the creation of the "undulating,

cyclical, or wavelike . . . swiveling helix" (Baxter Magolda & King, 2012, p. 16) illustrated in Figure 2.8.

Another critique of self-authorship is that it is too individualistic, aligning primarily with individualistic cultures (Cohen et al., 2013). Self-authorship scholars are sensitive to this concern. For example, Pizzolato, Nguyen, Johnston, and Wang (2012) interviewed 166 students of color to better understand the relationship between self-authorship development and relational and cultural influences, shedding light on how the dissonance that promotes development can be tied to culture. Whereas cognitive dissonance is often discussed in the literature, these students of more diverse cultural backgrounds experienced what the authors referred to as identity dissonance (i.e., incongruence between respondents' and others' perceptions of their identities) and relational dissonance (i.e., incongruence among personal, relational, and cultural decision making and meaning making). This refined understanding of dissonance is significant, especially as it pertains to programs with intended outcomes tied to identity and relationships, such as IGD. At the same time, another element of this critique should be the recognition that, as individuals become the owner and coordinator of their beliefs as part of self-authorship development, they are not only better able to honor their own internal commitments in relationships, but also become more open and considerate of others (a form of interpersonal development) (Baxter Magolda, 2008). Thus, more authentic identities can produce more authentic relationships and communities because individuals can interact with people who are different from themselves without feeling uncomfortable or threatened (King & Baxter Magolda, 2005).

One final critique of self-authorship theory is that it lacks attention to identity-specific aspects of student development. For example, the longitudinal studies of lesbian (Abes, 2012; Abes & Jones, 2004; Abes & Kasch, 2007) and Latino (Torres, 2003; Torres & Hernandez, 2007)

students support the claim that development varies according to one's identity and position in societal power structures. To address this concern, scholars gathered at an international conference on this topic in 2008, resulting in the publication of an edited volume on self-authorship (Baxter Magolda, Meszaros, & Creamer, 2010), including chapters on Latinos (Torres, 2010), at-risk adolescents (Meszaros & Lane, 2010), Bedouins and Jews in Israel (Weinstock, 2010), a comparison of U.S. and Japanese students (Hofer, 2010), and chapters on the role of identity in self-authorship research (Berger, 2010; Jones, 2010). An extensive discussion of these chapters is beyond the scope of this study, but it is worth noting that the recognition of identity and stratification in society (and in participants' interactions) is a critical component that sets IGD apart from other forms of dialogue (Zúñiga, Lopez, & Ford, 2012). Therefore, ongoing conversations related to matters of power and identity in the development of self-authorship stand to increase the utility of this theory in the study of IGD.

A "Strong Partner" in the Development of Self-Authorship

Another important question, focusing specifically on the roles of self-authorship's three developmental dimensions (King, 2010), is also addressed in a chapter in Baxter Magolda and colleagues' (2010) edited volume. A foundational assumption of self-authorship is that learning, as well as programs like IGD, are strongly influenced by how students make meaning of what they are experiencing (Ignelzi, 2000). In her longitudinal study, Baxter Magolda (2008) found that "participants' meaning-making at any given point mediated how they approached experiences and how they interpreted those experiences, as did their particular combination of the epistemological, intrapersonal, and interpersonal dimensions of development" (p. 282). Given such observations, King (2010) discusses whether the interwoven strands of epistemological, intrapersonal, and interpersonal development are "equal partners" in the

development of self-authorship, or if one may be a moderating "strong partner" (p. 167) or "leading edge" (Kroll, 1992, p. 13) upon which the other two are reliant. In the IGD context, this question addresses whether there is a particular aspect of students' development that moderates the extent to which they are willing or able to engage in the communication processes, psychological processes, and outcomes identified by IGD researchers over the last few decades.

In her review of the literature, King (2010) presents preliminary evidence that the epistemological dimension "provide[s] a foundation without which development in the other domains is restricted" (p. 177). She points out that some of the overarching outcomes of development found in each of the three self-authorship dimensions (e.g., recognizing complexity, meaning-making) are arguably cognitive processes (King & Baxter Magolda, 2005; King & Shuford, 1996). Though some studies provide preliminary support for the three dimensions being equal partners (Baxter Magolda, 2001; Torres & Hernandez, 2007; Abes, Jones, & McEwen; 2007), other studies (described below) provide evidence that epistemological development may operate as a strong partner.

For example, as part of their longitudinal study that led to the creation of the seven-stage Reflective Judgment Model (RJM) of epistemological development, King and Kitchener (1994) compared high school students, undergraduates, and graduate students' epistemological and moral development, with follow-up tests after two, six, and ten years. Statistically significant increases in epistemological and moral development were observed between education levels (across groups) and assessments (within groups). Significant differences in epistemological development remained significant when the effects of the moral development scores were statistically removed, but differences in moral development did not remain significant when

epistemology scores were covaried out, suggesting that increases in moral development were reliant on increases in epistemological development.

In a study of the relationship between epistemological development and tolerance towards African Americans and homosexuals among undergraduates ($N = 48$), Guthrie, King, and Palmer (2000) found that almost all of the students who had below average tolerance had not yet fully developed beyond the pre-reflective level, characterized by simplistic thinking and that certain knowledge is temporarily unavailable (i.e., Stage 3 in Kitchener and King's [1994] RJM). Conversely, the majority of students who had above average tolerance scored at Stage 4 or higher in the model, with 44% of the variance in tolerance explained by students' epistemological development. Endicott, Bock, and Narvaez (2003) made a similar observation in their study of the relationship between moral judgment and intercultural sensitivity, suggesting that the shared variance observed between these two forms of development may be because both are "rooted in cognitive flexibility, or the ability to understand, consider, and weigh multiple frameworks" (p. 16). In another study of the relationship between epistemological development and Latino students' reactions to intolerance, Torres and Baxter Magolda (2004) found that student's epistemological development enabled corresponding shifts in students' understanding of their own ethnic identity and the family relationships that had informed this identity (reflecting the intrapersonal and interpersonal domains, respectively).

Beyond empirical studies, the possibility of epistemology serving as the strong partner can be supported conceptually as well. Piaget's (1971) construct of disequilibrium, which aligns with self-authorship's crossroads phase (see Table 2.3 and Figure 2.8), describes a cognitive struggle to reconcile new information with previously held knowledge which can, in turn, promote development. In the literature, a variety of terms are used to capture elements of this

phenomenon, which span beyond the cognitive domain into the intrapersonal and interpersonal domains as well, including provocative moment (Pizzolato, 2005), cognitive dissonance (Festinger, 1957), anxiety (King, Baxter Magolda, & Massé, 2011), shadow lands (Baxter Magolda, 2008), challenge by countervailing forces (Perry, 1970), cognitive conflict (Lee et al., 2003), spiritual struggle and spiritual skepticism (Astin, Astin, & Lindholm, 2011), shipwreck (Parks, 2000), religious/spiritual concerns (Johnson & Hayes, 2003), fork in the road (Pargament, 2008), crisis (Rockenbach, Walker, & Luzader, 2012), disruptions (Fowler, 1981), personal distress (Schafer, 1997), and breaking and rebuilding one's web of life (Smucker, 1996). Thus, even in instances when dissonance originates in the intrapersonal or interpersonal domains, if such dissonance indeed stems from how and what individuals know (epistemologically) about themselves and their relation to others, and if the resolution of such dissonance is the driving force of intrapersonal or interpersonal development, King's (2010) suggestion of epistemological development serving as the strong partner in self-authorship development is supported.

Ultimately, the strong partner evidence is mixed, and King (2010) makes clear that further research is needed to make more definitive statements. She invites readers "to participate in this extended conversation" (p. 183), which is one purpose of this study. I seek to contribute to the conversation on the role of epistemology in the development of self-authorship by examining the extent to which students' epistemological dispositions moderate the relationships between IGD pedagogy, processes, and outcomes (see Figure 1.1). In the following section, I present an overview and synthesis of prominent epistemological development theories, which provide a necessary foundation to the consideration of epistemology's role and place in IGD.

Epistemological Development Theory

Epistemological development is distinguished from cognitive development, the broader form of development to which it belongs. Cognition includes a variety of mental processes related to thought, attention, reasoning, and problem-solving. Epistemology describes "what individuals believe about how knowing occurs, what counts as knowledge and where it resides, and how knowledge is constructed and evaluated" (Hofer, 2004, p. 1). It is the structure upon which individuals make meaning of what and how they know.

To illustrate the role of epistemic cognition, one IGD participant may assume there is a single, objective truth regarding the causes of poverty. A second participant might assume there is no such truth, but that truth is something we construct. These two students hold different assumptions regarding the nature of knowledge. Regarding the nature of knowing, the first student would likely assume that what we can know about poverty is disseminated by experts (e.g., teachers, researchers, parents, religious leaders). The second student would likely assume that what can we know about poverty is the result of a critical assessment of the claims being made by various parties regarding poverty.

As with the development of self-authorship, scholars have been interested in college students' epistemological assumptions of knowledge and knowing. Studies of college student epistemology have led to the creation of theoretical models and schemes that help describe how college students transition from dualistic, "black-and-white" thinking to a recognition of the relativistic and contextual nature of knowledge (Baxter Magolda, 1992; Belenky et al., 1986; Kitchener & King, 1981, 1990; Perry, 1981). The purpose of this section is not to provide a detailed account of each epistemological development model in the literature, but to provide

sufficient description of four prominent models in order to identify the broad patterns of epistemological development that are most relevant to IGD.

Perry's Scheme of Intellectual and Ethical Development

The first of these models was Perry's (1981) scheme of intellectual and ethical development. Perry was intrigued by the variety of student responses to the intellectually diverse environment of the university. The formulation of his scheme was based primarily on interviews with 84 students (predominantly white, upper-class men) at the end of each academic year between 1958 and 1963.

His scheme includes four categories of development, consisting of nine positions (dualism [two positions], multiplicity [two positions], relativism [one position], and commitment in relativism [four positions]). He traced students' transitions from the "black-and-white" assumptions of knowledge and knowing (dualism) to the assumption that unresolved matters will either be (a) resolved eventually or (b) are simply outside the realm of authority (multiplicity). In the relativism phase, students abandon dualistic thinking and recognize the contextual and evolving nature of knowledge, and they see themselves as constructors of knowledge and meaning. However, it is in the final phase, commitment in relativism, that students commit to what they know, believe, value, and how they interpret and make meaning of their identity.

In addition to serving as a foundation for future epistemological development models, Perry's scheme made two significant contributions. First, it built on Piaget's (1971) cognitive development theory, which extended through age 16. Second, its focus on cognitive aspects of development offered a more refined explanation to the prevailing thought of that time that variation in students' reactions to diverse college campuses were primarily a matter of

personality. However, Perry's (1981) scheme had significant limitations, most notably the students he interviewed. Of these 84 students, only 2 were women.

Women's Ways of Knowing

In response to Perry's predominantly male sample, Belenky et al. (1986) focused on women's development. They interviewed 135 women to develop their model of "women's ways of knowing" (the title of their book), which included five "epistemological perspectives" (p. 15). One perspective, silence, describes a passive state in which women are unaware of their deference to authorities. Another, received knowledge, captures women's dualistic assumptions of knowledge and knowing, along with the conscious belief that knowledge comes from external sources. A third perspective, subjective knowledge, describes the recognition that the ability to know can come from within, though knowledge is still perceived to be right or wrong. A fourth perspective, procedural knowledge, captures valuing objective procedures (e.g., mathematic formulas) to understand and confirm authorities' claims. Within this fourth perspective, the authors observed two types of knowing. Separate knowing relies on critical thinking and an assumption that anyone could be wrong, hence the value of objective knowledge procedures. By contrast, connected knowing blends this valuing of procedures with valuing of others' perspectives, along with an appreciation of empathy and understanding. The most advanced perspective, constructed knowledge, integrates objective and subjective strategies for knowing, discerns the contextual nature of knowledge, and recognizes that one can be a constructor of knowledge. Women using this perspective see themselves as constructors of knowledge and recognize that that their frame of reference is both relevant and significant.

The Epistemological Reflection Model

Belenky and colleagues (1986) model of women's ways of knowing broadened scholars' understanding with its focus on women (and all-female sample), but left no way to assess whether these patterns were only characteristic of women's development. In order to examine gender-related patterns, Baxter Magolda's (1992) initial longitudinal study (i.e., her college study) led to the development of her epistemological reflection model (ERM), which included annual interviews of 51 women and 50 men who also completed the Measure of Epistemological Reflection (Baxter Magolda & Porterfield, 1985). Though the students in her sample were middle-class, traditional age, from a single institution, and 97% white, her model was nonetheless ground-breaking in its identification of gender-related patterns of epistemological reflection.

The ERM consists of four approaches to knowing, three of which include gender-related patterns. Absolute knowers view knowledge dualistically and defer to authorities. Among absolute knowers, passively "receiving" knowledge from teachers was more common among women, whereas men tended to engage with teachers in the pursuit of "mastery" of a given subject. Transitional knowers recognize the uncertainty of knowledge, with women more likely to maintain an "interpersonal" reliance on peers to reconcile truth, while men generally took a more "impersonal" approach by mastering learning processes and relying on authorities to make sense of dissonance. Independent knowers begin to question authorities and recognize their capacity to form their own opinions, with women more often taking an "interindividual" approach (reliance on peers to form personal opinions) and men more often taking an "individual" approach (placing more value on their own thoughts than others'). Contextual knowers formed their own conclusions by considering claims and evidence from a variety of contexts. Very few

students were contextual knowers during the college years, which made it difficult to discern gender-related related patterns at this level.

The Reflective Judgment Model

A primary contribution of King and Kitchener's (1994) Reflective Judgment Model (RJM) was a greater understanding of the upper limits of epistemological development (Hofer & Pintrich, 1997). Their work began with interviews that ultimately spanned 10 years, during which they identified 7 stages of reasoning that would later be organized into 3 levels (pre-reflective thinking [3 stages], quasi-reflective thinking [2 stages], and reflective thinking [2 stages]). In the third stage of the pre-reflective thinking level, individuals have developed beyond simple and absolute thinking (stage 1) and the belief that authorities have the truth (Stage 2) to the assumption that knowledge may be temporarily uncertain, which allows room for personal opinions (Stage 3). In the quasi-reflective level of reasoning, individuals perceive knowledge as abstractions (Stage 4) and see it as relative (Stage 5). The reflective thinking level captures the recognition of oneself as a knowledge constructor (Stage 6) and the use of critical thinking to weigh evidence and draw conclusions that are most reasonable and justifiable (Stage 7).

With approximately 1,300 interviews with undergraduate and graduate students to draw from (King & Kitchener, 1994), the research that formed and refined the RJM provides an informative account of college students' epistemological development. Among these students, the average Reflective Judgment Interview (RJI) score was 3.6 (i.e., between Stage 3 and Stage 4) for first-year students and sophomores, 3.7 for juniors, and 4.0 for seniors. Substantively, this suggests that students were coming to college on the verge of transitioning from pre-reflective thinking to quasi-reflective thinking, but it seems to have required most or all of their undergraduate experience to accomplish this feat. As for the higher stages of development, RJI

scores for beginning graduate students averaged 4.6, and those who were more advanced

graduate students averaged 5.3, though development also varied by degree program. Stage 6 and

stage 7 reasoning emerged primarily among advanced doctoral students.

An Integration of Prominent Epistemological Development Theories

These findings raise intriguing questions related to undergraduate and graduate education

(e.g., whether there is an ideal level of epistemic cognition students should attain prior to

graduation, and what that level should be), and IGD as well (e.g., the questions driving this study,

whether a minimum level of epistemic cognition is necessary for IGD to have an impact).

However, in addition to the model-specific limitations of these four theories discussed previously,

they collectively possess some of the same limitations associated with self-authorship research.

Some have noted that these theories are limited in their ability to account for culturally-

specific patterns (Brabeck, 1994; Hofer & Pintrich, 1997), though efforts have been made to

address this gap (e.g., Hofer, 2010). The use of stages in these models may unduly imply that

epistemological development is a rigid and linear process (Love & Guthrie, 1999b; Schommer,

1994), though each of the scholars who formulated these four models acknowledge and refute

such a claim. For example, King and Kitchener (1994) state that it is misleading to suggest that

individuals are in one stage at a time; rather, they have an optimal level of capacity they can

access (Fischer & Pipp, 1984), along with a functional level that represents their default capacity.

This explanation is also helpful in addressing a critique unique to epistemology,

specifically, that individuals are more likely to think dualistically and defer to authorities when

working in certain domains of knowledge (e.g., car repair) than others (e.g., their own areas of

expertise), again implying that individuals cannot be placed in one stage (Welte, 1997; Hofer &

Pintrich, 1997). This aligns with the social-psychological theory of situated cognition, which

states that cognition cannot be separated from context, both practically and conceptually. Rather, cognition "arises from, and is connected to, the interactions that an agent entertains with its social environment" (Roth & Jornet, 2013, p. 464). In acknowledging this relationship between cognition and context, King and Kitchener (2004) point out that context-related fluidity in individuals' epistemological ranges rarely exceed one stage above or below their functional level.

In the acknowledgement of limitations associated with epistemological development theory, it is nonetheless clear that the identification and defining of discrete levels of epistemological development provides a structure for research without which scholarly progress would be substantially hindered. Higher education professionals also benefit from such models and their respective levels, which provide a foundation for making sense of their students' ideas, actions, and overall experience. At the same time, the recognition of fluidity and developmental ranges within such levels helps individuals overcome the temptation to assume that development is more rigid, linear, and context-independent than it truly is. Indeed, it is this dual recognition that there is some consistent order and pattern to development, though no perfect or all-encompassing order or pattern, that maximizes our understanding such complex and nuanced processes.

Though these four theories possess certain limitations and differ in many ways given their particular foci, empirical foundations, and the terms they use to describe their various phases/stages/positions, they share similarities. Table 2.4 illustrates how these theories' phases/stages/positions can be organized into three general developmental levels, each with its own set of assumptions related to knowledge and knowing. Furthermore, Table 2.4 also indicates how these levels align with the three meaning-making structures of self-authorship.

Table 2.4. Synthesis of College Student Epistemological Development Models and the Theory of Self-Authorship

	Assumptions of Knowledge	Assumptions of Knowing	Scholar(s): Corresponding Terms at Levels 1, 2, and 3
Level 1	Knowledge is black or white/true or false. There is one truth.	Experts/authority figures discover and disseminate truth (teachers, scientists, parents, religious leaders).	Perry: Dualism Belenky et al.: Received Knowledge Baxter Magolda: Absolute Knowing Kitchener & King: Pre-Reflective Thinking *Self-Authorship: Solely External*
Level 2	Knowledge is relative. There is no single, objective truth.	It is difficult to know anything for sure. Competing claims are/should be viewed as equally valuable.	Perry: Multiplicity Belenky et al.: Subjective/Procedural Knowledge Baxter Magolda: Transitional/Independent Knowing Kitchener & King: Quasi-Reflective Thinking *Self-Authorship: Crossroads*
Level 3	Knowledge is evolving and contextual. It is not black and white, but it is not merely relative.	One does not merely defer to experts. One co-constructs knowledge by weighing evidence, evaluating claims.	Perry: Relativism (and Commitment in) Belenky et al.: Constructed Knowledge Baxter Magolda: Contextual Knowing Kitchener & King: Reflective Thinking *Self-Authorship: Solely Internal/Self-Authorship*

Indeed, a particular theory included in Table 2.4 may be more useful to particular IGD researchers, given the purposes of their research, the context of their sample, the IGD topic, or a variety of other factors. However, as an initial step in the consideration of epistemology's role in IGD, the synthesis provided in Table 2.4 illuminates a critical aspect of the IGD experience. That is, as students participate in IGD, they are continually maintaining and refining assumptions of knowledge and knowing in ways that align with the three positions included in Table 2.4, which stands to have an impact on their IGD experience and that of their peers. Though this is clearly a complex phenomenon that varies by individual, the utility of a broad understanding and synthesis

of epistemological theories is also helpful in determining how students' epistemological development may be the strong partner (King, 2010) that drives the interpersonal and intrapersonal processes, outcomes, and development associated with IGD. In the following section, I discuss the implications of integrating epistemological development theory into IGD theory, practice, and research.

Integrating Epistemology and Intergroup Dialogue

Thus far in this dissertation, I have discussed the conceptual overlap of IGD and self-authorship, the mixed evidence related to the strong partner role of epistemology in self-authorship development (King, 2010), and I have identified three broad positions of epistemological development based on my synthesis of prominent epistemological development theories (see Table 2.4). In this section, I discuss how an increased focus on epistemology can inform IGD theory, practice, and research.

Gurin and colleagues' (2013) theoretical framework (see Figure 1.1) captures over a decade of theory building and is useful in considering the theoretical implications of the role of epistemology in IGD. Indeed, integrating the IGD, self-authorship, and epistemological development literatures *theoretically* is a critical first step to the rationale for the quantitative analyses conducted in this study. In addition to potentially saving time and other resources, theoretically-informed exploration of the phenomena and relationships in a given dataset helps researchers responsibly account for what other researchers have discovered previously, and building upon previous work in this way helps researchers ensure that the relationships and temporality of a given model are logical and reasonable (MacCallum & Austin, 2000). Thus, in this section, I present a theoretical framework that (a) integrates what I have presented thus far

regarding IGD, self-authorship, and epistemological development and (b) served as a starting point for my analyses.

As a first step to this theoretical integration, it is helpful to first consider what is and is not already present in the IGD framework. Specifically, the IGD framework describes what participants experience (e.g., facilitated/structured interactions), learn (e.g., content,), do (e.g., engage in dialogic/critical communication, cognitive involvement, intergroup collaboration/action), feel (e.g., affective positivity), and obtain (e.g., a greater interest in intergroup relationships, collaboration, action). However, the consideration of epistemology's role in IGD requires the acknowledgement of students' development capacities. Epistemological development is of particular interest, given how it may be driving the IGD processes and development associated with other dimensions, including how students make sense of who they are in the IGD context (the intrapersonal dimension) and their relationships with other participants (the interpersonal dimension). Indeed, there is already substantial evidence supporting IGD's effectiveness; however, one of the questions driving this study is how IGD might be more effective if, in addition to its focus on interpersonal and intrapersonal processes, there was a greater acknowledgement of the epistemological dimension as well.

Even in the early iterations of the IGD framework, empirical studies had given scholars reason to believe that IGD pedagogy (the left side of the IGD framework in Figure 1.1) brought about IGD's intended outcomes (the right side of the framework). Scholars then sought to "fill in" the middle of the framework by identifying processes that mediated the effect of IGD's pedagogy on its outcomes. For example, as discussed in my review of the IGD literature, Nagda et al. (2004) found that psychological processes facilitate IGD outcomes, though Nagda (2006) later found that four communication processes (appreciating difference, engaging self, critical

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reflection, alliance building) facilitate those psychological processes, noting that "a mediating process may also be an outcome" (p. 561) (i.e., preceded by other mediating processes; see Figure 2.3).

Continuing on with this approach of recognizing how previously-identified mediating processes can be treated as outcomes in order to identify processes that precede, mediate, or moderate those processes, the next question to ask might be, "What may be mediating or moderating the impact of IGD's pedagogical features on students' disposition to appreciate difference, engage self, critically reflect, and build alliances?" Given the strong partner evidence (King, 2010), how IGD participants make sense of IGD content, structured interactions, and facilitation may be moderated or "filtered" by their level of epistemological development. This moderation stands to affect the extent to which they engage in those four communication processes, as well as the subsequent interpersonal and intrapersonal processes and outcomes that have been identified previously by IGD scholars. Figure 2.9 illustrates this theoretically-derived framework of the relationship between epistemology and IGD pedagogy, processes, and outcomes, which served as a starting point for the empirical analyses I conduct in this study.
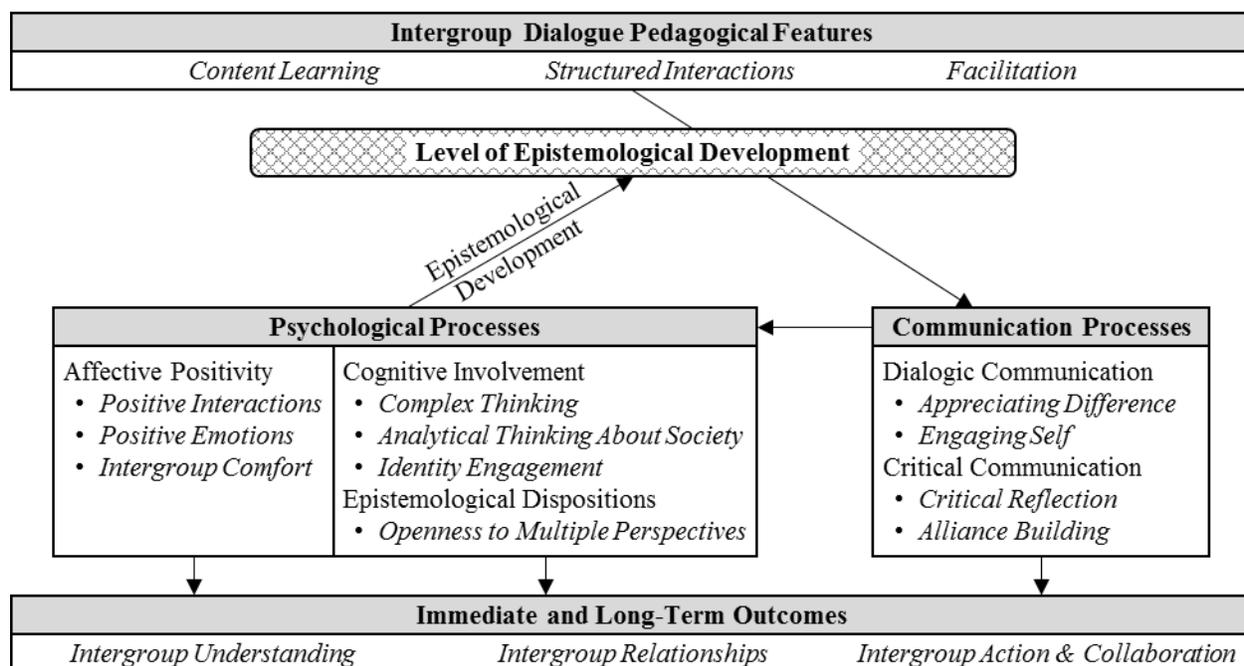
Figure 2.9 Hypothesized moderating role of students' epistemological development in intergroup dialogue processes and outcomes.

In interpreting Figure 2.9, it is important to note that all of the previously-identified

components and relationships included in Gurin et al.'s (2013) framework (see Figure 1.1)

remain intact, with one minor adaptation: Openness to multiple perspectives is included in its

own subcategory (epistemological dispositions) in order to capture a distinction integral to this

dissertation. As discussed previously, the connection between openness to multiple perspectives

(and corresponding MIGR measures) and students' epistemological development differentiates it

from other cognitive processes that focus primarily on students' dispositions toward effortful

thought (i.e., complex thinking), reflecting upon their own identities (i.e., identity engagement),

and thinking about society (i.e., analytical thinking about society) (see Chapter III for discussion).

In this modified framework, students' experiences with IGD content, activities, peers,

and facilitators are moderated (or, "filtered" in the illustration presented in Figure 2.9) by their

level of epistemological development—whether that be a single level, or the developmental

range created by their functional and optimal levels (Fischer & Pipp, 1984)—thus affecting the

communication processes they engage in with their peers. For example, a student in the early

levels of epistemological development (see level 1 in Table 2.4) who maintains a dualistic

understanding of poverty (e.g., "if one works hard, one avoids poverty; if one does not work hard,

one will live in poverty") may be dismissive of assigned readings that provide alternative

explanations. He might scoff at activities designed to increase his understanding of such

alternatives, or feel attacked by peers' or facilitators' statements that don't align with his pre-

conceived notions. Thus, his willingness and ability to appreciate difference, engage himself,

critically reflect, and build alliances (see Figure 2.9) is moderated by his dualistic assumptions of

knowledge and knowing. Conversely, the communication processes of a student in the more

advanced levels of epistemological development (e.g., positions 2 or 3 in Table 2.4) would likely

be positively influenced by such development. These two examples illustrate one way in which

epistemological development may play a moderating role in students' IGD experience.

Next, the communication processes that have been moderated by students'

epistemological development affect the psychological processes students experience, as in Gurin

et al.'s (2013) framework. However, in acknowledging that the phenomena captured in the

framework likely happen concurrently, as opposed to sequentially in discrete steps, it is possible

that other direct and moderating relationships may exist among students' epistemological

development and IGD pedagogy, communication and psychological processes, and intended

outcomes. Theoretically, the strong partner perspective (King, 2010) would suggest direct

relationships between epistemological development and any intrapersonal and interpersonal

processes associated with IGD (such as those included as cognitive and emotional processes in

the framework). SEM analyses by Gurin et al. (2013) also found a previously unsupported (e.g.,

Gurin-Sands et al., 2012) direct relationships between IGD pedagogy and cognitive and

emotional processes. These two relationships may also be moderated by epistemological development, just as the relationship between pedagogy and communication processes is moderated in Figure 2.9. In this study (described in the next chapter), this broader set of relationships between epistemological development and IGD pedagogy, communication and psychological processes, and intended outcomes are explored.

A better understanding of the relationships between epistemology, pedagogy, processes, and outcomes would be significant, given the critical role of emotion—such as intergroup empathy (Gurin et al., 2013; Sorensen, 2010)—in IGD outcomes (Nagda et al., 2004; Zúñiga et al., 2012). Thus, a student with level 1 assumptions (see Table 2.4), which describes the assumptions most commonly held among first-year students and sophomores (King & Kitchener, 1994), may not experience positive emotions (see Figure 2.9) in response to a stirring story shared by a peer who grew up in poverty because the student already "knows" that if his peer's family had just worked harder, they would not have lived in poverty.

However, week by week, there is the potential for students to develop epistemologically, thus altering the moderating "filter" through which future readings, activities, interactions, and peer/facilitator statements pass. In this way, and in line with Nagda's (2006) recognition that processes can also be outcomes, the role of epistemological development as both a moderating process and outcome of IGD is accounted for in the modified framework. This cyclical depiction of IGD processes, as opposed to previous linear depictions, proposes how epistemology acts as a strong partner in IGD by moderating the extent to which previously identified processes occur. Specifically, the cyclical depiction illustrates how one's assumptions of knowledge and knowing can directly and indirectly affect one's interactions and relationships with others (the interpersonal dimension) and one's intrapersonal reflection (e.g., identity engagement; see Figure

2.9). Thus, the interaction of these three developmental domains takes place over time and, in turn, collectively mediates the relationship between IGD pedagogy and outcomes.

Furthermore, in the modified framework, IGD's outcomes can occur at multiple time points. As the cyclical mediation and filtration process takes place throughout a semester, intergroup understanding, relationships, action, and/or collaboration can be cultivated among group members prior to, at, or after the conclusion of the IGD. Acknowledging these multiple time points takes into account the variability of developmental levels found among IGD participants. Presumably, due to individual differences, everyone will not experience the same processes and outcomes at the same time.

In sum, this adapted framework represents a theoretically-derived integration of the IGD, self-authorship, and epistemological development literatures and, therefore, needs to be tested empirically, ideally by multiple studies. Furthermore, this theoretical framework stands to be modified based on the results of such studies.

In this study, my analyses focus on the role of epistemological development as a moderator of the communication processes, psychological processes, and intended outcomes included in Gurin et al.'s (2013) critical-dialogic theoretical framework of intergroup dialogue. I build on their framework by treating students' epistemological development as its own construct (separate from the forms of cognitive involvement already included in their framework), operationalizing it and all other constructs in their framework based on MIGR measures, data, and statistical techniques discussed in the following chapter. In so doing, I address my broader research question (presented in Chapter I) and related sub-questions (presented in Chapter III).

CHAPTER III

METHODS

The purpose of this study was to examine the relationships between students' epistemological development and intergroup dialogue's (IGD) cognitive, interpersonal, and intrapersonal processes and outcomes. My analyses of these relationships were guided by theoretically-derived modifications (see Figure 2.9) to the critical-dialogic theoretical framework of intergroup dialogue (see Figure 1.1), which are the result of my review and integration of the IGD, self-authorship, and epistemological development literatures. In addition, my analyses were guided by the following general research question: *What are the relationships among students' epistemological development and the major pedagogical features of IGD, its communication, cognitive, and affective mediating processes, and its intended outcomes?* To explore this question, I asked the following research sub-questions:

1. How do students' levels of/attitudes towards IGD's pedagogy, processes, and outcomes vary by students' level of epistemological development?

2. To what extent are the relationships between IGD's pedagogical features, mediating processes, and intended outcomes moderated by students' epistemological development?

To answer these questions, I conducted *t*-tests and used two structural equation modeling (SEM) techniques (path analysis, multiple group analysis) to analyze survey data collected as part of the Multi-University Intergroup Dialogue Research Project (MIGR).

In this chapter, I describe the MIGR dataset and my analyses in detail. First, I provide an overview of the MIGR dataset, including its research design, data collection methods, and

sample, drawing attention to those aspects of the project and dataset that are most relevant to this study. Second, I describe the measures associated with the dependent and independent variables in my analyses. Third, I discuss how I accounted for missing data. Fourth, I discuss my *t*-test and SEM analyses in conjunction with my research question and two research sub-questions. Fifth, I conclude with a discussion of some limitations of this study.

The Multi-University Intergroup Dialogue Research Project and Dataset

The MIGR is a multi-institutional, longitudinal, concurrent mixed methods study that included randomly assigned IGD groups and control groups, along with comparison groups of students in traditional social science courses that also focused on race/ethnicity or gender. The project was designed to overcome many of the limitations of previous IGD research (see Chapter II for a detailed account) and allowed researchers to analyze the role of IGD's pedagogical features (rather than students' self-selection into IGD) in promoting the processes and outcomes included in the critical-dialogic theoretical framework of intergroup dialogue (see Figure 1.1). The MIGR included content analyses of students' final IGD papers, recordings of select IGD groups/sessions along with follow-up interviews of students who were recorded, and surveys completed prior to, immediately following, and one year after students' IGD experience.

I used the survey responses of the MIGR to analyze my research questions for several reasons. First, not only is the MIGR dataset the only IGD dataset that includes measures for each of the latent constructs included in the critical-dialogic theoretical framework of intergroup dialogue (see Figure 1.1), it also includes a suitable proxy measure of students' epistemological development (a composite score of the five measures included in the "openness to multiple perspectives" factor). Second, the MIGR data provides data at three time points (pre-IGD, immediately after the IGD, and one year after the IGD). This is helpful when analyzing

dispositions and behaviors that are closely related to student development, which occurs

gradually over time. Third, the response rates for the post-test survey (95%) and one-year follow-

up survey (82%) were high, minimizing the risk of obtaining problematic results and drawing

erroneous conclusions due to systematic patterns of missing data. Finally, there are variety of

other strengths of the MIGR dataset that are described throughout this section (random

assignment, sample size and diversity, institutional diversity, multiple IGD topics, standardized

curriculum).

Sample

Seven public institutions and two private institutions participated in the MIGR, including

Arizona State University, Occidental College, Syracuse University, the University of California-

San Diego, the University of Maryland, the University of Massachusetts at Amherst, the

University of Michigan, the University of Texas, and the University of Washington. The

inclusion of these institutions in the study was based on professional relationships among IGD

researchers and practitioners at these institutions, and that these institutions have their own IGD

programs. These collaborators worked closely over two years to standardize the IGD curriculum

across institutions for both the race/ethnicity and gender IGDs. This included two to three

meetings each year, with each gathering lasting three to four days, and each participating

institution hosting at least one gathering. The goal of these meetings and the standardization of

the curriculum was to reduce (though not completely eliminate) institutional variability.

Data were collected from 52 IGD courses (26 focused on race/ethnicity, 26 focused on

gender) that took place at these institutions. The total sample ($N = 1875$) consisted of

undergraduate students in one of three groups: IGD participants ($n = 720$; randomly assigned),

control groups of non-participants ($n = 717$; randomly assigned), and a social science course

comparison group (*n* = 438; 27 course sections; not randomly assigned). In these three groups, the researchers sought equal representation for four categories of participants: women of color (26%-27% across groups), men of color (21%-24% across groups), white women (26%-28% across groups), and white men (23%-24% across groups). Given the focus of my study on the pedagogy, processes, and intended outcomes associated with IGD, I only used the survey responses from the 720 IGD participants in this study, given that the control and comparison groups did not participate in IGD. Table 3.1 presents demographic characteristics of the students in the IGD group.

Table 3.1. Demographic Characteristics of Intergroup Dialogue Students

	n	Proportion		*n*	Proportion
Gender			**Dialogue Topic**		
Woman	375	0.48	Gender	354	0.49
Man	345	0.52	Race/Ethnicity	366	0.51
Race/Ethnicity			**Major**		
African American	158	0.22	Social Sciences	301	0.42
Asian	116	0.16	Math, Science, Engineering,		
Latino/a	77	0.11	Architecture	122	0.17
Native American	4	0.00	Arts, Humanities	129	0.18
Arab/Arab-American	3	0.00	Business	118	0.16
Person of Color	*358*	*0.50*	Nursing, Social Work,		
White	*362*	*0.50*	Education, Public Health	45	0.06
			missing/other	5	0.01
Gender & Race			**Year in School**		
Woman of Color	185	0.26	First-Year	149	0.21
Man of Color	174	0.24	Sophomore	193	0.27
White Woman	189	0.26	Junior	181	0.25
White Man	171	0.24	Senior	183	0.25
missing	1	0.00	Fifth-Year	12	0.02
			missing	2	0.00
Religion			**Institution**		
Buddhist	18	0.03	Arizona State University	83	0.12
Hindu	16	0.02	University of Maryland	111	0.15
Muslim	11	0.02	University of Massachusetts	62	0.09
Jewish	103	0.14	University of Michigan	211	0.29
Greek Orthodox	3	0.00	Occidental College	65	0.09
Non-Evangelical Protestant	179	0.25	University of San Diego	63	0.09
LDS/Mormon	7	0.01	Syracuse University	51	0.07
Non-Evangelical Roman Catholic	199	0.28	University of Texas	33	0.50
Evangelical Christian	78	0.11	University of Washington	41	0.60
Other	48	0.07			
Non-Religious	97	0.13			

Note. n = 720.

Students indicated the religion(s) in which they were raised.

Research Design

Random assignment to IGD or control groups, along with the manipulation of these groups' demographic composition, were made possible by an online application process required for IGD participation at each institution. Students who applied for an IGD were randomly assigned to a race/ethnicity IGD, a gender IGD, or a wait-list control group, and students who were not assigned to an IGD group were assured they could enroll in an IGD in a later term. The IGD group completed surveys related to the pedagogical features, processes, and outcomes captured in the IGD framework prior to IGD, immediately after IGD, and one year later (see Figure 3.1). Students were given $15 to complete the pre-test survey, $20 for the post-test survey, and $25 for the one-year follow-up survey.
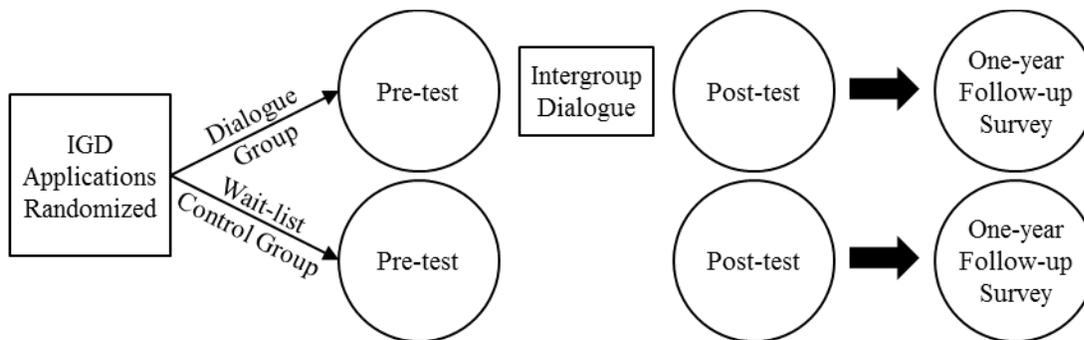
Figure 3.1 Multi-university intergroup dialogue research project research design.
Source: Gurin, P., Nagda, B. R. A., & Zúñiga, X. (2013). *Dialogue across difference: Practice, theory, and research on intergroup dialogue*. New York, NY: Russell Sage Foundation, p. 128.

Data Collection

The *Group Attitudes and Experiences on Campus* surveys (see Appendix A in Gurin et al., 2013) were used for the IGD and control groups in order to collect student responses related to each of the constructs included in the critical-dialogic theoretical framework of intergroup dialogue (see Figure 1.1). The survey items used to measure each construct in the IGD framework did not differ across the IGDs and two control groups, though some items were

changed simply to reflect the topic of students' IGDs (e.g., the terms "gender" or "race/ethnicity" being used in particular items), and different instructions were given to students in the IGD and classroom groups (e.g., "think about your IGD group" versus "think about your social science course").

The MIGR researchers conducted exploratory factor analyses (with varimax rotation), confirmatory factor analyses, and calculated Cronbach's alpha (α) to identify which survey items would be included for the various sub-constructs that would comprise each of the broader latent constructs included in the IGD framework (see Table 3.2 for a summary of these constructs). In the MIGR SEM analyses, for all but two of these broader latent constructs (intergroup empathy; pre-post change and one year later), the items associated with each of these sub-constructs were averaged to function as single indicators of the broader latent constructs to which they belong. For example, 12 "facilitator effectiveness" items were averaged to serve as a single indicator of "pedagogical features," along with averages for 5 "structured interactions" items and 3 "content" items (i.e., 3 indicators total; see Table 3.2). In this study, I took the same approach to constructing the broader latent constructs of the IGD framework. These broader latent constructs, the sub-constructs of which they are comprised, and associated survey items are described in detail in the following section.

Table 3.2. Summary of Constructs Included in the Critical-Dialogic Theoretical Framework of Intergroup Dialogue

Construct	Description	Construct Element(s)
Pedagogical Features	The core features of this approach to IGD	• Academic Content • Structured Interactions • Facilitator Effectiveness
Mediating Processes		
Communication Processes	The dialogic and critical communication promoted in IGD (i.e., the sharing of lived experience such that the status quo, one's internalized socialization, etc., are analyzed critically)	Dialogic Communication • Engaging Self • Appreciating Difference Critical Communication • Critical Reflection • Alliance Building
Affective Positivity	The positive interactions, emotions, and overall experience associated with IGD	• Positive Interactions Across Difference • Positive Emotions in Interactions Across Difference
Cognitive Involvement	The analytical thinking and reflection associated with IGD course readings, in-class activities, activity debriefs, etc.	• Complexity of Thinking • Analytical Thinking About Society • Identity Engagement • Openness to Multiple Perspectives
Intended Outcomes		
Intergroup/Structural Understanding	An increasing awareness that inequality results, at least in part, from societal structures	• Structural Attribution for Gender Inequality • Structural Attribution for Racial/Ethnic Inequality
Intergroup Relationships/Empathy	Feeling what others feel (or reacting emotionally) as others share their experiences	• Intergroup Empathy
Intergroup Collaboration and Action	Committing oneself to action and social responsibility geared toward reducing inequality	• Post-college Involvement • Self-Directed Action • Other-Directed Action • Intergroup Collaboration

Note. Descriptions adapted from Gurin et al. (2013).

<center>**Dependent Variables**</center>

There were three dependent variables in this study: intergroup understanding, intergroup relationships, and intergroup collaboration and action. Each is explained below.

Intergroup (Structural) Understanding

According to Gurin, Nagda, & Zúñiga (2013), "the main focus for intergroup understanding in the critical dialogic framework is increasing awareness that inequality exists and that it results, at least in part, from societal structural arrangements" (p. 155). In this sense, intergroup understanding focuses on one's understanding of intergroup and structural dynamics in society (as opposed to understanding that is taking place across groups and between individuals). Students' understanding of this structural attribution for both racial/ethnic and gender inequality was measured at all three time points (pre-, post-, one year later) via two four-item factors.

In Gurin et al.'s SEM analyses, and in this study, the items associated with these four factors were averaged to serve as four individual indicators of intergroup/structural understanding. Using a Likert scale (1 = disagree strongly, 7 = agree strongly), the four-item "race/ethnicity" factor (pre-test α = .771, post-test α = .796) includes measures such as "what one can achieve in life is still limited by one's race or ethnicity" and "prejudice and discrimination in the educational system limit the success of people of color."[3] Similarly, the four-item "gender" factor (pre-test α = .728, post-test α = .756) includes measures such as "discrimination in the workplace still limits the success of many women" and "in the United States, there is still great gender inequality" (measures adapted from Gurin, Miller, & Gurin, 1980).

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[3] Though there is some disagreement among scholars regarding the use and reliability of Cronbach's alpha (Agbo, 2010; Cronbach & Shavelson, 2004; Sijtsma, 2009), some scholars have regarded alpha levels of 0.60 as the minimum indication of sufficient reliability (Loewenthal, 2001), while others suggests levels of 0.70 or 0.80 (Nunnally, 1978).

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Intergroup Relationships

To measure intergroup relationships, Gurin et al. (2013) used measures of "intergroup empathy," which refers to students being able to relate to others by "responding to the experiences of members of other social groups by feeling what they feel or reacting emotionally to their experiences" (p. 107). These kinds of feelings have been found to be associated with the reduction of bias and prejudice (Finlay & Stephan, 2000; Vescio, Sechrist, & Paolucci, 2003) and, therefore, critical to the development of relationships across groups.

In the MIGR data, "intergroup empathy" is an eight-item factor (pre-test α = .863, post-test α = .882) including measures such as "when people feel frustrated about racial-ethnic/gender stereotypes applied to their group, I feel some of their frustration too" and "when people feel proud of the accomplishments of someone of their racial-ethnic/gender group, I feel some of their pride as well." Each of these items use a Likert scale (1 = not at all like me, 7 = very much like me), were developed specifically for the MIGR study, and were included in the surveys at all three time points.

Intergroup Collaboration and Action

The third dependent variable is intergroup collaboration and action, which Gurin et al. (2013) describe as students "commit[ing] themselves to social responsibility and action specifically geared to reducing inequalities" (p. 115). To measure such dispositions at all three time points, four sets of measures were used. First, Nagda et al.'s (2004) measures of "action" used Likert scales to measure the confidence (1 = not at all confident, 7 = extremely confident; pre-test α = .713, post-test α = .775) and frequency (1 = never, 7 = very often; pre-test α = .704, post-test α = .755) of students' "self-directed" action (e.g., "make efforts to educate myself about other groups"). Second, the same Likert scales were used to measure the confidence (pre-test α

= .692, post-test α = .707) and frequency (pre-test α = .681, post-test α = .700) of students'

"other-directed" action (e.g., "challenge others on derogatory comments"). A third set of

measures were developed specifically for the MIGR and include the confidence (pre-test α

= .880, post-test α = .890) and frequency (pre-test α = .861, post-test α = .887) of specific types

of "intergroup collaboration" (e.g., "participate in a coalition of different groups to address some

social issues"). The fourth set of measures used was Gurin et al.'s (2002) measures of "post-

college involvement," which use Likert scales (1 = not at all important, 7 = extremely important;

pre-test α = .883, post-test α = .893) to assess the value students assign to various forms of post-

college collaboration and action (e.g., "influencing social policy," "working to correct social and

economic inequalities"). In Gurin et al.'s SEM analyses, and in this study, the items associated

with these four factors were averaged to serve as four individual indicators of intergroup

collaboration and action.

Independent Variables

Pedagogical Features

Three key components of IGD pedagogy are (a) the learning of new content and (b) the

structured interactions of students that are (c) guided by trained co-facilitators. As part of the

post-test (end of semester) survey, students were asked about the extent to which IGD content

and structured interactions contributed to their learning (Likert scale; 1 = not at all, 7 = very

much). The three-item "content" factor (Lopez et al., 1998; Nagda et al., 2004) included

"assigned readings," "journal or reflection papers," and "other written assignments" (post-test α

= .776). Gurin et al. (2013) define structured interactions as "the intentional creation of group

structures and activities to involve students from different backgrounds in active learning" (p.

47). Thus, the five-item factor for "structured interactions" (Nagda et al., 2004; Nagda & Zúñiga,

2003; post-test α = .786) referenced both specific interactions (e.g., "ground rules for discussion") and general characteristics of the course's group interactions (e.g., "[being] a small group of students," "[being] a diverse group of students"). The 12-item factor of "facilitation" (Nagda, 1999; post-test α = .955) utilized a Likert scale (1 = not at all effective, 7 = extremely effective) to assess how effective students felt the facilitators were, including items such as "handling conflict situations," "helping to clarify misunderstandings," and "creating an inclusive environment." In Gurin et al.'s SEM analyses, and in this study, the items associated with these three factors were averaged to serve as three individual indicators of IGD pedagogical features.

Communication Processes

As discussed in detail in Chapter II, IGD's pedagogical features are designed to engage students in specific kinds of communication processes identified by Nagda (2006): "appreciating difference," "engaging self," "critical reflection," and "alliance building." Using Nagda's (2006) original measures of these constructs, students were asked in the post-test survey about the extent to which these processes occurred among their respective groups throughout the semester (Likert scale; 1 = not at all, 7 = very much). The items associated with these four factors were averaged to serve as four individual indicators of communication processes, both in Gurin et al.'s SEM analyses and in this study.

The four-item factor for "appreciating difference" included items such as "appreciating experiences different from my own" and "hearing different points of view" (post-test α = .837). The five-item factor for "engaging self" included items like "being able to disagree" and "speaking openly without feeling judged" (post-test α = .836). The four-item factor for "critical reflection" included items such as "examining the sources of my biases and assumptions" and "making mistakes and reconsidering my opinions" (post-test α = .807). Finally, the seven-item

factor for "alliance building" included items like "working through disagreements and conflicts" and "talking about ways to take action on social issues" (post-test α = .915).

Psychological Processes

The communication processes included in Gurin and colleagues' (2013) framework foster both affective and cognitive psychological processes (Nagda, 2006). These processes, in turn, help students attain the three intended outcomes of IGD (intergroup understanding, relationships, and collaboration and action).

Affective Positivity. "Affective positivity" includes two factors, which were measured at the pre- and post-tests: "positive interactions across difference" (three items; pre-test α = .776, post-test α = .784) and "positive emotions in interactions across difference" (four items; pre-test α = .698, post-test α = .718). In Gurin and colleagues' (2013) SEM analyses and in this study, the items associated with these two factors were averaged to serve as two individual indicators of affective positivity. As intergroup interactions become/remain positive, the feelings associated with such interactions stand to be positive as well (Pettigrew & Tropp, 2011). To assess students' sense of their own interactions with individuals who are different from themselves, they were asked to indicate how frequently (Likert scale; 1 = not at all, 7 = very much) they "had meaningful and honest discussions outside of class about race and ethnic/gender relations," "shared our personal feelings and problems," and "had close friendships" since coming to college (Matlock, Wade-Golden, & Gurin, 2007). In terms of how students feel in such interactions, they were asked to rate (on a scale of 1-10) how "trusting," "excited," "open," and "engaged" they felt when interacting with people from racial/ethnic/gender groups that are different form their own (measures adapted from Stephan & Stephan, 1985).

Cognitive Involvement. In the MIGR study, "cognitive involvement" included four factors that were measured at the pre- and post-tests: "complexity of thinking" (five items; pre-test α = .793, post-test α = .818), "analytical thinking about society" (four items, pre-test α = .729, post-test α = .735), "identity involvement" (five items; pre-test α = .833, post-test α = .853)," and "openness to multiple perspectives" (five items; pre-test α = .737, post-test α = .760). In this study, however, I included only three of these factors as part of cognitive involvement, given my use of "openness to multiple perspectives" as proxy for students' epistemological development (as described in the following section). For each of the items included in the three remaining factors, students were asked to indicate how well each statement describes themselves using a Likert scale (1 = not at all like me; 7 = very much like me). In this study, the items associated with complexity of thinking, analytical thinking about society, and identity involvement were averaged to serve as three individual indicators of cognitive involvement..

"Complexity of thinking" and "analytical thinking about society" are based on the highly correlated relationship between "need for cognition" (i.e., one's tendency to pursue and enjoy effortful thought) (Cohen, Scotland, & Wolfe, 1955, p. 291) and "attributional complexity" (i.e., one's preference for complex explanations of phenomena; Fletcher, Danilovics, Fernandez, Peterson, & Reeder, 1986). In an IGD context, these dispositions lead students to a variety of behaviors (e.g., seeking out new information, trying to solve problems) that promote the attainment of IGD's intended outcomes. "Complexity of thinking" included items such as "I like tasks that require little thought once I've learned them" and "I prefer simple rather than complex explanations for people's behavior" (Cacioppo & Petty, 1982). "Analytical thinking about society" included items such as "I think a lot about the influence that society has on my

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behaviors" and "I am fascinated by the complexity of the social institutions that affect people's lives" (Fletcher, et al., 1986).

"Identity engagement" involves students reflecting upon their own identities and the role their identities play in shaping their worldview and convictions (Gurin & Markus 1989; Luhtanen & Crocker, 1992). This construct has been found to promote ally development in matters of race/ethnicity (Reason, Millar, & Scales, 2005) and gender (Kahn & Ferguson, 2009). Also, as students reflect upon how their day-to-day experiences are (unequally) affected by their identities and group memberships, students can feel "pushed towards [collective action] by an inner obligation to enact their (politicised) collective identity" (Stürmer & Simon, 2004, p. 93). This factor included measures such as "I have spent time trying to find out more about my racial-ethnic/gender identity group" and "I think a lot about how my life will be affected by my race/ethnicity/gender."

Epistemological Development

Though MIGR researchers did not include survey items designed specifically for the measurement of students' epistemological development, SEM is well-suited for secondary data analyses involving unmeasured constructs, assuming other suitable measures can be used to represent those constructs (Diemer et al., 2010). In this study, the five items comprising the "openness to multiple perspectives" factor (pre-test $\alpha = .737$, post-test $\alpha = .760$) serve as proxy measures for epistemological development. Though other items and factors in the MIGR data describe other aspects of cognition (e.g., complexity of thinking), openness to multiple perspectives assesses dispositions closely associated with epistemological development (see Table 2.4 for a synthesis of epistemological development models).

Adapted from Davis' (1983) perspective-taking scale, these five items included: "I strive to see issues from many points of view," "If I am sure about something, I don't waste too much time listening to other people's arguments," "I believe there are many sides to every issue and try to look at most of them," "I am willing to listen to the variety of views that can emerge in talking about social issues and problems," and "I sometimes find it difficult to see things from the 'other person's' point of view." Students indicated how well each statement describes themselves using a Likert scale (1 = not at all like me; 7 = very much like me). For this study, I averaged students' pre-IGD responses to these prompts to form a composite measure of students' incoming openness to multiple perspectives. I then used the group average on this composite measure (5.40/7.00, which was also the group median) to split the sample into two subsamples (at/below the group mean [n = 377], above the group mean [n = 343]) for my *t*-test and SEM analyses (described hereafter).

Though each of these five measures is useful in describing nuances of students' openness to multiple perspectives, identifying them as a factor reveals their collective strength in measuring this aspect of students' development. This also confirms that averaging students' pre-IGD responses to these five items to create a proxy measure of epistemological development is preferable to using a single survey item alone. However, it is nonetheless useful to consider each of these five survey items individually to determine the ways in which they align with epistemological development theory and capture students' epistemological dispositions.

One approach to identifying connections between the openness to multiple perspectives items and epistemological development is to identify similarities between these items and items used in epistemological development instruments. Such instruments include the Reasoning about Current Issues Test (King & Kitchener, 1994; Wood, Kitchener, & Jensen, 2002); the Discipline-

Focused Epistemological Beliefs Questionnaire (Hofer, 2000); Kuhn, Cheney, and Weinstock's

(2000) instrument of epistemological development; and the Epistemological Beliefs Inventory

(Schraw, Bendixen, & Dunkle, 2002), which is an abbreviated and refined version of

Schommer's (1990) Epistemological Questionnaire.[4] As an example, Table 3.3 compares the

openness to multiple perspectives items with similar items included in Schraw, Bendixen, &

Dunkle's (2002) Epistemological Beliefs Inventory, revealing similarities between them.

Table 3.3. Comparison of Openness to Multiple Perspectives Items and Epistemological Beliefs
Inventory Items

MIGR Survey Item	Similar Epistemological Beliefs Inventory Item(s)
I strive to see issues from many points of view.	• The more you know about a topic, the more there is to know. • If a person tries too hard to understand a problem, they will most likely end up being confused.
If I am sure about something, I don't waste too much time listening to other people's arguments.	• If two people are arguing about something, at least one of them must be wrong. • What is true today will be true tomorrow.
I believe there are many sides to every issue and try to look at most of them.	• The more you know about a topic, the more there is to know. • If a person tries too hard to understand a problem, they will most likely end up being confused.
I am willing to listen to the variety of views that can emerge in talking about social issues and problems.	• Absolute moral truth does not exist. • Working on a problem with no quick solution is a waste of time.
I sometimes find it difficult to see things from the other person's point of view.	• If two people are arguing about something, at least one of them must be wrong.

As an additional approach to identifying connections between the five measures of

openness to the multiple perspectives and epistemological development, Table 3.4 presents

conceptual relationships between the openness to multiple perspectives survey items and core

assumptions of knowledge and knowing associated with epistemological development (discussed

in detail in Chapter II). These assumptions make up the first three columns in Table 3.4 and

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[4] These five instruments vary in their conceptual foci and respective strengths and limitations (see Ku, 2015 and Shraw, 2013 for discussions). My review of the literature did not reveal more recent analyses or modifications of these (or other) instruments of epistemological development.

capture the spectrum associated with the earliest and most advanced levels of epistemological

development (e.g., knowledge is dualistic vs. contextual, respectively). The specific phrase that

is most related to the assumptions in each column is indicated. For example, the phrase "many

points of view" in the first item in Table 3.4 suggests that students who score high on this item

assume that knowledge is contextual. The phrase "I strive" speaks to students seeing themselves

as constructors of knowledge, as opposed to deferring to authority figures as sources of

knowledge. "See issues from many points of view" speaks to students' willingness to consider

different perspectives and allow that experience to reshape what they know.

Table 3.4. Conceptual Alignment Between Openness to Multiple Perspective Measures and Epistemological Development

MIGR Survey Item	Disposition/Assumption of Epistemological Development and Corresponding MIGR Survey Item Phrase			
	Knowledge is dualistic vs. contextual	Knowledge is fixed vs. evolving	Knowledge is gained from others vs. self-constructed	Willingness to consider different perspectives and positions
I strive to see issues from many points of view.	many points of view		I strive to see	see issues from many points of view
If I am sure about something, I don't waste too much time listening to other people's arguments.	sure about something + waste time listening	sure about something + waste time listening		listening to other people's arguments
I believe there are many sides to every issue and try to look at most of them.	many sides to every issue		try to look	look at most of them
I am willing to listen to the variety of views that can emerge in talking about social issues and problems.	variety of views	variety of views that can emerge	I am willing to listen	listen to the variety of views
I sometimes find it difficult to see things from the other person's point of view.	find it difficult to see	find it difficult to see		see things from the other person's point of view

Note. The phrase listed in each cell is the phrase in the MIGR item most related to the assumption in its respective column.

Thus, as the five items for openness to multiple perspectives are considered collectively as a factor or composite measure, or individually as items and phrases, their ability to capture students' epistemological dispositions is discernable. All 720 students responded to these survey items prior to their IGD experience, providing additional support for combining these measures to form a composite score of incoming openness to multiple perspectives for my analyses. I discuss the implications of missing data for other measures included in my analyses in the following section.

Missing Data

Although there were fairly high response rates for the post-test (95%) and one-year follow-up surveys (82%), missing data introduces the risk of drawing problematic conclusions based on sub-samples (e.g., students who participated in IGD compared to those who participated in IGD *and* completed all three surveys). Also, students who did fill out all three surveys may not have responded to all survey items for a variety of reasons, which leads to additional missing data. In any study, there is always the possibility that these different kinds of missing data are somehow systematic, suggesting that meaningful differences exist between the students who respond and those who do not, which significantly limits the generalizability of the study's findings.

In determining how to address the limitations associated with missing data, it is helpful to first have some understanding of what may have led to missing data. For example, if the missing data is due to some phenomenon for which no data were collected, the data is missing not at random (MNAR). When the correlate(s) for missing data are unknown, and there are no data for those correlates (through which trends in missing data could be identified), researchers are limited in their ability to account for missing data and move forward with their analyses.

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On the other end of the spectrum, when missing data are not due to a known phenomenon, the data is missing completely at random (MCAR). In such a case, missing data would not hinder researchers' ability to make claims about the sample (and, by extension, the population to which the sample applies) because there are not meaningful correlates among the missing data.

MNAR is something researchers strive diligently to avoid; however, whether they can construct a dataset in which missing data are truly MCAR is questionable (Kline, 2011). However, an understanding of the extremes that are MNAR and MCAR illuminate a middle ground—missing at random (MAR)—in which missing data are associated only with observed data. Though there is no perfect approach to accounting for missing data, if the missing data are associated with observed data, missing data can be accounted for using this observed data.

For the SEM analyses in this study, I used full-information maximum likelihood (FIML) estimation and model auxiliary variables to account for missing data.[5] FIML allows for all available data to be included in analyses. Auxiliary variables are variables that are not included in the model of interest, but account for unobserved causes of missingness by modeling observed data that are assumed to be correlated with missingness. As a simple example, researchers might ask students in a survey how likely they are to fill out a follow-up survey a year later. Some students would indicate that they are very unlikely, others would report that they are very likely, and others will be more uncertain about their likelihood. These responses would likely be associated with missing responses a year later, and accounting for these responses in a model increases the amount of information available to compute results and substantiates researchers' claim that missing data is associated with observed data.

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[5] Multiple imputation was not a viable approach to accounting for missing data in this study, given that multiple group analyses cannot be conducted in Mplus using multiply imputed data.

In this study, I selected auxiliary variables that indicate levels of experience with and enthusiasm towards social justice work and social justice education. It is reasonable to assume that those with a greater social justice orientation would be more inclined to complete the surveys immediately after the IGD and one year later. Similarly, among those with less of a social justice orientation, there would likely be less desire to take the time to complete a lengthy survey related to such matters. All of the auxiliary variables I used are pre-IGD data and, therefore, have high response rates themselves (less than 1% missing data in all cases).

Four auxiliary variables are associated with students' engagement in and enthusiasm towards social justice and related activities ("anticipated post-college involvement in redressing inequalities," "confidence in/frequency of collaborative action towards social justice," "involvement in social justice activities," and "political orientation"). Three other variables speak to students' feelings and dispositions toward an activity such as IGD ("positive emotions in intergroup settings," "positive attitude toward diversity in education," and "motivation to bridge differences").[6]

<div align="center">**Analyses**</div>

t-tests

My first research sub-question focused on the relationship between students' openness to multiple perspectives and their levels of/attitudes towards IGD's pedagogy, processes, and outcomes. Gurin et al.'s (2013) critical-dialogic theoretical framework of intergroup dialogue (see Figure 1.1) includes seven latent constructs associated with IGD pedagogy, communication

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[6] After conducting my analyses using auxiliary variables, I conducted them again without using auxiliary variables (i.e., without accounting for missing data). The results of these subsequent analyses were very similar to those I present in this study (see Chapter IV). Statistically significant relationships remained significant, as did relationships that were not significant. Corresponding parameter coefficients and factor loadings were nearly identical. Such similarities indicate that the potential for missing data to produce erroneous results in this study is minimal.

and psychological processes, and outcomes (see Table 3.2 for a summary of these constructs).

The authors' SEM analyses of this framework (Gurin et al., 2013) include three additional long-term outcomes as well. For those SEM analyses, and for my SEM analyses in this study (described in the following section), each of these 10 latent variables consists of survey responses or composite scores that serve as indicators of that latent construct. Furthermore, each of these indicators (67 total) represent a phenomenon that IGD is intended to produce or increase (e.g., positive assessments of IGD curriculum and facilitators, cognitive and emotional experiences, greater empathy and relationships with others).

To answer my first research sub-question given at the beginning of this chapter, I conducted Welch's t-tests in SPSS to analyze the differences in means on these 67 measures between students above ($n = 343$) and at/below ($n = 377$) the group mean (5.40/7.00, which was also the group median) for openness to multiple perspectives (a proxy measure for students' epistemological development). Compared to the more conventional Student's t-test, Welch's t-test is better suited to test for statistically significant differences in means between two unequal samples.

Structural Equation Modeling

To answer my second research sub-question, I conducted SEM analyses using Mplus. SEM is a method by which researchers can test multiple regression equations concurrently in order to analyze complex hypothesized relationships among manifest and/or latent variables, which are generally organized as part of a broader theoretical framework. Depending on the data used in analysis, a single structural model can analyze multiple types of relationships, including direct effects (the effect of one variable on another), indirect or mediated effects (the effect of one variable on another variable, via one or more other variables), moderated effects (how one

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variable effects the relationship between two other variables), among others (Little, Card,

Bovaird, Preacher, & Crandall, 2007). Critical to the strength of such robust analyses is having a

large sample size, which was provided by the MIGR dataset.[7]

Path Analysis. One prominent form of SEM, path analysis, which I used in this study,

consists of latent constructs that are organized into a theoretically informed, temporal sequence.

The structural equation model presented by Gurin et al. (2013; see Figure 3.2) in conjunction

with the current iteration of the critical-dialogic theoretical framework of intergroup dialogue

(see Figure 1.1) is an example of path analysis.
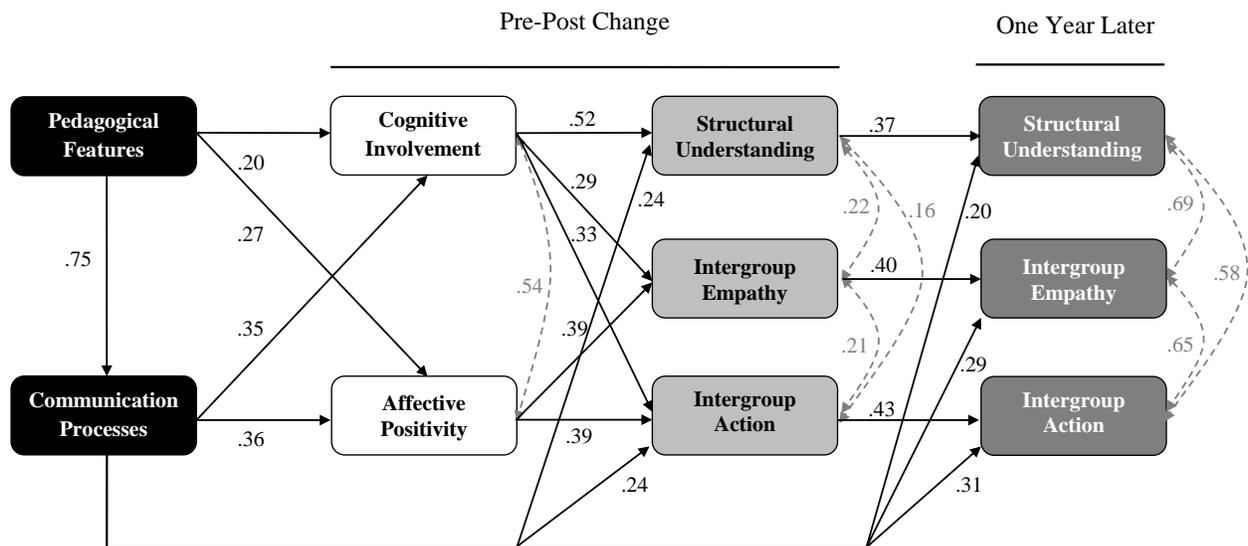
Figure 3.2 Structural equation model test of a process model for intergroup dialogue.
Note: RMSEA < .05, CFI = .90, TLI = .89, χ^2/df = 2.75. Rounded rectangles represent latent
variables containing multiple indicators. Dashed lines represent correlated error terms. Estimates
are standardized. Only significant relationships are shown.
Source: Gurin, P., Nagda, B. R. A., & Zúñiga, X. (2013). *Dialogue across difference: Practice,
theory, and research on intergroup dialogue*. New York, NY: Russell Sage Foundation, p. 177.

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[7] To conduct SEM analyses, a variety of conditions and assumptions must be met. Additional
assumptions and conditions must be met to make causal claims based on SEM results. Guided by
Kline's (2012) in-depth description of these assumptions and conditions, the Appendix details
the extent to which these assumptions and conditions are met in this study. Though I do not make
causal claims in this study, I discuss the assumptions and conditions associated with causality in
the Appendix for reference.

Path analysis is especially useful in analyzing mediating and moderating relationships. As an example of mediation, Figure 3.2 indicates an indirect effect of IGD's pedagogical features on participants' cognitive involvement via communication processes. This indirect effect can be calculated by multiplying the standardized coefficients associated with pedagogy and communication processes (.75) and communication processes and cognitive involvement (.35), equaling 0.26. This means that participants who differ by one standard deviation on the pedagogy scale are estimated to differ by 0.26 standard deviations on the cognitive involvement scale, reflecting how differences in the pedagogy scale are associated with differences in the communication processes scale, which, in turn, are associated with differences in the cognitive involvement scale. If this relationship were instead one of moderation, participants who differ by one standard deviation on the pedagogy scale—given a particular, shared value on the communication processes scale—would be estimated to differ by a certain (standard deviation) amount in the cognitive involvement scale, thus showing how different values of communication processes differently affect the relationship between pedagogy and cognitive involvement (Hayes & Preacher, 2013).

In addition to analyzing relationships among variables, SEM also helps researchers assess the extent to which the data collected "fit" the proposed theoretical framework. Note that this is different than determining the extent to which a given theoretical framework is "true" or "right." Though there is no single, mutually-agreed-upon test of a model's overall fit to the data, there exists a set of generally-accepted fit indices that can be used collectively to ascertain a model's overall fit (Kline, 2011). These indices include (but are not limited to) the Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the Standardized Root Mean Square Residual (SRMR). Each of these fit indices represent a

different approach to analyzing various aspects of a model (e.g., degrees of freedom, chi-square value, sample size, correlations) and, in the cases of CFI and TLI, comparing the hypothesized set of relationships in the model with a baseline or "null" model of no relationships among variables. Each fit index possesses its own cut-off value signifying good model fit (presented hereafter in Table 3.7), though scholars have acknowledged the difficulties associated with establishing rigid cut-off values that will apply consistently well across different models (Barrett, 2007; Hayduk, Cummings, Boadu, Pazderka-Robinson, & Boulianne, 2007; Hu & Bentler, 1999; Kenny, Kaniskan, & McCoach, 2014; Kline, 2011).

SEM is often used to analyze relationships among both manifest and/or latent variables. Unlike manifest (observed) variables, latent variables cannot be measured directly, rather, they are inferred based on the relationships among a group of observed variables (or "indicators") that are assumed to collectively represent the latent construct. Said another way, it is assumed that the observed relationships among a given set of observed variables is the result of a given latent construct that is unmeasurable. Gurin et al.'s (2013) SEM analyses (see Figure 3.2), for example, includes latent variables only, each of which is assumed to explain the observed values and relationships of the measures (described previously in this chapter) they comprise. Though each indicator variable included in a latent variable will possess measurement error, one of the methodological strengths of SEM is its ability to account for such error as part of the construction of latent variables. Accounting for measurement error in this way leads to final estimates that are more accurate than analyses reliant on observed variables alone (Kline, 2011).

Thus, critical to the utility of SEM is the ability to first confirm that a collection of manifest variables is empirically related and collectively account for a given latent construct (i.e. construct validity). Confirmatory factor analysis (CFA) is a process by which such relationships

are analyzed and, in identifying the relationships that emerge, researchers can draw informed

conclusions as to the latent construct that is driving those relationships. Ideally, as with the

relationships between latent variables that are part of the broader structural model, conclusions

related to relationships within latent variables are informed by theory and previous research.

As noted previously, each latent construct in the SEM analyses of Gurin and colleagues'

(2013) model is made up multiple sub-constructs, each of which is made up of multiple survey

item responses that are averaged to serve as individual indicators of the broader latent construct

to which they belong. The only exception to this approach is intergroup group empathy, which

consists of eight survey items for both pre-post change and one year later. Factor loadings are

presented in Table 3.5.

Table 3.5. Factor Loadings for Latent Constructs in the Critical-Dialogic Theoretical Framework
of Intergroup Dialogue

	Standardized Estimate	*SE*
Pedagogical Features		
Facilitator effectiveness	0.66	0.04
Structured interactions	0.80	0.05
Content	0.57	0.04
Communication Processes		
Alliance building	0.84	0.02
Appreciating difference	0.79	0.02
Engaging self	0.74	0.02
Critical reflection	0.89	0.01
Cognitive Involvement		
Analytical thinking about society	0.58	0.04
Complexity of thinking	0.46	0.07
Identity involvement	0.42	0.05
Openness to multiple perspectives	0.67	0.05
Affective Positivity		
Frequency of positive interactions across difference	0.47	0.05
Positive emotions in interactions across difference	0.47	0.05

Intergroup Understanding

Structural attribution for gender inequality	0.66	0.05
Structural attribution for racial-ethnic inequality	0.72	0.04

Intergroup Empathy

Feel others' sense of group pride	0.56	0.04
Feel others' sense of group frustration	0.60	0.04
Empathize with others regretting their biases	0.55	0.04
Feel others' sense of group anger	0.62	0.04
Feel hopeful hearing about others' allyhood	0.58	0.03
Feel despair hearing about societal inequalities	0.57	0.04
Feel hopeful hearing about others overcoming disadvantages	0.63	0.04
Feel anger hearing others not acknowledge privilege	0.45	0.04

Intergroup Action

Post-college involvement	0.64	0.05
Other-directed action	0.70	0.03
Intergroup collaboration	0.52	0.04
Self-directed action	0.79	0.03

Intergroup Understanding (One Year Later)

Structural attribution for gender inequality	0.85	0.03
Structural attribution for racial-ethnic inequality	0.81	0.03

Intergroup Empathy (One Year Later)

Feel others' sense of group pride	0.71	0.03
Feel others' sense of group frustration	0.83	0.02
Empathize with others regretting their biases	0.72	0.03
Feel others' sense of group anger	0.82	0.02
Feel hopeful hearing about others' allyhood	0.79	0.02
Feel despair hearing about societal inequalities	0.68	0.04
Feel hopeful hearing about others overcoming disadvantages	0.78	0.02
Feel anger hearing others not acknowledge privilege	0.62	0.03

Intergroup Action (One Year Later)

Intergroup collaboration	0.64	0.03
Self-directed action (confidence & frequency average)	0.87	0.02
Other-directed action (confidence & frequency average)	0.81	0.02
Post-college involvement	0.71	0.03

Multiple Group Analysis. Whereas path analysis is useful in identifying or

substantiating a theoretical framework that explains complex relationships, multiple group

analysis can be used to assess how a theoretical framework operates differently for different

groups within a sample, assuming the sample size for each subgroup is sufficiently large. In multiple group analysis, the structural model is analyzed for each group separately, allowing for comparisons of the coefficients that describe the latent variable relationships for each group (i.e., the basis of my second research sub-question).

In addition to having never been used in previous IGD research, multiple group analysis has multiple advantages over other moderation analyses (e.g., latent variable interactions) in which the sample is analyzed as a whole (e.g., less computationally intense, less processing time in analysis). Given these advantages, I was able to use multiple group analysis to analyze not only the possible moderating role of openness to multiple perspectives in the relationship between IGD's pedagogical features and communication processes (see Figure 2.9), but all other relationships in the critical-dialogic theoretical framework of intergroup dialogue as well. Specifically, I analyze how the relationships among pedagogical features, communication and psychological processes, and intended outcomes vary for students above ($n = 343$) and at/below ($n = 377$) the group mean for openness to multiple perspectives (5.40/7.00, which was also the group median).[8]

In order to compare group differences in the relationships between latent constructs in Gurin and colleague's (2013) model, I had to establish measurement invariance between students with below and above average openness to multiple perspectives. Specifically, group differences

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[8] In the literature, what is considered the minimum sample size for SEM ranges from 200 (Brecker, 1990; Shah & Goldstein, 2006) to having at least 10 cases for each parameter in the model (Jackson, 2003; Kline, 2011) to a more nuanced calculation provided by Westland (2010). Westland's approach depends on the desired statistical power level (0.80), number of latent (10) and observed variables (40) in the model, significant p level (.10), and the strength of relationship between variables. Using a corresponding online calculator (Soper, 2017), I confirmed that sample sizes of 377 and 343 are sufficient in detecting relationships of at least 0.22 and 0.21, respectively (i.e., the stronger the relationship, the less data needed to detect it). As presented hereafter in Chapter IV, only 2 of the 23 statistically significant relationships reported as a result of my multiple group analyses are below these levels (0.21, 0.16).

in the coefficients describing the relationships between constructs are only reliable if, across groups, the factors, factor loadings, and intercepts are invariant (configural invariance, metric invariance, and scalar invariance, respectively). If identical factors are found across groups (configural invariance), but the factor loadings are different, then the relationship between survey items and their respective latent constructs is different across groups, hindering one's ability to make group comparisons based on the resulting models. If the factor loadings are, in fact, the same across groups (metric invariance), but the scaling of survey items is different across groups, there is a response bias associated with group membership. That is, two respondents with the *same* amount/level of a given latent variable provide *different* responses to corresponding survey items, given their different group memberships. If only a few factors, factor loadings, and/or intercepts are noninvariant (i.e., *partial* measurement invariance), group comparisons can still be made, though this invariance should be acknowledged by researchers and readers in the interpretation of the results.

As a basic test of *configural* invariance, I analyzed the model separately for each group. All 10 latent factors in Gurin and colleagues' (2013) model were identified for both groups, and all factor loadings were statistically significant.

I then used a module in Mplus that tests for *metric* and *scalar* invariance, thus automating a set of complex statistical analyses that I summarize here. To determine whether differences in factor loadings between groups are sufficiently invariant (metric invariance), factor loadings are constrained to be equal across groups, and this constrained model is compared to the unconstrained model (in which loadings are free to vary) using a chi-squared difference test. If the difference is statistically significant, the null hypothesis of metric invariance is rejected.

A similar process is used to test for scalar invariance. A model in which both factor loadings and intercepts are constrained to be equal is compared to a model in which only factor loadings are constrained to be equal using a chi-squared test. If the difference is statistically significant, the null hypothesis of scalar invariance is rejected.

Initially, I observed scalar invariance between the below and above average groups ($p = 0.32$), but not metric invariance ($p = 0.05$). Though tests of measurement invariance can more easily produce statistically significant results in large samples (such as the MIGR sample) that are not *substantively* influential on results (Milfont & Fischer, 2010), I sought to establish metric invariance nonetheless, given the importance of invariant factor loadings when comparing relationships among latent constructs across groups. To do this, I pursued modifications to the model that were both statistically and substantively justified (Kline, 2012).

From a statistical standpoint, as part of measurement invariance testing, Mplus reports model modifications that can increase invariance. This can include changing the factor to which a given measure is assigned or correlating the error terms associated with two measures. Given that I am building on the work of Gurin et al. (2013), I did not alter the factor structures in the model. As for correlating error terms, Mplus suggested many correlations of error terms for measures that were not substantively related, so I did not make such adaptations.

However, I did correlate the error terms of some survey items if they were suggested by Mplus *and* substantively related. This included (a) related pairs of measures belonging to the same factor and (b) the outcome measures over time (i.e., pre-post change and one year later). SEM assumes that error terms are uncorrelated, though correlating error terms between related measures within factors and across time can be appropriate (Kline, 2012; Landis, Edwards, & Cortina, 2009). Nevertheless, I was conservative in making such adaptations in order to avoid

over-fitting the model (Hermida, 2015). Specifically, of the thousands of possible correlations of error terms that I could have modeled, only 100 represented intuitive correlations among measures within factors or across time. Of those 100 correlations, I modeled 21 (14 across time, 7 within the same factor). After these modifications, I failed to reject the null hypothesis that measurement invariance exists between these two groups. Table 3.6 presents the results of measurement invariance testing both before and after these modifications.

Table 3.6: Results of Measurement Invariance Testing for Original and Adapted Models

Comparisons	Difference in Chi-Square	Difference in Degrees of Freedom	p
Original Model			
Metric to Configural	44.26	30	0.05
Scalar to Metric	32.99	30	0.32
Adapted Model			
Metric to Configural	36.86	30	0.18
Scalar to Metric	37.20	30	0.17

Note. p values of 0.05 or less indicate measurement noninvariance.

Table 3.6 also indicates that the chi-square difference for the scalar to metric comparison increased slightly from 32.99 to 37.20 as a result of my modifications (resulting in a lower *p* value as well). Though scalar invariance is a step in the invariance testing process, it is worth noting that scalar invariance is mostly critical in the comparison of latent means (Byrne, 2012), which is beyond the scope of this study. However, having invariant factor loadings (metric invariance) is ideal in the comparisons of pathway coefficients, which is the focus on my second research sub-question. Table 3.7 displays the factor loadings for students with below and above average openness to multiple perspectives, along with the loadings for the entire sample as reference. Each of the factor loadings for all 10 latent constructs for all 3 groups is greater than

0.30, which is generally considered the minimum acceptable value (Walkey & Welch, 2010),

and only one loading across all three groups is lower than 0.40.

Table 3.7. Factor Loadings for Latent Constructs in the Critical-Dialogic Theoretical Framework of Intergroup Dialogue for all Students and Students with Below Average and Above Average Openness to Multiple Perspectives

	Standardized Estimate			SE		
	All	Below	Above	All	Below	Above
Pedagogical Features						
Facilitator effectiveness	0.66	0.65	0.67	0.04	0.04	0.06
Structured interactions	0.80	0.77	0.85	0.05	0.05	0.06
Content	0.57	0.54	0.60	0.04	0.04	0.04
Communication Processes						
Alliance building	0.84	0.85	0.82	0.02	0.02	0.02
Appreciating difference	0.79	0.77	0.80	0.02	0.03	0.02
Engaging self	0.74	0.73	0.71	0.02	0.03	0.03
Critical reflection	0.89	0.90	0.87	0.01	0.02	0.02
Cognitive Involvement						
Analytical thinking about society	0.58	0.45	0.58	0.04	0.07	0.09
Complexity of thinking	0.46	0.36	0.41	0.07	0.05	0.06
Identity involvement	0.42	0.44	0.47	0.05	0.06	0.06
Openness to multiple perspectives	0.67	-	-	0.05	-	-
Affective Positivity						
Frequency of positive interactions across difference	0.47	0.46	0.53	0.05	0.05	0.06
Positive emotions in interactions across difference	0.47	0.43	0.47	0.05	0.07	0.06
Intergroup Understanding						
Structural attribution for gender inequality	0.66	0.68	0.65	0.05	0.05	0.06
Structural attribution for racial-ethnic inequality	0.72	0.78	0.65	0.04	0.05	0.05
Intergroup Empathy						
Feel others' sense of group pride	0.56	0.56	0.56	0.04	0.04	0.05
Feel others' sense of group frustration	0.60	0.59	0.59	0.04	0.05	0.05
Empathize with others regretting their biases	0.55	0.58	0.51	0.04	0.04	0.04
Feel others' sense of group anger	0.62	0.61	0.60	0.04	0.04	0.04
Feel hopeful hearing about others' allyhood	0.58	0.54	0.62	0.03	0.04	0.04
Feel despair hearing about societal inequalities	0.57	0.56	0.58	0.04	0.04	0.05
Feel hopeful hearing about others overcoming disadvantages	0.63	0.63	0.62	0.04	0.04	0.05
Feel anger hearing others not acknowledge privilege	0.45	0.44	0.43	0.04	0.04	0.05
Intergroup Action						
Post-college involvement	0.64	0.63	0.63	0.05	0.06	0.06
Other-directed action (confidence & frequency average)	0.70	0.72	0.68	0.03	0.03	0.04
Intergroup collaboration	0.52	0.52	0.51	0.04	0.04	0.04

Self-directed action (confidence & frequency average)	0.79	0.76	0.78	0.03	0.04	0.03
Intergroup Understanding (One Year Later)						
Structural attribution for gender inequality	0.85	0.85	0.84	0.03	0.03	0.03
Structural attribution for racial-ethnic inequality	0.81	0.83	0.78	0.03	0.03	0.04
Intergroup Empathy (One Year Later)						
Feel others' sense of group pride	0.71	0.70	0.64	0.03	0.03	0.04
Feel others' sense of group frustration	0.83	0.83	0.77	0.02	0.02	0.03
Empathize with others regretting their biases	0.72	0.73	0.68	0.03	0.03	0.04
Feel others' sense of group anger	0.82	0.82	0.81	0.02	0.03	0.03
Feel hopeful hearing about others' allyhood	0.79	0.79	0.78	0.02	0.03	0.03
Feel despair hearing about societal inequalities	0.68	0.71	0.63	0.04	0.04	0.05
Feel hopeful hearing about others overcoming disadvantages	0.78	0.76	0.76	0.02	0.03	0.03
Feel anger hearing others not acknowledge privilege	0.62	0.62	0.60	0.03	0.03	0.04
Intergroup Action (One Year Later)						
Intergroup collaboration	0.64	0.62	0.59	0.03	0.03	0.04
Self-directed action (confidence & frequency average)	0.87	0.85	0.86	0.02	0.02	0.02
Other-directed action (confidence & frequency average)	0.81	0.81	0.78	0.02	0.03	0.03
Post-college involvement	0.71	0.69	0.67	0.03	0.03	0.04

Another important consideration of the multiple group analyses in this study is the overall model fit for: (a) the configural, metric, and scalar *measurement* models (describing the relationships between latent constructs and their measures) and (b) the *structural* models for students with below and above average openness to multiple perspectives, which describe the relationships among latent variables for each group. As discussed, given disagreement in the literature regarding appropriate cut-off values for fit indices (and in what conditions cut-off values apply), I confirmed that the values for each model were at least near prescribed cut-off values and that no drastic differences existed among the measurement models (see Table 3.8) and structural models (see Table 3.9). I was also most interested in each model's RMSEA value, given that RMSEA is the index that has received the most support in the literature (Byrne, 2012; Hu & Bentler, 1999; MacCallum & Austin, 2000). Though the CFI and TLI values only approach their respective cut-off values for the measurement and structural models, the RMSEA and SRMR cut-offs are met in all cases. Regarding the structural models, the CFI and TLI values

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may indicate that, when compared to students with below average openness, there is slightly less fit between Gurin and colleagues' (2013) model and the data collected from students with above average openness.

Table 3.8. Model fit Indices for Configural, Metric, and Scalar Models

Fit Index	Cut-off	Configural	Metric	Scalar
RMSEA	≤ .05	.04	.04	.04
CFI	≥ .95	.92	.92	.92
TLI	≥ .95	.91	.91	.91
SRMR	< .08	.05	.06	.06

Table 3.9. Model fit Indices for all Students and Students with Below Average and Above Average Openness to Multiple Perspectives

Fit Index	Cut-off	All Students ($n = 720$)	Below Average ($n = 377$)	Above Average ($n = 343$)
RMSEA	≤ .05	.03	.04	.04
CFI	≥ .95	.94	.94	.90
TLI	≥ .95	.94	.93	.89
SRMR	< .08	.05	.06	.07

Establishing measurement invariance and confirming good model fit for students with below and above average openness to multiple perspectives enabled me to conduct my multiple group analyses. Collectively, the *t*-test and multiple group analyses described in this section illuminated relationships between students' openness/epistemology and the pedagogy, processes, and outcomes of IGD (described hereafter in Chapter IV). There are, however, limitations associated with these analyses, as well as the MIGR research design and data I used in this study. I discuss these limitations in the following section.

Limitations

Analyses

In completing the methodological steps described in this chapter, a few analytical

limitations emerged. First, though p values of 0.18 and 0.17 (see Table 3.6) indicate

measurement invariance, these values are low, suggesting that some amount of noninvariance

may exist. As noted, this may not indicate *substantively* significant noninvariance, given that

noninvariance is more easily detected in large samples like the MIGR (Milfont & Fischer, 2010),

but this possible limitation is worth noting. Second, to establish metric invariance, I modeled

correlations among error terms that were not modeled in Gurin and colleagues (2013) original

SEM model. These modifications are minor and do not create substantively meaningful

differences between the original model and the model upon which my group analyses were based,

but they should be acknowledged.

Data

There are a few limitations associated with the MIGR data I used in this study. The

MIGR involved race/ethnicity and gender dialogues only, so the generalizability of my results to

other dialogue topics (e.g., religion, SES, sexual orientation) is limited. Only two of the nine

institutions included in the project (Occidental College and Syracuse University) are not large,

public research universities. Therefore, generalizability to other institution types (e.g., liberal arts

colleges, community colleges, regional public universities) is limited. In addition, the facilitators

across the nine institutions consisted of faculty, professional staff, graduate students, and peer

undergraduate facilitators. Such variance in status and professional experience stands to

influence IGD processes and outcomes, given the importance of the rather refined facilitation

approach associated with IGD (Maxwell, Nagda, & Thompson, 2011). Finally, the MIGR

surveys did not include any survey items designed to measure epistemological development specifically. Because of this, I selected a set of survey responses that capture dispositions closely associated with epistemological development (openness to multiple perspectives) to function as proxy variables.

Research Design

Though the MIGR research design resolved many of the issues associated with previous IGD research, some limitations remain. The IGD participants in this study self-selected into the IGD experience by submitting an application, so the results of this study speak only to IGD processes and outcomes associated with students who demonstrate an interest in IGD. Therefore, the results of this study are of limited use when thinking about IGDs that are required of students because such groups would consist of students who enrolled willingly and others who did not, though it should be noted that this particular approach to dialogue is generally an opt-in experience only (Gurin et al., 2013).

The congruence between the temporal sequence of the IGD theoretical framework and the collection of the data associated with each component in the framework should also be discussed, given the SEM assumption that presumed causes occur before presumed effects (Kline, 2012). Though the framework (and path analysis more broadly) does not make causal claims, it does assume directional relationships among variables that collectively describe discrete phenomena that occur in a temporal sequence. That is, IGD pedagogy fosters particular communication processes, which, in turn, foster cognitive and affective processes and, collectively, these three processes increase intergroup understanding, relationships, and collaboration and action. However, in the structural models analyzed as part of this study, these processes can take place simultaneously. It is difficult to assume that only one process is taking

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place at a time, and it is virtually impossible to assume that a given process has "stopped" and another construct has "started."

Furthermore, given the need for students to provide assessments of the IGD pedagogy and their group's communication processes, and given that students are unable to provide such assessments prior to their IGD experience, data for these first two components in the theoretical framework were collected at the post-test only. The cognitive and affective data, along with the proxy measures of epistemological development, were collected at the pre- and post-tests in order to analyze change over the semester, as were the data for intergroup understanding, relationships, and collaboration and action. This is noteworthy, given that the post-test pedagogy and communication processes data come first in the structural path and, therefore, are assumed to "lead to" cognitive and affective phenomena that were captured, in part, via students' pre-tests. However, it should also be noted that students' post-test assessment of IGD pedagogy and their group's communication processes required students to assess phenomena that had taken place over the previous weeks and months, as opposed to a distinct phenomenon that was taking place at the time they completed the post-test survey; this makes this temporal inconsistency a more technical than substantive limitation (for further discussion regarding the extent to which this study fulfills the conditions and assumptions associated with SEM, see the Appendix).

Similarly, as opposed to variables that are fixed and do not change over time, the variables in this study can be fluid, even over the short period of a semester. This raises the question as to how researchers can discern and analyze this fluidity. Though students submitted responses related to an entire semester of IGD pedagogy and group communication processes at only one time point, measuring all other constructs in the framework at three time points (pre-IGD, post-IGD, and one year later) begins to capture the fluidity of these constructs over time.

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It is important to be cognizant of the limitations associated with collecting data related to complex, abstract, and fluid phenomena. This cognizance is likewise important when analyzing such data and discerning implications. However, one must also determine if these limitations are significant enough to prevent analysis and/or produce erroneous results. In addition to what I have already discussed related to these potential concerns, the strength of the original structural model (see fit indices reported in Figure 3.2) upon which the SEM analyses in this study were based provides additional evidence that the data collected are not inhibited by matters of fluidity or temporality in a meaningful way.

Summary

To analyze the role of students' epistemological development in IGD, I used quantitative data collected as part of the MIGR study to conduct *t*-test and SEM analyses. The MIGR dataset was developed from a large, multi-institutional study and is the only dataset that includes measures related to each construct included in Gurin et al.'s (2013) critical-dialogic theoretical framework of intergroup dialogue (see Tables 3.2 and 3.7). Though these researchers did not include measures designed specifically to assess students' epistemological development, the MIGR dataset does include suitable proxy measures for students' epistemological development (the openness to multiple perspectives composite score).

To answer my first research sub-question related to students' levels of/attitudes towards the various pedagogical features and processes associated with IGD, I utilized Welch's *t*-test, given its ability to detect differences in means between groups with unequal sample sizes. To answer my second research sub-question, I analyzed the moderating role of students' openness to multiple perspectives in the critical-dialogic theoretical framework of intergroup dialogue using

multiple group analysis, an SEM technique. Specifically, I compared how this framework

operates differently for students with below and above average openness to multiple perspectives.

Limitations common to many studies applied to this study, and, to the degree possible,

these limitations were addressed or remedied. The results of my analyses are presented in

Chapter IV.

CHAPTER IV

RESULTS

In this chapter, I discuss the results of analyses I conducted to answer the two research sub-questions presented in Chapter III, which are framed by my broader research question: *What are the relationships among students' epistemological development and the major pedagogical features of IGD, its communication, cognitive, and affective mediating processes, and its intended outcomes?* My analyses were guided by Gurin, Nagda, & Zúñiga's (2013) critical-dialogic theoretical framework of intergroup dialogue (see Figure 1.1), utilizing data from the Multi-University Intergroup Dialogue Research Project (MIGR; see Chapter III). Summaries of each construct included in Gurin and colleagues' framework are provided in Table 3.2.

Having operationalized students' epistemological development using the openness to multiple perspectives composite score in the MIGR dataset (see Chapter III), I first address the extent to which students' engagement with and attitudes towards IGD's pedagogy, communication and psychological processes, and intended outcomes varied by students' level of openness to multiple perspectives. To do this, I conducted Welch's t-tests to analyze the differences in means for each measure of these latent variables between students who were at/below ($n = 377$) and above ($n = 343$) the sample mean for openness to multiple perspectives ($M = 5.40$; 1-7 Likert scale). Second, I used a structural equation modeling (SEM) technique, multiple group analysis, to analyze the extent to which relationships between IGD's pedagogy, processes, and outcomes were moderated by students' openness to multiple perspectives.

Openness and Intergroup Dialogue Pedagogy, Processes, and Outcomes

Gurin and colleagues' (2013) SEM analyses of the critical-dialogic theoretical framework of intergroup dialogue included seven latent constructs associated with IGD pedagogy, processes, and outcomes, along with three additional long-term outcomes. Each of these 10 latent variables consist of survey responses or composite scores that serve as indicators of their respective latent construct. In addition, each indicator (67 total) represents a phenomenon that IGD is intended to produce or increase (e.g., positive assessments of curriculum and facilitators, cognitive and emotional processes, greater intergroup relationships). Testing mean differences for each measure between students who had below and above average openness to multiple perspectives revealed notable differences across groups. Table 4.1 displays the results of these analyses.

Table 4.1. Results of *t*-tests for Students with Below Average and Above Average Openness to Multiple Perspectives

Indicator (number of survey items; scale range)	Below Average (*n* = 377)			Above Average (*n* = 343)			Difference	*t*
	n	*M*	*SD*	*n*	*M*	*SD*		
Pedagogical Features								
Content (3; 1-7)								
post-test	357	4.36	1.50	324	4.87	1.44	0.51***	4.49
Structured interactions (5; 1-7)								
post-test	357	5.44	1.09	325	5.76	0.96	0.32***	3.99
Facilitator effectiveness (12; 1-7)								
post-test	359	5.92	0.97	327	6.07	0.97	0.15***	2.04
Communication Processes								
Engaging self (5; 1-7)								
post-test	357	5.50	0.98	326	5.81	0.94	0.31***	4.19
Appreciating difference (4; 1-7)								
post-test	357	6.00	0.97	326	6.37	0.80	0.37***	5.41
Critical reflection (4; 1-7)								
post-test	356	5.50	1.01	326	5.92	0.93	0.42***	5.54
Alliance building (7; 1-7)								
post-test	356	5.17	1.13	326	5.59	1.12	0.42***	4.88
Cognitive Involvement								
Complexity of thinking (5; 1-7)								
pre-test	377	4.66	0.96	343	5.50	1.01	0.84***	11.36
post-test	363	4.75	1.09	329	5.47	1.11	0.72***	8.63
one year later	307	4.99	1.10	281	5.57	1.01	0.58***	6.69

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Analytical thinking about society (4; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	377	4.96	1.11	343	6.08	0.88	1.12***	15.06
post-test	363	5.25	1.12	329	6.09	0.95	0.84***	10.67
one year later	307	5.27	1.18	281	5.94	1.04	0.67***	7.29

Openness to multiple perspectives (5; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test (sample split by group mean/median)	377	4.67	0.60	343	6.21	0.43	1.54***	39.68
post-test	363	5.03	0.84	329	5.92	0.78	0.89***	14.36
one year later	307	5.11	0.92	281	5.91	0.79	0.80***	11.48

Identity engagement (5; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	377	4.16	1.48	343	4.58	1.49	0.42***	3.81
post-test	361	4.80	1.28	327	5.37	1.26	0.57***	5.85
one year later	309	4.64	1.44	282	5.04	1.39	0.40***	3.44

Affective Positivity

Frequency of positive interactions across difference (3; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	374	4.48	1.47	342	5.14	1.40	0.66***	6.16
post-test	361	4.99	1.29	328	5.62	1.17	0.63***	6.70
one year later	307	4.91	1.45	282	5.41	1.29	0.50***	4.39

Positive emotions in interactions across difference (4; 1-10)

	N	M	SD	N	M	SD	Diff	t
pre-test	376	5.92	1.49	342	6.84	1.46	0.92***	8.41
post-test	362	6.32	1.47	327	7.00	1.43	0.68***	6.15
one year later	307	6.34	1.53	282	6.89	1.56	0.55***	4.33

Intergroup Understanding

Structural attribution for gender inequality (4; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	377	5.03	1.12	342	5.62	1.11	0.59***	6.98
post-test	363	5.42	1.11	327	5.95	0.93	0.53***	6.70
one year later	305	5.35	1.13	279	5.82	1.04	0.47***	5.25

Structural attribution for racial-ethnic inequality (4; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	377	4.91	1.23	342	5.51	1.26	0.60***	6.39
post-test	362	5.33	1.22	327	5.89	1.10	0.56***	6.34
one year later	305	5.31	1.20	278	5.78	1.16	0.47***	4.76

Intergroup Empathy

When people feel frustrated about racial-ethnic (gender) stereotypes applied to their group, I feel some of their frustration too. (1; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	376	4.41	1.60	342	5.35	1.58	0.94***	7.84
post-test	361	4.97	1.42	327	5.73	1.39	0.76***	7.12
one year later	309	4.81	1.45	282	5.63	1.38	0.82***	7.04

When people feel proud of the accomplishments of someone of their racial-ethnic (gender) group, I feel some of their pride as well. (1; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	375	4.23	1.55	342	5.05	1.63	0.82***	6.94
post-test	361	4.68	1.42	327	5.37	1.44	0.69***	6.31
one year later	309	4.58	1.46	281	5.17	1.56	0.59***	4.73

When people express regret about the racial-ethnic (gender) biases they were taught, I can empathize with their feelings. (1; 1-7)

	N	M	SD	N	M	SD	Diff	t
pre-test	372	4.35	1.59	341	5.38	372	1.03***	8.88

	N	M	SD	N	M	SD	d	t
post-test	361	5.13	1.30	327	5.69	1.36	0.56***	5.43
one year later	309	4.93	1.42	282	5.55	1.44	0.62***	5.25

When I learn about the injustices that people of different races/ethnicities (genders) have experienced, I tend to feel some of the anger that they do. (1; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	376	4.84	1.55	339	5.70	1.35	0.86***	7.85
post-test	359	5.16	1.37	325	5.93	1.26	0.77***	7.64
one year later	309	5.01	1.51	281	5.72	1.36	0.71***	6.06

When I hear others use their positions of privilege to promote greater racial-gender equality, I feel hopeful. (1; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	374	4.83	1.52	340	5.55	1.56	0.72***	6.22
post-test	359	5.33	1.33	327	6.00	1.20	0.67***	6.92
one year later	309	5.13	1.48	282	5.74	1.26	0.61***	5.43

I feel despair when I hear about the impact of racial-gender inequalities on others in our society. (1; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	374	4.86	1.51	337	5.56	1.44	0.70***	6.32
post-test	357	5.10	1.35	324	5.71	1.40	0.61***	5.75
one year later	308	4.97	1.50	282	5.58	1.49	0.61***	4.93

I feel hopeful hearing how others have overcome disadvantages because of their race or gender. (1; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	374	5.08	1.49	339	5.79	1.35	0.71***	6.68
post-test	359	5.48	1.20	326	5.94	1.26	0.46***	4.91
one year later	306	5.27	1.41	280	5.88	1.21	0.61***	5.66

I feel angry when people don't acknowledge the privileges they have in society because of their race or gender. (1; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	371	4.11	1.74	342	4.73	1.76	0.62***	4.68
post-test	360	4.72	1.66	327	5.17	1.73	0.45***	3.47
one year later	307	4.68	1.76	278	5.27	1.73	0.59***	4.07

Intergroup Action

Post-college involvement (4; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	375	4.45	1.45	342	5.40	375	0.95***	9.36
post-test	362	4.78	1.36	327	5.52	362	0.74***	7.44
one year later	307	4.95	1.28	280	5.59	307	0.64***	6.35

Self-directed action (4; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	376	4.73	0.87	341	5.61	376	0.88***	14.19
post-test	363	5.18	0.95	329	5.90	363	0.72***	10.76
one year later	308	5.16	0.98	281	5.84	308	0.68***	9.07

Other-directed action (2; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	376	4.38	1.15	341	5.12	376	0.74***	8.65
post-test	363	4.74	1.18	328	5.45	363	0.71***	8.07
one year later	308	4.84	1.22	281	5.48	308	0.64***	6.69

Intergroup collaboration (3; 1-7)

	N	M	SD	N	M	SD	d	t
pre-test	375	3.66	1.41	341	4.32	375	0.66***	6.38
post-test	363	4.08	1.39	327	4.74	363	0.66***	6.13
one year later	308	4.11	1.37	281	4.69	308	0.58***	5.18

Note. * $p < .05$, ** $p < .01$, *** $p < .001$.

The results presented in Table 4.1 indicate that students with above average openness to multiple perspectives scored significantly higher on all other measures when compared to students with below average openness. With the exception of the difference in students' overall assessment of their facilitators ($p < .05$), each of these differences were statistically significant at the 0.001 level. The differences in means range from small (0.15) to more than a point on a Likert scale (1.12), with an average difference of 0.65 (median = 0.64) across all measures.

Given that I formed these two groups based on their being above or below average in a measure of cognitive involvement (openness to multiple perspectives), it is not surprising that the largest mean differences were among the other three measures of cognitive involvement associated with similar constructs (complexity of thinking, analytical thinking about society, and identity engagement). Differences in means associated with IGD pedagogy and communication processes were the smallest (between one-third and one-half of a point, generally), while differences in each of the other categories ranged from half a point to nearly a full point.

More practically, these results suggest that when compared to IGD students with below average openness to multiple perspectives, students who came into the IGD course with above average openness also possessed and/or experienced higher levels of numerous other dispositions and characteristics associated with IGD's processes and intended outcomes. Subsequent correlation analyses of the entire sample (i.e., not group-specific) provided additional evidence for this trend. All 67 variables had positive, statistically significant correlations (ranging from 0.15 to 0.59; $p < .05$) with students' pre-IGD openness to multiple perspectives. These t-tests and correlational analyses cannot indicate a causal relationship, nor do they control for other variables in the data, but they do provide an initial account of notable relationships between

openness to multiple perspectives and students' attitudes and dispositions towards IGD's

pedagogy, processes, and outcomes.

Moderation of Relationships Among Pedagogy, Processes, and Outcomes

To analyze the potential moderating role of students' openness to multiple perspectives in

the relationships between IGD pedagogy, processes, and outcomes, I used SEM (i.e., multiple

group analysis) to analyze how the strength of these relationships varied between students with

below and above average openness. Having modified the model subtly to establish configural,

metric, and scalar invariance across groups, and having confirmed that the resulting model fits

the data for both of the openness to multiple perspectives groups and the entire sample (see

Chapter III), differences observed in the relationships among latent variables across groups can

be attributed to the moderating role of openness to multiple perspectives.

Figure 4.1 displays these differences in direct effects for the two groups visually, along

with the direct effects for the whole sample. All statistically significant coefficients are

underlined (see note for additional explanation). To maximize the clarity and interpretability of

Figure 4.1, standard errors and significance levels are provided subsequently in Table 4.2. I

interpret these results in the paragraphs that follow.

Pre-Post Change   1 Year Later

.15
.00   .06

| Pedagogical Features | .22 .29 .04 | Cognitive Involvement | .49 .71 .50 | Intergroup Understanding | .30 .35 .21 | Intergroup Understanding | .25 .16 .28 |

.34
.30   .60

.29
.49   .47

| | | | | Intergroup Empathy | .34 .41 .26 | Intergroup Empathy | .28 .24 .25 |

.78
.79   .73

.45
.25   .28

.28
.49   .17

.42
.73   .47

| Communication Processes | .37 .08 .47 | Affective Positivity | .26 .01 .23 | Intergroup Action | .29 .33 .28 | Intergroup Action | .35 .30 .30 |

.12
.02   .10

Figure 4.1 Structural Equation model and multiple group analysis of intergroup dialogue pedagogy, processes, and outcomes for all students and students with below average and above average openness to multiple perspectives.
Note: For each relationship among latent variables, three standardized coefficients are provided. The top coefficient describes the relationship for the whole sample, the bottom-left coefficient for students with below average openness to multiple perspectives, and the bottom-right coefficient for students with above average openness to multiple perspectives. Statistically significant relationships are underlined.

Table 4.2. Direct Effects, Standard Errors, and Significance Levels for all Students and Students with Below Average and Above Average Openness to Multiple Perspectives

	All Students (*n* = 720)		Below Average (*n* = 377)		Above Average (*n* = 343)	
	β	*SE*	*β*	*SE*	*β*	*SE*
Pedagogical Features						
Communication Processes	0.78****	0.05	0.79****	0.05	0.73****	0.06
Affective Positivity	0.28**	0.15	0.49*	0.26	0.17	0.26
Cognitive Involvement	0.22*	0.14	0.29*	0.16	0.04	0.20
Communication Processes						
Affective Positivity	0.37**	0.16	0.08	0.26	0.47*	0.24
Cognitive Involvement	0.34**	0.14	0.30*	0.17	0.60***	0.21
Intergroup Understanding (Pre-PostΔ)	0.15**	0.07	0.00	0.15	0.06	0.11
Intergroup Action (Pre-PostΔ)	0.12*	0.07	0.02	0.10	0.10	0.11
Intergroup Understanding (1 year later)	0.25****	0.05	0.16**	0.08	0.28****	0.07
Intergroup Empathy (1 year later)	0.28****	0.05	0.24****	0.06	0.25***	0.08
Intergroup Action (1 year later)	0.35****	0.05	0.30****	0.07	0.30****	0.07
Cognitive Involvement						
Intergroup Understanding (Pre-PostΔ)	0.49****	0.07	0.71****	0.15	0.50****	0.14
Intergroup Empathy (Pre-PostΔ)	0.29*	0.18	0.49**	0.20	0.47	0.35
Intergroup Action (Pre-PostΔ)	0.42****	0.13	0.73****	0.19	0.47	0.34
Affective Positivity						
Intergroup Empathy (Pre-PostΔ)	0.45***	0.17	0.25	0.21	0.28	0.37
Intergroup Action (Pre-PostΔ)	0.26*	0.16	0.01	0.20	0.23	0.35
Intergroup Understanding						
Intergroup Understanding (1 year later)	0.30****	0.06	0.35****	0.08	0.21**	0.10
Intergroup Empathy						
Intergroup Empathy (1 year later)	0.34****	0.06	0.41****	0.05	0.26**	0.11
Intergroup Action						
Intergroup Action (1 year later)	0.29****	0.05	0.33****	0.06	0.28****	0.08

Note. Reported estimates are standardized.
*p < .10, **p < .05, ***p < .01, ****p < .001.
Independent variables are in bold. Dependent variables are listed beneath independent variables.

The results presented in Figure 4.1 and Table 4.2 illuminate how relationships between

IGD pedagogy, processes, and outcomes varied by students' level of openness to multiple

perspectives. For both groups, the IGD experience promoted the intended outcomes of intergroup understanding, empathy, collaboration, and action, but the two groups varied in terms of which pedagogical, communicative, and psychological processes directly and indirectly promoted these outcomes. Furthermore, the *strengths* of the relationships between IGD pedagogy and its various processes and outcomes also varied, revealing a notable pattern of relationships that has implications for IGD theory, research, and practice. I discuss this pattern and broader set of findings in the following sections, beginning with a discussion of direct effects, followed by a discussion of indirect effects.

Moderation of the Relationship Between Pedagogy and Communication Processes

For the relationship between pedagogical features and communication processes, the coefficients for students in the entire sample (0.78), the below average group (0.79), and the above average group (0.73) were strong, similar, and statistically significant. For each of these three groups, a standard deviation increase in students' assessment of IGD pedagogy is associated with an average increase of approximately three-quarters of a standard deviation in students' communication processes, when accounting for all other relationships included in the model. The similarity of the coefficients across groups suggests that this particular relationship is not moderated by students' openness to multiple perspectives.

Moderation of the Relationships Between Communication and Psychological Processes

Among the relationships between communication processes, cognitive involvement, and affective positivity, differences emerged between students with below and above average openness to multiple perspectives, indicating moderation based on openness. For the relationship between IGD's pedagogical features and cognitive involvement, the coefficient for students with above average openness (.04) was close to zero, not statistically significant, and lower than

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students with below average openness (0.29) and the entire sample (0.22), both of which were statistically significant. This finding suggests that as students' perceptions of IGD pedagogy improved among students with *below* average openness, their levels of cognitive involvement increased. Conversely, increasingly positive perceptions of IGD pedagogy among students with *above* average openness are *not* directly associated with increases in cognitive involvement. This pattern of relationships is the first of a few such patterns in the model for which a statistically significant relationship was not observed for one of these two groups and/or the strength of the relationship for one group was notably larger than the other group.

As another example of this trend, for the relationship between communication processes and students' cognitive involvement, the relationships for students with below and above average openness to multiple perspectives, as well as the entire sample, are all statistically significant. However, when compared to students with below average openness, the increase in cognitive involvement was twice as large for students with above average openness to multiple perspectives (0.60 vs. 0.30).

Therefore, among the relationships between (a) pedagogical features and cognitive involvement and (b) communication processes and cognitive involvement, I observed similar, yet opposite, trends. For students with above average openness to multiple perspectives, their increases in communication processes were directly associated with increases in their cognitive involvement, whereas their assessment of IGD pedagogy was not directly associated with increases in their cognitive involvement. Conversely, for students with below average openness, increases in both communication processes and their perceptions of IGD pedagogy were directly associated with increases in cognitive involvement, though the relationship between

communication processes and cognitive involvement was much weaker than that of students with above average openness.

I observed a near-identical pattern among the relationships between communication processes and affective positivity, and pedagogical features and affective positivity. Though both of these relationships were statistically significant for the entire sample, both the strength of the relationships and statistical significance varied by group. For students with below average openness, the relationship between communication processes and affective positivity (0.08) was not statistically significant and much lower than students with above average openness (0.47) and the entire sample (0.37), both of which were statistically significant. Conversely, for students with above average openness, it was the relationship between *pedagogical features* and affective positivity (0.17) that was not statistically significant and lower than the below average group (0.49) and entire sample (0.28), both of which were statistically significant. Taken together, these findings reveal notable trends for affective positivity for each group. For students with *above* average openness, it is not their experience with IGD pedagogy that was directly associated with increases in affective positivity, rather, the extent to which they engage in communication processes. Conversely, for students with *below* average openness, these communication processes were not directly associated with increases in affective positivity, rather, their experience of IGD pedagogy.

Moderation of the Relationships Between Mediating Processes and Outcomes

Irregularities in the Results. In order to interpret and discuss the relationships between IGD's outcomes and its communication, cognitive, and affective processes, I first note a few irregularities in this particular set of results. Though all of these relationships in the model were statistically significant for the entire sample, there were four instances in which relationships for

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students of both below and above average openness to multiple perspectives were not significant: communication processes and intergroup understanding, communication processes and intergroup action, affective positivity and intergroup empathy, and affective positivity and intergroup action. In addition, there were three instances in which coefficients describing relationships among students with above average openness were not statistically significant, even though they were similar to or greater than the corresponding coefficient for the entire sample and/or students with below average openness. These three relationships included cognitive involvement and intergroup empathy, cognitive involvement and intergroup action, and communication processes and intergroup action (see Figure 4.1).

Consistent across these irregular relationships were large standard errors (relative to their corresponding coefficients and the standard errors and coefficients of the other two groups in the comparison; see Table 4.2). For example, for the relationship between cognitive involvement and intergroup action, the coefficient for the entire sample was 0.42 with a standard error of 0.13 ($p < 0.001$), and the coefficient for students with below average openness was 0.73 with a standard error of 0.19 ($p < 0.001$). However, though the coefficient for students with above average openness (0.47) was higher than that of the entire sample (0.42), its standard error was the largest of the three groups (0.34), as was its p value (0.17).

Increases in standard errors indicate decreases in the precision of estimates, thus increasing the probability that the true coefficient for a given relationship is some value other than what the SEM analyses produced. High standard errors can potentially lead to results that are uninterpretable or problematic in other ways. Though the larger standard errors displayed in Table 4.2 were not so large that they made the results uninterpretable, in a few cases, they likely prevented otherwise-significant relationships between latent variables from being statistically

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significant, as well as otherwise-significant differences in latent variable relationships across the below and above average openness groups. Given this, I am able to discuss statistically significant relationships in my interpretation of the results, but, in some instances, I speak only to relationships and differences that can be presumed to be substantively meaningful, given the value of the coefficient describing the relationship.

Higher standard errors in relationships among latent variables also invite researchers to rule out or confirm possible limitations associated with their data. For example, the distribution of student responses may be skewed or kurtotic, violating the assumptions of normality in SEM analyses. Factor loadings for one or both factors in a given relationship may not be sufficiently high, suggesting that the measures used as indicators are not measuring the factor(s) very well. Along these lines, Kline (2011) and Kenny (1979) note that having only two indicators for a given factor may be technically sufficient, but can also represent a limited ability to measure a given construct and, therefore, may also lead to issues in the quality and interpretation of the results. In terms of sample size, there may be insufficient covariance coverage between two constructs in a model, that is, not enough data associated with one or both of the constructs to estimate the relationship between them. Similarly, insufficient overall sample size can also be associated with problematic results, especially for complex models, such as those in this study (Brecker, 1990; Shah & Goldstein, 2006, Jackson, 2003; Kline, 2011; discussed in Chapter III).

I investigated each of these possible concerns and drew two conclusions. First, none of these potential issues apply to the data such that one of them singlehandedly produced the aforementioned larger standard errors. Second, it may be that some of these issues are collectively influencing the standard errors in subtle ways that are difficult to detect. As discussed in Chapter III, each of the factor loadings for all 10 latent constructs for all 3 groups

are sufficiently strong (see Table 3.7). However, the two constructs possessing some of the lower factor loadings in the data are among those relationships with higher standard errors (cognitive involvement and affective positivity). Similarly, two of the factors among the relationships with higher standard errors (affective positivity and intergroup understanding) are comprised of the minimum of two indicators, which may also have influenced the standard errors. Regarding covariance coverage, each of the relationships with higher standard errors has coverage of over 90% for each pair of indicators between them (i.e., not 100%), given that I used auxiliary variables to account for missing data (see Chapter III). Regarding sample size, dividing the entire sample ($n = 720$) by students' openness to multiple perspectives led to two smaller samples of 377 (below average) and 343 (above average), which I used for my SEM analyses. As discussed in Chapter III, these samples are sufficient for my analyses, but, as sample sizes get smaller, it becomes more difficult to analyze complex structural equation models. None of the measures used in this study was skewed or kurtotic (see Appendix), so I ruled this out as a possible cause.

In summary, the irregularities in the results were likely associated with multiple characteristics of the data that were affecting the data in subtle ways, as opposed to a single critical issue that would render the results uninterpretable. Having established this, I now turn to a discussion of notable patterns observed among IGD outcomes (post-IGD and one year later).

Results. First, many of the relationships between IGD's communication, cognitive, and affective processes and IGD's outcomes were similar among students with below and above average openness to multiple perspectives. For example, each of the relationships between intergroup empathy and its mediators (cognitive involvement and affective positivity) are nearly identical for students with below and above average openness, though three of these four relationships have larger standard errors and are therefore not statistically significant.

All of the relationships associated with long-term outcomes are similar across groups as well. Specifically, for students with both below and above average openness to multiple perspectives, the relationships between communication processes and long-term outcomes, and pre-post change and long-term outcomes, are only slightly different, statistically significant, and moderately strong.

In addition to these outcome-related similarities across groups, there is a pattern of *differences* as well. First, increases in cognitive involvement are moderately to strongly associated with increases in intergroup understanding and intergroup action for both groups. However, group differences in coefficients for these two outcomes indicate that increases in cognitive involvement were more strongly associated with these outcomes for students with below average openness to multiple perspectives. For example, a standard deviation increase in cognitive involvement was associated with an almost three-quarter standard deviation increase (0.71) in intergroup understanding for students with below average openness, whereas the same increase in cognitive involvement was associated with a one-half standard deviation increase (0.50) for students with above average openness. Similarly, for the relationship between cognitive involvement and intergroup action, the coefficient for students with below average openness (0.73) was statistically significant, while the coefficient for students with above average openness (0.47) was considerably lower, had a relatively large standard error (0.34), and was not statistically significant.

The second outcome-related difference between the two groups is that increases in affective positivity were associated with increases in intergroup action for students with above average openness (0.23), but almost no relationship existed between affect and action for students with below average openness (0.01). Neither of these coefficients was statistically

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significant, though the relationship for students with above average openness (0.23) was similar to the statistically significant relationship of the entire group (0.26).

One final difference between groups is the relationship between communication processes and intergroup action. Though coefficients for both groups were small, and neither are statistically significant, the coefficient for students with above average openness (0.10) was similar to the statistically significant coefficient of the entire group (0.12), while the coefficient for students with below average openness was almost zero (0.02).

When considered collectively, these patterns of group difference related to IGD's mediating processes, intergroup understanding, and intergroup action mirror the aforementioned patterns of group difference among IGD's pedagogical features and mediating processes. Specifically, when students with below and above average openness to multiple perspectives were compared, cognitive involvement was more strongly associated with increases in intergroup understanding and action for the below average group, while affective positivity and communication processes were more strongly associated with increases in intergroup action for the above average group.

Group-Specific Models

"Moving from left to right" across the model in a temporal manner (as the previous section was organized) is a useful approach to analyzing differences in direct effects across groups and identifying patterns of such difference. However, considering the model and the results of these analyses *in their entirety* reveals an overarching pattern of the various patterns I identified. In summary, increases in IGD's mediating processes and intended outcomes are most strongly (although not exclusively) associated with *pedagogy* and *cognition* for students with below average openness and *communication* and *emotion* for students with above average

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openness. These patterns are illustrated in Figures 4.2 and 4.3, which collectively describe how IGD's pedagogy, communication processes, psychological processes, and intended outcomes operated differently for students with below and above average openness to multiple perspectives, respectively.

In forming these group-specific models, I retained relationships if they met one of two conditions: (a) they represent a statistically significant direct effect; or (b) they have larger standard errors and are therefore not statistically significant, but the strength of the relationship is similar to the statistically significant relationship of one or both of the two other comparison groups. As an example of a relationship meeting this second condition, the relationship between cognitive involvement and affective positivity (0.47) was not statistically significant for students with above average openness, but it was similar to the statistically significant coefficient for students with below average openness (0.49; $p < .05$) and greater than the statistically significant coefficient for the entire sample (0.29; $p < .10$). Of course, it should be acknowledged that these models do not represent causal relationships, nor do I imply that all students of the same level of openness to multiple perspectives have the same IGD experience.
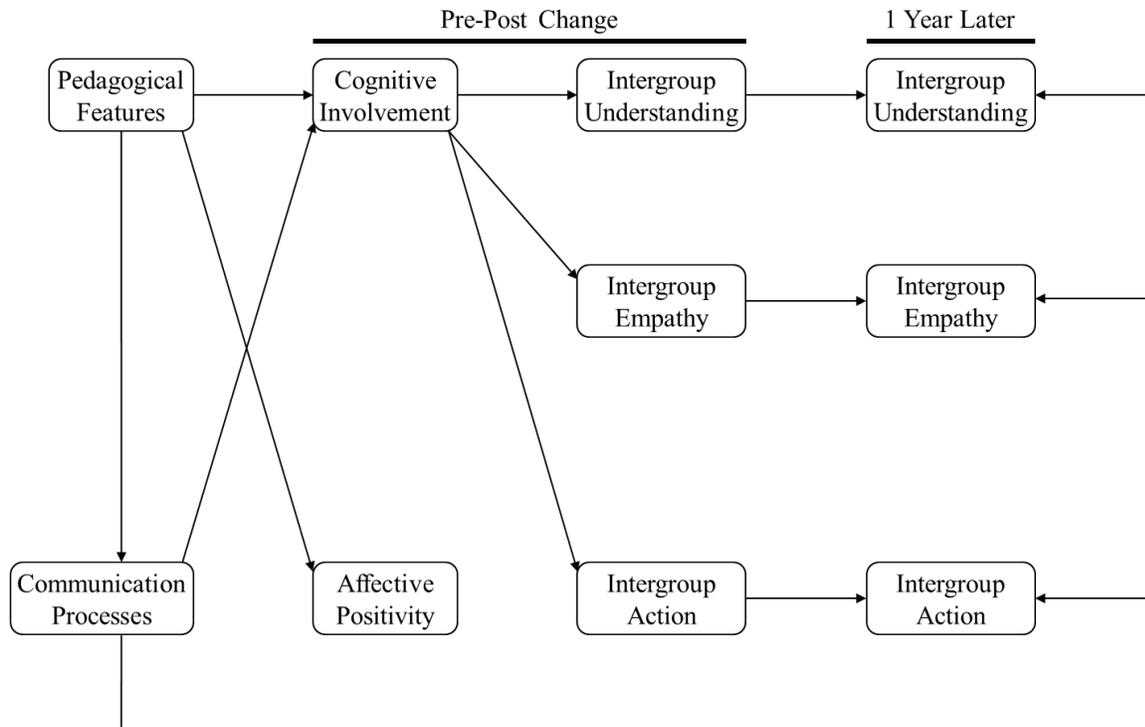
Figure 4.2 Relationships between intergroup dialogue pedagogy, processes, and intended outcomes for students with below average openness to multiple perspectives.
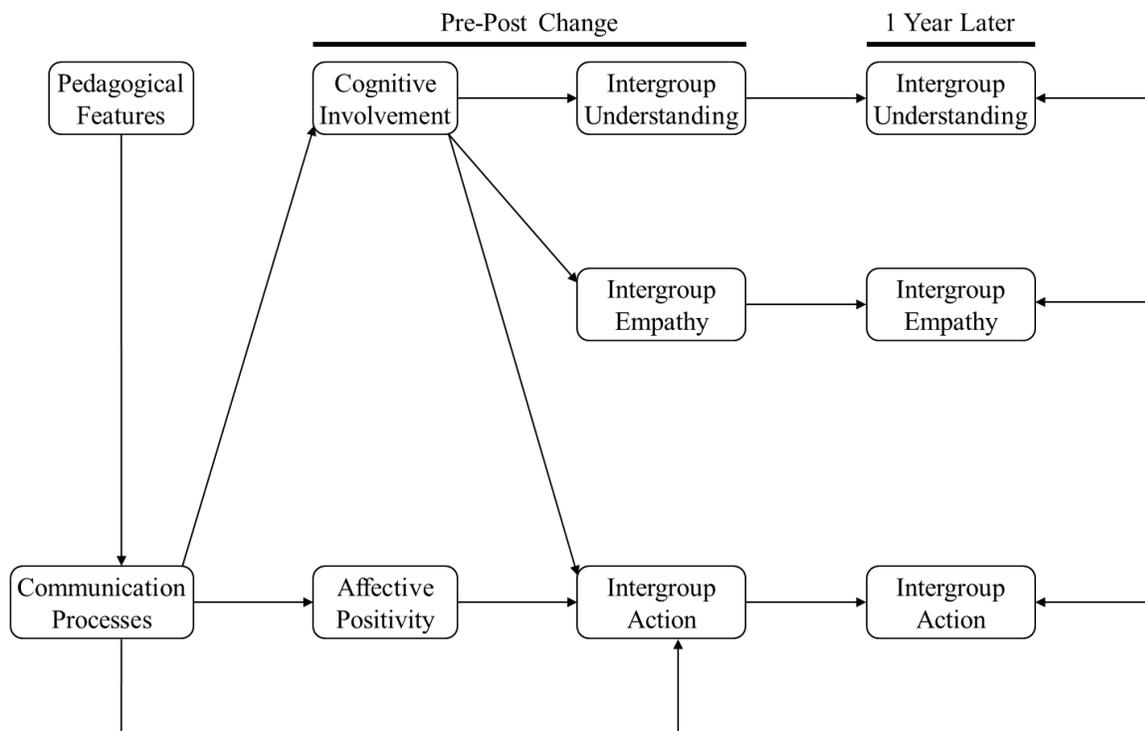
Figure 4.3 Relationships between intergroup dialogue pedagogy, processes, and intended outcomes for students with above average openness to multiple perspectives.

In Chapter V, I discuss the varying experiences of students with below and above average openness to multiple perspectives in detail, along with the implications of these differences for IGD theory, research, and practice. Useful in the interpretation of these results and the discussion of their implications is a basic understanding of the characteristics of students with below and above average openness in the sample, particularly those characteristics that are identifiable and relevant to the creation and facilitation of diverse IGD groups. Table 4.3 presents the distribution of gender and race, year in school, and major of students who had below and above average openness to multiple perspectives.

Table 4.3. Select Demographic Characteristics of Intergroup Dialogue Students with Below Average and Above Average Openness to Multiple Perspectives

	All Students ($n = 720$)	Below Average ($n = 377$)		Above Average ($n = 343$)	
	n	n	Proportion	n	Proportion
Gender & Race					
Woman of Color	185	90	0.49	95	0.51
Man of Color	174	86	0.49	88	0.51
White Woman	189	90	0.48	99	0.52
White Man	171	111	0.65	60	0.35
missing	1	0		1	
Year in School					
First-Year	149	83	0.56	66	0.44
Sophomore	193	101	0.52	92	0.48
Junior	181	95	0.52	86	0.48
Senior	183	91	0.50	92	0.50
Fifth-Year	12	5	0.42	7	0.58
missing	2	2		0	
Major					
Social Sciences	301	137	0.46	164	0.54
Math, Science, Engineering, Architecture	122	69	0.57	53	0.43
Arts, Humanities	129	64	0.50	65	0.50
Business	118	80	0.68	38	0.32
Nursing, Social Work, Education, Public Health	45	27	0.60	18	0.40
missing/other	5	0		5	

Having below or above average openness to multiple perspectives is fairly equally

distributed across most of the student characteristics included in Table 4.3. However, the

majority of white men (0.65), business majors (0.68), and nursing, social work, education, and

public health majors (0.60) had below average openness to multiple perspectives. To a lesser

extent, the majority of first-year students (0.56) and students majoring in math, science,

engineering, or architecture (0.57) also had below average openness.

It is worth noting that having below average openness to multiple perspectives does not

necessarily mean that a student was not open at all. The average openness for the entire sample

was 5.40 (out of 7), which, numerically, straddles a response of 5 ("somewhat like me") and 6

("quite a lot like me"). Even an average response of 4 ("a little bit like me") across the five

survey measures of openness would arguably indicate that a student is more "open" than "closed"

to multiple perspectives. The average openness for the group of students with below average

openness was 4.67 (see Table 4.1), and 684 of the 720 students in the sample had an average

openness of 4.0 or greater. In a few ways, this is not surprising, given that this sample consisted

only of students who pursued and formally applied to engage in an experience such as IGD.

However, as discussed, the information presented in Table 4.3 is useful in providing a

sense of who is included in the groups of below and above average openness to multiple

perspectives. That is, it is useful to know that some of the more salient aspects of students'

identities are fairly equally distributed across students with below and above average openness,

though some groups of students are overrepresented among those with below average openness.

Indirect Effects

To this point in my interpretation of the results of this study, I have focused primarily on

the direct effects of each latent variable on one or more other latent variables, which has revealed

two overarching and related findings. First, IGD pedagogy promoted each of IGD's intended

outcomes for all students, whether they had below or above average openness to multiple

perspectives. Second, the promotion of these outcomes happened indirectly and through different

communication and/or psychological processes, based on students' openness. Specifically, IGD's

processes and outcomes were most strongly (though not exclusively) driven by *pedagogy* and

cognition for students with below average openness and *communication* and *emotion* for students

with above average openness. These two overarching findings are evident in Table 4.4, which

presents the indirect effects found among each of these two groups.

Table 4.4. Indirect Effects, Standard Errors, and Significance Levels for all Students and Students with Below Average and Above Average Openness to Multiple Perspectives

	All Students (n = 720)		Below Average (n = 377)		Above Average (n = 343)	
	β	SE	β	SE	β	SE
Pedagogical Features						
Cognitive Involvement	0.26**	0.10	0.23*	0.13	0.43***	0.16
Affective Positivity	0.29**	0.12	0.06	0.20	0.35*	0.18
Intergroup Understanding (Pre-Post∆)	0.35****	0.05	0.37****	0.07	0.28****	0.07
Intergroup Empathy (Pre-Post∆)	0.40****	0.05	0.40****	0.05	0.37****	0.06
Intergroup Action (Pre-Post∆)	0.44****	0.05	0.41****	0.06	0.41****	0.06
Intergroup Understanding (1 year later)	0.30****	0.05	0.26****	0.06	0.26****	0.06
Intergroup Empathy (1 year later)	0.35****	0.04	0.35****	0.05	0.28****	0.05
Intergroup Action (1 year later)	0.40****	0.04	0.37****	0.06	0.33****	0.05
Communication Processes						
Intergroup Understanding (Pre-Post∆)	0.17**	0.07	0.21	0.15	0.30**	0.14
Intergroup Empathy (Pre-Post∆)	0.27**	0.09	0.17	0.13	0.41****	0.10
Intergroup Action (Pre-Post∆)	0.24***	0.08	0.22	0.14	0.39***	0.14
Intergroup Understanding (1 year later)	0.09***	0.03	0.07*	0.04	0.08**	0.04
Intergroup Empathy (1 year later)	0.09***	0.03	0.07	0.05	0.11**	0.05
Intergroup Action (1 year later)	0.10****	0.03	0.08*	0.05	0.14***	0.04
Cognitive Involvement						
Intergroup Understanding (1 year later)	0.15****	0.04	0.25****	0.08	0.11*	0.06
Intergroup Empathy (1 year later)	0.10	0.06	0.20**	0.08	0.12	0.10
Intergroup Action (1 year later)	0.12***	0.04	0.24****	0.08	0.13	0.09
Affective Positivity						
Intergroup Empathy (1 year later)	0.15**	0.06	0.10	0.09	0.07	0.10
Intergroup Action (1 year later)	0.08	0.05	0.00	0.07	0.07	0.10

Note. Reported estimates are standardized.
*p < .10, **p < .05, ***p < .01, ****p < .001.
Independent variables are in bold. Dependent variables are listed below independent variables. Total indirect effects are reported.

Indeed, for both groups of students, the overall indirect effect of IGD pedagogy on each

of IGD's intended outcomes (over the short- and long-term) are clear; all relationships are

moderately strong and statistically significant ($p < .001$). However, the results presented in the

remainder Table 4.4 illustrate how communication and affect were primary drivers of the IGD experience for students with above average openness, whereas the cognitive aspects of IGD had a stronger influence for students with below average openness.

For students with above average openness to multiple perspectives, the indirect effects of IGD's communication processes on intergroup understanding, empathy, and action—over the short- and long-term—were greater than students with below average openness. Of particular note is the difference between the indirect effect of communication processes on intergroup empathy for students with below average (0.17) and above average (0.41) openness, with a similarly large difference existing for the indirect effect of communication processes on intergroup action (0.22 and 0.39 for students with below and above average openness, respectively).

At the same time, just as the direct effects of cognitive involvement on these three outcomes are greater for students with below average openness than students with above average openness over the *short*-term, the indirect effects of cognitive involvement on each of these outcomes over the *long*-term are likewise greater by comparison. Also in line with the patterns of difference I have discussed thus far is the lack of indirect effect (0.00) of affective positivity on intergroup action over the long-term for students with below average openness; the indirect effect of their cognitive involvement on long-term intergroup action is much greater by comparison.

Table 4.4 also sheds additional light on how the pedagogical features of IGD are interpreted and experienced differently by students with below and above average openness to multiple perspectives. Though the *direct* effects of pedagogy on cognitive involvement and affective positivity were relatively weak for students with above average openness and relatively

strong for students with below average openness, the opposite was the case for their respective *indirect* effects. The indirect effects of pedagogy on cognitive involvement and affective positivity (via communication processes) were markedly greater for students with above average openness when compared to students with below average openness. Therefore, though pedagogy alone may not strongly promote cognitive involvement and affective positivity among students with above average openness, its role in promoting the communication processes that *do* promote cognitive involvement and affective positivity among these students is vital.

A Single Framework of the Moderating Role of Openness to Multiple Perspectives

Creating two groups based on students' openness to multiple to multiple perspectives allowed me to analyze how such openness moderates the relationships among IGD pedagogy, processes, and outcomes. Though my analyses led to group-specific versions of Gurin and colleagues' (2013) IGD model (see Figures 4.2 and 4.3), the results of this study can also be organized into a single model that builds on their original model, captures the moderating role of openness to multiple perspectives in IGD, and is not specific to a single group of students (see Figure 4.4).

Pre-Post Change   1 Year Later

| Pedagogical Features | | Cognitive Involvement | | Intergroup Understanding | | Intergroup Understanding |

Openness to Multiple Perspectives

Intergroup Empathy   Intergroup Empathy

Communication Processes   Affective Positivity   Intergroup Action   Intergroup Action
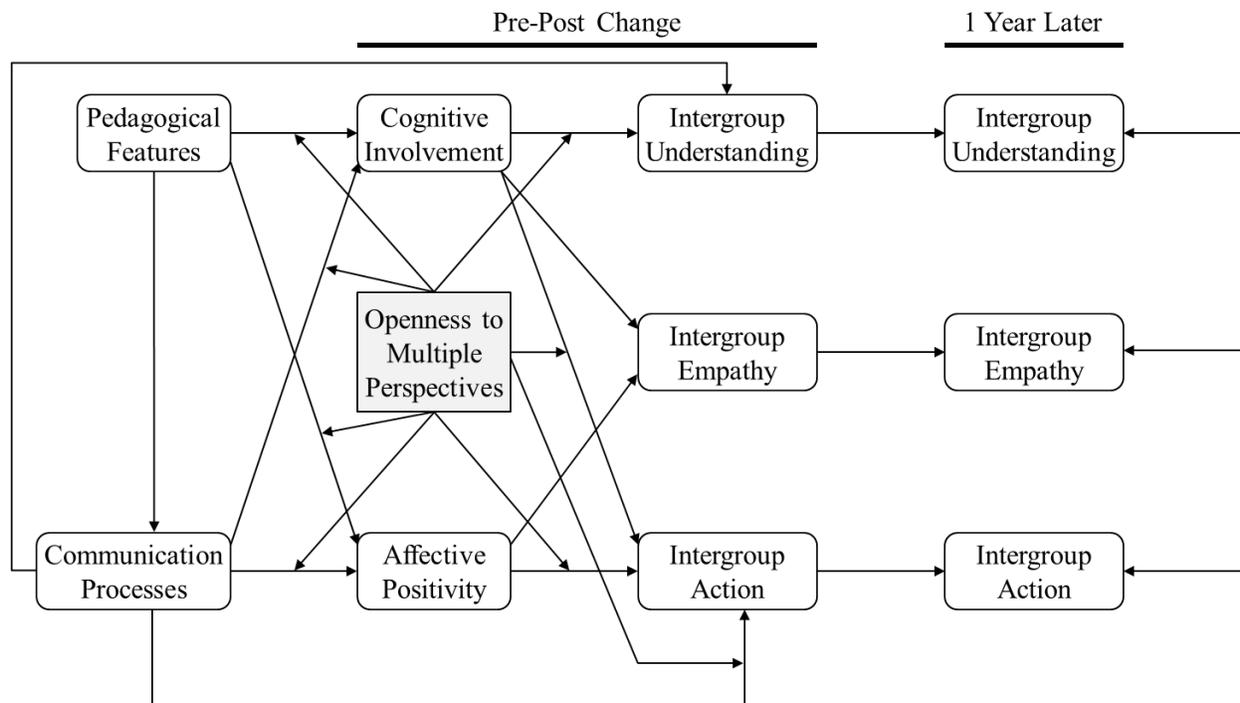
Figure 4.4 The moderating role of openness to multiple perspectives in intergroup dialogue pedagogy, mediating processes, and intended outcomes.

Though Figure 4.4 can be informative to IGD theory and practice, providing statistical support for the model by analyzing it in Mplus proved to be unviable. Indeed, not only are interactions involving latent variables (such as the eight interactions illustrated in Figure 4.4) computationally intensive to analyze (Little et al., 2007), there are particular limitations associated with such analyses in Mplus (Maslowsky, Jager, & Hempkin, 2015). For example, Mplus is unable to produce standardized coefficients for relationships between latent variables, nor can it produce model fit indices indicating the extent to which Figure 4.4 fits the MIGR data. Given these analytical limitations, Figures 4.2 and 4.3 are most useful in discerning the implications of the moderating role of openness to multiple perspectives in students' IGD experience. I provide interpretations of these two figures and their implications in Chapter V.

Conclusion

When considered collectively, the results of my analyses provide evidence for the relationship between students' openness to multiple perspectives (an epistemological disposition) and the pedagogy, communication processes, psychological processes, and intended outcomes associated with IGD. Specifically, *t*-tests revealed that students who began IGD with below and above average openness to multiple perspectives (relative to their IGD peers) exhibited significant differences in their levels of/dispositions towards IGD's pedagogy, processes, and outcomes. This was true prior to, at the conclusion of, and one year after students' IGD experience.

My SEM analyses showed that students' openness to multiple perspectives also moderated many of the relationships between IGD's pedagogy, communication processes, psychological processes, and intended outcomes. For some of the relationships, statistical significance was observed for students with both below and above average openness, though the difference in the strength of the relationship varied between groups considerably. For other relationships, the strength of the association was not statistically significant for one of the groups, and the strength of the relationship approached zero in some of these cases. In summary, IGD's various processes and intended outcomes were most strongly (although not exclusively) driven by pedagogy and cognition for students with below average openness to multiple perspectives and communication and emotion for students with above average openness.

Collectively, these results provide empirical support for the commonly held belief that experiences such as IGD will vary based on individual student differences, but these results also provide clarity as to *how* students' experiences vary based upon a particular characteristic, openness to multiple perspectives. This has implications for IGD curriculum, facilitation, and the

training of facilitators. However, openness/epistemological development represents just one of many possible student attributes influencing students' IGD experiences, which has implications for future IGD theory-building and research.

Finally, this study also contributes to the conversation regarding epistemology's potential role as a strong partner in self-authorship development (King, 2010). I discuss all of these implications in detail in Chapter V.

CHAPTER V

DISCUSSION AND IMPLICATIONS

In this chapter, I discuss the implications of the results presented in Chapter IV. First, I discuss in practical terms how these results inform our understanding of the intergroup dialogue (IGD) experience for students with below and above average openness to multiple perspectives. I then discuss implications for IGD theory and research, beginning first with a discussion of these findings from the perspective of the adapted model of intergroup dialogue I discussed in Chapter II (see Figure 2.9), followed by a discussion of broader theoretical and research implications. I then discuss implications for practice related to IGD curriculum, facilitation, and training of facilitators. To conclude, I discuss this study's contribution to our understanding of the role of epistemological development in the holistic development of students.

The Attainment of Intergroup Dialogue Outcomes by Openness to Multiple Perspectives

Previous research (Gurin, Nagda, & Zúñiga, 2013; Gurin-Sands, Gurin, Nagda, & Osuna, 2012; Nagda, 2006; Nagda, Kim, & Truelove, 2004) has shown (and the results of this study confirm) that the relationship between IGD's pedagogical features and intended outcomes are indirect. That is, it is not the mere implementation of the pedagogy that increases students' intergroup understanding, empathy, collaboration, or desire to act; the pedagogy must promote other processes in students that, in turn, promote IGD's intended outcomes (see Table 3.2 for a summary of IGD's pedagogical features, mediating processes, and intended outcomes). It is not difficult to imagine an IGD course in which, for whatever reason, students do not engage in critical and dialogic communication, nor do they engage cognitively by thinking deeply about

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society or their own identities, nor do they experience positive emotions throughout the semester. In such circumstances, IGD's intended outcomes would almost certainly not be attained. Thus, for any given student in any given semester, a "path" to IGD's intended outcomes must form. Intuitively, one would assume that these paths will vary for different students in complex ways, given their varying backgrounds, knowledge, and developmental capacities. The two sets of paths that emerged from this study, illustrated visually in Figures 4.2 and 4.3, illustrate how the relationship between IGD pedagogy, processes, and outcomes varied for students with below and above average openness to multiple perspectives (see Table 4.3 for characteristics of these two groups).

Specifically, for students with below average openness, increases in IGD's intended outcomes were directly affected by cognitive involvement only; the direct effects of affective and communication processes on outcomes were not significant for these students. Conversely, for students with above average openness, increases in IGD's intended outcomes were driven by all three mediating processes (communication, cognition, affect). Therefore, IGD was successful in promoting intergroup understanding, empathy, collaboration, and action among all students, though this took place in different ways for different students: those with greater openness to multiple perspectives were able to tap into the ways in which communication and affective processes promote intergroup relations.

In addition, communication processes, the primary driver of IGD's affective and cognitive mediating processes (see Figure 1.1), promoted affective positivity for students with above average openness, but not students with below average openness. Communication processes did promote cognitive involvement for students with both below and above average openness, but the increases were twice as large for students with above average openness when

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compared to students with below average openness. Thus, the results of this study indicate that greater openness to multiple perspectives serves not only as a gateway to greater attainment of IGD outcomes, but greater promotion of IGD's mediating processes as well.

In addition to these broader findings and patterns, interpreting the divergent sets of relationships presented in Figures 4.2 and 4.3 sequentially and in practical terms offers additional insight into the varying IGD experiences of students with below and above average openness. Figure 4.2 illustrates how exposure to course readings, structured activities, community guidelines, co-facilitation, and weekly journals (i.e., pedagogical features) promoted communication processes, affective positivity, and cognitive involvement for students with below average openness to multiple perspectives. The effectiveness of IGD in promoting all three of these mediating processes among students with below average openness may have been because these kinds of experiences were new to students who came into IGD less open to multiple perspectives. Students who come into IGD with below average openness likely have greater potential growth in these areas than students with above average openness. Along these lines, one might argue that students who are less open to multiple perspectives would not enroll in IGD in the first place, which may be the case for many students. However, the results of this study suggest that students who are relatively less open who do enroll in IGD can still engage in processes necessary to augment their intergroup understanding, empathy, and dispositions toward action and collaboration.

Figure 4.3, however, suggests that students who come into the IGD already more open to multiple perspectives have a different experience. Although IGD's pedagogy was associated with dialogic and critical communication among these students, it did not directly affect cognitive involvement or affective positivity. This may have been because the kinds of content and

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activities associated with IGD did not represent new learning or experiences for these students; therefore, there was nothing about IGD pedagogy alone that led to heightened levels of cognition or emotion. However, as these students communicated with each other in ways that are rare in their daily life (i.e., critical and dialogic communication processes), they experienced these heightened levels of both cognitive and emotional involvement, which speaks to the importance of facilitating IGD's pedagogical experiences and activities in ways that promote these kinds of communication processes.

As discussed, a significant relationship between communication processes (i.e., appreciating difference, engaging self, critical reflection, alliance building; Nagda, 2006) and affective positivity was found among students with above average openness to multiple perspectives, but not students with below average openness to multiple perspectives. A practical example may provide insight as to why this is. It is common in IGD to read about a certain topic before class, hear a mini-lecture about that topic from the co-facilitators, and then engage in a small group activity related to that topic. Each of these steps is captured in the pedagogical features construct in Figure 4.2, which was the only construct associated with affective positivity for less open students. However, quite often, the final engagement with a course topic is to dialogue with each other, which includes sharing how that topic affects one's life and hearing how that topic affects one's peers. Regardless of whether students possess more or less privilege in society, talking about and listening to such experiences can be uncomfortable in a variety of ways. The results of this study suggest that, for students with below average openness, this kind of communicative experience does not facilitate positive feelings. However, as suggested by Figure 4.2, such communication does promote cognitive involvement.

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Up to this point in these two adapted models, I have shown how students with both below and above average openness to multiple perspectives experienced increases in the mediating communication, cognitive, and affective processes associated with IGD, though their paths to those experiences were notably different. As a next step in the IGD process illustrated in Figures 4.2 and 4.3, it is intended that these cognitive and/or emotional experiences promote greater levels of intergroup understanding, empathy, and the desire to act and collaborate in ways that promote social justice. Again, we see that this promotion of outcomes did take place for both more and less open students, but in different ways.

As discussed, the cognitive aspects of the IGD experience (complex thinking about oneself, identity, societal norms, and related topics) promoted all three of the intended outcomes for both groups of students, though these relationships were stronger for less open students. Here to, this stronger connection between cognitive involvement and outcomes may have been due to the newness of the experience for less open students. That is, when compared to students with above average openness, students with below average openness would have more intergroup understanding, collaboration, and action to gain from the cognitive involvement IGD requires of them, given that students with above average openness were presumably already more cognitively engaged and/or social-justice oriented prior to their IGD experience. Therefore, students with above average openness experienced less drastic increases in these areas of intergroup relations based on their cognitive involvement.

It is also worth emphasizing that, for students with below average openness to multiple perspectives, cognitive involvement was the only mediating process that directly affected IGD's outcomes over the short-term (i.e., at the end of the semester). For these students, pedagogy and cognition seem to drive the IGD experience, whereas communication and emotion play much

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smaller roles. Indeed, there were multiple differences between students with below and above average openness related to affective positivity and communication. Specifically, for students with above average openness, positive emotions and experiences promoted intergroup action and collaboration, as did the communication processes. Neither of these direct effects existed for students with below average openness. As discussed previously, dialogic and critical communication may be an uncomfortable experience for students with below average openness and, therefore, may not motivate them to such action (i.e., self-directed action, other-directed action, intergroup collaboration, post-college involvement). As for affective positivity, the model does indicate that students with below average openness did have positive experiences and emotions in IGD (associated with pedagogy, as discussed); though, it also suggests that these positive experiences did not, in turn, foster the intended outcomes of IGD in a significant way. That is, affective positivity is not a mediator of IGD outcomes for students with below average openness as it is for students with above average openness.

Regarding long-term outcomes, prior to Gurin and colleagues' (2013) SEM analyses of longitudinal data provided by the Multi-University Intergroup Dialogue Research Project (MIGR), IGD scholars were limited in their understanding of the long-term impacts of IGD. The SEM analyses revealed that students' levels of intergroup understanding, empathy, and action a year after their IGD were associated with the change students experienced in those outcomes throughout their IGD (Gurin et al., 2013). The only mediating process that had long-lasting direct effects was communication processes. For students with both below and above average openness to multiple perspectives, all of these relationships remained intact and varied only slightly across groups, which is noteworthy for two reasons. First, though these relationships are not causal, they align with previous findings (Gurin et al., 2013) that the effects of IGD do not

"fade away" to a greater or lesser extent for students with below or above average openness. This might have been the case if, for one or both of these groups, increases in these outcomes over the semester were not associated with higher outcome levels a year later, or if the differences in the strengths of the relationships across groups varied substantially.

Second, though IGD's communication processes did not have direct effects on affective positivity or any of the three outcomes over the short-term for students with below average openness to multiple perspectives, communication processes did have direct effects on intergroup understanding, empathy, and action a year later. It is reasonable to assume, perhaps especially for students with below average openness, that many positive effects of the program do not come to fruition until after the IGD is completed. Students may need to first work through disequilibrium brought about by their IGD experience. This possibility aligns with one of the findings of Bowman's (2010) study of diversity courses, which he defines as "coursework that focuses on racial/ethnic and/or gender diversity" (p. 544). Though the IGD experience differs from the traditional classroom experience in multiple ways, his findings are useful in thinking about the short- and long-term impacts of IGD on students. Bowman found that taking a single diversity course was associated with decreased well-being when compared to not taking a diversity course. However, student well-being increased significantly after taking a second course. He describes this process as "disequilibrium and resolution" (p. 543), suggesting that one course may be enough to produce, but not resolve, disequilibrium in students. Additional coursework or time may be necessary for such resolution. This may be why, in the IGD context, dialogic and critical communication have direct effects on IGD outcomes over the long-term for students with below average openness, but much less so during their IGD experience.

Practical understanding of these different paths to short- and long-term IGD outcomes for students with below and above average openness to multiple perspectives has further implications for IGD theory, research, and practice. I discuss these implications in the following sections.

Implications for Intergroup Dialogue Theory and Research

This study was guided by Gurin and colleagues' (2013) critical-dialogic theoretical framework of IGD, the research that led to its development, and subsequent studies that built upon it. This study builds on previous group-specific analyses and comparisons as well; whereas previous studies have analyzed the IGD experience of particular social identity groups (Alimo, 2012; Dessel, Woodford, & Routenberg, 2014; Dessel, Woodford, & Warren, 2011; Ford & Malaney, 2012; Sorensen, 2010), this study provides the first set of group-specific analyses and comparisons based on an aspect of students' development. The results of these analyses have significant implications for IGD theory building.

Krathwohl (2009) defines theory as an "explanation of behavior that [a] makes good logical sense and either is [b] consistent with the research and explanations that preceded it or [c] convincingly negates or modifies them" (p. 84). He suggests that theory should "[d] find the significant variables, [e] unify a variety of findings, [f] assimilate them into a cohesive and interrelated body, and [g] locate points where research is needed" (p. 84). As explicated throughout this dissertation, the integrative theoretical framework I propose in Chapter II (see Figure 2.9), along with the overall purposes of this study, were designed to align with these seven points highlighted by Krathwohl.

Specifically, the theoretical framework I propose, as well as the research questions I put forth, are the result of a thorough review and integration of the IGD, self-authorship, and

epistemological development literatures, which guided my analyses of the relationships between students' openness to multiple perspectives (an epistemological disposition) and IGD pedagogy, communication processes, psychological processes, and intended outcomes. The framework builds on previous IGD and student development research by suggesting that communication processes that had been found to promote cognitive and emotional processes in IGD may be moderated by students' epistemological development, given previous student development research indicating that individuals' epistemological development may moderate the interpersonal development and capacity associated with such communication processes (King, 2010). At the same time, in acknowledging that the phenomena captured in the IGD framework likely happen concurrently (as opposed to sequentially in discrete steps) I suggested that other direct and moderating epistemological relationships may exist within the framework as well.

The results of this study indicate that each of the relationships between IGD pedagogy and psychological processes, communication processes and psychological processes, and many of the relationships between psychological processes and (short-term) outcomes are moderated by students' openness to multiple perspectives (see Figure 4.1). However, no epistemological moderation of the relationship between IGD pedagogy and communication processes was found. This suggests that the process by which IGD pedagogy fosters communication processes does not differ for students who come into IGD with relatively lower or higher openness. This is indeed plausible, given that each student in the sample opted into the IGD experience, which implies a certain level of commitment to engage in dialogue, regardless of the student's level of openness.

At the same time, recall that the data for both pedagogy and communication processes were collected at the end of the semester, providing a static, retrospective self-report related to

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these constructs, which may have influenced these results. Specifically, the results may have

been different if students filled out surveys related to pedagogy and communication processes

throughout the semester (e.g., at the end of each of the four phases of IGD; see Chapter II for

description). With this approach, students' responses related to pedagogy and communication

would not have been influenced by the entirety of their IGD experience, as is likely the case

when completing surveys at the end of the semester. As just one analytic approach, a semester

average of students' periodic assessments of pedagogy and communication would arguably

represent a more accurate indication of students' perceptions of IGD pedagogy and

communication processes than a single end-of-semester assessment, and such an average may

have differed from the end-of-semester values I used in this study. Using average values in my

analyses may have revealed differences in the relationship between pedagogy and

communication processes for students with below and above average openness to multiple

perspectives, indicating that this relationship is moderated by students' openness/epistemological

development. Additional research is needed to analyze this possibility.

In terms of broader implications for IGD theory, Gurin and colleagues' (2013) critical-

dialogic theoretical framework of intergroup dialogue (Figure 1.1) identifies the way in which

IGD's unique pedagogical features promotes IGD's intended outcomes among its diverse body

of participants; however, this framework may not describe the experience of particular subgroups

of participants. That is, in a large sample (e.g., the MIGR dataset), a model that holds for a

majority of participants may cloud how the model does not hold for a subgroup of participants

not included in that majority. For example, the results of this study might have indicated that the

framework does not hold for students with below or above average openness to multiple

perspectives. As it stands, Figures 4.2 and 4.3 indicate that the framework does operate for both groups of students, albeit in different ways.

Confirmation that the framework operates differently for some groups of students, along with the lingering possibility that the framework may not operate for other groups of students, invites IGD researchers to consider the role of student characteristics in Gurin and colleagues' (2013) framework. As the only previous study that included group-specific analyses of this framework, Sorensen's (2010) study of intergroup empathy (described in Chapter II) identified significant differences in the relationships between IGD pedagogy and processes for four groups: women of color, men of color, white women, and white men. These results suggest that some of the group memberships that may influence the relationships among IGD pedagogy, processes, and outcomes could be tied to social identity (e.g., race/ethnicity, gender, religion, sexual orientation, socioeconomic status, ability status).

Additional evidence of this possible relationship between social identity and IGD pedagogy, processes, and outcomes was provided by this study as well. Whereas women of color, men of color, and white women were fairly equally distributed across the two groups of students with below and above average openness to multiple perspectives (see Table 4.3), 65% of white men were among those with below average openness. As discussed, students with below average openness experienced IGD differently than students with above average openness (see Figures 4.2 and 4.3) as well as Gurin and colleagues' (2013) original model. Therefore, the various trends and group differences associated with openness revealed in this study may also be attributable to matters of gender and race. Similarly, the group-specific characteristics presented in Table 4.3 provide evidence that IGD may be experienced differently by students who were members of other types of groups who were likewise not evenly distributed between the below

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and above average groups. These groups include year in school (e.g., the higher proportion of below average openness among first-year students) and major (the higher proportion of below average openness among students majoring in STEM fields, business, nursing, social work, education, and public health compared to those in social science and arts and humanities). Further research could illuminate differences in the IGD experience among these various group memberships. Though it can be difficult to collect data from a large number of individuals in some of these groups, qualitative methods could be used to study groups with small sample sizes.

However, some of the group memberships that may influence the relationships between IGD pedagogy, processes, and outcomes may be related to students' developmental capacities, as is the case in this study. Indeed, among the many considerations made in the creation and facilitation of intergroup programs in higher education (e.g., resources, content, pedagogy), scholars emphasize the importance of acknowledging students' developmental readiness for such programs as well (Barber, King, & Baxter Magolda, 2013; Kegan, 1994; Waters, 2010). It is through such acknowledgement that professionals are able to provide students with appropriate levels of challenge and support (Baxter Magolda, 2004; Sanford, 1962). An appropriate blend of challenge and support facilitates epistemological, interpersonal, and intrapersonal development, while at the same time helping prevent developmental regression (Perry, 1981; Taylor, 2008). Kegan (1994) describes providing such challenge and support in terms of "building bridges" that (1) meet students where they are developmentally and (2) invite them to make their way toward a more refined and developed state, as opposed to "assuming that such a bridge already exists and wondering why the other has not long ago walked over it" (p. 332). Furthermore, he suggests that "we cannot simply stand on our favored side of the bridge and worry or fume about the

many who have not yet passed over. A bridge must be well anchored on both sides, with as much respect for where it begins as for where it ends" (Kegan, 1994, p. 62).

Many of the ways such "bridges" are "built" are reflected in educational practice, but there are theoretical implications as well. Scholars emphasize the importance of incorporating all three dimensions of development into programs' conceptual frameworks (Baxter Magolda & King, 2012; Pettigrew & Tropp, 2011), noting that a failure to adequately consider one of these dimensions can hinder programs' effectiveness (King & Baxter Magolda, 2005). I focused on epistemological development in this study because of the evidence suggesting that epistemological development may moderate individuals' interpersonal and intrapersonal development, as well as the lesser emphasis on epistemology in IGD theory and research. However, it would also useful to analyze how varying levels of intrapersonal development (e.g., racial/ethnic and gender "identity engagement" measures in the MIGR dataset) or interpersonal development (multiple measures in the MIGR dataset) moderate the relationships identified in Gurin and colleagues' (2013) framework. How might these paths differ among less and more highly developed students? In the simplest of terms, might there not be a complete path of arrows in an SEM model from pedagogy to outcomes for one or more of such groups? A lack of path does not necessarily indicate that these intended outcomes are not being attained by a given group; it simply hinders our ability to understand the IGD experience for different groups, as well as how to best challenge, support, and "build bridges" with diverse student groups in the attainment of IGD outcomes.

Studying the role of developmental capacities in the IGD experience would also help determine whether the effectiveness of IGD for an individual or group is dependent upon a minimum level of development in one or more domains (e.g., epistemological, intrapersonal,

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interpersonal). Though it would be difficult and impractical to assess students' developmental

capacities as part of their IGD application, a better understanding of this question could inform

how IGD administrators establish course prerequisites for IGD participation and/or select

participants. That is, such research might support the structuring of enrollment based on indirect

measures of development (e.g., course prerequisites), or it might make clear that a wide range of

development needs to be represented in groups in order to maximize the effectiveness of IGD.

One issue that is critical to research of student groups (whether they be demographic

groups or groups based on developmental level) is the recognition that it may not be possible to

measure different groups' various characteristics in the same way. Though I was able to establish

measurement invariance in this study, the results of my tests of measurement invariance suggest

that students with below and above average openness to multiple perspectives could be

considered different enough that measuring their attitudes and behaviors in the same way might

not be appropriate. Perhaps the simplest way this manifests itself is in how students interpret

survey questions, or even specific terms within survey questions. For example, students with

below and above average openness may differ in their understanding of what terms such as

"privilege," "discrimination," "gender identity group," and "inequality" mean. If the definitions

of such terms vary across groups, the survey items and set of possible responses take on different

meanings across groups, and comparisons of responses become difficult. For example, some

students may have little to no understanding of what "privilege" means in a social justice context.

Among students who do have such understanding, multiple interpretations may be had (e.g.,

"privilege is something that is earned," "privilege is something that can be earned or unearned,"

"privilege is something that can only be unearned"). In future studies comparing groups,

providing students with definitions of the key terms used in the study would go a long way in establishing measurement invariance.

Implications for Intergroup Dialogue Practice

The relationships between epistemological dispositions and IGD pedagogy, processes, and outcomes found in this study have multiple implications for practice. These implications can be organized into two primary categories: curriculum and facilitation, and facilitator training.

Curriculum and Facilitation

In light of the results of this study, both students and facilitators stand to benefit from an increased understanding of epistemological development and how it relates to individuals' engagement in dialogue and matters of social justice. In addition, it would be helpful to both students and facilitators if they were invited to reflect upon their own epistemological assumptions of truth, knowledge, and knowing. Such reflection could prompt greater self-awareness throughout the semester and facilitate development along these lines. Furthermore, to better accomplish the intended outcomes of IGD, it would be helpful if facilitators could gain an understanding of their students' epistemological dispositions and adapt their facilitation accordingly.

These various goals could be accomplished in multiple ways, depending on the needs and resources of the dialogue programs, facilitators, and students in a given context. I offer a few suggestions here, based on the results of this study, my reviews of the IGD, self-authorship, and epistemological development literatures, and my own experience as an IGD participant, facilitator, and trainer of facilitators. In developing such approaches, IGD professionals should remember that the goal is not to make students epistemological development experts, nor is it the goal to administer an empirically supported instrument of epistemological development in order

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to optimally assess students' development in this domain. As is the case with other concepts and reflections embedded in the first few weeks of the IGD curriculum, the goal would be to introduce concepts and help students develop a working knowledge and language, such that this knowledge can positively influence the IGD and be drawn upon throughout the semester.

The first few weeks of IGD are designed not only to help students get to know each other, but themselves as well. Students participate in activities that help them reflect upon various aspects of their identity, including their gender, sex, race, ethnicity, sexual orientation, religion/faith, social class, age, (dis)ability, citizenship, body size, and any other identities that are meaningful to students. This is helpful to students individually, and it grounds the IGD in matters of personal and social identities and, by extension, matters of intrapersonal and interpersonal development. To likewise ground the IGD experience in matters of epistemological development, students could participate in an activity that introduces them to epistemology and provides them an opportunity to reflect upon their assumptions of knowledge and knowing.

One approach to introducing epistemology would be to invite students to review a transcript of a real or hypothetical IGD interaction between multiple individuals on an issue related to social justice. Each of the individuals in the transcript would exhibit different assumptions of knowledge and knowing, though the students would not be told this in advance. Students would be asked to read the transcript and note the different ways in which the participants are making and supporting their claims, and how participants differ from each other in terms of how they make sense of and explain their stance on the issue (i.e., not how their opinions/positions differ). After doing this analysis individually, students could discuss what they found with a partner, after which the whole group could debrief the activity together. This large group debrief could include the group organizing similar statements in the transcripts into

distinct groups based on how individuals in the transcripts arrived at their conclusions (again, not based on the positions and opinions individuals in the transcripts maintained), which could be accomplished using large sheets of paper or a whiteboard. Though the groups of statements students produce could take shape in a variety of ways, the basic goal of the activity would be to help students identify the three general levels of epistemological development identified by scholars over the last few decades (see Table 2.4 for a summary). The basic understanding of epistemology provided by these three general levels would provide students with language and a framework they could draw upon throughout the IGD, which would be based on a shared experience they could refer back to as well (the transcript activity).

Having introduced epistemology and epistemological development to the IGD students, the next goal would be for facilitators to gain a sense of what each participant thought of the activity so that the facilitators can gain insight into students' epistemological dispositions. Such understanding would enhance facilitators' ability to provide an appropriate blend of challenge and support (Baxter Magolda, 2004; Sanford, 1962) to both individuals and the group as a whole. For example, the results of this study suggest that the interplay of communication, affect, and cognition in IGD varies based on students' openness to multiple perspectives. Having gained initial insights into students' epistemological dispositions, facilitators could better anticipate and make sense of their students' engagement and adjust their preparation, framing, and facilitation of the curriculum accordingly.

Inviting students to journal is one way facilitators could gain such insight. Each week, IGD students submit a journal related to the most recent dialogue. Journals are guided by a prompt that is provided by the facilitators. After completing an activity related to epistemological development, students could be asked to write about what they may have learned about

themselves in that process. They could be asked to describe which of the three positions they feel best describes them in a social justice/IGD context, or the extent to which they may align with more than one position, perhaps depending on the topic. To better illustrate their thinking, they could be asked to discuss a relevant topic or issue related to social justice. Alternatively, this journaling could be done briefly in class and turned in to the facilitators immediately after the epistemological development activity. Alternatively, if one-on-one meetings between facilitators and participants are built into the course, facilitators could follow up with each student at that time.

Having an increased understanding of students' epistemological dispositions gives facilitators more information to draw upon as they facilitate and make decisions, both in their preparation and in real-time. Indeed, facilitators are trained to be mindful of many things as they prepare and facilitate, including (but not limited to) each student's social identities, the balance of social identities in the group, the relationship between those identities and the IGD topic, who is speaking often and less often (or not at all), and the extent to which students are dialoguing versus discussing or debating. As students make statements or ask questions, facilitators' understanding of epistemological development (and their students' epistemological dispositions) would provide an additional lens through which facilitators could develop follow-up questions and responses. This would be especially useful in instances when students' comments or questions are perceived as problematic by the group, facilitators, or both. That is, it is possible that a student's comment may be problematic because it is associated with overly dualistic assumptions of knowledge and knowing. Conversely, an otherwise appropriate comment may be perceived as problematic because those hearing the comment may be maintaining overly dualistic assumptions of knowledge and knowing. Facilitators' ability to recognize such

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assumptions in the contributions and interpretations of their students would increase their ability to respond in the moment in such a way that offers both adequate challenge and support to all involved.

Facilitator Training

Of course, the effectiveness of epistemological development activities, as well as facilitation that is guided by an understanding of epistemological development, would depend significantly upon the knowledge, skills, and training of IGD facilitators. Facilitators are trained in a variety of topics prior to their first facilitation, including identity, power, privilege, principles of dialogue, facilitation techniques, working with their co-facilitator, IGD activities, and how to develop and ask effective questions, among others (Maxwell, Nagda, & Thompson, 2011). However, unless facilitators have studied psychology or student development, they are likely unfamiliar with epistemological development. Therefore, they are likely unable to informally assess participants' assumptions of knowledge and knowing (or their own assumptions), facilitate related activities, and they may be limited in the language they can use to discuss such matters in their planning sessions or facilitation.

Training facilitators on matters of epistemological development could be conducted in a variety of ways; I offer a few suggestions here. One common approach to training individuals to facilitate and debrief a given IGD activity is for them to experience the activity as participants themselves. Therefore, one approach to training facilitators on matters of epistemological development is to have them experience, as participants, the epistemological development activity they will lead as facilitators. This would give them an opportunity think about and ask questions related to both epistemological development and the facilitation of the activity. Indeed, the two primary goals of such training would be that facilitators (a) know how to guide their

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future students through each part of the activity and (b) gain knowledge of epistemological development that at least matches what their students should know about epistemological development after having completed the activity themselves.

In addition to training related to epistemological development *activities*, facilitators should also be trained on how to use epistemological development as lens for planning and real-time facilitation. To practice such planning as a part of training, trainees could work in pairs to think about how they would prepare a particular activity for students in the earlier and later levels of epistemological development. Trainers of facilitators could offer guiding questions that invite each pair to think about how less and more developed students might interpret and engage with that activity, and what facilitators might do to help all students get the most out of the activity. This work in pairs could be followed-up by a large group share-out, which would allow trainees to receive feedback from the group on what they came up with. Also, giving each pair a different activity to think through and prepare increases the number of activities trainees would go through together during the large group debrief (as opposed to each pair thinking through and preparing the same activity).

To provide an opportunity for trainees to see how their understanding of epistemological development can influence their real-time facilitation, trainees could review statements that students might make (or have made) in an IGD setting. Trainees could first be given an opportunity to think about how any indications of the students' epistemological dispositions in the statement might influence what they would do after that statement as facilitators. Trainees could also do mock facilitations in which this could be practiced in real time without an opportunity to reflect. Alternatively, trainees could read a case study involving multiple students

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and be invited to reflect on how epistemology is influencing the case, and how they might guide the interaction as a facilitator.

As facilitators are able to increase their understanding of epistemological development, augment their preparation and facilitation based on this understanding, pass on their understanding to students via carefully developed activities, and assess the epistemological dispositions of the students in their group, the group's collective ability to maximize the potential of IGD is enhanced. Furthermore, though student's openness to multiple perspectives is more often seen as a mediating process in IGD, it has been treated as a desired outcome in previous IGD research (Gurin et al., 2013; Nagda & Zúñiga, 2003), and each study has indicated that IGD does not increase students' openness to multiple perspectives. Therefore, adapting IGD and facilitator training as discussed in this section also stands to enhance IGD's ability to increase students' openness. Of course, I have provided basic overviews of only a few possible approaches to integrating epistemology into IGD, so programs and facilitators will need to determine what approaches they could take, given their specific context and goals.

Implications for the Role of Epistemological Development in Holistic Development

One additional motivation for conducting this study was to provide a response to King's (2010) call for additional research related to evaluating the role of epistemological development in the holistic development of students (i.e., whether this dimension is an equal partner among the dimensions, or the strong partner). This study speaks to this query, though a few constraints should be noted. First, proxy measures associated with epistemological dispositions are used for epistemological development. Second, the phenomena that were moderated in this study were not direct measures of interpersonal and intrapersonal development; rather, measures of IGD processes and outcomes that are interpersonal and intrapersonal in nature (see Table 3.2 for a

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summary of these constructs). In addition, this study focused on the *relationships among* IGD pedagogy, processes, and outcomes, as opposed to the extent to which interpersonal and intrapersonal processes and outcomes were *attained* by students with below and above average openness. In this sense, epistemological moderation is identified through notable differences in relationships across groups, as opposed to differences in the "levels" of phenomena across groups. With these constraints acknowledged, I discuss a few ways in which the results of this study further the scholarly strong partner conversation.

Perhaps the clearest indication of strong partner moderation this study could have provided would be if the relationships and paths in Gurin and colleagues' (2013) model simply did not exist for students with below average openness. If this were the case, it would be reasonable to assume that this framework and overall IGD experience, consisting primarily of interpersonal and intrapersonal processes and outcomes, did not operate for students in earlier levels of epistemological development. Such results would indicate that a certain level of development in this domain would be necessary for the framework (and IGD, generally) to "work" for students. As illustrated in Figures 4.2 and 4.3, the framework did operate for students with below and above average openness, but it operated in different ways, and it is this variation that provides evidence for the strong partner role of epistemological development.

Though the relationships among long-term outcomes were similar between students with below and above average openness to multiple perspectives, this was not the case for short-term, end-of-semester outcomes. For students with below average openness, the IGD experience was driven more by pedagogy and cognition; for students with above average openness, the IGD experience was driven more so by communication and emotion, though cognitive involvement still played a meaningful role. That is, the only paths to end-of-semester outcomes for students

with below average openness were through cognitive involvement. Communication and affect did not have direct or indirect effects on short-term outcomes for students with below average openness (and only a few weak relationships with long-term outcomes), aligning with Watt's (2003) observation that "cognition might prevent one from receiving the knowledge that comes through feeling" (p. 34). Along these lines, communication processes did not directly affect affective positivity for students with below average openness, whereas the opposite was the case for students with above average openness.

Therefore, being less open to multiple perspectives hindered the extent to which multiple aspects of the IGD experience promoted affective positivity, intergroup understanding, intergroup empathy, and intergroup collaboration and action. For students with above average openness, the full range of intrapersonal and interpersonal processes was more fully utilized in the realization of these IGD processes and outcomes, revealing how students' epistemological dispositions served as a moderating strong partner in the relationships between IGD pedagogy, processes, and outcomes.

Furthermore, the moderating role of students' openness to multiple perspectives may have been even more prominent in this study had an analysis of students with low openness been possible (i.e., as opposed to simply "below average" relative to their IGD peers). Given that the average openness for the below average group was fairly high (4.67/7.00), it remains unclear as to how having a truly low average level of openness (e.g., 2.50/7.00) would moderate the pedagogy, process, and outcomes associated with IGD. As discussed previously, it is possible that some or many of the relationships between constructs in Gurin and colleagues' (2013) model would not hold for such students. However, the MIGR data indicate that students with low levels of openness typically do not enroll in IGD, making a future analysis of such students unlikely.

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In summary, the moderation identified in this study increases our theoretical understanding of the relationships among epistemological, interpersonal, and intrapersonal development in the holistic development of students, yet it also provides a practical example of how such moderation plays out in a "real life" (and higher education) context. It illuminates the more tangible consequences of such moderation in the pursuit of intergroup understanding, empathy, collaboration, action, and other such aims of higher education that are critical to citizenship in an increasingly diverse and complex society.

Conclusion

Demographic shifts and technological advances are changing the social landscape of society, and colleges and universities stand to play an important role in preparing individuals for citizenship in this evolving landscape, given their ability to create diverse communities, provide relevant academic content, and facilitate meaningful interactions among diverse groups of students. However, among the many practical, theoretical, and empirical considerations that must be made in the creation and refinement of such endeavors, students' developmental capacities cannot be overlooked if the effectiveness of these endeavors is to be maximized.

Built originally upon principles and conditions conducive to positive intergroup contact, IGD has been refined and assessed over the last three decades and is therefore able to account for and maximize many aspects of students' developmental capacities and potential, as was found among the diverse group of students I analyzed in this study. Regardless of their relative levels of openness to multiple perspectives, students in this study experienced increases in IGD's intended outcomes of intergroup understanding, empathy, collaboration, and action. However, the processes by which these increases occurred varied by students' levels of openness. Students with relatively higher levels of openness benefited more fully from integral communication,

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cognitive, and affective processes that have been found to cultivate IGD's intended outcomes, while students with relatively lower levels of openness benefited less from these communication and affective processes, benefiting primarily from the cognitive processes associated with IGD.

In my review of the IGD, self-authorship, and epistemological development literatures, as well as in my interpretation and discussion of the results of this study, I describe how the effectiveness of IGD in promoting intergroup understanding, empathy, collaboration, and action stands to be increased as epistemological considerations are more thoroughly integrated into IGD theory, research, and practice. Indeed, such an integration represents a complex undertaking, but the theoretical, empirical, and practical contributions of this study provide a starting point as to how epistemology can be more fully integrated into the pedagogy, processes, and intended outcomes associated with IGD.

APPENDIX

Assumptions and Conditions of SEM Analyses, Causal Claims Based Upon SEM Results, and how These Assumptions and Conditions Apply to This Study

Assumption/Condition	Relevance to This Study
The observations (scores) are independent and the variables are unstandardized.	Regarding within-group independence, the sample, research design, and approach to data collection are such that observations can be assumed to be independent, or, dependent to an extent that would not have a meaningful impact on results. See "The Multi-University Intergroup Dialogue Research Project and Dataset" section (Chapter III).

Regarding between-group independence, each student in the sample is included in either the below or above average openness to multiple perspectives group for my multiple group analyses (i.e., not both). See "Multiple Group Analysis" section (Chapter III).

The variables used in my analyses are unstandardized. See "Dependent Variables" and "Independent Variables" sections (Chapter III). |
There are no missing values when a raw data file is analyzed.	Auxiliary variables are used to account for missing data. See "Missing Data" section (Chapter III).
Endogenous variables are continuous and their joint distributions are multivariate normal.	All endogenous variables included in my SEM analyses are continuous. I analyzed each variable for skewness (resulting in values less than 2.0 in each case) and kurtosis (resulting in values less than 3.0 in each case), indicating sufficiently normal distributions.
Predictor variables are not collinear.	I calculated variance inflation factors (VIF), which serve as indicators of multicollinearity, for the variables included in my SEM analyses. Acceptable VIF levels range from less than 10.0 (Midi & Bagheri, 2010) to less than 5.0 (Craney & Surles, 2002; Field, 2009) in the literature. The VIFs in this study were each less than 4.0.
To infer a causal relationship between two variables using SEM . . .	
The exogenous variables are measured without error.	The only exogenous variables in my SEM analyses are the indicators of pedagogical features. Kline (2012) notes that this assumption is generally unrealistic, especially for such abstract measures. He suggests that only variables with clear, exact values (e.g., age) have the potential to be measured without error.

| Presumed causes must occur before the presumed effect; that is, there is temporal precedence. | Throughout this paper, I discuss ways in which the pedagogy, processes, and outcomes associated with IGD follow the temporal sequence outlined in Gurin and colleagues' (2013) framework in a broad sense, though I also acknowledge in this paper that such phenomena (a) are not discrete events with clear "start" and "stop" times and (b) can occur simultaneously. See "Integrating Epistemology and Intergroup Dialogue–Implications" section (Chapter II) and "Implications for Intergroup Dialogue Theory and Research" section (Chapter V).

Also, the order in which the data for each latent construct was collected does not align completely with the sequence of phenomena captured in the SEM model. See "Research Design" subsection in "Limitations" section for a discussion (Chapter III). |
| There is association, or an observed covariation, between presumed cause and presumed effect. | All direct effects are presented in Figure 4.1 and Table 4.2 (Chapter IV). |
| There are no other plausible explanations of the covariation between a presumed cause and presumed effect; their statistical association holds controlling for other variables that may also affect the dependent variable. | All possible direct effects among latent variables are modeled in my SEM analyses, with the following exceptions.

I modeled only the direct effects of each short-term outcome on its corresponding long-term outcome (i.e., not all short-term outcomes on all long-term outcomes), given that Gurin and colleagues (2013) constructed the original model in this way. Replicating their model as much as possible was critical to analyzing how their model operated differently for groups that were created based on students' openness to multiple perspectives.

In addition, Gurin and colleagues' (2013) modeled eight direct relationships that were not found to be statistically significant in their results. Though these relationships remain "plausible" in a practical sense, the smaller sample sizes associated with my group comparisons necessitated analyzing a less complex model, so these eight previously unsupported relationships were removed. It should be noted that six of these eight relationships were direct relationships between pedagogical features and the three outcomes (three pre-post change, three one year later). In addition to Gurin and colleagues' (2013) analyses, Nagda, Kim, & Truelove (2004), Nagda (2006), and Gurin-Sands, Gurin, Nagda, & Osuna (2012) provide additional evidence that the relationships between pedagogy and outcomes are not direct, but indirect. The other two relationships that were not included are between affective positivity and intergroup understanding and between communication processes and intergroup empathy. |

The observed distributions match those assumed by the method used to estimate associations.	In Mplus, I used a maximum likelihood estimator (MLR) that is appropriate for SEM analyses of continuous, normally distributed variables. Muthén & Muthén (2015) indicate that the only analyses for which MLR is inappropriate are (a) two-level exploratory factor analyses with at least one binary/categorical variable and (b) three-level models with at least one binary/categorical variable, neither of which I conducted in this study.
The direction of the causal relation is correctly specified, and there are no equally plausible alternative versions of the model.	To test this assumption, I reversed the direction of those relationships that were reasonable to reverse based on logic and when the data was collected. Many, but not all, of these reversed relationships were similarly strong, and model fit did not worsen significantly as a result of these reversals. This indicates that equally plausible alternative versions of the model exist and the direction of the relationships among IGD's interconnected pedagogy, processes, and outcomes are not necessarily unidirectional. I acknowledge the inherent complexity of these relationships in Chapters II, III, and IV. Ultimately, I do not make causal claims in this study, so violating this assumption does not invalidate the results or implications I discuss. It should be noted, however, that the succession of IGD research that has been conducted over the last few decades (e.g., Nagda, Kim, & Truelove, 2004, Nagda, 2006) provides empirical support for the sequence of pedagogy, processes, and outcomes that is the focal point of this study. See "Intergroup Dialogue Theories, Framework, and Associated Research" section for a review of this literature (Chapter II).

Source: The assumptions/conditions included in the first column are adapted from Kline (2012).

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