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The influence of the campus climate for diversity on college students' need for cognition

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THE INFLUENCE OF THE CAMPUS CLIMATE FOR DIVERSITY ON COLLEGE STUDENTS' NEED FOR COGNITION

by

Kathleen M. Goodman

An Abstract

Of a thesis submitted in partial fulfillment of the
requirements for the Doctor of Philosophy degree
in Counseling, Rehabilitation, and Student Development
in the Graduate College of
The University of Iowa

May 2011

Thesis Supervisor: Professor Ernest Pascarella

ABSTRACT

The purpose of this research was to examine the influence of the campus climate for diversity on learning within four racial groups of college students. I used multiple regression to analyze how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college.

Three of the eight campus climate for diversity variables appeared to have no effect on need for cognition for any of the four samples: student heterogeneity, faculty heterogeneity, and discussion with faculty and staff whose opinions differ from the students. One variable, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, had an effect on need for cognition for all four samples.

Four additional variables were significant within different samples. Believing the institution facilitates diverse interactions positively influenced need for cognition for Latino/a students. Taking a diversity course was positive for African-American students. Both interacting with diverse others and participating in a racial/cultural workshop were positive for White students. The findings also suggested that being a first-generation college student or coming from a low-income family moderates the influence of the campus climate for diversity on need for cognition.

Suggestions for future research include creating research designs that ascertain how various racial and economic groups experience the influence of diversity on learning; seeking out new ways to distribute surveys and encourage survey-completion

among students of color; looking for interaction effects among diversity experiences; and using hierarchical linear modeling, structural equation modeling, qualitative methods, and mixed methods.

Suggestions for campus practice include maintaining programs designed specifically for students of individual racial groups, as well as low-income and first-generation college students; seeking ways to create a psychological climate that cultivates the belief that diversity is important to learning; providing more courses and workshops focused on racial and cultural diversity; and creating structured opportunities to introduce students to the varying political, religious, and social perspectives held by their peers.

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CERTIFICATE OF APPROVAL

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PH.D. THESIS

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CHAPTER 1 – INTRODUCTION

Background

Diversity has multiple meanings in higher education (Chang, 2002a). Quite often it refers to racial diversity (Chang, 2002a). Other times it refers to any kind of difference, based on economics, religion, political beliefs, gender, sexual orientation, and so on (Chang, 2002a). The term "viewpoint diversity" indicates that the difference is about perspective, rather than personal characteristics (Pidot, 2006; Pike & Kuh, 2006). However, many presume that perspective diversity results from personal characteristics such as race, gender, or sexual orientation (Chang, 2002a; Michaels, 2006; Pidot, 2006).

For many years the stated purpose of diversity in higher education was to serve students from underserved populations – primarily racial minorities – who had experienced inequities that prevented them from attending college at rates proportional to the population (Chang, 2002a; Rhoads, Saenz, & Carducci, 2005; Rothman, Lipset, & Nevitte, 2003). However, a shift in the discourse concerning the purpose of diversity occurred in the late 90s and early 2000s, related to a series of court cases that challenged race-based college admissions. In an effort to support affirmative action, higher education researchers, practitioners, policy-makers, and educators began to describe the purpose of diversity as fostering improved learning for all students (Chang, 2002a; Hurtado, 2007; Rothman et al.). They used cognitive and psychosocial theory to justify this premise – stating that the dissonance of interacting with people who are different from oneself leads to greater learning and personal development (Gurin, 1999; Gurin, Dey, Hurtado, & Gurin, 2002). If addressing inequities for students of color remained an underlying purpose of admitting more racially diverse classes, it remained implicit and unspoken

(Chang, 2002a; Denson & Chang, 2009; Hurtado, 2007). Racial diversity as an educational benefit for all – White students and students of color – became the explicit reason for diversity in higher education (Gurin, 1999; Hurtado, 2003).

Statement of the Problem

The shift in thinking about the purpose of diversity – from remedying race inequities to providing educational benefits for White students and students of color – was accompanied by a great deal of research during the past 10-15 years. The research established the educational benefit of diversity, suggesting it leads to improved learning and personal development (see for example, Bowman, 2009, 2010; Denson & Chang, 2009; Chang, 1996, Gurin, 1999; Hurtado, 2003; Locks, Hurtado, Bowman, & Oseguera, 2008; Milem, 2003; Nelson Laird, 2005; Umbach & Kuh, 2006). However, it also gave rise to several tensions that cast doubts on the educational benefits of diversity. These tensions include the conflation of racial diversity with perspective diversity (Chang, 2002a; Pidot, 2006; Pike & Kuh, 2006; Michaels, 2006; Rothman et al., 2003); the potential propagation of inequities for students of color (Carey, 2009; Chang, 2000, 2002a; Lerner & Negai, 2003; Palmer, 2001; Pidot, 2006; Schmidt, 2007); and the possible exacerbation of economic inequities (Astin & Oseguera, 2004; Carnevale & Rose, 2003; Michaels, 2006; Sacks, 2007; Schmidt, 2007; Walpole, 2007; Witt, Chang, & Hakuta, 2003).

Tensions that Cast Doubts on the Educational Benefits of Diversity

The conflation of racial diversity with perspective diversity is, in part, a result of strongly aligning the concept of diversity with affirmative action policies in order to justify bringing students of color to predominately White institutions (PWIs) (Michaels,

2006; Rothman et al., 2003). Since affirmative action is about race, diversity came to mean race. An underlying assumption of diversity as a mechanism to increase learning is that students of different races have different perspectives, which further contributed to the conflation of racial diversity with perspective diversity (Chang, 2002a; Pike & Kuh, 2006), even though it is possible for individuals of different races to share similar perspectives (Wood & Sherman, 2001 as cited in Pike & Kuh). Poor operationalization of variables used in diversity research, such as using ethnic studies courses (which inherently focus on perspective diversity) as a proxy for racial diversity, also add to the conflation (Gurin, 1999; Pidot, 2006).

The second tension related to the shift in thinking concerning diversity is that it may propagate inequities for students of color in several ways. Many have accused proponents of the educational benefit of diversity of using racial diversity as a "tool" to improve learning for White students (Carey, 2009; Denson & Chang 2009; Lerner & Negai, 2003; Palmer, 2001; Pidot, 2006; Schmidt, 2007). Related to this is a concern that PWIs have focused on enrolling students of color in the name of improved education, but then they have failed to put into place the systems and services that would contribute to the academic success and increased graduation rates for those students (Carey, 2009). Furthermore, PWIs have neglected to create environments that encourage positive interactions among students of different races (Chang, 2000; Hurtado, Milem, Clayton-Pedersen, & Allen, 1998; 1999; Levin, 2003; Milem, 2003; Palmer, 2001). Educators have also failed to address racial antipathy, which is still prevalent in society (Chang, 2000). The interpretation of research supporting diversity as an educational benefit has been criticized as well. Lerner and Negai (2003), in a critique of Gurin's (1999) widely-

cited research, suggested that she downplayed the fact that students of color, compared to White students, experience benefits from far fewer diversity experiences and that their learning is handicapped by some of those diversity experiences.

The final tension is directly related to the affirmative action policies that have been buttressed by the shift to viewing the purpose of diversity as an educational benefit for all, rather than a remedy to racial inequities. Affirmative action policies in higher education have been accused of increasing the likelihood that wealthy students – of any race – get into the most selective colleges while poor students go to the least selective institutions (Astin & Oseguera, 2004; Schmidt, 2007; Walpole, 2007) and overlooking the negative effects of poverty on race (Witt et al., 2003). Michaels (2006) goes so far as to say that higher education is guilty of masking issues of poverty by aggrandizing race. Others have suggested that affirmative action policies must address low-income status as an admissions factor, either to address inequities for those that are low-income or to increase the economic diversity of colleges for the educational benefit of all (Carnevale & Rose, 2003; Schmidt, 2007; Sacks, 2007).

These tensions manifest in society, in diversity research and scholarly discourse, in policies that guide higher education, and in practices at the campus level. For example, individuals have continued to challenge affirmative action policies, using political means such as ballot initiatives and referendum (Cokorinos, 2003; Jayakumar, 2008; Witt et al., 2003). Think tanks with the specific purpose of disproving the educational benefits of diversity have arisen (Cokorinos, 2003; Rhoads et al., 2005). Organizations have sprung up to challenge the use of race for any purpose in colleges and universities, demanding that programs specifically designed for students of color be dropped or made available to

White students as well (Cokorinos, 2003; Schmidt, 2006a; 2006b; 2007). Research documenting the economic inequities and stratification of higher education has been published (see, for example, Astin & Oseguera, 2004; Carnevale & Rose, 2003; Walpole, 2007). NPR has found the corporate push to define diversity beyond race and gender to be newsworthy (Whitelaw, 2010). This list could go on ad infinitum. Given the widespread manifestation of the tensions, it is important to address them.

Each of the three tensions cited can be viewed from multiple – and sometimes opposing – perspectives. Given the prevailing concerns and their widespread effects, research concerning the benefits of diversity should take into account these tensions in order to lessen them.

Background of Study

In the current study, I sought to test the hypothesis that diversity fosters improved learning for all students while taking into account the three tensions that have arisen related to diversity and learning: the conflation of racial diversity with perspective diversity; the propagation of inequities for students of color; and the exacerbation of economic inequities. In order to do this, I framed my research using the campus climate for diversity framework (Hurtado et al., 1998; 1999), which I describe in the next section. This framework guided me to operationalize some variables that represent racial diversity and others that represent perspective diversity, which will address the tension that the two are often conflated. More importantly, the campus climate for diversity framework is specifically about creating environments that support students of color (Hurtado et al.). By framing my research in this way, it helps address the second tension – that the current diversity views and practices propagate inequities for students of color. I also ran all of

my analyses on four separate samples, representing African-American, Asian-American, Latino/a, and White students in order to understand how each group experiences the climate. Finally, I addressed the third tension related to economic inequities by including variables for low-income and first-generation students in my models, which I also interact with the climate variables to find whether those characteristics moderate how students experience the effect of the climate on their learning. As Walpole (2007) points out, grouping research on both low-income and first-generation college students can help create an understanding of a group she refers to as "economically and educationally challenged" (pp. 14-15). By addressing these three tensions using the campus climate for diversity framework and creating variables that represent the concerns, I sought to gain a more nuanced understanding of who benefits from what types of diversity.

Campus Climate for Diversity

Based on years of prior research, Hurtado et al. (1998; 1999) defined institutional dimensions that comprise the campus climate for diversity. The four institutional dimensions are (1) historical legacy, (2) psychological climate, (3) structural diversity, and (4) behaviors. Each of these four dimensions represents multiple aspects of the campus climate for diversity. Historical legacy includes the heritage of race-relations, as well as campus mission and policies related to race. The psychological climate includes perceptions and attitudes related to diversity. Structural diversity is the proportion of students, faculty, and administrators of color on campus. Behaviors include interactions across differences, inclusion of diverse perspectives in the curriculum, and involvement in diverse activities. An essential tenet of the campus climate for diversity framework is "that different racial/ethnic groups often view the campus differently, a fact that has been

confirmed in numerous studies. Further, each conception is valid because it has real consequences for the individual" (Hurtado et al., 1999, p. iv). Therefore, the campus climate for diversity framework provides a way to look at the campus climate to assess 1) how it supports students of color and 2) whether it creates the type of structures, beliefs, and behaviors that produce the positive effect of diversity on learning for all students (Hurtado et al.).

The goals of diversity cannot be met by simply admitting more students of color to PWIs, but rather requires attention to many dimensions of the campus climate including curriculum, pedagogy, activities, support systems, percent of faculty and students of color, etc., on all campuses (Hurtado, 2001; Hurtado et al., 1998; 1999). Because the various dimensions of diversity on campus are interconnected, and individual perceptions are informed by multiple dimensions of the climate, Hurtado et al. recommend analyzing multiple dimensions rather than a single one. They conclude that "continued research is recommended on these interrelationships and the complexities that diverse learning environments present to continue to help individuals understand the implications of their work on college campuses" (Hurtado et al., 1999, p. 100).

Defining Need for Cognition as a Learning Outcome

Many learning outcomes have been used in diversity research, including intellectual ability (Chang, Astin, & Kim, 2004; Denson & Chang, 2009; Gurin, 1999; Hu & Kuh, 2003; Umbach & Kuh, 2006), critical thinking (Bowman, 2009; Loes, 2009; Nelson Laird, 2005), problem-solving (Hurtado, 2003; Terenzini, Cabrera, Colbeck, Bjorklund, & Parente, 2001), intellectual or academic self-concept (Chang, 1999; Cole, 2007), and need for cognition (Bowman, 2009). In this research, I used need for cognition

as a measure for learning because it is related to cognitive development (Baxter Magolda 1999; 2001; King & Kitchener, 1994; Perry, 1968) and desired learning outcomes as put forth by the Association of American Colleges and Universities (2002), the primary national association focused on undergraduate education.

The need for cognition measures an individual's "tendency to engage in and enjoy effortful cognitive activity" (Cacioppo, Petty, Feinstein, & Jarvis, 1996, p. 197). Those with low need for cognition are more likely to rely on the opinions and ideas of others to make sense of their world, whereas educators want students to learn to make meaning of multiple perspectives based on evidence and reason (Association of American Colleges and Universities, 2002). Individuals with a high need for cognition tend to seek out information and reflect on it to make sense of their world (Cacioppo et al.), which increases their likelihood of being exposed to multiple perspectives, which in turn leads to cognitive development (Baxter Magolda 1999; 2001; King & Kitchener, 1994; Perry, 1968).

Need for cognition reflects motivation to expend effort on problem-solving, reasoning, and gathering information, all of which are important learning outcomes. Although it is referred to as a motivation, need for cognition is not innate, but rather it "can be developed or changed" (Cacioppo et al., 1996, p. 199), which puts it on par with other learning outcomes of higher education. The need for cognition has been positively associated with high levels of verbal ability, the tendency to generate complex attributions for human behavior, one's desire to maximize information gained rather than maintain one's perceived reality (Cacioppo et al.) and college grades (Elias & Loomis, 2002). I describe the scale used to measure need for cognition in chapter 3.

Purpose and Research Questions

The purpose of this research was to use the campus climate for diversity framework (Hurtado et al., 1998; 1999) to examine the influence of multiple dimensions of diversity on the need for cognition (Cacioppo et al., 1996) within four racial groups of college students. Therefore, I analyzed how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college. I also analyzed whether demographics such as being low-income or a first-generation college student further influence the effect of the campus climate for diversity on the need for cognition for students in those four racial groups.

Research Questions

Specifically, two research questions guided this study. Controlling for student background characteristics, institutional characteristics, and a pretest of the outcome, how do the structural, behavioral, and psychological dimensions of the campus climate for diversity influence the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college? Does being a first-generation college student, or a student from a low-income family, moderate the effects of the structural, behavioral, and psychological dimensions of the campus climate for diversity on the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

Significance of the Study

This study is significant for several reasons. First, it addressed the tensions related to the shift in thinking regarding the purpose of diversity. Second, it provided a more

nuanced understanding of the climate for diversity and its effects on different student groups at a time when colleges and universities are becoming more racially and economically diverse due to changing demographics. Finally, it is significant because it provided findings that can have a wide impact because they inform policy-makers, researchers, educators, and student affairs practitioners.

The study addressed the tensions related to redefining the purpose of diversity from being a remedy for societal inequities that people of color have experienced and continue to experience to being an educational benefit of all students. I addressed these tensions by carefully operationalizing and defining diversity variables that reflect either racial diversity or viewpoint diversity. I also included variables representing low-income and first-generation students in order to understand the relationship of economic inequities to diversity. I used the campus climate for diversity framework (Hurtado et al., 1998; 1999) to frame my research, in order to address both how the climate supports students of color and whether the climate positively affects learning for all students. My research illustrates patterns of the impact of the campus climate for diversity on need for cognition for several racial groups. I disaggregated my analyses by race, in recognition of the fact that "the needs of marginalized populations, as opposed to the agenda served by normative frameworks, are often overlooked" (Teranishi, 2007, p. 40). This perspective is consistent with past research that demonstrates that different racial groups experience campus differently (Hurtado et al., 1998; 1999). Research that compares students of color to White students or seeks to find statistically significant differences between racial groups, sends the message – intentionally or not – that White perspectives are the norm, thereby marginalizing other racial perspectives (Stage, 2007).

The findings of this study are especially significant given the expected changes in demographics in the decade between 2005 and 2015. During that time, the overall number of graduating high school students will slow down and stabilize (Prescott, 2008). Simultaneously, the racial diversity of high school graduates will increase significantly, leading to 54% more Latino/a graduates, 32% more Asian-American graduates, 3% more African-American graduates, and 11 percent fewer White graduates (Prescott, 2008). These shifts have implications for postsecondary education related to admissions, financial aid, curriculum, support services, etc. (Prescott, 2008). The findings from my study are significant because they can contribute to the understanding of the ways that different racial groups experience aspects of the campus climate and inform policymakers and practitioners at a time when racial diversity is escalating.

The final reason my study is significant is that the findings are relevant to practice and theory. Therefore, the results can have multiple impacts by informing policy-makers, researchers, educators, and student affairs practitioners.

Assumptions and Delimitations

Several assumptions have guided my research. First, although research supporting the educational benefits of diversity began with court cases concerning race-based admissions in selective institutions of higher education, the repercussions of the findings are much broader. While college admittance is one manifestation of the relationship between diversity and education in the United States, beliefs concerning the educational benefit of diversity also affect policy and practices at the campus level at all types of institutions, thus compounding the influence of research related to diversity and education. Beyond influencing affirmative action, beliefs about diversity guide curricular

choices, programs that serve minority students, and initiatives to teach students how to dialogue across difference, to name just a few examples. I also assume that once colleges admit students, they have an obligation to provide the services and environment needed for them to succeed, and that my study can contribute to practitioners and educators as they work toward that goal. Finally, I assume that quantitative data can, and should, be used to answer research questions related to equity.

I have delimited the data for this study in a few ways. I used quantitative data from the Wabash National Study of Liberals Arts Education (WNSLAE). As with any secondary data analysis, my choice of variables is restricted to those available in the data set. Because WNSLAE was conceived as a broad investigation of college experiences that influence liberal arts education, it includes just 30 questions related to diversity, and my ability to create variables representing the campus climate for diversity are constrained by those questions. Likewise, I am constrained by the race categories that were used in data collection, which include Latino/a, African-American, Native American Indian, White, and Asian-American, but no options for multiracial individuals. Further, the number of Native American Indian students in the data set are too few to be included in the sample. The data is also limited to assessing change in the first year of college, because fourth year data has not been collected when I conducted my analysis. Finally, I chose to further delimit my analytic sample by restricting the data to students who attend four-year colleges and those who have voluntarily identified their race.

Summary

In higher education, diversity has multiple meanings related to race, personal characteristics, and perspectives. The purpose of diversity within college settings once

meant enrolling students of diverse racial backgrounds to provide opportunities that society had systematically limited. Starting in the late 1990s, the discourse concerning the purpose of diversity in higher education shifted to being an educational benefit for all. This coincided with legal battles over race-based college admissions policies and spurred a great deal of research demonstrating that engagement with diversity is positively related to many desired learning outcomes of college, such as critical thinking and intellectual development. However, the shift in thinking gave rise to three tensions that are evident in research, politics, and practice. These three tensions, which cast doubt on the educational benefit of diversity, include the conflation of racial diversity with perspective diversity, the potential propagation of inequities for students of color, and the possible exacerbation of economic inequities. Using the campus climate for diversity framework, I created a study that investigated the effects of various types of diversity on need for cognition (a learning outcome associated with cognitive development) for four separate samples of college students. The samples represented racial groups, including Asian-American, African-American, Latino/a, and White students. I also examined whether being low-income or a first-generation college student moderated the effects of diversity on need for cognition within each racial group. In the next chapter, I will discuss the theoretical and empirical foundations for my study.

CHAPTER 2 – THEORETICAL AND EMPIRICAL FOUNDATIONS FOR STUDY

The purpose of this research was to use the campus climate for diversity framework (Hurtado et al., 1998; 1999) to examine the influence of multiple dimensions of diversity on the need for cognition (Cacioppo et al., 1996) within four racial groups of college students. Therefore, I analyzed how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college. In this chapter, I present a theoretical foundation that suggests that diversity experiences facilitate cognitive development. Then I trace a decade's worth of research related to the educational benefits of diversity in postsecondary education.

How Diversity Works: A Theoretical Framework

As the 20th century came to a close and the new century dawned, the legality of using of affirmative action in college admissions was being challenged in courts throughout the U.S. (Chang, Witt, Jones, & Hakuta, 2003; Gurin et al., 2002; Hurtado, 2007; Hurtado, Dey, Gurin, & Gurin, 2003; Orfield, & Kurlaender, 2001). In this context, educational researchers sought to articulate the theoretical link between diversity and learning to support the growing empirical evidence that demonstrated the educational benefits of diversity (Gurin et al.; Hurtado, 2007; Hurtado et al.). Drawing from theories of Erikson (1963; 1968) and Piaget (1953; 1964; 1985), researchers hypothesized that experience with racial diversity creates a discontinuity and disequilibrium that facilitates learning outcomes such as active thinking, intellectual engagement and motivation, and academic skills (Gurin et al.; Hurtado et al.).

Erikson

Erikson's (1963, 1968) theory of identity development suggests that adolescents face a stage of "identity vs. role confusion," during which they often shut out people and ideas that differ from those they are used to, in order to hold onto their current identity. During this stage, it is not uncommon for adolescents to seek out individuals similar to them and to avoid, or even become intolerant of, those who are different from themselves, in order to avoid identity confusion (Erikson, 1963; 1968). Erikson (1963, 1968) called this stage in development a moratorium between childhood and adulthood, "between the morality learned by the child, and the ethics to be developed by the adult" (1963, p. 263). During this stage, individuals seek affirmation from their peers. During the next stage of development, "intimacy vs. isolation," adolescent become young adults willing to fuse their identities with that of others in order to create intimacy (Erikson, 1963; 1968). In order to develop intimate relationships, young adults must commit to affiliations and abide by those commitments, even if the commitments require sacrifice and compromise (Erikson, 1963; 1968). Colleges facilitate identity development because they expose students to ideas, people, and experiences which often differ from their backgrounds and therefore encourage new ways of thinking about the self, which is integral to psychosocial development (Gurin et al., 2002).

In delineating the theoretical link between diversity and learning, Gurin et al. (2002) suggested that the moratorium described by Erikson "should ideally involve a confrontation with diversity and complexity, lest young people passively make commitments based on their past experiences, rather than actively think and make decisions informed by new and more complex perspectives and relationships" (p. 330).

Thus, colleges and universities that provide racially diverse environments create a discontinuity that is important to identity development and is related to cognitive development (Gurin et al.; Hurtado et al., 2003).

Piaget

While interaction with racial diversity contributes to identity development by providing a discontinuity from prior experience, racial diversity also provides a disequilibrium in thinking which leads to increased learning (Gurin et al., 2002; Hurtado et al., 2003). Gurin et al. draw on Piaget (1953; 1964; 1985) to support this assertion. According to Piaget (1953; 1964; 1985), learning is an active process of moving from understanding something one way to understanding it in a qualitatively different way. This process requires equilibration – a process of trying to bring about a state of balance when faced with something that challenges that balance. Specifically, individuals experience "disequilibria" when exposed to ideas or concepts that don't fit with their current way of knowing. When that happens, individual must return to balance by either simply holding on to their current way of knowing or changing their thinking to integrate the experience that caused disequilibrium. The processes used to achieve equilibrium are assimilation and accommodation (Piaget, 1953; 1964; 1985).

Assimilation is the process of incorporating the disequilibriating idea or experience into one's current scheme of thinking and knowing, without changing that scheme (Piaget, 1953; 1964; 1985). Therefore, although disequilibrium is a necessary motivation to change one's thinking, it does not always lead to progress (Piaget, 1953; 1964; 1985). On the other hand, accommodation is the process of changing one's scheme

of thinking and knowing based on a new understanding grasped from the disequilibrium (Piaget, 1953; 1964; 1985).

Accommodation is a way to manage deficiencies and limitations of previous ways of thinking in order to integrate new understanding (Piaget, 1953; 1964; 1985). Therefore, accommodation eliminates the perturbations cause by the disequilibrium (Piaget, 1953; 1964; 1985). Accommodation is not typically the immediate inclination of individuals experiencing disequilibrium, but rather comes about when the disequilibrium and the potential of accommodating it "leads the subject to interest himself [sic] in the diversity of reality" (Piaget, 1953, p. 414). Therefore, accommodation fosters increased complexity in thinking and knowing within an individual (Piaget, 1953; 1964; 1985). A racially diverse student body has the possibility of exposing students to multiple worldviews and perspectives, creating the disequilibrium necessary to spur active and complex thinking (Gurin et al., 2002; Hurtado et al., 2003).

Cognitive Development in College

Perry (1968) incorporated Piaget's ideas and posited that cognitive development among college students entails new ways of thinking that move from being authority-bound to personally-defined, based on a wide-array of perspectives that often compete with one another. Therefore, cognitive development in college is not about what a student knows; rather, it describes the way students' think about the nature of knowledge, truth, values, responsibilities, and the meaning of life (Perry, 1968).

The psychological theories of Jean Piaget (1953, 1964, 1985) informed Perry's (1968) scheme of cognitive student development in several ways. Like Piaget, Perry (1968) suggested that development recapitulates at each new level of understanding. In

other words, the cognitive processes that a student works through in the early phases of development repeat when his or her thinking becomes more complex. Perry's (1968) scheme, similar to Piaget's (1953, 1964, 1985), was founded on the premise that individuals must experience disequilibrium (also referred to as incongruity or dissonance), in order to develop more complex ways of thinking. Perry's scheme (1968) also incorporated notions of assimilation and accommodation (Piaget, 1953, 1964, 1985). When an individual is faced with the dissonance of an experience that does not fit with his or her current epistemologies, that experience can either be assimilated – forced to fit the current way of thinking – or ways of thinking can expand to accommodate the new understanding (Piaget, 1953, 1964, 1985). Therefore, Perry (1968) concluded that students need exposure to multiple viewpoints and a diversity of experiences in order to spur cognitive development. Gurin et al. (2002) suggested that creating a racially diverse student body would expose students to the multiple viewpoints and diversity of experiences that Perry (1968) claimed were necessary for cognitive development (Hurtado et al., 2003).

Although Perry's (1968) scheme of cognitive development comprises nine "positions" describing increased complexity, it can be briefly described as four phases. The first phase, dualism, entails believing that knowledge is absolute and all of the "right" answers are known by authorities. In this phase, alternate perspectives are not considered legitimate and uncertainty among authorities is considered a weakness (Perry, 1968). Conflicting perspectives that may arise from diverse groups on campus are considered a problem that needs to be solved by students in this phase of development. They want to find out which opinion is right.

In the next phase, multiplicity, students accept that multiple perspectives exist, believing the authorities have just not found the right answers yet (Perry, 1968). Since multiple answers to questions can legitimately exist in this phase, those who hold different beliefs are not considered wrong and all opinions are considered equally valid (Perry, 1968). Students in this phase who experience conflicting perspectives that may arise from diverse groups on campus are likely to believe that all of the opinions are equally valid. Because the perspectives are all equal, the student at this stage does not commit to their own beliefs and understandings. Nor does he or she construct reasoned arguments to support one perspective over another.

In the third phase of Perry's (1968) scheme, known as relativism, students become aware that all knowledge is contextual and part of a larger whole. They recognize that there is a difference between unconsidered belief and considered judgment (Perry, 1968). Whereas authorities are valued for their expertise, it is possible to evaluate their perspectives as well (Perry, 1968). Students in this phase who experience conflicting perspectives that may arise from diverse groups on campus recognize that those perspectives arise from different experiences and understanding.

In the fourth and final phase, commitment in relativism, students realize they must make their own choices based on multiple truths and commit to ideas, themes, and choices (Perry, 1968). During this phase, they are able to clarify their identity (Perry, 1968). Students at this phase are able to integrate conflicting perspectives into their way of thinking, understand why those perspectives exist, and commit to those that best fit with the student's way of thinking.

This brief description of Perry's (1968) scheme helps illustrate how exposure to a variety of viewpoints can lead to cognitive development. As differing perspectives are encountered, a student experiences disequilibrium in his or her thought processes. While it is possible to assimilate new ideas into one's current ways of thinking, the more the disequilibrium interests the student, the more likely it is that an individual will make accommodations in their ways of thinking, thereby increasing complexity of thinking and developing cognitively.

Diversity's Role in College Student Development

Gurin et al. (2002) applied the theories of Erikson (1963, 1968) and Piaget (1953; 1964; 1985) to explain why racial diversity provides an educational benefit to all students. In short, they suggested that interaction with racial diversity in college leads to the disequilibrium required for identity construction and its subsequent role in fostering cognitive development (Gurin et al.; Hurtado et al.). While acknowledging that Erikson and Piaget were not explicitly making an argument for diversity, Gurin et al. suggested that, taken together, these theories support the conviction that diversity can facilitate better critical thinking skills, greater awareness of the learning process, understanding of self, and preparation for citizenship in a diverse democracy.

Gurin and colleagues concluded that "this body of theoretical work strongly suggests that racially and ethnically diverse learning environments can effectively provide the types of complex social structures that stimulate the development of active thinking processes" (as quoted in Milem, 2003, p. 135). They also articulated three specific aspects of a diverse learning environment that would create the discontinuity and disequilibrium necessary for development. First, structural diversity, the numerical

representation of diverse groups, is a necessary but not sufficient condition for encouraging student development (Gurin et al., 2002; Hurtado et al., 2003). In other words, racial diversity must exist in order for students to engage with it, but its mere existence will not cause engagement. Rather, it is incumbent on educators to create the conditions, policies, and practices that encourage informal interactions among students of different racial groups. Indeed, informal cross-racial interaction is the second aspect of a diverse learning environment that encourages college student development (Gurin et al.; Hurtado et al.). The third aspect of the environment necessary for encouraging engagement with racial diversity is to incorporate knowledge about diverse racial groups into the curriculum (Gurin et al.; Hurtado et al.). Gurin et al. named this "classroom diversity."

Given that most people, including students, are "cognitive misers" who prefer to rely on familiar ways of thinking, it is important for educators to find ways to encourage active thinking that can lead to cognitive development (Gurin et al., 2002; Hurtado, 2007; Hurtado et al., 2003). The psychological and social theories of Erikson (1963; 1968), Piaget (1953; 1964; 1985), and Perry (1968) help explain why racial diversity leads to enhanced learning for all students (Gurin et al.; Hurtado, 2007; Hurtado et al.). In particular, three aspects of diversity (structural diversity, informal interactions, and classroom diversity) provide the disequilibrium that leads to psychosocial and cognitive development (Gurin et al.; Hurtado, 2007; Hurtado et al.). Having established a theoretical link between racial diversity and improved learning, Gurin (1999) went on to test these ideas on an extensive set of analyses of the effects of diversity on learning, which I describe in the following section. Gurin's (1999) research was highly influential

to the field of higher education and marked the beginning of a long line of research supporting the educational benefits of diversity by linking aspects of diversity with college learning. I summarize that research following the section on Gurin's (1999) seminal study.

Gurin's Study Supports the Educational Benefits of Diversity

Gurin's (1999) research began with the premise that learning and preparation for democratic life are central missions of undergraduate education and racial diversity among college students is an effective mechanism for fostering those outcomes. She submitted her research to the U.S. Supreme Court as expert testimony defending diversity as an educational benefit for college students for two court cases challenging the use of affirmative action in college admissions. Based on her research findings, she claimed that "diversity is a critically important factor in creating the richly varied educational experience that helps students learn and prepares them for participation in a democracy that is characterized by diversity" (Gurin, 1999, "Opinions to Be Expressed"). The court relied on Gurin's (1999) research more than other support in favor of affirmative action, which was provided by many individuals and organizations (Pidot, 2006). Now widely cited in social science research, Gurin's (1999) research and theory have become the vanguard of a decade's worth of research related to the educational benefits of diversity.

Data and Analyses

Gurin (1999) analyzed three separate sets of data. First, she analyzed a cohort of students who participated in the longitudinal, freshmen survey of the Cooperative Institutional Research Program (CIRP). The students were surveyed when they entered

college in 1985 and then again in 1989 and 1994. Altogether, this analysis included more than 9,000 students at 184 institutions. Second, she analyzed students who participated in the Michigan Student Study (MSS), a longitudinal study of the effects of diversity at Michigan University. Nearly 1,500 students completed the 1990 and 1994 MSS survey. Her third analysis focused on a subset of the MSS that focused on students who participated in the University's Intergroup Relations, Community, and Conflict Program (IGRCC), who were also surveyed in 1990 and 1994.

Gurin (1999) used multiple regression and completed separate analyses for each racial group for which she had an adequate sample size. In the CIRP analyses, she analyzed samples of White, African-American, and Latino/a students, whereas in the MSS analyses, she analyzed samples of African-American and White students, and she did not disaggregate date for the IGRCC analyses.

Gurin's (1999) research centered on three types of racial diversity: structural, classroom, and interactional. Structural diversity was a measure of the percentage of students of color at an institution and was used as a control in each of the CIRP regressions. It was not relevant to the MSS and IGRCC analyses, because those data were from a single institution. Classroom diversity was a measure of diversity in the curriculum. In the CIRP analyses, she operationalized classroom diversity as the number of ethnic studies courses in which a student enrolled. In the MSS and IGRCC analyses, she used a measure of the extent to which students were exposed to, and influenced by, classes that dealt with issues of race, ethnicity, or interracial relationships. Interactional diversity captured any informal interaction between racial groups or concerning racial issues. Many variables were used to measure interactional diversity and they differed in

each dataset. Examples of the informal interactional diversity that Gurin (1999) investigated include attending a racial/cultural awareness workshop, socializing with someone from a different racial/ethnic group, positive personal interactions with students of other racial groups, and discussing racial issues. In order to capture the "net effects" of diversity, Gurin (1999) controlled for student background characteristics and institutional characteristics in each of her regression analyses.

Gurin (1999) hypothesized that greater structural diversity created optimal conditions for students to experience classroom diversity and interactional diversity. She first tested these relationships and found that structural diversity had significant positive effects on both classroom and interactional diversity. Next, she regressed more than 66 learning and democratic outcomes on student background characteristics, institutional characteristics, and measures of campus racial diversity, including structural, classroom, and interactional diversity. Each regression included structural diversity as a control. In each regression, she included the classroom diversity measure and one measure of interaction diversity. Because she used extensive controls, and included three diversity variables (which tend to be correlated) in each regression, Gurin's (1999) findings are conservative estimates of the unique effects of diversity.

Findings

Gurin (1999) used a p value of .05 for White student and .10 for the others, because the samples of White students were considerably larger than those of Latino/a or African-American students. The findings that she presented in her expert report did not include coefficients. Instead, she indicated which diversity experiences were statistically significant, and whether they were positive or negative. Her objective was to illustrate

patterns of significant positive (or negative) effects within and across groups. Her conclusions are based on those patterns.

For White students in the CIRP samples, taking an ethnic studies course had a positive effect on 11 of the 15 learning outcomes tested (Gurin, 1999). Those learning outcomes ranged from intellectual self-confidence to graduate degree aspirations to GPA to self-reported gains in a variety of academic skills. Among those same 15 outcomes, attending a racial/cultural workshop was positive for 11, discussing racial diversity was positive for 14, socializing with someone of a different race/ethnicity was positive for 13, and having a larger proportion of close friends from another racial/ethnic group was positive for 4.

While Gurin (1999) reported that African-American and Latino/a students experienced similar patterns of benefits, the tables she presented told a story that was a bit less positive. Taking an ethnic studies class had a positive effect on none of the 15 outcomes for African-American students and on 5 of the outcomes for Latino/a students. Among those same 15 outcomes, for African-American students, attending a racial/cultural workshop was positive for 7, discussing racial diversity was positive for 3, socializing with someone of a different race/ethnicity was positive for 3, and having a larger proportion of close friends from another racial/ethnic group was positive for none. For Latino/a students, attending a racial/cultural workshop was positive for 3, discussing racial diversity was positive for 2, socializing with someone of a different race/ethnicity was positive for 1, and having a larger proportion of close friends from another racial/ethnic group was positive for none. Altogether, diversity experiences were a positive influence on far fewer outcomes for students of color than for White students.

Furthermore, within the CIRP analysis, there were no negative findings for White students but there were for students of color. For African-American students, taking an ethnic studies course had a negative association with self-reported grades. For Latino/a students, attending a racial/cultural workshop was negatively associated with preparation for graduate school.

The MSS analysis focused on four learning outcomes: increased complex thinking, social historical thinking, intellectual engagement, and graduate school intentions (Gurin, 1999). For White students, experiencing racial diversity in the curriculum was positively associated with all four outcomes, and experiencing personal interactions with individuals from another race was positively associated with all except intellectual engagement. Involvement in campus activities with students from other races was also positively associated with two of the learning outcomes: social historical thinking and intellectual engagement.

The MSS results for African-American students were far more sparse than those of White students (Gurin, 1999). Experiencing racial diversity in the curriculum was positively associated with social historical thinking. Personal interactions with individuals from another race was positively associated with intellectual engagement. Amount of interaction with White students was positively associated with intellectual engagement but negatively associated with graduate school intentions.

The IGRCC analysis investigated whether participation in the Intergroup Relations, Community, and Conflict program was related to increased complex thinking or social historical thinking (Gurin, 1999). The findings suggested that the program

participation was positively associated with both outcomes for all students in the analysis; the data were not disaggregated by race.

Gurin (1999) concluded that the evidence strongly supported the positive effect of diversity experiences on learning outcomes. She found consistent patterns of significant positive effects for each racial group on multiple learning outcomes, in three different samples, and across time periods representing the senior year as well as five years post-college. Gurin (1999) recognized that there were fewer significant effects of diversity on learning for African-American and Latino/a students. She suggest that this may be related to smaller sample sizes.

Gurin's (1999) report stressed that both classroom diversity and interactional diversity were positively associated with many learning outcomes. She suggested that they are part of an inter-related diversity experience that is fostered by structural diversity. While she conducted her analyses to assess the independent statistical effects of each type of outcome, she concluded that on college campuses, diversity experiences are interconnected and work together to benefit learning outcomes.

Gurin's (1999) research was influential in the Supreme Court decision to allow colleges to continue to use affirmative action in admissions in a limited way (Chang et al., 2003; Pidot, 2006). While the Supreme Court condoned the use of affirmative action, the justices were not all in agreement, and one judge suggested that in another 25 years there will be no need for affirmative action (Chang et al.; Pidot, 2006). Critiques of Gurin's (1999) research suggested that her findings were overstated and the benefit of racial diversity was not nearly as ubiquitous as she stated (Pidot, 2006). Simultaneously, there was an onslaught of ballot initiatives and court cases against the use of race for

admissions, programming, or scholarship designations in higher education (Cokorinos, 2003). As a reaction to these events, scholars continued to research the effects of diversity on learning.

Additional Evidence of the Benefits of Diversity

Like Gurin (1999), many researchers have found that a wide array of diversity experiences benefit students on learning outcomes such as cognitive development, intellectual skills, and subject matter mastery. I describe that research in this section, using the campus climate for diversity framework to organize the material (Hurtado et al., 1998; 1999). The campus climate for diversity framework provides a way to look at the campus climate to assess whether it creates the type of structures, beliefs, and behaviors that produce the positive effect of diversity on learning for all students (Hurtado et al.). Although there are four aspects of the campus climate for diversity (structural diversity, psychological climate, behaviors, and historical legacy), I have found no research on historical legacy. Therefore, the following sections focus on research concerning the effects of structural diversity, psychological climate, and diversity behaviors on college learning outcomes.

Structural Diversity

Structural diversity is the proportion of students, faculty, and administrators of color on campus (Hurtado et al., 1998; 1999). Educators and researchers have suggested that the proportion of students of color on campus is a necessary precursor to interactions among students of diverse backgrounds that leads to cognitive development for all students involved (Chang, 1999; Denson & Chang, 2009; Gurin, 1999; Hurtado et al.;

Loes, 2009; Terenzini et al., 2001; and Umbach & Kuh, 2006). However, the research findings concerning the benefits of structural diversity have been inconclusive.

While Gurin's (1999) report to the U.S. Supreme Court stated that structural diversity had significant positive effects on both classroom and interactional diversity, it did not include a description of the methods used for that analysis. Chang (1999) conducted a study of the effects of diversity on college outcomes that was also used in the U.S. Supreme Court's decision about affirmative action. Using longitudinal data collected in the mid-1980s as part of the Cooperative Institutional Research Program (CIRP), Chang (1999) found that structural diversity, defined as the racial heterogeneity of the student body, directly affected the extent that students socialized with someone of another race and discussed issues of race. In other words, the greater the structural diversity, the more students had interracial interactions in some form. Moreover, his findings also suggested that structural diversity has an indirect effect on intellectual self-concept, when controlling for individual and institutional characteristics. Denson & Chang (2009) found some evidence that the effect of the institution-level cross-racial interaction on self-efficacy tends to be stronger on campuses that have greater structural diversity, which they defined as larger proportions of students of color. However, this was not the primary purpose of their research, and they suggested that the link between structural diversity and cross-racial interactions and cognitive outcomes should be further studied with structural equation modeling (Denson & Chang, 2009). In another study of cross-racial interaction, Chang et al. (2004) found that the percent of students of color on campus leads to increased cross-racial interactions and that cross-racial interactions in the classroom positively affect intellectual ability. Taken together, these four studies provide

evidence that suggests structural diversity may have an indirect effect on learning by leading to increased levels of cross-racial interactions.

Other studies have found that structural diversity has a negative effect, or no effect at all, on learning outcomes. For example, Loes (2009) found that for students of color, compared to White students, structural diversity had a small negative effect on critical thinking. Rothman et al. (2003) defined structural diversity as increased enrollment of Black students at PWIs. Their outcomes measured how students, faculty, and administrators perceive the academic climate. They found correlations between higher levels of Black student enrollment and negative perceptions of students' academic abilities and students' academic effort (Rothman et al.). Terenzini et al. (2001) found little relationship between the structural diversity of a classroom and problem-solving skills such as describing a problem, evaluating evidence, and suggesting multiple solutions for an unstructured problem. In a pared down model, there was a negative relationship between low classroom diversity and problem-solving skills, but those effects were not significant when other classroom experiences were added to the model (Terenzini et al.). Umbach and Kuh (2006) defined structural diversity as the heterogeneity of students on campus and found no relationship between it and gains in general education. In fact, they found that students at liberal arts colleges had the greatest gains in intellectual outcomes associated with diversity experiences, yet liberal arts colleges had the lowest levels of structural diversity in their sample of 349 four-year institutions (Umbach & Kuh, 2006).

Research on the relationship between structural diversity and learning outcomes provides little consistent evidence of a positive connection. This may reflect differences

in methods, which included bivariate correlation (Rothman et al., 2003), multiple regression (Chang, 1999; Chang et al., 2004; Loes, 2009; Terenzini et al., 2001), graphing group differences (Denson & Chang, 2009), and hierarchical linear modeling (Umbach & Kuh, 2006). Likewise, the researchers' various definitions and operationalization of structural diversity may have led to divergent findings. Given the range of methodological approaches, definitions of structural diversity, and findings, more research on this particular aspect of the campus climate for diversity seems warranted (Denson & Chang, 2009; Loes, 2009; Rothman et al.) and should try to discern under what conditions does structural diversity lead to increased diversity experiences (Chang et al.; Umbach & Kuh, 2006).

Psychological Climate

Gurin (1999) asserted that institutional commitment to diversity is important to learning. While she claimed that commitment to diversity is demonstrated by structural diversity, classroom diversity, and informal interactional diversity (Gurin, 1999), others have stated that the perceptions and attitudes of individuals related to multiculturalism and students of color on PWIs have very real consequences that affect the institution's climate (Hurtado et al., 1998; 1999). Perceptions and attitudes comprise the psychological climate and relate to other aspects of the campus climate for diversity, including behaviors and structural diversity (Hurtado et al.). Few studies about the relationship to diversity and learning have focused on how the psychological climate influences learning; instead, they have focused on structural diversity (as described in the prior section) and behaviors related to diversity (described in the next section). However, the growing use of hierarchical linear modeling (HLM) in higher education research

(Hox, 2002, Osborne, 2000) may lead to changes in this regard. The three studies described below used aggregated student data to test whether institutional context affects students' learning regardless of their own behaviors.

Three groups of researchers have suggested that higher average institutional levels of behaviors such as cross-racial interactions would represent conditions and attitudes on campus that reflected positive attitudes toward diversity which would, in turn, lead to increased cognitive and intellectual outcomes (Chang, Denson, Saenz, & Misa, 2006; Denson & Chang, 2009; Umbach & Kuh, 2006). One study found that the average level of participation in racially-focused programs and classes was associated with increased academic skills, regardless of the individual student's level of participation (Denson & Chang, 2009). They concluded that "campuses where students are offered more diversity-related opportunities and are encouraged to take advantage of them are also those that are likely to possess a unique normative context that embraces diversity and are serious about eradicating racism. From a practical standpoint, our findings suggest that students benefit from being educated in such a context" (Denson & Chang, 2009, p. 345).

In their hierarchical linear model of diversity at liberal arts colleges, Umbach & Kuh (2006) found that institutional level diversity was associated with higher levels of collaborative learning and higher-order thinking. Chang et al. (2006) found that institutional averages of cross-racial interactions marginally influenced cognitive development. They posited that the institutional qualities responsible for creating positive cross-racial interactions included values, practices, traditions, and sentiments of the university culture (Chang et al.).

These three studies, though not specifically focused on psychological climate, used hierarchical modeling to test whether institutional contexts influence learning beyond individual student behaviors. Each study concluded that aggregate levels of diversity experiences influence learning in small but significant ways. Since the average levels of diversity experiences represent an institutional context related to norms and culture, these studies provide a modicum of support that suggests that the psychological climate of the campus affects learning.

Behavior

Within the campus climate for diversity framework, behaviors include exposure to inclusion of diverse perspectives in the curriculum, involvement in diverse activities, and interactions across differences (Hurtado et al., 1998; 1999). Research on this aspect of the climate is extensive and, for the most part, it supports Gurin's (1999) findings that classroom diversity and informal interactional diversity positively affect learning.

Diversity coursework. Several studies have investigated the relationship between learning outcomes and taking ethnic studies, women studies, or social justice courses and found positive results. While Bowman (2009) did not find a relationship between diversity courses and critical thinking or moral development, he did find a positive correlation with need for cognition (a measure of enjoying mental effort and multiple perspectives). Interestingly, he did not find increased gains related to taking more than one diversity course (Bowman, 2009). Another study on the relationship between taking an intergroup dialogue course and gains in need for cognition found no significant effect (Mayhew, Wolniak, & Pascarella, 2008). One explanation for the seemingly contrary findings of these two studies may have to do with the comparison group. While Bowman

(2009) was comparing students who took diversity courses to those who took none, Mayhew et al. were comparing those who took an intergroup dialogue course to those who took an introduction to sociology course. The difference in findings could also lie in the difference between an intergroup dialogue course, which typically focuses on a lot of personal identity work, and an ethnic studies course (the variable in Bowman's study) which could be any kind of course focused on another culture. Sample size may also contribute to the different findings; Bowman (2009) used a multi-institutional sample representing 19 institutions, while Mayhew et al. used a single-institution sample.

In the realm of critical thinking, one study has positively linked taking diversity courses to disposition toward critical thinking (Nelson Laird, 2005). Both ethnic studies courses and women's studies courses were linked to self-reported gains in critical thinking in another study (Tsui, 1999). However, once pedagogy was taken into account, the effects of taking an ethnic studies course on critical thinking were no longer significant, suggesting that the content of the course was less important than pedagogies employed to teach the course (Tsui, 1999). Loes (2009) found no relationship between taking diversity courses and gains in critical thinking, whereas Carini, Kuh, & Klein (2006) found that integration of diversity into coursework was positively related to critical thinking, especially for students with lower SAT scores. Similar to the findings for diversity coursework and need for cognition, the findings related to diversity coursework and critical thinking are not congruent. This could have to do with differing sample sizes, different measures of diversity coursework, or different measures of critical thinking. However, diversity coursework has been positively associated with other learning outcomes. Increases in attributional complexity (how people think about, and

attribute, their own and others actions) (Engberg & Mayhew, 2007; Hurtado, 2003; 2005), as well as with persistence to the next academic year (Hurtado, 2003), and self-reported grade point average (Carini et al.) were all linked to diversity coursework.

Non-classroom diversity programming. A number of studies have found positive effects of participating in non-classroom diversity programming and various learning outcomes. In one study, participating in intergroup dialogue was positively associated with gains in analytic-problem solving skills and attributional complexity, but participating in extracurricular diversity events did not affect learning outcomes (Hurtado, 2003; 2005). In another study, participating in a racial or cultural awareness workshop was associated with gains in critical thinking in the first year of college for White students (Pascarella, Palmer, Moye, & Pierson, 2001).

Formal diversity experiences. A number of studies combined diversity coursework with non-classroom diversity programming into one scale. I have grouped these studies under the category "formal diversity experiences" because they seem to represent institutionally-created experiences (courses, workshops, organizations, etc.) vs. student-created experiences such as choosing to socialize with an individual from a different race. For example, researchers found "curricular diversity" was positively associated with gains in academic skills and self-efficacy but it should be noted that curricular diversity variable was operationalized as a scale that included diversity coursework, participating in a student organization focused on race/ethnicity, and attending a cultural awareness workshop (Denson & Chang, 2009). Likewise, using a scale representing both diversity coursework and diverse interactions, Umbach and Kuh (2006) found a positive influence on gains in general education (including writing,

speaking, and critical thinking) for students at liberal arts colleges. In yet another study that used a scale combining diversity coursework with diversity programming, researchers found a positive effect on both critical thinking and intellectual self-confidence, for women (Kim, 2002). Cole (2007) found that participating in diversity functions, including workshops, courses, or organizations, indirectly influenced intellectual self-concept through increased student-faculty interactions.

Diverse interactions. Interacting with those who are different from self, either by race or worldview, has been correlated with many cognitive and learning outcomes as well. For example, Chang (1999) found that socializing with someone from a different race has a positive effect on intellectual self-concept, although that effect became non-significant when he added college activities and student involvement to his model. Cole (2007) also found that interacting with someone from a different race has an indirect effect on intellectual self-concept, because it leads to increased interactions between students and faculty, which in turn leads to gains in intellectual self-concept.

Hurtado (2003, 2005) found that positive interactions with individuals from another race or ethnicity had a positive effect on analytic problem-solving and attributional complexity. Frequency of interactions with individuals from another race or ethnicity also had a positive effect on attributional complexity (Hurtado, 2003, 2005). Nelson-Laird (2005) also found that *positive interactions* with racially diverse peers affected multiple learning outcomes, whereas *frequency of interaction* with racially diverse peers affected only one outcome. In his study, positive interactions with racially diverse peers had a positive effect on open-mindedness and confidence in one's ability to think critically, whereas frequency of interaction with racially diverse peers had a

positive effect on just open-mindedness (Nelson Laird, 2005). Both authors concluded that when it comes to cross-racial interactions, quality of interactions may be more important than frequency of interactions (Hurtado, 2003; 2005; Nelson Laird, 2005).

Cross-racial interaction positively predicts gains in general education, intellectual skills, and science literacy (Luo & Jamieson-Drake, 2009), general academic skills (Denson & Chang, 2009), and cognitive development, openness to diversity, and intellectual/social self-confidence (Chang et al., 2006). Being friends with someone from a different race is associated with gains in critical thinking in the first year of college, for White women (Pascarella et al., 2001). Cross-racial interaction in the classroom has been associated with increased ratings of one's general knowledge and critical thinking (Chang et al., 2004).

Studies that have defined "interactional diversity" related to differences in worldview (as opposed to race) have also found positive effects on learning, although not universally so. Positive interactions with diverse peers has been associated with gains in need for cognition (Mayhew et al., 2008) and interacting with someone from a different racial, economic, social, or cultural background has been associated with gains in general education and intellectual development (Hu & Kuh, 2003). Engaging in serious discussions with individuals who have different perspectives on politics, religion, personal values, and other aspects of worldview positively affected critical thinking for some groups of students (discussed more in the next section) but not all students (Pascarella et al., 2001). Likewise, Loes (2009) found no main effect of interactional diversity on critical thinking, but it was positive for White students. His interactional diversity variable included attending a cultural workshop, having serious discussions

about perspective diversity, and having meaningful discussions with diverse students (Loes, 2009). Discussing issues of race and ethnicity has also positively predicted intellectual self-concept (Chang, 1999).

The evidence suggesting that cross-racial interaction has a positive effect on learning is quite strong, given the substantive number of studies that have evaluated the effect of cross-racial interactions on various cognitive and intellectual outcomes. These studies have all found a positive relationship, regardless of the different measures used for outcomes and sample sizes. Interactional diversity based on perspective rather than race may also positively affect learning, but the findings are less clear.

Conditional Effects of Race

A distinguishing characteristic of Gurin's (1999) seminal study of the effect of diversity on learning was that it was disaggregated by race. Gurin (1999) was, after all, trying to ascertain whether racial diversity was a benefit to all students, regardless of race. It is surprising then, that so few of the subsequent studies have attempted to test for racial differences. Hurtado (2005) stated that "those in the minority experience the campus differently" (p. 608) and the success of students of color is related to how they experience campus, yet she did not try to isolate those differences in her analyses. Likewise, Chang et al. (2006) acknowledged, "we are fully aware that students from different racial/ethnic groups probably experience campus diversity in different ways" (p. 438) and went on to state that they did no run separate analyses for each racial group because of sample size limitations.

Of the few studies that did look for conditional effects by race, several found that White students tend to benefit from diversity experiences more than students of color. For

example, Hu & Ku (2003) found that overall, the magnitude of gains in general education associated with diverse interactions were greater for White students than students of color, although that too was conditional, on institutional type. Loes (2009) findings demonstrated that diversity interactions positively affected critical thinking for White students, but was not significant for students of color. Bowman (2009) found that White students, compared to students of color, made greater gains in need for cognition when they took two or more diversity courses.

The analysis of Pascarella et al. (2001) was more complex in that it looked at the effects of ten different diversity experiences on gains in critical thinking during the first and third years of college. Their analyses were broken into samples of 2-year and 4-year institutions, and further subdivided into White males, White females, male students of color, and female students of color (Pascarella et al.). They concluded:

> A number of different diversity experiences had significant, positive influences on first- and third-year critical thinking… What is perhaps less intuitive about the results of this investigation is the range of diversity experiences that influence critical thinking for different groups of students. Different experiences affected two- and four-year college students and the various racial and gender subgroups in our study in different ways. p. 269

While no clear patterns emerged, the disparate findings seem to support the notion that the race and gender of a student affects how they experience college.

Finally, two additional studies found no conditional effects based on race. There were no differences between White students and student of color for the effect of taking an intergroup dialogue course on need for cognition (Mayhew et al., 2008). Likewise, there were no differences by race for the effect of experiencing diverse coursework on critical thinking, GRE scores, and GPA (Carini et al., 2006).

Taken together, these conditional findings suggest that it is likely that students do experience college differently depending on their race. They also suggest that the benefits of diversity on learning may accrue to White students more than to students of color. Given the legal and practical importance of understanding how diversity affects learning for various racial groups on campus, it is surprising that more research in this area has not disaggregated data, searched for conditional effects by race, or employed other research methods to understand the experiences of students of different races. According to Hurtado (2005), "a deeper understanding of campus diversity will be attained when researchers understand how diversity affects the different groups and even subgroups within our society" (p. 608). While limited sample sizes of students of color may limit analyses, that argument applies mostly to multilevel analyses and studies of single institutions. At least a handful of studies included in this review used multiple regression to analyze thousands of students and very likely could have looked for conditional effects of race (see, for example, Chang, 1999; Chang et al., 2004; Hurtado, 2003; 2005; and Luo & Jamieson-Drake, 2009).

Synthesis and Critique

Several conclusions can be drawn from the research reviewed in this section. First, there is little conclusive evidence that structural diversity effects learning, but rather there is an abiding belief that "structural diversity is a necessary but insufficient condition for maximal educational benefits" (Gurin et al., 2002, p. 333). Evidence suggesting that structural diversity has an indirect effect on learning by creating increased cross-racial interactions supports this belief (Chang, 1999; Chang et al., 2004; Denson & Chang, 2009; Gurin, 1999). However, findings suggesting that structural diversity has no indirect

effect on learning (Loes, 2009; Umbach & Kuh, 2006) or perhaps even a negative effect on learning (Rothman et al., 2003; Terenzini et al., 2001) indicate that the issue is far from resolved. More research on the impact of structural diversity is needed.

This review of empirical evidence also demonstrates that little research has focused on the effects of psychological climate for diversity on learning. While the psychological climate has been lauded as important (Hurtado et al., 1998; 1999), I found no research look at the relationship of this aspect of the campus climate for diversity and learning outcomes. Three studies found that institutional context related to diversity positively influences learning in small but significant ways (Chang et al., 2006; Denson & Chang, 2009; Umbach & Kuh, 2006). Though the connection is amorphous, these findings suggest that the psychological aspect of the campus climate for diversity is relevant to learning and needs to be researched.

The research in this review predominantly focuses on behaviors in the campus climate for diversity and their influence on learning. The evidence strongly supports the notion that cross-racial interaction positively influences learning (Chang, 1999; Chang et al., 2004; Chang et al., 2006; Denson & Chang, 2009; Hurtado, 2003; 2005; Luo & Jamieson-Drake, 2009; Nelson Laird, 2005). There is also considerable evidence that diversity coursework has a positive effect on learning as well, though the research is not clear as to whether it is the content of those courses, the interactions within them, or the pedagogy that influences learning (Bowman, 2009; Carini et al., 2006; Engberg & Mayhew, 2007; Hurtado, 2003; 2005; Nelson Laird, 2005; Tsui, 1999). Fewer studies focused on participating in co-curricular activities such as attending a cultural awareness workshop or participating in a student organization focused on race/ethnicity, but do

suggest they may have positive influence on learning (Cole, 2007, Denson & Chang, 2009; Hurtado 2003; 2005; Kim, 2002). There is also evidence that interacting with individuals who are different from oneself based on economic, religious, or social background (Hu & Kuh, 2003), or who hold different religious or political perspectives or personal values (Mayhew et al., 2008; Pascarella et al., 2001) may also contribute to learning. Even engaging in conversations about difference may lead to gains in learning (Chang, 1999; Loes, 2009, Pascarella et al.). These findings on behavior strongly support the hypothesis that interacting with diversity in general, and racial diversity in particular, is an effective means to increase learning. Bowman's (2010) quantitative meta-analysis of 17 articles and dissertations about college diversity experiences and cognitive development came to similar conclusions as this review.

Bowman (2010) concluded that his meta-analysis provides strong evidence that diversity coursework, interpersonal interactions with racial and nonracial diversity, and diversity workshops are positively related to cognitive development. Based on his analysis, he also concluded that interactions with racial diversity, compared to interactions with non-racial diversity, are more strongly linked to cognitive development (Bowman, 2010). Due to his particular method, he was also able to ascertain that the connection between diversity and cognitive development is the same regardless of whether the research used self-reported gains or more objective measures of cognitive growth (Bowman, 2010).

Finally, the evidence from this review demonstrates that only a small portion of the research attempted to understand whether the influence of diversity on learning is conditional based on race. Gurin (1999), whose study serves as the foundation for the

research concerning the benefits of diversity on learning (it is cited in all but one of the articles reviewed here), disaggregated her data by race to ascertain how each racial group benefited from diversity. While she concluded that the findings demonstrated that all racial groups benefit from diversity experiences, a look at her results suggests that African-American and Latino/a students experienced far few gains in learning due to diversity experiences, and in some instances the effect of diversity was negative on their learning. Research in the past 10-15 that looked for conditional effects tended to find that Whites gained more from diversity (Bowman, 2009; Hu & Kuh, 2003; Loes, 2009), or that the effects are not conditional (Carini et al., 2006; Mayhew et al., 2008). Still, researchers continue to call for an understanding of how diversity affects different racial groups for important legal and practical reasons (Bowman, 2010; Chang et al., 2006; Hurtado, 2005). Chang et al. summarize this sentiment best:

> It is becoming increasingly clear that the effects of diversity are conditional, which explains in part why there is still ongoing controversy regarding the body of research informing the benefits of diversity as noted by Justice Scalia. In order to understand if diversity matters, we need also to understand *what* makes diversity work or fall short. There is still a pressing need for more quality research because the if question is not yet fully resolved in the courts, and the what question has serious implications for institutional practice, which subsequently contributes to how the educational relevance of diversity will invariably be judged. p. 452

This sentiment, and the research reviewed in this chapter, demonstrates that there are still some doubts concerning the effect of diversity on learning.

This line of research was precipitated by a shift in thinking concerning the purpose of diversity – from remedying race inequities to providing educational benefits for White students and students of color. While the research strongly suggests that there is an educational benefit of diversity, it also raises several tensions that cast doubts on the

educational benefits of diversity. These tensions include the conflation of racial diversity with perspective diversity (Chang, 2002a; Pidot, 2006; Pike & Kuh, 2006; Michaels, 2006; Rothman et al., 2003); the potential propagation of inequities for students of color (Carey, 2009; Chang, 2000, 2002a; Lerner & Negai, 2003; Palmer, 2001; Pidot, 2006; Schmidt, 2007); and the possible exacerbation of economic inequities by focusing on race to the exclusion of income (Astin & Oseguera, 2004; Carnevale & Rose, 2003; Michaels, 2006; Sacks, 2007; Schmidt, 2007; Walpole, 2007; Witt et al., 2003).

Summary

The U.S. Supreme Court deliberations concerning affirmative action in college admissions incited a large amount of social science research investigating the effects of diversity on college outcomes. It began with Gurin (1999) who put forth the theory of diversity's influence on learning and provided the courts with expert testimony demonstrating a relationship between learning and structural diversity, diverse courses, and interactions with diverse others. Since then the research has accumulated more evidence suggesting that overall, diversity has a positive influence on a wide range of outcomes. While the evidence varies from one study to the other based on definitions, methods, how variables are operationalized, and samples used, the general pattern supports the notion that diversity is associated with the college learning outcomes.

Using the campus climate for diversity framework (Hurtado et al., 1998; 1999) to categorize the research, this review demonstrated that the influence of structural diversity on learning is likely to be indirect. It also demonstrated that little attention has been given to the influence of the psychological climate on learning, but considerable research has focused on diversity behaviors and their relationship to learning. The strongest evidence

supports the link between cross-racial interactions and learning, yet there is also considerable evidence suggesting that diverse coursework, interactions with non-racial diversity, and diversity programming such as workshops and student organizations also positively influence learning. The evidence also showed that only a small portion of research has attempted to discern whether the relationship between the campus climate for diversity and learning is conditional based on race. Those that did look for conditional effects seem to suggest that White students are benefiting from diversity more than students of color. These findings support the conclusion that Bowman (2010) suggested in his meta-analysis of the relationship between college diversity experiences and cognitive development: "more research is needed not about whether racial diversity has an impact but about how, for whom, and under what conditions" (p. 23).

Using the campus climate for diversity framework (Hurtado et al., 1998; 1999), I created a study that investigated the effects of various types of diversity on need for cognition (a learning outcome associated with cognitive development) for four separate samples of college students. The samples represented racial groups, including Asian-American, African-American, Latino/a, and White. I also examined whether being low-income or a first-generation college student moderated the effects of diversity on need for cognition for each racial group. I described the methods used for this study in the next chapter.

CHAPTER 3 – METHODS

The purpose of this research was to use the campus climate for diversity model to examine the influence of multiple dimensions of diversity (Hurtado et al., 1998; 1999) on the need for cognition (Cacioppo et al., 1996) within four racial groups of college students. Therefore, I analyzed how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college. I also analyzed whether demographics such as being low-income or a first-generation college student further influenced the effect of the campus climate for diversity on the need for cognition for students in those four racial groups.

Two questions guided the study. When controlling for student background characteristics, institutional characteristics, and a pretest of the outcome:

(1) How do the structural, behavioral, and psychological dimensions of the campus climate for diversity influence the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

(2) Does being a first-generation college student, or a student from a low-income family, moderate the effects of the structural, behavioral, and psychological dimensions of the campus climate for diversity on the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

In order to address these questions, I analyzed longitudinal data comprised of college experiences and outcomes. In this chapter, I provide details of the data set, my analytic

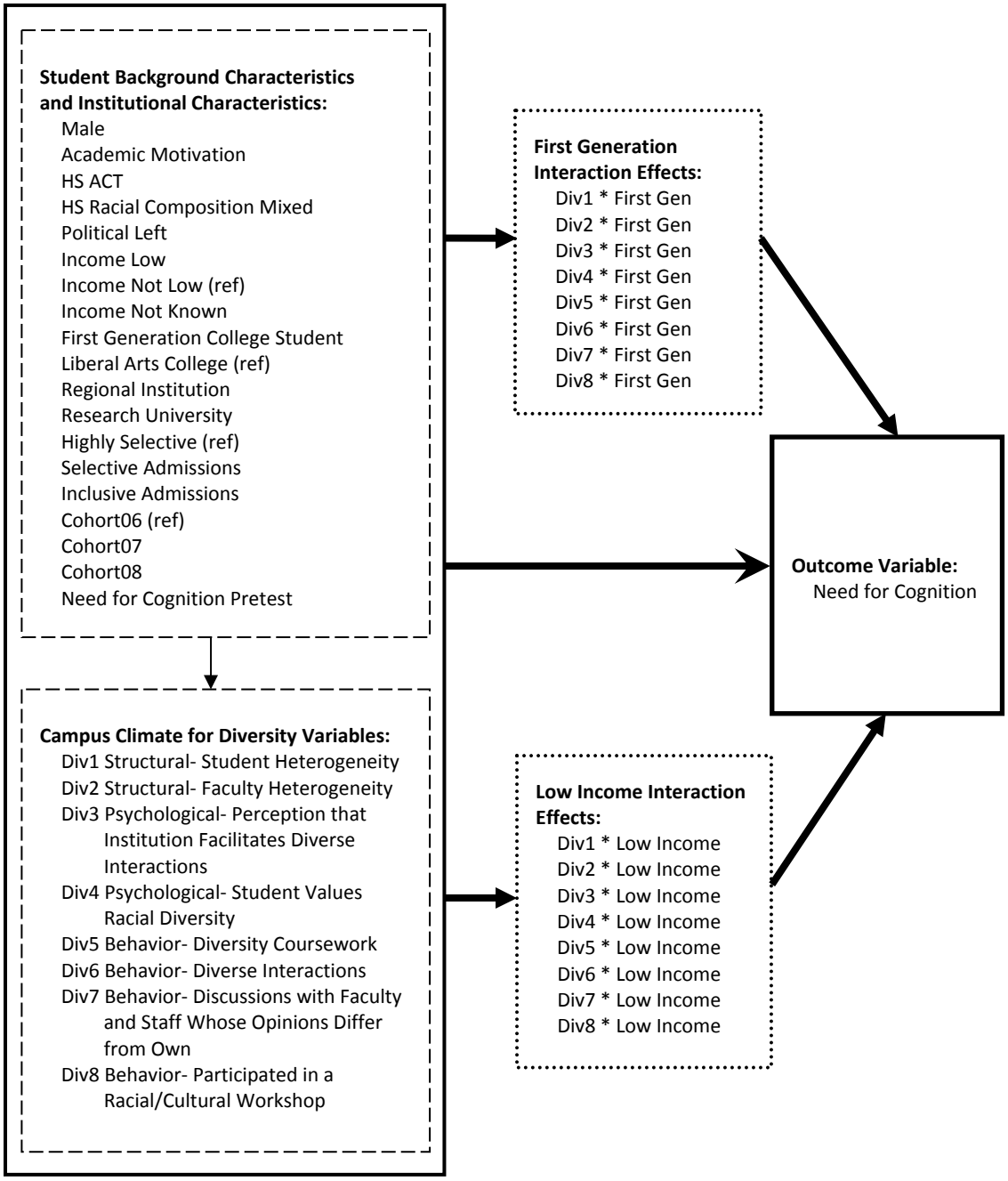
samples, and the data collection process. I also describe the variables chosen for the analysis, including dependent variables, control variables, campus climate for diversity variables, and cross-product (conditional effect) variables. Then I delineate the analytic processes I used, as well as limitations of the research. Figure one illustrates the conceptual framework that guided my investigation of the impact the campus climate for diversity on need for cognition within four student racial populations (African-American, Asian-American, Latino/a, and White).

Data Set and Analytic Sample

The data for this study came from the Wabash National Study of Liberal Arts Education (WNSLAE), a longitudinal investigation of the effects of liberal arts institutions and experiences on outcomes associated with undergraduate education. Originating in 2006, the study includes three cohorts of full-time, first-time students surveyed as they entered college and then again at the end of their first year. The students attend liberal arts colleges, research universities, and regional colleges located in various geographic regions of the United States. Characteristics such as institutional control (public or private), selectivity, size, location, and patterns of student residence vary among the institutions. Community colleges were originally included in the WNSLAE study but are not included in the analytic sample because of their exceptionally low response rate and because the majority of the diversity research focuses on four-year institutions (see for example, Hurtado, 2003; Umbach & Kuh, 2006).

The first cohort entering the study consisted of 19 institutions and 4,501 students at the beginning of their first year of college. Sixty-eight percent of the students in that cohort returned for the second data collection at the end of the academic year, including

Figure 1. Conceptual model of study.



2,953 students at four-year institutions. The 2007 cohort began with 3,375 students at eight institutions, all of which were four-year schools. Thirty-eight percent of the sample (1,306 students) responded to the survey at the end of the academic year. Finally, the third cohort of 9,628 students at 26 institutions was surveyed in fall 2008. Forty-three percent of those students took the follow-up survey in the following spring, 3,899 of whom attended four year institutions. Altogether, the analytic samples began with 8,158 students from 49 institutions.

To divide the data into samples based on race, I used the official racial designation that each student provided to their institution and the institution, in turn, provided to the WNSLAE study. The categories are consistent across institutions because they followed the race categories designated by the National Center for Education Statistics of the Department of Education for inclusion in the Integrated Postsecondary Education Data System (IPEDS) (National Center for Education Statistics, n.d.). During the years that the data for this study were collected, the IPEDS categories were: Nonresident Alien; Black, non-Hispanic; American Indian/Alaska Native; Asian/Pacific Islander; Hispanic; White, non-Hispanic, and Race/Ethnicity unknown. Students were allowed to designate only one category. In instances where the institution did not report the student's race, but the student designated a racial category on the WNSLAE survey, I used that designation. The choices available on the survey instrument were the same as those used for IPEDS. Of the 8,158 students at four-year institutions who completed the pre- and post-survey, 7,971 had a racial designation.

I eliminated from my analysis the data from the 187 students who did not disclose their race. American Indian/Alaskan Natives (n=31) were not included in my analysis

either, because too few were included in the survey to make reasonable inferences about that group. Non-resident Aliens (n=37) were eliminated for the same reason. The remaining data (n=7,903) were divided into four analytic samples based on race: Asian/Pacific Islander (n=438); Black, non-Hispanic (n=732); Hispanic (N=403 students); and White, non-Hispanic (n=6,330 students).

The analytic samples were narrowed one more time to eliminate missing data. I first analyzed the missing data to see if it was significantly related to race and it was not. Then I looked at the relationship between missing data and the value of my dependent measure and found none. Given these conditions, I used listwise deletion to handle missing data (Allison, 2002). My final four analytic samples were narrowed to Asian/Pacific Islander (n=402); Black, non-Hispanic (n=639); Hispanic (N=357 students); and White, non-Hispanic (n=5,631 students). Although the samples are based on official IPEDS designations, throughout the rest of the dissertation I use more commonly accepted terms to refer to each group—African-American, Asian-American, Latino/a, and White.

Data Collection

Considerable data were collected at both the first and second survey points, requiring up to two hours of students' time. This first data collection lasted between 90-100 minutes and included a precollege survey designed to solicit information on student demographic characteristics, family background, high school experiences, political orientation, educational degree plans, and the like. Students also completed a series of assessments that measured dimensions of intellectual and personal development associated with liberal arts education (King, Kendall Brown, Lindsay, & VanHecke,

2007). Specifically, survey instruments measured critical thinking, psychological well-being, leadership, need for cognition, intercultural effectiveness, and moral reasoning.

The follow-up data collection was conducted in the spring of the students' first year of college. This data collection took about two hours and included several survey instruments. Two instruments were used to collect detailed information on students' experience of college: the National Survey of Student Engagement (NSSE) (Kuh, 2001) and the WNSLAE Student Experiences Survey. These instruments were designed to capture student engagement and experiences of good practices in undergraduate education (for more on good practices, see: Chickering, & Gamson, 1987; 1999; Pascarella, Cruce, Wolniak, & Blaich, 2004; Pascarella et al., 2006). Data collected also consisted of follow-up (posttest) assessments using the same instruments measuring dimensions of intellectual and personal development that were completed in the initial data collection. Students completed the NSSE and WNSLAE Student Experiences Survey prior to completing the posttest instruments. ACT, a not-for-profit organization that provides assessment and research services in the field of education, conducted both data collections in conjunction with administrators on each campus.

Additional Data Sources

I supplemented the WNSLAE data using institutional information available from the Integrated Postsecondary Education Data System (IPEDS, n.d.) and the Carnegie Classification of Institutions of Higher Education (Carnegie, n.d.). IPEDS is a postsecondary data collection created and maintained by the National Center for Education Statistics. Each year, all postsecondary institutions in the United States report to IPEDS data on enrollments, program completion rates, graduation rates, faculty and

staff, finances, institutional prices, and student financial aid. The data are available on this web site: http://nces.ed.gov/ipeds/datacenter/. The Carnegie Classifications are based on the mission of institutions and the students they serve. They also include a selectivity rating based on the entrance scores of admitted undergraduate students, which I added to the WNSLAE data. Carnegie classification data are available on this web site: http://classifications.carnegiefoundation.org. Table 1 at the end of this chapter contains definitions of all variables used in my analysis.

Dependent Variable

In order to measure students' need for cognition, I used the Need for Cognition (NFC) scale, which measures an individual's "tendency to engage in and enjoy effortful cognitive activity" (Cacioppo et al., 1996, p. 197). Those with low need for cognition are more likely to rely on the opinions and ideas of others – such as experts or celebrities – to make sense of their world (Cacioppo & Petty, 1982). They act as cognitive misers, withholding effortful thinking, even in situations that call for it (Cacioppo et al.). Alternatively, individuals with a high need for cognition tend to seek out information and reflect on it to make sense of their world (Caccioppo & Petty, 1982). They are also more capable of evaluating ideas they encounter, while ignoring information that is extraneous or distracting (Caccioppo & Petty, 1982).

The short form of the scale (Cacioppo, Petty, & Kao, 1984) employed in the Wabash National Study consists of 18 questions such as "I really enjoy a task that involves coming up with new solutions to problems," and "I feel relief rather than satisfaction after completing a task that required a lot of mental effort" (Cacioppo et al., 1984, p. 307). Questions on the scale are shown in Table 2 at the end of this chapter.

The NFC scale was developed in the 1980s and has proven reliable and valid in multiple studies (Cacioppo & Petty, 1982; Cacioppo et al., 1984; Cacioppo et al., 1996; Osberg, 1987; Sadowski, 1993; Sadowski & Cogburn, 1997; Sadowski & Gulgoz, 1992b). The NCS has been positively associated with high levels of verbal ability, the tendency to generate complex attributions for human behavior, one's desire to maximize information gained rather than maintain one's perceived reality (Cacioppo et al., 1996) and college grades (Elias & Loomis, 2002; Sadowski & Gulgoz, 1992a; 1996). The reliability of the NCS ranges from .83 to .91 in samples of college students (Cacioppo et al., 1984) and has ranged from .87 to .89 in the WNSLAE data.

Independent Variables

Student Background Characteristics

The analyses included a variety of control variables. One group of control variables represent student background characteristics associated with attainment of college outcomes or engagement in diversity (see, for example: Antonio, 2001; Astin, 1993; Denson & Chang, 2009; Gurin et al., 2002; Pascarella & Terenzini, 2005). These variables are male (female is the reference group), academic motivation, and tested academic ability (based on ACT and SAT scores). I also included a variable representing a heterogeneous racial composition of the student's high school (homogenous racial composition is the reference group), since prior exposure to diverse environments may be correlated with how one engages with racial diversity, or perceives diversity experiences (Chang, 2002b; Gurin et al.; Locks et al., 2008; Nelson Laird, 2005; Zuniga, Williams, & Berger, 2005). I also included a variable representing students with a liberal political ideology at the time of college entry, since some of the critics of diversity research have

suggested diversity experiences and democratic outcomes are subsets of political liberalism (Lerner & Nagai, 2003). The reference category is non-liberal, which includes conservative, middle, and undecided. While age is a demographic often controlled for when studying college students, I did not include it because 99% of the sample is traditional college age, 22 years or younger.

Race is also a background characteristic that is important to my study. In the sample section I described how the race variables were coded and used to create four analytic samples—African-American, Asian-American, Latino/a, and White. Therefore, the variable is not included in any of the analyses.

Consistent with my second research question (does being a first-generation college student, or a student from a low-income family, moderate the effects of the dimensions of the campus climate for diversity on the need for cognition for African-American, Asian-American, Latino/a, and White college students?), I created variables to represent first-generation college students and students from low income families.

I defined first generation college student as any student who does not have any parent who graduated with a four-year degree or higher. To create this variable, I used two self-reported items from the WNSLAE Registration Form administered at the beginning of the first-year of college: Mother's highest level of education completed and Father's highest level of education complete. The response options were 1 = Did not finish high school, 2 = High school graduate/GED, 3 = Attended college but no degree, 4 = Vocational/technical certificate or diploma, 5 = Associate or other 2-year degree, 6 = Bachelors or other 4-year degree, 7 = Masters, 8 = Law, and 9 = Doctorate. Students who did not report a 6 or higher for either parent were coded as first-generation. Within my

samples, 55% of African-American students were first-generation college students, 43% of Asian-Americans were first-generation college students, 55% of Latino/a students were first-generation college students, and 24% of White students were first-generation college students.

I created the low income variable using two variables from the WNSLAE Registration Form (Student Income and Family Income) and the Federal Grant variable from data reported by the institutions at the beginning of the survey. I coded students low-income if they received federal grants, regardless of what they reported for income. I made this decision because federal Pell grants are specifically designed for low-income students (Sacks, 2006). Otherwise, I coded students low-income if their family income was less than $50,000 because that represented the bottom third of income distribution within the entire sample. Finally, if students did not report family income, but reported personal income of $50,000 or less, I coded them as low income as well. While this number seems high for student income, it should be noted that 98% of students reported income of $15,000 or less, and 1.7% reported income above $15,000 and less than $50,000. I chose the cut off to be consistent with the family income cut off because I did not have information about family size. Nor did I have information indicating which students are financially independent from their parents. Using these guidelines, within my samples, 52% of African-American students were low income, 48% of Asian-Americans were low income, 57% of Latino/a students were low income, and 25% of White students were low income.

Because many students did not report family or personal income, I created a variable called Income Not Known to include in my models. Therefore, the reference

category is families who make $50,000 or more and do not receive federal grants.

Institutional Characteristics

My control variables also included institutional characteristics that scholars have correlated with diversity experiences and college outcomes (see for example, Denson & Chang, 2009; Gurin et al., 2002; Fischer, 2007; Lerner & Nagai, 2003). Therefore my models contain variables representing institutional type (regional college, research university, or liberal arts college, which is the reference group) and institution selectivity (inclusive admissions, selective admissions, and highly selective, the reference category). These variables were obtained from the Carnegie Classification web site. I also include variables representing the cohort of the WNSLAE study that the student participated in (cohort 2008, cohort 2007, and cohort 2006, which is the reference category), to isolate differences that may be related to when a student entered the study.

Pretest of Need for Cognition

Importantly, I included a pretest of the dependent variable, need for cognition. The need for cognition assessment was administered during the first data collection at the beginning of students' first year and therefore provides an exact parallel pretest representing the student's "starting point" on the outcome. This provides the data necessary to assess actual gains. While much of the diversity research has lacked pretests, a few exceptions exist (Bowman, 2009; Chang et al., 2004; Denson & Chang, 2009; Loes, 2009; Nelson, Laird, Engberg, & Hurtado, 2005; and Pascarella et al., 2001).

Summary of Control Variables

Because randomized experiments are typically not possible with college students, statistical controls and pre-test measures of the outcome are the best means to accurately

assessed the net effects of college experiences (Astin & Lee, 2003; Pascarella, 2006). I created a very conservative model, in an attempt to account for anything that may correlate with how students experience campus diversity or learning outcomes. Additionally, I looked at change during the first year of college only. Therefore, I expected to find very small effect sizes for anything that is a significant predictor in the model. If any variable was able to predict the outcome using these conservative estimates, I considered its impact to be substantive.

Campus Climate for Diversity Variables

The independent variables of interest consisted of eight variables which align with three of the dimensions of the campus climate for diversity framework—structural diversity, psychological climate, and behaviors (Hurtado et al., 1998; 1999). While the campus climate for diversity framework includes a fourth dimension – historical legacy – I was not able to include any variables representing it. The survey contained approximately 30 questions about student experiences of diversity that I used to create six variables and I added another two, using IPEDS data, to representing the heterogeneity of racial diversity of students and faculty at each institution. The eight campus climate for diversity variables are explained in detail below.

Structural diversity. As described by Hurtado et al. (1998; 1999), structural diversity refers to the numeric representation of various racial and ethnic groups of students, faculty, and staff on campuses. While some of the earlier measures of structural diversity were calculated as the proportion of all students of color to White students (Gurin, 1999), a more complex measure encompasses the heterogeneity of the population by looking at distribution across all racial groups (Chang, 1999; Pike & Kuh, 2006; Pike,

Kuh, & Gonyea, 2007; Umbach & Kuh, 2006). Using the heterogeneity measure, "institutions with similar percentages of students across all four groups (e.g., 25%, 25%, 20%, and 30%) have higher diversity index scores than institutions with dissimilar percentages of students across all four groups (e.g., 5%, 10%, 5%, and 80%)" (Pike et al., 2007, p. 171). Therefore, PWIs with a high percentage of students of color from one specific racial group (e.g. Latino/a) are not more heterogeneous than institutions that truly are racially diverse because they have a mix of students from all racial groups. Conceived in this way, the heterogeneity index also moves away from comparing White students to all other students of color. I created a student heterogeneity index and a faculty heterogeneity index, for each institution, using data from IPEDS and the formula provided by Umbach and Kuh (2006).

Psychological climate. The psychological climate consists of the perceptions and attitudes concerning race, diversity, and prejudice held by individuals on campus (Hurtado et al., 1998; 1999). The first variable I created in this category represents the students' perception that the institution facilitates diverse interactions. It is a dummy variable indicating that the student answered "quite a bit" or "very much" to both of these questions: "To what extent does the institution encourage contact among students from different economic, social, and racial or ethnic backgrounds?" and "To what extent does the institution contribute to knowledge, skills and personal development in terms of understanding people of other racial and ethnic backgrounds?".

The second variable in this category is a scale I created based on a principle components analysis (pca) of the 30 diversity-related questions in the WNSLAE data. The pca suggested 11 variables represented two latent constructs, one of which falls into

this category. When I removed the other variables, the 11 aligned into two factors which conceptually made sense and were statistically sound (KMO = .846 and Bartlett's Test of Sphericity was significant at $p<.001$). Table 3 at the end of this chapter shows the rotated component matrix with factor loadings of each variable and Table 4 shows the factors created, constituent items, and Cronbach alphas. The scale representing the psychological climate is "Student values racial and cultural diversity" (alpha = .84). It is based on survey questions such as "To what extent do you believe that learning about people from different cultures is a very important part of your college education?" and "How important is it to you personally to help promote racial understanding?".

Behaviors. The behavioral dimension of the campus climate for diversity encompasses any action which represents interaction with diverse others or involvement in diversity-related activities (Hurtado et al., 1998; 1999). The first variable in this category is a scale created as part of the process described above: "Student has serious conversations and friendships with diverse others" (alpha = .81). It consists of questions such as "How often have you made friends with a student whose race is different than yours?" and "During the current school year, how often have you had serious conversations with students who are very different from you in terms of their religious beliefs, political opinions, or personal values?".

The second variable in this category is a dummy variable that represents the student took one or more courses focusing on "diverse cultures and perspectives" or "women's/gender studies" during the current academic year. Another behavior variable is a dummy variable that indicates the student has "often" or "very often" had serious discussions with both staff AND faculty whose political, social, or religious opinions

were different from his or her own. The final variable in this category is a dummy variable that represents a student has “sometimes,” “often,” or “very often” participated in a racial or cultural awareness workshop during the academic year.

Cross Products

Finally, I created two groups of interaction variables by multiplying each of the eight campus climate for diversity variables with first-generation college students and then with low-income. Altogether, the interactions consist of 16 variables.

Analyses

Descriptive Statics and Correlations

I ran descriptive statistics for all variables for each sample (African-American, Asian-American, Latino/a, and White), using weights based on sex, race, and ACT scores to represent the first year class at each institution during the year the students entered. Table 5 at the end of this chapter shows the means and standard deviations for each variable in the main effects analyses, disaggregated by race. Table 6 at the end of this chapter shows the means and standard deviations for each cross-product variable, disaggregated by race. I also ran the bivariate correlations between the independent variables of interest in the main effects models. Table 7 at the end of the chapters shows the Pearson correlations and indicates there was no concern about multicollinearity in the models. I also ran the bivariate correlations of the cross-product variables. As one would expect, the correlations between these variables are quite high and range from .10 to .96.

Multiple Regression

I used multiple regression to analyze the models because it is the best means to predict a quantitatively measured outcome using several independent variables (Meyers,

Gamst, & Guarino, 2005). I weighted the data based on sex, race, and ACT scores to represent the first year class at each institution during the year the students entered. This does not adjust for nonresponse bias, but it does make the sample more similar to the population it represents.

Because the sample represents multiple students at each institution, I accounted for the hierarchical or nested nature of the data using statistical means. By using the survey command in stata software, I indicated that I was using complex survey data and designated institutions as the primary sampling units using the SchoolID variable. Therefore, standard errors were calculated using degrees of freedom representing the number of institutions instead of the number of students, thereby reducing the chance of Type 1 error (finding significance where there isn't any). This type of adjustment is necessary because students within institutions are more alike than students at different institutions (Groves et al., 2004).

I ran the regression analyses on four separate analytic samples—African-American, Asian-American, Latino/a, and White students. The general effects model includes all of the control variables, the first-generation and low-income variables, and the campus climate for diversity variables shown in Figure 1 presented earlier in this chapter.

Post Hoc Tests

My purpose of disaggregating the data was to illustrate the patterns of effects within each racial group. I was interested in seeing which variables were significant for each group and whether they were positive or negative. There is research precedence for such an approach (see for example, Fischer, 2007; Gurin, 1999; Milem & Umbach, 2003;

Sax, Ceja, & Teranishi, 2001; Teranishi, Ceja, Antonio, Allen & McDonough, 2004). However, I also ran a test of equality of coefficients across populations to show whether the effect sizes of each diversity variable for each racial group were significantly different from one another. Because this is not the primary focus of my research, it is provided in Appendix A for those who are interested in comparing effect sizes across groups.

Conditional Effects

To estimate the conditional effects, I entered into the regression in two batches – the first-generation college student interactions and then the low-income interactions. Then I ran a Wald test to see if adding the cross-products was significant. I discussed the Wald results and presented a table of the coefficients for the cross-products in the Chapter 4. The purpose of the cross-product variables is to determine whether there is a conditional effect of the campus climate for diversity on need for cognition for students who are low-income or first-generation.

Limitations

The primary limitation with this study is the generalizability of the WNSLAE data. Institutions were not sampled; they chose to participate because of their interest in liberal arts outcomes and undergraduate education. We do not know if experiences and outcomes at these institutions are significantly different from institutions that did not participate. Also, students in the 2006 cohort were paid for their participation and students in the other two cohorts were not. While there is certainly a precedent for using incentives to boost response rates (Dillman, 2007), the responses may be significantly different for those that received an incentive from those that did not.

Large discrepancies in response rates at Time 1 and Time 2 of the survey also pose problems for generalizability. Each institution organized the survey administration in conjunction with ACT and chose whom to survey at the beginning of the year, which in most cases was not a random sample. The institutions also made choices about how to administer the end-of-the-year survey and how much effort to expend on getting students to return for that administration. The non-random sample and large variation in response rates suggest that we cannot generalize the results of those students who responded to the survey to the entire population of undergraduate students.

Another limitation of data is the relatively small proportions of students of color. These groups were not oversampled to ensure adequate representation. Therefore, the percent of respondents from each racial group is not representative of that group's percentage among all undergraduates. And while we have small proportions of Asian/Pacific Islander, Black, and Hispanic students, we have virtually no data from Native American Indian students. Furthermore, "multiracial" was not a category included on the survey. Students who are multiracial are not represented in the study and may be inaccurately represented depending on whether they chose to pick one racial category that does not fully represent them or whether they chose not to designate a category at all.

Also limiting the extent to which the findings can be generalized is the amount of missing data. This is especially true for certain demographic characteristics like race and family income, which cannot realistically be imputed. Therefore, cases without that data could not be included in my analyses. For most other variables, the amount of missing data is relatively small (ranging from 1-15%) but the research team has also noticed what might be an "order effect" in that there seems to be more missing data on the instruments

administered toward the end of the two hour time period than those administered at the beginning. This raises concerns as to whether data collected later in the data collection session is as reliable as that collected earlier in the session.

Another limitation, which may have an impact on validity and reliability, is that all of the scales created in this survey were based on principle components analyses (PCA) of the entire data set. Recent research has suggested that when PCA is performed on separate samples, such as African-American, Asian-American, Latino/a, and White students, the resulting factors may differ for each group (Mayhew & Briscoe, 2009).

Summary

In this study, I investigated the relationship between the campus climate for diversity and need for cognition within four separate racial groups of first-year college students—African-American, Asian-American, Latino/a, and White students. I also analyzed whether demographics such as being low-income or a first-generation college student further influenced the effect of the campus climate for diversity on the need for cognition for students in those four racial groups. In this chapter, I described the data collection and instruments used in the WNSLAE study, which is the source of my data. I also described each of my variables in detail, especially focusing on the eight variables I have chosen to represent structural diversity, psychological climate, and behaviors, which are three dimensions of the campus climate for diversity. I went on to explain the descriptive analyses I ran as well as the regressions I modeled, including the postsurvey weighting and clustering adjustments I made. In the next chapter, I will present the results of my analyses.

Table 1

Definition of All Variables Used in Analyses

Variable Name	Definition
Dependent Variable	
Need for Cognition Posttest	Scale of 18-items that was administered as part of WNSLAE in the spring of the first year of college. Score indicates a tendency to engage in, and enjoy, thinking. Standardized.
Student Background Characteristics	
Male	Student is male (reference group is female). Student reported in a single item on the WNSLAE Student Survey administered at the beginning of the first year of college.
Academic Motivation	Scale of 8 items that appeared on the WNSLAE Student Survey administered at the beginning of the first year of college. Score indicates level of motivation for academic pursuits. Standardized.
HS ACT	ACT score (or equivalent calculated using SAT scores) provided by institution.
HS Composition Mixed	Dummy variable representing that the student went to a high school with a mix of students of color and White students. Reference is a homogenous composition of mostly students of color or mostly White. Student reported in a single item on the WNSLAE Student Survey administered at the beginning of the first year of college.
Political Left	Student is politically liberal. Reference is politically conservative, middle, or undecided. Student reported in a single item on the WNSLAE Student Survey administered at the beginning of the first year of college.
Income Low	Created from one institution-reported variable (does the student receive federal grant money), and two-self-reported variables (Family Income and Student Income). Students were coded low-income if they received federal grants, if they reported less than $50,000 of family income, or they reported no family income and student income less than $50,000.
Income Not Low (reference category)	Created from federal grant variable, family income variable, and student income variable. This designation was assigned to every student who reported $50,000 or more for family or student income.
Income Not Known	This designation was assigned to every student who did not fill in family income or student income.
First Generation College Student	Dummy variable created from two items on the WNSLAE Student Survey administered at the beginning of the first year of college. Indicates that the student does not have any parent who completed a bachelor's degree or higher.

Table 1continued

Institutional Characteristics	
Liberal Arts College (reference category)	Dummy variable created based on Liberal Arts Carnegie classification.
Regional Institution	Dummy variable created based on Masters Carnegie classification.
Research University	Dummy variable created based on Research University Carnegie classification.
Highly Selective (reference category)	SAT and ACT data for first-year students indicate that these institutions are selective in admissions. Carnegie's analysis of first-year students' test scores places these institutions in roughly the top fifth of baccalaureate institutions.
Selective Admissions	ACT and SAT data for first-year students indicate that these institutions are selective in admissions. Carnegie's analysis of first-year students' test scores places these institutions in roughly the middle two-fifths of baccalaureate institutions.
Inclusive Admissions	Institutions that have few admissions requirements (including SAT or ACT scores) in order to extend educational opportunities to a wide range of students.
Cohort06 (reference category)	Dummy variable that represents the institution began participating in the Wabash National Study in Fall 2006.
Cohort07	Dummy variable that represents the institution began participating in the Wabash National Study in Fall 2007.
Cohort08	Dummy variable that represents the institution began participating in the Wabash National Study in Fall 2008.
Pretest	
Need for Cognition Pretest	Scale of 18-items that was administered as part of WNSLAE at the beginning of the first year of college. Score indicates a tendency to engage in, and enjoy, thinking. Standardized.
Campus Climate for Diversity Variables	
Div1 Structural- Student Heterogeneity	Index representing the student heterogeneity of the campus created using IPEDS 'enrollment by race' data.
Div2 Structural- Faculty Heterogeneity	Index representing the faculty heterogeneity of the campus created using IPEDS 'faculty by race' data.
Div3 Psychological- Institution Facilitates Diverse Interact	Dummy variable representing those students who answered "quite a bit" or "very much" to both of these questions "to what extent does the institution encourage contact among students from different economic, social, and racial or ethnic backgrounds" and "to what extent does the institution contribute to knowledge, skills and personal development in terms of understanding people of other racial and ethnic backgrounds."

Table 1continued

Div4 Psychological- Student Values Racial and Cultural Diversity	A scale consisting of 4 items that indicates the student values racial and cultural diversity.
Div5 Behavior- Student Took a Diversity Course	Dummy variable that represents the student took 1 or more course focusing on "diverse cultures and perspectives" or "women's/gender studies" during the current academic year.
Div6 Behavior- Student Interacts with Diverse Others	A scale consisting of 7 variables that indicates the student has serious conversations and friendships with diverse others.
Div7 Behavior – Discussions with Faculty and Staff Whose Opinions Differ from Own	Dummy variable that indicates student has "often" or "very often" had serious discussions with staff whose political, social, or religious opinions were different from own AND student has "often" of "very often" had serious discussions with faculty whose political, social, or religious opinions were different from your own
Div8 Behavior- Participated in a Racial/Cultural Workshop	Dummy variable that represents a student has "sometimes," "often," or "very often" participated in a racial or cultural awareness workshop during the academic year.
Other Variables Used for Analysis	
Race	Reported by institutions using the IPEDS categories that were in use in 2006-2008. My samples were created based on Asian/Pacific Islander, Black (non-Hispanic), Hispanic, and White (non-Hispanic). There is no reference group because I did not analyze all four groups together.
WeightT1T2	Weights were created and applied in order to make the sample more representative of the first year students at their institution, based on race, sex, and ACT scores.
SchoolID	Unique id assigned to each institution when data was collected. This variable is used to designate institutions as the primary sampling unit and calculate the stand error accordingly.
RecordID	Unique id assigned to each individual when data was collected.

Table 2

Questions Included on the 18-item Short Form of the Need for Cognition Scale

1.	I would prefer complex to simple problems.
2.	I like to have the responsibility of handling a situation that requires a lot of thinking.
3.	Thinking is not my idea of fun.*
4.	I would rather do something that requires little thought than something that is sure to challenge my thinking abilities.*
5.	I try to anticipate and avoid situations where there is likely chance I will have to think in depth about something.*
6.	I find satisfaction in deliberating hard and for long hours.
7.	I only think as hard as I have to. *
8.	I prefer to think about small, daily projects to long-term ones.*
9.	I like tasks that require little thought once I've learned them.*
10.	The idea of relying on thought to make my way to the top appeals to me.
11.	I really enjoy a task that involves coming up with new solutions to problems.
12.	Learning new ways to think doesn't excite me very much.*
13.	I prefer my life to be filled with puzzles that I must solve.
14.	The notion of thinking abstractly is appealing to me.
15.	I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought.
16.	I feel relief rather than satisfaction after completing a task that required a lot of mental effort.*
17.	It's enough for me that something gets the job done; I don't care how or why it works.*
18.	I usually end up deliberating about issues even when they do not affect me personally.

Notes: Reverse scoring is used on items with an asterisk. Students were instructed: “For each statement listed below, circle the number that indicates the extent to which you feel it is characteristic of you.” Options ranged from 1 – Extremely Uncharacteristic to 5- Extremely Characteristic.

Table 3

Factor Loadings and Rotated Matrix from Principle Components Analysis with Varimax Rotation of Diversity Variables

Variable	Factor Loadings Component 1	Factor Loading Component 2
NSSEdivrstudT2	.758	.151
DivPrDiscussRelationsT2	.729	.223
FriendsWithStudRaceDiffThanOwnT2	.708	.182
DivPrDiscussSocJustT2	.693	.257
DivPrDiscussPersonalT2	.686	.185
NSSEdiffstu2T2	.664	.105
FriendsStudAnotherCountryT2	.638	.197
DivODiffCulturesT2	.195	.816
GLCulturalUnderstandingT2	.158	.771
DivOContactDiffOwnT2	.253	.766
GLPromoteRacialUnderstandingT2	.194	.722

Table 4

Factors Created Based on Principle Components Analysis

Variable Name	Survey Question
Psychological Climate: Student values racial and cultural diversity, Cronbach Alpha = .84	
DivODiffCulturesT2	The extent to which R believes that learning about people from different cultures is a very important part of Rs college education
DivOContactDiffOwnT2	The extent to which R believes contact with individuals whose backgrounds (e.g., race, national origin, sexual orientation) are different from Rs own is an essential part of Rs college education
GLPromoteRacialUnderstandingT2	How important to R personally is helping to promote racial understanding
GLCulturalUnderstandingT2	How important to R personally is improving Rs understanding of other countries and cultures
Behavior: Student has serious conversations and friendships with diverse others, Cronbach Alpha = .81	
FriendsWithStudRaceDiffThanOwnT2	How often R made friends with students whose race is different than own
NSSEdivrstudT2	During current school year, how often has R had serious conversations with students of a different race or ethnicity than self
NSSEdiffstu2T2	During current school year, how often has R had serious conversations with students who are very different from R in terms of their religious beliefs, political opinions, or personal values
FriendsStudAnotherCountryT2	How often R made friends with a student from another country
DivPrDiscussPersonalT2	How often R shared personal feelings and problems with diverse students while attending this college
DivPrDiscussSocJustT2	How often R had meaningful and honest discussions about issues related to social justice with diverse students while attending this college
DivPrDiscussRelationsT2	How often R had discussions regarding inter-group relations with diverse students while attending this college

Table 5

Means and Standard Deviations for Main Effects Variables for Each Weighted Sample

	African-American n=639		Asian-American n=404		Latino/a n=357		White n=5631	
Variable	M	SD	M	SD	M	SD	M	SD
Need for Cognition	-.10	.94	-.22	.99	-.17	.99	-.11	1.01
Male	.39	.49	.46	.50	.35	.48	.43	.50
Academic Motivation	-.05	1.01	-.10	1.05	-.11	1.01	-.07	1.02
HS ACT	-.22	.91	-.30	1.04	-.17	1.07	-.17	1.02
HS Composition Mixed	.29	.46	.26	.44	.24	.42	.18	.39
Political Left	.38	.49	.43	.50	.44	.50	.37	.48
Income Low	.52	.50	.48	.50	.57	.50	.25	.44
Income Not Low (ref category)	.36	.48	.38	.49	.36	.48	.63	.48
Income Not Known	.13	.34	.15	.35	.07	.25	.12	.32
First Generation College Student	.55	.50	.43	.50	.55	.50	.24	.43
Liberal Arts College (ref category)	.11	.31	.22	.42	.27	.45	.35	.48
Regional Institution	.72	.45	.44	.50	.38	.49	.22	.41
Research University	.17	.38	.34	.47	.35	.48	.43	.50
Highly Selective (ref category)	.21	.41	.55	.50	.55	.50	.72	.45
Selective Admissions	.17	.38	.42	.49	.37	.48	.23	.42
Inclusive Admissions	.62	.49	.03	.18	.08	.28	.05	.21
Cohort06 (ref category)	.22	.42	.69	.46	.55	.50	.47	.50
Cohort07	.63	.48	.09	.29	.12	.33	.18	.38
Cohort08	.15	.36	.22	.42	.32	.47	.35	.48
Need for Cognition Pretest	-.04	.96	-.18	.99	-.17	.98	-.11	1.00
Div1 Structural- Student Heterogeneity	-.04	.98	.64	1.08	.40	1.06	.06	1.06
Div2 Structural- Faculty Heterogeneity	.20	.96	.48	1.00	.40	1.10	.10	.94
Div3 Psychological- Institution Facilitates Diverse Interact	.40	.49	.46	.50	.49	.50	.42	.50
Div4 Psychological- Student Values Racial and Cultural Diversity	-.06	.99	-.14	1.00	-.19	1.03	-.06	1.01
Div5 Behavior- Student Took a Diversity Course	.73	.45	.62	.49	.68	.47	.56	.50
Div6 Behavior- Student Interacts with Diverse Others	-.09	.94	-.16	1.01	-.17	1.03	-.02	.99
Div7 Behavior – Discussions with Faculty and Staff Whose Opinions Differ from Own	.20	.40	.12	.33	.24	.43	.15	.36
Div8 Behavior- Participated in a Racial/Cultural Workshop	.29	.45	.28	.45	.29	.45	.16	.37

Table 6

Means and Standard Deviations for Cross-Product Variables for Each Weighted Sample

	African-American n=639		Asian-American n=404		Latino/a n=357		White n=5631	
Variables	M	SD	M	SD	M	SD	M	SD
FGDiv1	17.16	19.54	25.97	32.42	29.63	30.18	9.23	17.99
FGDiv2	27.69	28.51	17.91	22.51	19.77	20.59	6.77	12.98
FGDiv3	.24	.43	.20	.40	.26	.44	.11	.30
FGDiv4	1.82	1.72	1.38	1.66	1.87	1.78	.71	1.30
FGDiv5	.40	.49	.29	.45	.39	.49	.13	.333
FGDiv6	1.60	1.55	1.34	1.63	1.71	1.68	.68	1.26
FGDiv7	.11	.32	.06	.24	.14	.35	.04	.19
FGDiv8	.16	.36	.12	.32	.17	.38	.04	.19
LowIncDiv1	17.05	20.65	27.32	31.36	29.81	29.41	9.63	18.27
LowIncDiv2	23.69	26.70	19.47	22.51	19.84	19.67	7.15	13.22
LowIncDiv3	.21	.40	.24	.43	.28	.45	.11	.31
LowIncDiv4	1.72	1.74	1.57	1.72	1.97	1.80	.76	1.37
LowIncDiv5	.36	.48	.30	.46	.38	.49	.15	.35
LowIncDiv6	1.51	1.56	1.52	1.69	1.81	1.70	.72	1.30
LowIncDiv7	.10	.30	.04	.20	.13	.34	.04	.20
LowIncDiv8	.14	.35	.15	.36	.21	.41	.05	.21

Table 7

Correlations of Variables of Interest in the Main Effects Model for Each Sample

	1	2	3	4	5	6	7	8	9	10	11	12
African-American, n=639												
1	1											
2	-.04											
3	.07	-.77**										
4	-.05	-.40**	-.29**									
5	-.04	.26**	-.24**	-.05								
6	.04	.14**	-.09*	-.08	.01							
7	-.07	-.24**	.17**	.13**	-.01	-.41**						
8	.16**	-.01	-.04	.06	.08	.02	.01					
9	.32**	.05	-.02	-.05	-.00	-.03	-.14**	.19**				
10	.13**	-.06	.07	-.01	-.02	-.27**	.20**	.10**	.08			
11	.21**	-.01	.05	-.06	-.06	.21**	-.20**	.26**	.38**	-.00		
12	.06	.00	.03	-.05	.01	.04	.02	.10**	.11**	-.04	.34**	
13	.15**	-.04	.09*	-.07	-.02	.09*	-.28**	.08	.26**	.05	.28**	.09*
Asian-American, n=402												
1	1											
2	-.18**											
3	.21**	-.75**										
4	-.04	-.39**	-.32**									
5	-.19**	.31**	-.31**	-.01								
6	-.25**	.01	.04	-.07	.16**							
7	-.17**	-.08	.13**	-.07	-.01	.68**	1					
8	.05	.11*	-.13*	.02	.02	-.06	-.07	1				
9	.30**	.02	.01	-.04	-.07	-.16**	-.13*	.27**				
10	.00	.00	-.04	.05	.10	-.00	.02	.03	.07			
11	.17 **	.01	-.02	.01	-.09	-.24**	-.19**	.33**	.43**	.05		
12	.08	-.11*	-.03	.19**	.04	-.14**	-.20**	.21**	.04	.19**	.24**	
13	.13*	.07	-.10*	.04	-.02	-.31**	-.31**	.17**	.23**	.11*	.32**	.21**
Latino/a, n=357												
1	1											
2	-.11*											
3	.11*	-.87**										
4	.01	-.31**	-.21**									
5	-.07	.37**	-.31**	-.13*								

Table 7 continued

6	-.13*	.00	.03	-.07	.11*							
7	-.03	-.14**	.17**	-.04	-.03	.55**						
8	.26**	-.00	-.04	.08	-.02	-.09	.02					
9	.33**	.11*	-.15**	.07	.04	-.12*	-.02	.38**				
10	-.08	-.00	.01	-.02	.09	.04	.07	.02	.04			
11	.22**	.03	-.02	-.01	-.04	-.21**	-.09	.42**	.53**	.02		
12	.08	-.02	.04	-.04	.07	-.08	-.02	.21**	.20**	-.06	.39**	
13	.07	.19**	-.15**	-.09	.05	-.15**	-.17**	.11*	.32**	.15**	.32**	.19**
White, n=5631												
1	1											
2	-.03*											
3	.06**	-.76**										
4	-.05**	-.21**	-.48**	1								
5	-.10**	.24**	-.17**	-.07**								
6	.08**	-.02	-.02	.06**	-.02							
7	.08**	-.10**	.11**	-.03*	-.11**	.47**						
8	.07**	.01	-.03*	.03*	.02	.10**	.07**					
9	.34**	-.00	.01	-.01	-.07**	.06**	.05**	.25**				
10	.13**	.01	.03*	-.06**	-.04**	.01	.02	.11**	.25**			
11	.28**	.01	.01	-.03*	-.03*	.18**	.14**	.32**	.50**	.18**		
12	.09**	.04**	-.03*	-.01	.00	-.01	-.04**	.13**	.14**	.06**	.26**	
13	.12**	.03*	-.01	-.03*	-.02	.08**	-.04**	.12**	.25**	.17**	.25**	.16**

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Column and row headings: 1 - zNFCScaleMeanT2; 2 – IncomeLow; 3 – IncomeNotLow; 4 – IncomeNotKnown; 5 – FirstGen; 6 - zDiv1StructStudentHeterogeneity;
7 - zDiv2StructFacultyHeterogeneity; 8 - Div3PsyInstFacDivInteract; 9 - zDiv4PsyValueRaceDiversity;
10 - Div5BehDiversityCourse; 11 - zDiv6BehDiverseInteractions;
12 - Div7BehDiscussDivEducators; 13 - Div8BehRaceCultureWorkshop

CHAPTER 4 – RESULTS OF THE STUDY

The purpose of this research was to use the campus climate for diversity framework (Hurtado et al., 1998; 1999) to examine the influence of multiple dimensions of diversity on the need for cognition (Cacioppo et al., 1996) within four racial groups of college students. Therefore, I analyzed how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college. I also analyzed whether demographics such as being low-income or a first-generation college student further influenced the effect of the campus climate for diversity on the need for cognition for students in those four racial groups.

Two questions guided the study. When controlling for student background characteristics, institutional characteristics, and a pretest of the outcome:

(1) How do the structural, behavioral, and psychological dimensions of the campus climate for diversity influence the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

(2) Does being a first-generation college student, or a student from a low-income family, moderate the effects of the structural, behavioral, and psychological dimensions of the campus climate for diversity on the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

In order to address these questions, I regressed need for cognition on background characteristics, institutional characteristics, a pretest of the outcome, and eight variables representing the structural, behavioral, and psychological dimensions of the campus climate for diversity, using four separate samples of students - African-American, Asian-

American, Latino/a, and White. The data were part of the Wabash National Study of Liberal Arts Education, a longitudinal study of college experiences and outcomes. In a second analysis, designed to find whether there are conditional effects of being a low-income student, I added a series of variables representing the interaction of being a low income student with each of the eight campus climate for diversity variables. In a third analysis, designed to find whether there are conditional effects of being a first-generation college student, I added a series of variables representing the interaction of being a first-generation student with each of the eight campus climate for diversity variables.

In this chapter, I presented the results of the main effects model for each of the samples. Then I presented the results of each of the conditional effects models for each sample. I concluded by highlighting some patterns of effects within and across groups.

The Effects of Campus Climate for Diversity on Need for Cognition

I presented the results of my main effects model in Table 8 at the end of this chapter. As noted in the table, I have standardized (converted to z-scores) all of the continuous variables in the model. I have also standardized the dependent variable, need for cognition. Therefore, the coefficients can be interpreted as the change of need for cognition, in standard deviations, for a one standard deviation change of the continuous variable. While multiple regression results do not prove causation, when significant findings are determined, one cannot reject the possibility of a causal relationship. Among the control variables, within all four samples, the need for cognition pretest has the largest effect on the outcome, as one would expect. Being low income or a first-

generation college student (characteristics explored further in the conditional effects model) were not significantly related to need for cognition in any of the samples.

African-American Sample

The regression for African-American students (n=636) explained 52% of the variance in need for cognition. Of the eight campus climate for diversity variables, two of them had a significant effect on need for cognition. The student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition ($b=.10$, $p<.01$). Taking a diversity course, a behavioral aspect of the campus climate for diversity, also positively influenced need for cognition ($b=.18$, $p<.01$).

Asian-American Sample

The regression for the sample of Asian-American students (n=402) explained 54% of the variance in need for cognition. The student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition ($b=.14$, $p<.01$). None of the other campus climate for diversity variables were significant.

Latino/a Sample

The regression for the Latino/a sample (n=357) explained 58% of the variance in need for cognition. Similar to the other groups, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition ($b=.20$, $p<.01$). Another psychological dimension of the campus climate for diversity – the students' belief that the institution facilitates diverse

interactions – also had a positive effect on need for cognition (b=.18, p<.05). No other campus climate for diversity variables were significant for Latino/a students.

White Sample

The regression for the sample of White students (n=5631) explained 57% of the variance in need for cognition. Three of the eight campus climate for diversity variables were significant. Consistent with the other groups, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition (b=.11, p<.01). Two behaviors also had positive effects on need for cognition – interacting with diverse others (b=.04, p<.05) and participating in a racial/cultural workshop (b=.07, p<.05).

Conditional Effects of Campus Climate for Diversity

on Need for Cognition for Low-Income Students

After adding the variables representing the interaction between being low income and the campus climate for diversity, I ran Wald tests and found that for the Asian-American students and White students, adding the variables was not significant. Furthermore, there were no significant coefficients for those two groups.

Within the African-American sample (n=639), three variables were significant. For low income students, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, had an additional positive effect (beyond the main effect) on need for cognition (b=.31, p<.01). The effects of believing the institution facilitates diverse interactions (b=-.22, p<.01) and participating in a racial/cultural workshop (b=-.28, p<.01) on need for cognition were negative for low income African-American students. Only one interaction variable for Latino/a students

was significant, but it added 3% to the variance explained. Low-income students who took a diversity course (b=.64, p<.05) experienced a gain in need for cognition.

Conditional Effects of Campus Climate for Diversity on Need for Cognition for First-Generation Students

After adding the variables representing the interaction between being a first-generation college student and the campus climate for diversity, I ran Wald tests and found that for the African-American students, adding the variables was not significant. While discussions with faculty and staff whose opinions differ from one's own appears to be significant for African-Americans, it should be interpreted with caution, given the results of the Wald test.

Within each of the other three models, only one of the eight variables was significant. For Asian-American students, taking a diversity course (b=.30, p<.05) provided an additional gain in need for cognition among first generation college students. For Latino/a students who are first generation college students, participating in a racial/cultural workshop (b=-.38, p<.05) had a negative effect on need for cognition. For White students who are first generation college students, the belief that the institution facilitates diverse interactions (b=.12, p<.01) provided a gain in need for cognition. There were no other conditional effects for first-generation college students.

Patterns of Effects Within and Across Groups

Figure 2 on the next page is a visual summary of the patterns of effects of campus climate for diversity's influence on need for cognition within and across groups. While the main effects, when significant, had positive influences on need for cognition, the conditional effects for first generation and low income students varied. Three of the

Figure 2. Patterns of effects of campus climate for diversity's influence on need for cognition.

	African-American	Asian-American	Latino/a	White	Low Inc Interact	First Gen Interact
Div1 Structural- Student Heterogeneity						
Div2 Structural- Faculty Heterogeneity						
Div3 Psychological- Institution Facilitates Diverse Interactions			+		– *African Am*	+ White
Div4 Psychological- Student Values Racial and Cultural Diversity	+	+	+	+	+ African Am	
Div5 Behavior- Student Took a Diversity Course	+				+ Latino/a	+ Asian Am
Div6 Behavior- Student Interacts with Diverse Others				+		
Div7 Behavior – Discussions with Fac and Staff Whose Opinions Differ from Own						
Div8 Behavior- Participated in a Racial/Cultural Workshop				+	– *African Am*	– *Latino/a*
Number of conditional effects	1 pos (LI) *2 neg (LI)*	1 pos (FG)	1 pos (LI) *1 neg (FG)*	1 pos (FG)	2 pos *2 neg*	2 pos *1 neg*

Notes:

White area represents main effects; gray area represents conditional effect.

Plus signs (+) represent positive effects; minus signs (–) and italic text represent negative effects.

LI stands for low income; FG stands for first generation college student.

significant conditional effects were negative and four were positive. All of these patterns are the focus of this dissertation. However, Appendix A, Tables 11-13 have been provided for those who are interested in whether the effect sizes across groups differ significantly.

Looking at the main effects across groups, the figure makes it clear that three of the eight campus climate for diversity variables appeared to have no relationship to need for cognition for any of the four samples. The three variables with no influence on need for cognition included the two structural diversity variables – student heterogeneity and faculty heterogeneity – as well as on one behavioral aspect of the campus climate for diversity – discussion with faculty and staff whose opinions differ from the students. The figure also illustrates that only one variable, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, had an effect on need for cognition for all four samples. Four additional variables were significant within different samples. Believing the institution facilitates diverse interactions positively influenced need for cognition for Latino/a students, taking a diversity course was positive for African-American students, interacting with diverse others was positive for White students, and participating in a racial/cultural workshop was positive for White students.

Looking at the patterns of main effects within groups, for Asian-Americans only one variable, valuing racial and cultural diversity, was significant. For African-American and Latino/a students, two of the eight campus climate for diversity variables had an effect. For African-American students, valuing racial and cultural diversity and taking a diversity course were significant predictors of need for cognition. For Latino/a students,

believing that the institution facilitates diverse interactions and valuing racial and cultural diversity were significant predictors of need for cognition. White students' need for cognition was positively influenced by more of the campus climate for diversity variables than any of the other three groups. Valuing racial and cultural diversity, interacting with diverse others, and participating in a racial/cultural workshop were all positive predictors of need for cognition for White students.

Figure 2 also demonstrates the differing conditional effects of the campus climate for diversity on need for cognition for low income and first generation college students within the four samples. For low-income African-American students, compared to non-low-income African-American students, believing that the institution facilitates diverse interactions and participating in a racial/cultural workshop had a negative influence on need for cognition, whereas valuing racial and cultural diversity provided an increased gain in need for cognition. Low income Latino/a students who took a diversity course, compared to non-low-income Latino/a students, experienced a positive effect on need for cognition.

For first-generation White students, compared to non-first-generation White students, believing that the institution facilitates diverse interactions had a positive effect on need for cognition. For first-generation Asian-American students, compared to non-first-generation Asian-American students, taking a diversity course had a positive effect on need for cognition. For first-generation Latino/a students, compared to non-first-generation Latino/a students, participating in a racial/cultural workshop had a negative effect on need for cognition.

Summary

In this chapter, I presented the results of several regression analyses that modeled the relationship between the campus climate for diversity and need for cognition within four separate racial groups of first-year college students—African-American, Asian-American, Latino/a, and White students. I also presented results of conditional effects analyses, which modeled whether demographics such as being low-income or a first-generation college student further influenced the effect of the campus climate for diversity on the need for cognition for students in those four racial groups.

The results indicated that the main effects of some of the campus climate for diversity variables positively influence the need for cognition within each group. Only valuing racial and cultural diversity was positive across all groups. Within groups, only one of eight variables was positive for Asian-American students, two of eight variables were positive for African-American and Latino/a students, and three of eight variables were positive for White students. The conditional effects indicated that for first generation and low income college students, differing aspects of the campus climate for diversity had positive influences and some had negative influences on the outcome. In the next chapter, I discussed these findings and suggested some implications for research and practice.

Table 8

Regression Coefficients for the Effects of Campus Climate for Diversity on Need for Cognition within Four Separate Samples of Students

	(1) African-American n=639	(2) Asian-American n=402	(3) Latino/a n=357	(4) White n=5631
Male	.04	.03	-.02	.07
	(.04)	(.09)	(.10)	(.04)
Academic Motivation [z]	.01	.06	.02	.07 **
	(.04)	(.06)	(.05)	(.01)
HS ACT [z]	.19 **	.06	.14 **	.12 **
	(.04)	(.04)	(.04)	(.01)
HS Composition Mixed	.01	-.01	.10	-.01
	(.05)	(.04)	(.10)	(.04)
Political Left	.10	-.01	-.10	.01
	(.05)	(.07)	(.06)	(.03)
Income Low	-.04	-.19	-.01	-.02
	(.05)	(.10)	(.07)	(.04)
Income Not Known	-.02	.07	-.10	.00
	(.09)	(.08)	(.13)	(.05)
First Gen College Student	.11	-.07	.04	-.00
	(.07)	(.05)	(.06)	(.02)
Regional Institution	.01	-.23	-.13	-.07 *
	(.17)	(.12)	(.07)	(.03)
Research University	-.05	-.12	.10	-.10 **
	(.09)	(.07)	(.09)	(.03)
Selective Admissions	.12	-.07	.31 **	.05 *
	(.12)	(.10)	(.08)	(.02)
Inclusive Admissions	.15	.35 *	.48 **	.02
	(.17)	(.16)	(.08)	(.10)
Cohort 2007	.07	.14	.18	.01
	(.14)	(.11)	(.11)	(.04)
Cohort 2008	.15	-.02	.11	.08 **
	(.12)	(.08)	(.10)	(.03)
Need for Cognition Pretest [z]	.61 **	.59 **	.65 **	.60 **
	(.04)	(.06)	(.05)	(.02)
Div1 Structural- Student Heterogeneity [z]	-.01	.05	-.04	-.01
	(.05)	(.04)	(.04)	(.01)
Div2 Structural- Faculty Heterogeneity [z]	-.06	-.03	.00	.00
	(.06)	(.04)	(.03)	(.02)
Div3 Psychological- Institution Facilitates Diverse Interactions	.08	.05	.18 *	-.02
	(.08)	(.05)	(.09)	(.03)
Div4 Psychological- Student Values Racial and Cultural Diversity [z]	.10 **	.14 **	.20 **	.11 **
	(.02)	(.06)	(.06)	(.02)

Table 8 continued

Div5 Behavior- Student Took a Diversity Course	.18 **	.04	.03	.04
	(.06)	(.10)	(.09)	(.03)
Div6 Behavior- Student Interacts with Diverse Others [z]	-.02	-.01	-.07	.04 *
	(.03)	(.05)	(.05)	(.02)
Div7 Behavior- Discussions with Faculty and Staff Whose Opinions Differ from Own	.03	-.12	-.16	.01
	(.05)	(.13)	(.08)	(.04)
Div8 Behavior- Participated in a Racial/Cultural Workshop	.04	.09	.00	.07 *
	(.08)	(.08)	(.06)	(.03)
Constant	-.47 *	.15	-.26 *	-.05
	(.18)	(.09)	(.12)	(.05)
R-squared	.52	.54	.58	.57

Standard errors in parentheses

** p<0.01, * p<0.05

[z] indicates variable has been standardized

Table 9

Regression Coefficients for the Interaction Effects of Low Income with the Campus Climate for Diversity on Need for Cognition within Four Separate Samples of Students

	(1) African-American n=639	(2) Asian-American n=402	(3) Latino/a n=357	(4) White n=5631
Low Income * Div1 Structural- Student Heterogeneity	.01	-.00	.01	.00
	(.01)	(.01)	(.00)	(.00)
Low Income * Div2 Structural- Faculty Heterogeneity	.00	-.01	-.00	-.00
	(.00)	(.01)	(.00)	(.00)
Low Income * Div3 Psychological- Institution Facilitates Diverse Interactions	-.22 **	-.12	-.01	.07
	(.08)	(.31)	(.15)	(.05)
Low Income * Div4 Psychological- Student Values Racial and Cultural Diversity	.31 **	-.07	-.17	.01
	(.11)	(.15)	(.10)	(.06)
Low Income * Div5 Behavior- Student Took a Diversity Course	.12	.10	.64 *	.05
	(.07)	(.10)	(.24)	(.06)
Low Income * Div6 Behavior- Student Interacts with Diverse Others	.01	-.14	-.06	.07
	(.05)	(.14)	(.15)	(.07)
Low Income * Div7 Behavior- Discussions with Fac and Staff Whose Opinions Differ from Own	.16	.13	-.25	-.10
	(.15)	(.28)	(.24)	(.10)
Low Income * Div8 Behavior- Participated in a Racial/Cultural Workshop	-.28 **	.07	.24	.00
	(.10)	(.13)	(.21)	(.08)
Constant	-.40 *	.12	.04	-.04
	(.16)	(.17)	(.19)	(.05)
R-squared	.54	.55 [w]	.61	.57 [w]

Standard errors in parentheses

** p<0.01, * p<0.05

[w] Wald test indicates that adding interaction variables to equation was not significant

Table 10

Regression Coefficients for the Interaction Effects of First-Generation College Students with the Campus Climate for Diversity on Need for Cognition within Four Separate Samples of Students

	(1) African-American n=639	(2) Asian-American n=402	(3) Latino/a n=357	(4) White n=5631
First-Generation * Div1 Structural- Student Heterogeneity	.00 (.00)	.00 (.00)	.00 (.00)	.00 (.00)
First-Generation * Structural- Faculty Heterogeneity	-.00 (.00)	-.01 (.01)	-.00 (.00)	-.00 (.00)
First-Generation * Div3 Psychological- Institution Facilitates Diverse Interactions	-.01 (.08)	.06 (.09)	.20 (.23)	.12 ** (.04)
First-Generation * Div4 Psychological- Student Values Racial and Cultural Diversity	.13 (.10)	-.09 (.11)	-.11 (.09)	-.01 (.05)
First-Generation * Div5 Behavior- Student Took a Diversity Course	-.01 (.09)	.30 * (.13)	.47 (.28)	.04 (.08)
First-Generation * Div6 Behavior- Student Interacts with Diverse Others	.02 (.05)	-.08 (.13)	-.17 (.15)	.08 (.05)
First-Generation * Div7 Behavior- Discussions with Faculty and Staff Whose Opinions Differ from Own	-.23 * (.10)	-.04 (.19)	-.00 (.22)	.14 (.09)
First-Generation * Div8 Behavior- Participated in a Racial/Cultural Workshop	.04 (.14)	-.07 (.16)	-.38 ** (.12)	.08 (.12)
Constant	-.48 * (.20)	.21 * (.10)	-.00 (.16)	-.02 (.05)
R-squared	.52 [w]	.55	.60	.57

Standard errors in parentheses

** p<0.01, * p<0.05

[w] Wald test indicates that adding interaction variables to equation was not significant

CHAPTER 5 – CONCLUSIONS AND IMPLICATIONS

The purpose of this research was to examine the influence of the campus climate for diversity (Hurtado et al., 1998; 1999) on the need for cognition (Cacioppo et al., 1996) within four racial groups of college students. Therefore, I analyzed how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college. I also analyzed whether demographics such as being low-income or a first-generation college student further influence the effect of the campus climate for diversity on the need for cognition for students in those four racial groups. In this chapter, I provided a brief review of this study. Then I presented conclusions drawn from the findings described in chapter 4. I concluded with implications for future research, theory, and practice.

Review of the Study

Background and Research Problem

In higher education, diversity has multiple meanings related to race, personal characteristics, and perspectives (Chang, 2002a). While the purpose of diversity within college settings once focused on enrolling students of diverse racial backgrounds to provide opportunities that society had systematically limited for those individuals, a shift occurred in the late 1990s (Chang, 2002a; Hurtado, 2007; Rothman et al., 2003). The discourse concerning the purpose of diversity in higher education began to focus on the educational benefit of diversity for all students (Chang, 2002a; Hurtado, 2007; Rothman et al., 2003). This coincided with legal battles concerning race-based college admissions policies and spurred a great deal of research demonstrating that engagement with

diversity is positively related to many desired learning outcomes of college (see for example, Bowman, 2009, 2010; Denson & Chang, 2009; Chang, 1996, Gurin, 1999; Hurtado, 2003; Locks et al., 2008; Milem, 2003; Nelson Laird, 2005; Umbach & Kuh, 2006).

Among the research incited by the U.S. Supreme Court deliberations concerning affirmative action in college admissions, Gurin's (1999) theory and research is pre-eminent. She put forth the theory of diversity's influence on learning and provided the courts with expert testimony demonstrating a relationship between learning and structural diversity, diverse courses, and interactions with diverse others (Gurin, 1999). Since then the research has accumulated more evidence suggesting that overall, diversity has a positive influence on a wide range of outcomes. While the evidence varies from one study to the other based on definitions, methods, how variables are operationalized, and samples used, the general pattern supports the notion that diversity is associated with many college learning outcomes.

I chose the campus climate for diversity framework to organize this study because it provides a lens to look at the campus climate to assess: 1) how it supports students of color; and 2) whether it creates the type of structures, beliefs, and behaviors that produce the positive effect of diversity on learning for all students (Hurtado et al., 1998; 1999). Based on years of prior research, Hurtado et al. defined institutional dimensions that comprise the campus climate for diversity. The four institutional dimensions are (1) historical legacy, (2) psychological climate, (3) structural diversity, and (4) behaviors. Because the various dimensions of diversity on campus are interconnected, and individual perceptions are informed by multiple dimensions of the climate, Hurtado et al.

recommend analyzing multiple dimensions rather than a single one. They concluded that "continued research is recommended on these interrelationships and the complexities that diverse learning environments present to continue to help individuals understand the implications of their work on college campuses" (Hurtado et al., 1999, p. 100).

I used the campus climate for diversity framework (Hurtado et al., 1998; 1999) to categorize the existing research on diversity and learning. The literature review in chapter 2 demonstrated that the influence of structural diversity on learning is likely to be indirect (Chang, 1999; Chang et al., 2004; Denson & Chang, 2009). It also showed that little attention has been given to the influence of the psychological climate on learning. However, considerable research has focused on diversity behaviors and their influence on learning. The strongest evidence supports the link between cross-racial interactions (a behavior) and learning (Chang, 1999; Chang et al., 2004; Chang et al., 2006; Denson & Chang, 2009; Hurtado, 2003; 2005; Luo & Jamieson-Drake, 2009; Nelson Laird, 2005). Considerable evidence also suggests that other behaviors such as interacting with non-racial diversity (Hu & Kuh, 2003; Mayhew et al., 2008; Pascarella et al., 2001), taking diversity-focused courses (Bowman, 2009; Carini et al., 2006; Engberg & Mayhew, 2007; Hurtado, 2003; 2005; Nelson Laird, 2005; Tsui, 1999), and participating in diversity programming such as workshops and student organizations positively influence learning (Cole, 2007; Denson & Chang, 2009; Hurtado, 2003; 2005; Kim, 2002).

The evidence from the literature review demonstrated that only a small portion of research has attempted to discern whether the relationship between the campus climate for diversity and learning is conditional based on race. Research that did find conditional effects seemed to suggest that White students are benefiting from diversity more than

students of color. These findings align with the problem described in chapter one: the shift in thinking about diversity–from remedying race inequities to providing educational benefits for White students and students of color–gave rise to three tensions that are evident in research, politics, and practice. These three tensions that cast doubt on the educational benefit of diversity include the conflation of racial diversity with perspective diversity (Chang, 2002a; Pidot, 2006; Pike & Kuh, 2006; Michaels, 2006; Rothman et al., 2003), the potential propagation of inequities for students of color (Carey, 2009; Chang, 2000, 2002a; Lerner & Negai, 2003; Palmer, 2001; Pidot, 2006; Schmidt, 2007), and the possible exacerbation of economic inequities (Astin & Oseguera, 2004; Carnevale & Rose, 2003; Michaels, 2006; Sacks, 2007; Schmidt, 2007; Walpole, 2007; Witt et al., 2003). The existing research and tensions about diversity support the conclusion that Bowman (2010) suggested in his meta-analysis of the relationship between college diversity experiences and cognitive development: “more research is needed not about whether racial diversity has an impact but about how, for whom, and under what conditions” (p. 23).

Research Methods

Using the campus climate for diversity framework (Hurtado et al., 1998; 1999), I created a study that investigated the effects of various types of diversity on need for cognition (a learning outcome associated with cognitive development) for four separate samples of college students. The samples represented Asian-American, African-American, Latino/a, and White students. I also examined whether being low-income or a first-generation college student moderated the effects of diversity on need for cognition

for each racial group. Two questions guided the study. When controlling for student background characteristics, institutional characteristics, and a pretest of the outcome:
(1) How do the structural, behavioral, and psychological dimensions of the campus climate for diversity influence the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?
(2) Does being a first-generation college student, or a student from a low-income family, moderate the effects of the structural, behavioral, and psychological dimensions of the campus climate for diversity on the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

In order to address these questions, I used multiple regression to analyze longitudinal data comprised of college experiences and outcomes collected as part of the Wabash National Study of Liberal Arts Education. The analytic samples included 8,158 students from 49 four-year institutions representing liberal arts colleges, regional colleges, and research universities. I broke the sample into groups using the official racial designation that each student provided to their institution. The categories are consistent across institutions because they followed the race categories designated by the National Center for Education Statistics of the Department of Education for inclusion in the Integrated Postsecondary Education Data System (IPEDS) (National Center for Education Statistics, n.d.). After eliminating those who did not report race and those groups with too few cases, I ran my final analysis on four analytic samples: Asian/Pacific Islander (n=438); Black, non-Hispanic (n=732); Hispanic (N=403 students); and White, non-Hispanic (n=6,330 students).

In order to measure students' need for cognition, I use the Need for Cognition (NFC) scale that measures an individual's "tendency to engage in and enjoy effortful cognitive activity" (Cacioppo et al., 1996, p. 197). Those with low need for cognition are more likely to rely on the opinions and ideas of others to make sense of their world, whereas educators want students to learn to make meaning of multiple perspectives based on evidence and reason (Association of American Colleges and Universities, 2002). Individuals with a high need for cognition tend to seek out information and reflect on it to make sense of their world (Cacioppo et al.), which increases their likelihood of exposure to multiple perspectives that can lead to cognitive development (Baxter Magolda 1999; 2001; King & Kitchener, 1994; Perry, 1968).

For each sample, I regressed need for cognition on the following control variables: Male; Academic Motivation; High School ACT score; High School Racial Composition Mixed; Political Left; Income Low; Income Not Known; First Gen College Student; Regional Institution; Research University; Selective Admissions; Inclusive Admissions; Cohort 2007; Cohort 2008; and the Need for Cognition Pretest. I also included eight variables of primary interest that reflect various aspects of the campus climate for diversity. Those eight variables are Div 1 Structural- Student Heterogeneity; Div2 Structural- Faculty Heterogeneity; Div3 Psychological- Institution Facilitates Diverse Interactions; Div4 Psychological- Student Values Racial and Cultural Diversity; Div5 Behavior- Student Took a Diversity Course; Div6 Behavior- Student Interacts with Diverse Others; Div7 Behavior – Discussions with Faculty and Staff Whose Opinions Differ from Own; and Div8 Behavior- Participated in a Racial/Cultural Workshop. All of these variables are defined in Table 1 at the end of chapter 3. In my secondary analysis, I

used 16 interaction variables which I created by multiplying each of the eight campus climate for diversity variables with first-generation college students and then with low-income.

Conclusions

Main Effects

The first research question I addressed focused on the effect of the campus climate for diversity on need for cognition. When controlling for student background characteristics, institutional characteristics, and a pretest of the outcome, how do the structural, behavioral, and psychological dimensions of the campus climate for diversity influence the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college? For each sample of students, the regression analysis was significant and explained from 52-58% of the variance. The full results are reported in Table 8 at the end of chapter 4.

For African-American students, two of the campus climate for diversity variables had a significant effect on need for cognition. The student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition. Taking a diversity course, a behavioral aspect of the campus climate for diversity, also positively influenced need for cognition. For Asian-American students, only one campus climate for diversity variable had a significant effect on need for cognition. The student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition. Within the Latino/a sample, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need

for cognition. Another psychological dimension of the campus climate for diversity – the student's belief that the institution facilitates diverse interactions – also had a positive effect on need for cognition. Within the sample of White students, three of the eight campus climate for diversity variables were significant. Consistent with the other groups, the student's value of racial and cultural diversity, a psychological dimension of the campus climate for diversity, positively influenced need for cognition. Two behaviors also had positive effects on need for cognition – interacting with diverse others and participating in a racial/cultural workshop.

Structural diversity. The findings on structural diversity in this study are consistent with past research. I found no evidence to suggest that a more heterogeneous student body has an effect on student learning in the first year of college. Based on Hurtado et al.'s (1998, 1999) suggestion that faculty diversity can be an important influence on learning, I expanded on prior research to look at whether a heterogeneous faculty would influence need for cognition. Again, I found no significant effects.

In retrospect, it is not surprising to find no effect of structural diversity on need for cognition, given that I used multiple regression for my analysis. While it is not uncommon in higher education research to use multiple regression to attempt to discern the influence of both institutional level variables (like structural diversity) and individual level variables (like diversity behaviors) on an individual level outcome such as need for cognition, this is not the best analytic tool for the job. Therefore, I have provided suggestions for future research in the implications section below. Like other researchers who have found no link between structural diversity and student learning, I stand by the common-sense dictum that if behaviors related to racial diversity influence learning, then

a necessary pre-condition for those behaviors is to have a racially diverse student body. If that is not demonstrated by current research, it would be wise to devise new ways to test the link.

Psychological climate. The psychological climate includes perceptions and attitudes related to diversity. Several scholars have touted the importance of the psychological climate as an aspect of the campus climate for diversity that can influence learning, because "the attitudes and dispositions that students bring to diversity experiences may function as catalysts or barriers to continued development, both affective and cognitive" (Nelson Laird, 2005, p. 384). However, I found no studies that focused on the relationship between psychological climate and learning. This study provides strong evidence of the importance of the psychological climate's relationship to need for cognition in the first year of college. The one variable (out of eight) that positively influenced need for cognition for all four racial groups was "student values racial and cultural diversity." The variable is a scale (alpha = .84) based on survey questions such as "To what extent do you believe that learning about people from different cultures is a very important part of your college education?" and "How important is it to you personally to help promote racial understanding?".

For Latino/a students, I found further evidence of the importance of the psychological climate for diversity. Latino/a students who believe that the institution works to facilitate diverse interactions among students experience positive gains on need for cognition. I measured this aspect of the climate using a dummy variable indicating that the student answered "quite a bit" or "very much" to both of these questions: "To what extent does the institution encourage contact among students from different

economic, social, and racial or ethnic backgrounds?" and "To what extent does the institution contribute to knowledge, skills, and personal development in terms of understanding people of other racial and ethnic backgrounds?".

Scholars have suggested that students of different racial groups experience campus in different ways and that the psychological climate for diversity can have an impact on their learning (Hurtado et al., 1998; 1999). These findings support that suggestion and provide evidence that student's own beliefs about diversity are important regardless of their race, whereas beliefs concerning the extent to which the institution facilitates diversity may influence need for cognition for Latino/a students in particular.

Behavior. Within the campus climate for diversity framework, behaviors include interactions across differences, inclusion of diverse perspectives in the curriculum, and involvement in diverse activities. The literature on this area of the campus climate for diversity is extensive and suggests that diversity coursework, cross-racial interaction, interacting with others who are different from oneself on a range of characteristics (religious, political, economic, personal values, etc.), and participating in cultural awareness workshops all foster improved learning. The findings from my study support the literature, but suggest that certain behaviors may benefit some racial groups but not others. Taking courses focused on diversity positively affected need for cognition for African-American students, but not White, Asian-American, or Latino/a students. Interacting with students who are different from oneself positively affected need for cognition for White students, but not students in the other three groups. Interacting with faculty and staff whose opinion differed from oneself did not affect need for cognition for any of the groups, suggesting that when it comes to diverse perspectives, peer influence is

more important than faculty influence on learning. Participating in racial/cultural workshops had a positive effect on need for cognition for White students, but not the other three groups.

Main effects summary. These main effects findings demonstrate that students' race does affect how they experience the first year of college. While an experience such as taking a diversity course may have a positive effect on need for cognition for one racial group, entirely different experiences may positively affect need for cognition for other racial groups. Gurin's (1999) seminal research, which looked at the influence of various diversity experiences on different learning outcomes, was disaggregated by race. Since then, the amount of research about the influence of diversity on learning has propagated, yet very few studies have disaggregated data, searched for conditional effects by race, or employed other research methods to understand the experiences of students of different races.

Of the diversity and learning studies that have attempted to discern differences by race, two found no significant differences (Carini et al., 2006; Mayhew et al., 2008). However, several found that White students tend to benefit from diversity experiences more than students of color (Gurin, 1999; Hu & Ku, 2003; Loes, 2009; Bowman, 2009) and another demonstrated that the effect of diversity on critical thinking varies depending on race and gender (Pascarella et al., 2001). This study adds to the weight of evidence that suggests race does influence how college students' experiences influence learning.

Conditional Effects

The second research question I addressed focused on whether the effect of the campus climate for diversity on need for cognition were conditional based on low-income

or first-generation college student status. When controlling for student background characteristics, institutional characteristics, and a pretest of the outcome, does being a first-generation college student, or a student from a low-income family, moderate the effects of the structural, behavioral, and psychological dimensions of the campus climate for diversity on the need for cognition for African-American, Asian-American, Latino/a, and White college students in the first year of college?

First-generation college students. The findings in my study suggest that being a first-generation college student moderates the influence on the campus climate for diversity on need for cognition differently for students of different racial backgrounds. White students who are first-generation college students who experienced a psychological campus climate in which the institution appears to facilitate diverse interactions made greater gains in need for cognition than their non-first-generation peers. Asian-American students who are first-generation college students who took a diversity course also made greater gains in need for cognition than their non-first-generation peers. Latino/a students who are first-generation college students who participated in a racial/cultural workshop experienced a negative influence on their need for cognition compared to their non-first-generation peers.

Low-income college students. The findings in my study suggest that being low income moderates the influence on the campus climate for diversity on need for cognition differently for students of different racial backgrounds. African-American students who are low income and who experienced a psychological campus climate that suggests the institution facilitates diverse interactions experienced a negative influence on need for cognition compared to their non-low-income peers. Likewise, African-American students

who are low income and participated in a racial/cultural workshop experienced a negative influence on their need for cognition compared to their non-low-income peers. Low-income African-American students did experience an increased gain in need for cognition if they valued racial and cultural diversity for the sake of learning. Low-income Latino/a students experienced a gain in need for cognition, compared to their non-low-income peers, when they took a diversity course.

Conditional effects summary. These conditional effects demonstrate the importance of taking into account multiple factors related to student identity when trying to understand how students experience the campus climate's effect on their learning. By disaggregating my data by race as a preliminary step, I was able to delve into the conditional effects of being a first-generation college student or being low income. It would have been much harder to discern those effects in a main effects model that included three way interactions (race x low income x diversity variable or race x first generation x diversity variable) because of the collinearity of the interaction variables. The conditional effects findings demonstrate that for some students the effect of being first-generation or low-income accentuates the positive influence of the campus climate for diversity on need for cognition but for other students it inhibits gains in need for cognition related to the campus climate for diversity. These finding have important implications for further research and campus practice, which I discuss in the following section.

Implications

These findings demonstrate that structural diversity does not significantly affect need for cognition in a multiple regression model, but the psychological climate for

diversity and diversity behaviors positively influence need for cognition for some groups of students. Some of the behaviors that influence need for cognition represent racial diversity, while others represent perspective diversity. These finding also demonstrate that a students' race influences how the campus climate for diversity affects their need for cognition. Furthermore, the findings demonstrate that the influence of diversity on learning is moderated by one's family income and first-generation college student status.

In chapter 1, I described how the meaning of diversity in education had undergone a shift in the late 1990s and early 2000s. Prior to that time, diversity in higher education typically focused on admitting students of color to colleges and universities in order to remedy societal inequities (Chang, 2002a; Rhoads et al., 2005; Rothman et al., 2003). However, as the legality of race-based admissions were increasingly challenged in the courts, the discourse concerning race in higher education shifted to the educational benefit for all students that a racially diverse student body could provide (Chang, 2002a, Hurtado, 2007; Rothman et al., 2003). This shift led to significant research that did demonstrate that diversity was a positive influence on learning (see for example, Bowman, 2009, 2010; Denson & Chang, 2009; Chang, 1996, Gurin, 1999; Hurtado, 2003; Locks et al., 2008; Milem, 2003; Nelson Laird, 2005; Umbach & Kuh, 2006). However, it also created several tensions that continue to plague educators, policy-makers, and society in general.

The tensions that I put forth in chapter 1 include the conflation of racial diversity with perspective diversity (Chang, 2002a; Pidot, 2006; Pike & Kuh, 2006; Michaels, 2006; Rothman et al., 2003); the potential propagation of inequities for students of color (Carey, 2009; Chang, 2000, 2002a; Lerner & Negai, 2003; Palmer, 2001; Pidot, 2006;

Schmidt, 2007); and the possible exacerbation of economic inequities (Astin & Oseguera, 2004; Carnevale & Rose, 2003; Michaels, 2006; Sacks, 2007; Schmidt, 2007; Walpole, 2007; Witt et al., 2003). While this study cannot lay to rest all of these tensions, it does contribute to the understanding of this complex societal issue. For example, the findings show that both racial and perspective diversity positively influence need for cognition for first-year students. The psychological climate variable – student values racial and cultural diversity – demonstrates the positive influence of race for all students and taking a racial/cultural workshop demonstrates the positive influence of race on learning for White students. However, behaviors representing perspective diversity, as opposed to racial diversity, were also positive influences on need for cognition for some groups. These findings support the claim diversity in all forms, including exposure to differing religious, social, and political perspectives (regardless of whether they are associated with race) is an important influence on learning (Pascarella et al., 2001), while simultaneously upholding the claim that racial diversity is an educational benefit for all (Chang, 1999; Chang et al., 2006; Gurin, 1999; Hurtado, 2003; 2007).

The tension that institutions may be concerned with enrolling students of color to improve the education of White students (Carey, 2009; Denson & Chang 2009; Lerner & Negai, 2003; Palmer, 2001; Pidot, 2006; Schmidt, 2007) and that fewer students of color benefit from campus diversity (Lerner & Negai, 2003) was also discussed in chapter 1. While this study shows that students in all racial groups experience increased need for cognition from some aspect of campus diversity, White students do indeed benefit from more aspects of the campus climate for diversity than African-American, Asian-

American, or Latino/a students. This is consistent with prior research (Bowman, 2009; Hu & Kuh, 2003; Loes, 2009).

The final tension concerns the view that issues of poverty may be masked by race (Michaels, 2006) and that higher education may be overlooking the negative effects of poverty on race (Witt et al., 2003). The current study sheds light on this tension in two ways. First, the main effects of low income were not significant for any of the racial groups, suggesting that low-income students in college are NOT experiencing a negative effect on learning during their first year. However, the conditional effects of being low income demonstrate a complex relationship between the campus climate for diversity, race, and income when it comes to learning. Low-income African-American students appear to be especially affected, since three of the four significant low income interaction effects influenced their learning.

The tensions related to the shift in the discourse of diversity reflect concerns about the relationship between race, diversity, and learning that are contested and very real. The tensions influence legal decisions, policies, research, and practices within institutions of higher education. While this study cannot and did not provide enough evidence to resolve the tensions, it did provide some new ideas to consider. Based on the findings of this study and my understanding of these tensions, I provide the following recommendations for research and practice.

Future Research

This study used of the campus climate for diversity framework (Hurtado et al., 1998; 1999) to structure the regression model, which provided a practical way to look at various diversity variables at once. Since multiple aspects of the campus work together to

create a climate that has the potential to influence learning for all students (Hurtado et al., 1998; 1999), it makes sense to create research models that represent those aspects of the climate. Future research, whether multi-institutional or a single campus assessment, could continue to use this model to ascertain which the structures, beliefs, and behaviors produce a positive effect on learning. This study also demonstrated the positive effect of an aspect of the campus climate for diversity that has been understudied thus far – the psychological climate. Future research should incorporate measures of the psychological climate, in order to create a greater understanding of how this works with structure and behaviors to enhance learning.

By disaggregating my findings by race, I was able to answer questions concerning "who" benefits from campus diversity. It also allowed me to find conditional effects related to being low income or a first-generation college student, which would have been difficult to find using three way interactions. Tensions related to race and income indicate that research needs to take these variables into account when studying the effects of diversity on learning. The quantitative criticalist perspective suggests that research interested in equity related to race should disaggregate data (Stage, 2007; Teranishi, 2007). Indeed, this study showed that disaggregating data is an effective way to find within group differences and illustrate patterns of effects across groups. Whether future researchers take this approach or more traditional approaches related to finding conditional effects, it is imperative to design studies that ascertain how various racial and economic groups experience the influence of diversity on learning. This has implications for survey sampling as well. Given that the racial diversity of high school graduates will increase significantly in the coming decade (Prescott, 2008), it is no longer sufficient for

researchers to use the standard excuse of “too few students of color in the sample to account for racial differences.” Between 2005 and 2015, high schools will graduate 54% more Latino/a students, 32% more Asian-American students, and 3% more African-American students, many of whom will attend college (Prescott, 2008). The perspectives and experiences of these students should be represented in educational research, even if it means seeking out new ways to distribute surveys and encourage survey-completion among students of color.

While this study looked at multiple diversity experiences within one model, as prior research had suggested, future research should go a step further by looking for interaction effects among diversity experiences. For example, do students who value racial diversity for learning gain more from taking a diversity course than students who do not value racial diversity for learning? Or do students who participate in a racial/cultural workshop gain more from interacting with diverse others than those students who did not take a racial/cultural workshop? Interacting diversity variables may be a way to discover the indirect and seemingly elusive effects of structural diversity as well. For example, do students at institutions with high levels of racial heterogeneity gain more from cross-racial interactions than those at institutions with lower levels of structural diversity?

Future research should consider other methods to understand the influence of structural diversity on learning as well. While educators have maintained that racial diversity is a necessary but insufficient condition to foster positive racial interactions, which in turn will foster improved learning, the research to date has been inconclusive. The current study adds to the realm of findings that show no significant effect of

structural diversity on learning. Future research should use hierarchical linear modeling or structural equation modeling to better understand the potential direct and indirect effects of structural diversity on learning. Even a more simplistic method such as ANOVA could be used to ascertain whether institutions with higher levels of structural diversity have higher mean levels of diverse behaviors.

Future research should consider using qualitative and mixed methods designs to understand the mechanisms underlying the influence of diversity on learning. This could support the theory related to diversity and learning and find specific relationships that expand the theory. Qualitative research and/or mixed methods could also provide greater understanding as to why some experiences benefit some groups but not others. Talking to students is an important aspect of diversity research, in order to gain insights related to the interactions of race, diversity, income, and learning that standard quantitative research questions cannot ascertain.

This research focused specifically on change during the first-year of college. It may be that students in the first-year of college benefit less from the campus climate for diversity because they are already experiencing a great amount of dissonance simply adjusting to college. Future longitudinal panel research should also look at the influence of diversity on learning over longer periods of time. It is possible that a study that looks at the change between the first and third year of college, or first and fourth year of college, would yield different results that would provide new understandings of the relationship between the campus climate for diversity and learning outcomes.

One of the most important reasons for researching the benefits of diversity on learning is to provide knowledge to inform campus practices. Beliefs about diversity

guide curricular choices, programs that serve minority students, and initiatives to teach students how to dialogue across difference, to name just a few examples. Empirical knowledge can influence those beliefs about diversity in order to create effective programs and practices to benefit all students. Therefore, I provide the following suggestions for practice.

Campus Practice

This study demonstrated that first-year students of different racial groups, as well as first-generation and low-income students, experience campus and the effects of the climate for diversity on learning in different ways. Therefore, programs designed specifically for students of individual racial groups, low-income backgrounds, and first-generation college students are necessary. These programs can provide the guidance and support that students of various backgrounds need in order to navigate the campus environment and make the greatest possible gains in college. Individuals working in those offices can share their expertise with the students they serve, as well as with other administrators and educators on campus. They can be activists for the students they serve as they remind others on campus that all students do not experience the campus in the same way. These programs are vitally important both to the students and to the broader campus and should be preserved even as outside organizations attempt to shut them down by suggesting that it is racist to provide services specifically targeted toward one racial group and not all (Cokorinos, 2003; Schmidt, 2006a; 2006b; 2007).

This study demonstrated that in the first-year of college there are interactions between the campus climate for diversity and students that are low income or first-generation college students that differ by race. Therefore, programs and offices that serve

individual racial groups, low-income backgrounds, and first-generation college students should work together, targeting groups that may experience negative effects from campus climate for diversity, such as low-income African-American students and first generation Latino/a college students. Individuals that work with those students can help them make meaning of the experiences that are having a negative effect on learning (such as participating in a racial/cultural workshop). They can also help educators understand that even among students who may "look" alike (such as African-American students), one's family income can affect how one experiences an educational event and its influence on learning.

In this study, students who valued racial and cultural diversity for the sake of learning made greater gains in need for cognition, regardless of race. This suggests that campus practitioners should seek ways to create a psychological climate that induces students to believe that diversity is important to learning, especially during the first year of college. This is, of course, one of those tasks that is easier said than done. However, talking with students who value racial and cultural diversity for learning's sake may shed light on why they feel that way and the experiences that helped them develop that value. Since this was the one aspect of the campus climate for diversity that benefited students in all four racial groups, and it provided an even greater benefit to low-income African-American students, it is worth the effort to figure out how to cultivate this value among students.

The educational benefit of courses and workshops that focus on racial and cultural diversity has been demonstrated in prior research (Bowman, 2009; Cole, 2007; Hurtado, 2003; 2005; Nelson Laird, 2005; Pascarella et al., 2001; Tsui, 1999). This study replicates

past findings, adding the twist that diversity courses may be more beneficial to African-American students and diversity workshops may be more beneficial to White students. Institutions should focus on adding more of these courses and workshops and encouraging students to enroll in them during the first year of college in order to contribute to learning outcomes for many students. Additionally, institutions concerned about the engagement and retention of African-American students should assess whether they are providing an adequate number of diversity courses and the extent to which those courses are meeting the learning goals for African-American students. Institutions concerned with engaging White students in learning about racial and cultural diversity should add more workshop opportunities and assess whether participating in those workshops is contributing to the cognitive development of those students, which this study suggests they will.

One of the interesting findings in this study was that, for White students, interacting with peers who are different from themselves led to gains in need for cognition, whereas having discussions with faculty and staff whose opinions differed from their own did not have a significant effect on need for cognition. This suggests that faculty should create opportunities within the classroom for students to interact with those who are different from themselves, rather than relying on lecturing to spur learning. However, opportunities for interacting with peers who are different should not be limited to the classroom – student affairs staff should facilitate structured opportunities for those types of interactions in venues such as residence halls, student organizations, student centers, and so on. This finding suggests that even campuses without a great deal of racial diversity can introduce students to the varying political, religious, and social perspectives

held by their peers in order to increase learning. Opportunities for both in-class and out-of-class interactions with students who represent varying perspectives should begin as soon as students enter college, given that this study demonstrated that change in need for cognition can occur based on experiences in the first-year of college.

Summary

The purpose of this research was to examine the influence of the campus climate for diversity on learning within four racial groups of college students. I used multiple regression to analyze how structural diversity, the psychological climate for diversity, and behavior influence one facet of learning – the need for cognition – for African-American, Asian-American, Latino/a, and White college students in the first year of college.

The main effects of some of the campus climate for diversity variables positively influenced the need for cognition within each group. For African-American students, the student's value of racial and cultural diversity and taking a diversity course positively influenced need for cognition. For Asian-American students, only the student's value of racial and cultural diversity positively influenced need for cognition. Within the Latino/a sample, the student's value of racial and cultural diversity and the student's belief that the institution facilitates diverse interactions positively influenced need for cognition. Within the sample of White students, the student's value of racial and cultural diversity, interacting with diverse others, and participating in a racial/cultural workshop had positive effects on need for cognition. The findings also suggested that being a first-generation college student or coming from a low-income family moderates the influence

of the campus climate for diversity on need for cognition differently for students of different racial backgrounds.

Suggestions for future research include creating research designs that ascertain how various racial and economic groups experience the influence of diversity on learning; seeking out new ways to distribute surveys and encourage survey-completion among students of color; looking for interaction effects among diversity experiences; and using hierarchical linear modeling, structural equation modeling, qualitative methods, and mixed methods.

Suggestions for campus practice include maintaining programs designed specifically for students of individual racial groups, as well as low-income and first-generation college students; seeking ways to create a psychological climate that cultivates the belief that diversity is important to learning; providing more courses and workshops focused on racial and cultural diversity; and creating structured opportunities to introduce students to the varying political, religious, and social perspectives held by their peers.

APPENDIX A – STATISTICAL SIGNIFICANCE OF EFFECTS ACROSS GROUPS

Table A1

Statistically Significant Differences between Regression Coefficients Across Groups for the Effects of Campus Climate for Diversity on Need for Cognition

	(1) African-American n=639		(2) Asian-American n=402		(3) Latino/a n=357		(4) White n=5631	
Div1 Structural- Student Heterogeneity[z]	-.01 (.05)	NS	.05 (.04)	NS	-.04 (.04)	NS	-.01 (.01)	NS
Div2 Structural- Faculty Heterogeneity[z]	-.06 (.06)	NS	-.03 (.04)	NS	.00 (.03)	NS	.00 (.02)	NS
Div3 Psychological- Institution Facilitates Diverse Interactions	.08 (.08)	NS	.05 (.05)	NS	.18* (.09)	4	-.02 (.03)	3
Div4 Psychological- Student Values Racial and Cultural Diversity[z]	.10** (.02)	NS	.14* (.06)	NS	.20** (.06)	NS	.11** (.02)	NS
Div5 Behavior- Student Took a Diversity Course	.18** (.06)	4	.04 (.10)	NS	.03 (.09)	NS	.04 (.03)	1
Div6 Behavior- Student Interacts with Diverse Others[z]	-.02 (.03)	NS	-.01 (.05)	NS	-.07 (.05)	4	.04* (.02)	3
Div7 Behavior- Disc with Fac/ Staff Whose Opinions Differ from Own	.03 (.05)	3	-.12 (.13)	NS	-.16 (.08)	1	.01 (.04)	NS
Div8 Behavior- Participated in a Racial/Cultural Workshop	.04 (.08)	NS	.09 (.08)	NS	.00 (.06)	NS	.07* (.03)	NS

** p<0.01, * p<0.05 (Standard errors in parentheses)

[z] indicates variable has been standardized

[1] indicates effect size is significantly different from African-American student sample

[2] indicates effect size is significantly different from Asian-American student sample

[3] indicates effect size is significantly different from Latino/a student sample

[4] indicates effect size is significantly different from White student sample

[NS] indicates effect size is not significantly different from any other student sample

Table A2

Statistically Significant Differences between Regression Coefficients Across Groups for the Interaction Effects of Low Income with the Campus Climate for Diversity on Need for Cognition

	(1) African-American n=639		(2) Asian-American n=402		(3) Latino/a n=357		(4) White n=5631	
Low Income * Div1 Structural- Student Heterogeneity	.01 (.01)	NS	-.00 (.01)	NS	.01 (.00)	NS	.00 (.00)	NS
Low Income * Div2 Structural- Faculty Heterogeneity	.00 (.00)	NS	-.01 (.01)	NS	-.00 (.00)	NS	-.00 (.00)	NS
Low Income * Div3 Psychological- Institution Facilitates Diverse Interactions	-.22** (.08)	4	-.12 (.31)	NS	-.01 (.15)	NS	.07 (.05)	1
Low Income * Div4 Psychological- Student Values Racial and Cultural Diversity	.31** (.11)	3,4	-.07 (.15)	NS	-.17 (.10)	1	.01 (.06)	1
Low Income * Div5 Behavior- Student Took a Diversity Course	.12 (.07)	3,4	.10 (.10)	3	.64* (.24)	1,2,4	.05 (.06)	1,3
Low Income * Div6 Behavior- Student Interacts with Diverse Others	.01 (.05)	NS	-.14 (.14)	NS	-.06 (.15)	NS	.07 (.07)	NS
Low Income * Div7 Behavior- Discussions with Fac and Staff Whose Opinions Differ from Own	.16 (.15)	NS	.13 (.28)	NS	-.25 (.24)	NS	-.10 (.10)	NS
Low Income * Div8 Behavior- Participated in a Racial/Cultural Workshop	-.28** (.10)	2,3,4	.07 (.13)	1	.24 (.21)	1	.00 (.08)	1

** p<0.01, * p<0.05 (Standard errors in parentheses)

[1] indicates effect size is significantly different from African-American student sample

[2] indicates effect size is significantly different from Asian-American student sample

[3] indicates effect size is significantly different from Latino/a student sample

[4] indicates effect size is significantly different from White student sample

[NS] indicates effect size is not significantly different from any other student sample

Table A3

Statistically Significant Differences between Regression Coefficients Across Groups for the Interaction Effects of First Generation College Student with the Campus Climate for Diversity on Need for Cognition

	(1) African-American n=639		(2) Asian-American n=402		(3) Latino/a n=357		(4) White n=5631	
First-Generation * Div1 Structural- Student Heterogeneity	.00 (.00)	NS	.00 (.00)	NS	.00 (.00)	NS	.00 (.00)	NS
First-Generation * Structural- Faculty Heterogeneity	-.00 (.00)	NS	-.01 (.01)	NS	-.00 (.00)	NS	-.00 (.00)	NS
First-Generation * Div3 Psychological- Institution Facilitates Diverse Interactions	-.01 (.08)	NS	.06 (.09)	NS	.20 (.23)	NS	.12** (.04)	NS
First-Generation * Div4 Psychological- Student Values Racial and Cultural Diversity	.13 (.10)	NS	-.09 (.11)	NS	-.11 (.09)	NS	-.01 (.05)	NS
First-Generation * Div5 Behavior- Student Took a Diversity Course	-.01 (.09)	2	.30* (.13)	1	.47 (.28)	NS	.04 (.08)	NS
First-Generation * Div6 Behavior- Student Interacts with Diverse Others	.02 (.05)	NS	-.08 (.13)	NS	-.17 (.15)	NS	.08 (.05)	NS
First-Generation * Div7 Behavior- Discussions with Faculty and Staff Whose Opinions Differ from Own	-.23* (.10)	4	-.04 (.19)	NS	-.00 (.22)	NS	.14 (.09)	1
First-Generation * Div8 Behavior- Participated in a Racial/Cultural Workshop	.04 (.14)	3	-.07 (.16)	NS	-.38** (.12)	1,4	.08 (.12)	3

** p<0.01, * p<0.05 (Standard errors in parentheses)

[1] indicates effect size is significantly different from African-American student sample

[2] indicates effect size is significantly different from Asian-American student sample

[3] indicates effect size is significantly different from Latino/a student sample

[4] indicates effect size is significantly different from White student sample

[NS] indicates effect size is not significantly different from any other student sample

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