

College Diversity Courses and Cognitive Development Among Students From Privileged and Marginalized Groups

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Previous research has suggested that diversity courses generally have positive effects on college students' cognitive development. However, it is unclear how many courses students need to take to maximize their cognitive gains, or whether some groups of students benefit more from taking these courses. Within a longitudinal sample of over 3,000 first-year students at 19 institutions, students who take at least one diversity course have greater gains in their general interest in ideas and effortful thinking than those who take no courses; however, taking more than one course is not associated with greater benefits than taking a single course. In addition, the number of diversity courses taken is virtually unrelated to gains in critical thinking and moral reasoning. Further analyses reveal that students from middle- or lower-income families and White students experience the greatest cognitive growth from taking diversity courses. Implications for future research and practice are discussed.

Keywords: diversity courses, cognitive development, college students, race/ethnicity, socioeconomic status

Clearly, American society is becoming increasingly diverse. By 2023, more than half of U.S. children under 18 years old will belong to a racial or ethnic minority group (U.S. Census, 2008a). Moreover, globalization and improved technology have made communication across diverse cultures much more common. Given the persistent—and even increasing—segregation in K-12 schools (Orfield, Bachmeier, James, & Eitle, 1997; Orfield & Lee, 2006), American colleges and universities must play a critical role in exposing the next generation to diverse people, ideas, and perspectives.

One means of fostering this exposure is through college diversity courses, which are defined here as those that have a primary emphasis on ethnic studies, women's studies, diverse cultures, and/or social justice. Although much rhetoric and research around college diversity focuses on the role of these experiences

in breaking down stereotypes and prejudices, current evidence suggests that these courses also promote gains in cognitive development (Gurin, 1999; Gurin, Dey, Hurtado, & Gurin, 2002; Hurtado, 2001, 2004; Tsui, 1999). However, very little is known about whether the impact of these courses might differ by gender, race/ethnicity, and social class, or how many courses are needed to provide significant benefits to students. These areas constitute the focus of the current study.

College Diversity Experiences and Cognitive Outcomes

Research on the relationship between diversity courses and cognitive outcomes has yielded mixed results, but most published studies suggest that these courses have positive effects on student development. Importantly, the design of a given study often seems to affect the substantive findings. For instance, Hurtado (2001) and Tsui (1999) found that ethnic studies and women's studies courses were associated with greater self-reported gains in critical thinking. In contrast, in a 2-year longitudinal study, taking diversity courses did not affect student gains in analytical problem-solving skills (Hurtado, 2004). A cross-sectional study also suggested that diversity courses promote a disposition toward critical

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thinking (Nelson Laird, 2005), whereas a longitudinal study found no such effect (Hurtado, Mayhew, & Engberg, 2003).

However, some longitudinal evidence does show that diversity courses foster cognitive skills. Hurtado et al. (2003) found that students who took a diversity course showed greater gains in moral reasoning (assessed before and after the class) than those who took a management course. In addition, controlling for numerous other factors, students who took diversity courses had larger gains in attributional complexity over a 2-year period than did those who took no such courses (Hurtado, 2004). Mayhew, Wolniak, and Pascarella (2008) examined the effects of curricular diversity experiences on students' need for cognition, which is defined as the "tendency to engage in and enjoy effortful cognitive activity" (Cacioppo, Petty, Feinstein, & Jarvis, 1996, p. 197). Although this study unexpectedly found that taking an intergroup dialogue course (relative to taking an introductory sociology course) was negatively related to gains in need for cognition, having positive diversity experiences *within* a given course was associated with increased need for cognition. Moreover, using multiple longitudinal datasets, Gurin (1999) and Gurin et al. (2002) found that students who took diversity-related courses experienced greater gains in intellectual engagement, academic skills, and active thinking than those who did not taken any courses.

The work by Gurin and colleagues (2002) is significant not only in its methodological rigor, but also in its attention to the distinct effects of diversity-related coursework for several racial/ethnic groups (though no statistical tests examined whether the effects were stronger or weaker among these groups). Overall, their findings are somewhat ambiguous. In a sample from the University of Michigan, the positive impact of "classroom diversity" was greater for African American and Asian students than for White students, controlling for numerous other variables. In a national dataset, though, the results were mixed: African American students did not benefit from classroom diversity, the positive impact of classroom diversity was similar for Asian and White students, and Latino students received greater benefits than did White students. It is possible that the discrepancy across samples stems from differences in how "classroom diversity" was operationalized.

In the national sample, it was defined as taking an ethnic studies course, whereas in the Michigan sample, it was defined in terms of how much information presented in class dealt with understanding other racial groups and how enrollment in a course affected one's views toward racial/ethnic diversity.

In sum, diversity coursework tends to have some positive effects on students' cognitive skills and tendencies, but this pattern is less consistent in longitudinal studies. The divergent findings for different methods here is consistent with other studies on the relationship between predictors of self-reported gains and longitudinal measures (e.g., Astin, 1993b). In fact, self-reported gains are subject to a variety of biases (Pike, 1993, 1999; Ross, 1989), which makes them less valid indicators of student learning and development than longitudinal measures. In a compelling illustration, Bowman (2009) examined the correspondence between self-reported gains and objective, longitudinal gains on critical thinking, and moral reasoning. In samples of over 1,500 students, the correlations between the two different measures of the same cognitive construct were virtually zero.

Divergent Experiences of Diversity

It is unclear how the impact of diversity courses varies between students from social groups that are privileged in American society (i.e., White/Caucasian, male, and wealthy) and those from groups that are marginalized (i.e., minority, female, and lower- or middle-income). Two perspectives on this issue yield opposing predictions. One view, the *exploration perspective*, posits that students from privileged groups have less exposure to diversity-related issues and, as a result, they should exhibit larger gains when learning about issues and experiences that are novel to them. This perspective draws from Gurin et al.'s (2002) conception of how disequilibrium shapes student reactions and responses to college diversity experiences. That is, college experiences with diversity—whether through formal coursework or informal interactions—are unfamiliar for most students and are likely to challenge students' existing beliefs and values. Faced with novel interactions across multiple forms of diversity (e.g., race, social class, gender, sexual orientation), college students must either make sense of these

experiences using their existing ways of seeing the world, or they must adjust their worldviews and conceptions to fit with these new experiences. Phrased in Piagetian terms (e.g., Piaget, 1971, 1975/1985), students must either assimilate these diversity experiences with their existing conceptions or accommodate their own perspectives and values to fit these experiences.

The likelihood of changing one's conceptions would most likely increase, on average, when discrepancies between one's previous worldview and one's current experiences are greatest. This disequilibrium and the reconsideration of one's existing views are what yield cognitive growth (Piaget, 1971; Ruble, 1994). For greater cognitive development to occur among students who are wealthy, White, and male, the exploration perspective assumes that at least one of the following related statements is true: (a) Students from privileged social groups have had less exposure to diversity than students from marginalized groups, and (b) The initial beliefs and worldviews of students from privileged groups are, on average, further from those presented in diversity courses than are those of students from marginalized groups.

Another view, the *resistance perspective*, suggests that students from privileged social groups often resist learning about and seriously considering the content of diversity courses. To the degree that this resistance persists throughout a course, students from privileged groups will experience less cognitive growth than students from marginalized groups. Although some attention has been paid to this form of resistance among college students in general (Higginbotham, 1996; Ringrose, 2007), these dynamics are most commonly discussed in the context of multicultural teacher education. Specifically, teacher education students who confront issues of power and privilege in their courses are often defensive, resistant, angry, and even antagonistic (Ahlquist, 1991; Berlak, 1999; Peters-Davis & Shultz, 2005; Ukpokodu, 2002). According to Brown (2004), this resistance is generally greatest when (mostly White, middle-class) students' own privilege and place in society are directly challenged. Even at the end of a semester-long course, students may still reject the course material; as a vivid illustration of this defensiveness, college students in one multicultural education course described their instructor as a "racist," "white-hater," and

"slave-master" on her final class evaluations (Ukpokodu, 2002, p. 29). Students who feel personally threatened by the content of diversity courses are unlikely to experience the open-mindedness that is required for disequilibrium and subsequent cognitive growth to occur. If a sizable proportion of students from privileged groups feel threatened and defensive when taking diversity courses, then these students will likely experience less cognitive growth (if any) than students from marginalized groups.

As the resistance perspective would suggest, some students are much more inclined than others to enroll in diversity courses or to have other diversity-related interactions. Previous research on college diversity has not accounted for this tendency and has implicitly assumed that diversity experiences themselves (not the proclivity to engage with or learn from diversity) are responsible for affecting development. Controlling for students' openness to diversity and challenge may help isolate the unique effects of diversity coursework. Although openness to diversity is generally conceptualized as a desired college outcome (e.g., Pascarella, Edison, Nora, Hagedorn, & Terenzini, 1996; Whitt, Edison, Pascarella, Nora, & Terenzini, 2001), this openness seems integral to students' willingness to engage in structured diversity experiences.

Present Research and Hypotheses

The current study expands upon previous research in several ways. First, it uses objective, longitudinal measures (as opposed to self-reported gains or other cross-sectional data) to gauge several cognitive outcomes. Regression analyses predicting cognitive outcomes can yield divergent results, depending on whether the outcome is measured through self-reported gains or longitudinal measures (Bowman, 2009; Whitt, Edison, Pascarella, Nora, & Terenzini, 1999). Second, this study explores potential nonlinear effects of diversity courses on cognition, because previous research suggests a curvilinear relationship exists between coursework and student outcomes. For example, Chang (2002) found that modern racism is reduced by taking one diversity course (but not through additional courses), and Bowman (in press-a, in press-b) found that well-being and positive orientations toward diversity only increase after taking multiple courses (but not just one course). Third, this

study examines whether and how the impact of diversity courses varies by socioeconomic status, gender, and race/ethnicity. Given the substantial variation in student demographics across colleges and universities, understanding whether and how the effects of diversity coursework differ among groups of students may have important implications for institutions that are deciding whether to institute a diversity course requirement.

As described earlier, Gurin et al. (2002) suggest that early experiences with diversity may cause students to grapple with how or whether these experiences fit with their existing worldviews and conceptions. If these interactions lead to students' engaging in considerable cognitive effort, then one might expect early diversity experiences (e.g., a student's first diversity-related course) to have a positive effect on cognitive outcomes. Conversely, there is little reason to suspect that extensive experiences with diversity would contribute to additional cognitive gains. The extent to which these experiences are associated with cognitive development may also vary depending upon whether students are members of privileged (*vis-à-vis* marginalized) social groups in American society. Therefore, three hypotheses were proposed. First, students who take one diversity course will exhibit greater gains in cognitive outcomes than those who take no such courses. Second, students who take more than one diversity course will not exhibit greater gains in cognitive outcomes than those who take one course. Third, the effects of diversity coursework on cognitive outcomes will differ across demographic groups (i.e., gender, social class, and race/ethnicity). Because there are two plausible, competing viewpoints—the exploration perspective and the resistance perspective—that yield predictions about how the effects of diversity coursework might differ across demographic groups, no specific hypotheses were made as to which groups might experience relatively greater gains.

Method

Data Source and Participants

Data from the Wabash National Study of Liberal Arts Education (WNSLAE) were used (for detailed information about the national study and participating institutions, see Center of Inquiry in the Liberal Arts, 2009). Nineteen colleges and universities (11 liberal arts col-

leges, two community colleges, three research universities, and three regional universities) were included in the sample on the basis of their strong commitment to liberal arts education. The study sample contained both private and public institutions, along with religiously affiliated, single-sex, and minority-serving schools. Moreover, institutions exhibited a wide range of selectivity, tuition costs, institutional size, minority enrollment, and geographic diversity.

Students who were beginning their freshman year in Fall 2006 were invited to participate in a longitudinal study. Before classes began and/or during their first 2–3 weeks on campus (Time 1), students completed: (a) a registration form that included demographic information; (b) a questionnaire regarding interests, attitudes, values, and high school experiences; and (c) a battery of five assessments, some of which were used in the current study. All students completed all assessments (including the need for cognition scale described below), except that approximately half of the students completed a critical thinking measure (the critical thinking module of the College Assessment of Academic Proficiency, or CAAP), whereas the other half completed a measure of moral reasoning (the Defining Issues Test 2, or DIT2). A total of 4,501 students received \$50 each for their participation. At the end of their freshman year (Time 2), students who took part in the initial assessment were invited to participate in a second wave of data collection. They completed the same battery of assessments, along with questionnaires that asked about their college experiences, interests, attitudes, and values. Once again, students who completed all measures received \$50 as compensation. A total of 3,081 students participated in this second wave, yielding a retest response rate of 68%. Of these students, 3,072 had valid data on the assessments: 1,569 students completed the CAAP critical thinking module, and 1,503 completed the DIT2. Demographic characteristics for the final sample are provided in Table 1a.

Measures

Dependent variables. A recent meta-analysis of college diversity experiences and cognitive outcomes (Bowman, 2009) indicates that diversity experiences are more strongly related to cognitive tendencies (i.e., how students tend

Table 1
A. Descriptive Statistics for Students in the Final Sample (Weighted)

Demographic group	Frequency	Percentage
Female	1687	54.9%
Male	1385	45.1%
Students of color	524	17.1%
White/Caucasian students	2503	81.5%
Race/ethnicity not reported	45	1.5%
Family income < \$100,000/year	1742	56.7%
Family income \geq \$100,000/year	967	31.5%
Income not reported	363	11.8%

Note. Percentages may not add up to 100% due to rounding.

B. Descriptive Statistics for Students in the Final Sample (Weighted)

Outcome	Mean	Standard deviation
Need for cognition scores at Time 1	3.40	0.62
Need for cognition scores at Time 2	3.39	0.63
DIT2 scores at Time 1	31.71	15.74
DIT2 scores at Time 2	36.64	15.95
CAAP critical thinking scores at Time 1	51.96	28.21
CAAP critical thinking scores at Time 2	53.30	30.39

Note. For inclusion in the regression analyses, these variables were subsequently standardized with a mean of zero and a standard deviation of one.

to or prefer to think) than to cognitive skills (i.e., students' general thinking abilities). Thus, the current study uses several forms of cognitive development—a measure of cognitive tendencies (need for cognition), a measure of cognitive skills (critical thinking), and arguably a measure of both aspects (moral reasoning)—to explore whether the study's hypotheses can be confirmed for divergent types of cognitive outcomes. In addition, these three outcomes constitute critical components of intellectual and moral development that are valuable not only during college, but also throughout the life span.

Critical thinking was assessed with the critical thinking module of the CAAP, which was developed by the American College Testing Program (ACT). This 40-minute, 32-item objective assessment measures a student's ability to clarify, analyze, evaluate, and extend arguments. The internal consistency reliabilities for the CAAP critical thinking test range between .81 and .82 (ACT, 1991), and CAAP scores correlate very highly ($r = .75$) with the Watson-

Glaser Critical Thinking Appraisal (Pascarella, Bohr, Nora, & Terenzini, 1995).

Moral judgment was measured with the DIT2 (Bebeau & Thoma, 2003; Rest, Narvaez, Thoma, & Bebeau, 1999). The DIT2 provides several scenarios in which participants judge what action the protagonist should take and what information is relevant for making that decision. The application of one's own complex framework for considering moral problems is associated with high levels of reasoning; in other words, students who have high N2 scores on the DIT2 have developed and are employing their own code of values and ethics. Previous evidence has shown that the N2 score is reliable ($\alpha = .77$ to $.81$; Rest et al., 1999; University of Minnesota, n.d.), and the N2 and its predecessor (the P-score) predict a variety of forms of moral thinking and behavior (for a synthesis of this literature, see Pascarella & Terenzini, 1991, 2005).

Need for cognition was measured with a scale by Cacioppo et al. (1996). People who have a high need for cognition "tend to seek, acquire, think about, and reflect back on information to make sense of stimuli, relationships, and events in their world" (Cacioppo et al., 1996, p. 198). In contrast, those with low need for cognition are more likely to rely on others (e.g., friends, perceived experts) or apply cognitive heuristics or social comparison processes to make sense of the world. The internal consistency of this scale ranged from .89 (Time 1) to .90 (Time 2) in the present sample.

Means and standard deviations for these three measures are displayed in Table 1b. Subsequently, all dependent variables were standardized with a mean of zero and a standard deviation of one, so that the unstandardized regression coefficients for diversity courses can be interpreted in terms of effect sizes.

Independent variables. The independent variable of interest was the number of diversity courses taken during the first year of college. Specifically, three separate items asked students how many courses they had taken that focused on "diverse cultures and perspectives (e.g., African American Studies, Latino Studies)," "women's/gender studies," and "equality and/or social justice." Because the effects of ethnic studies courses on college outcomes are generally quite similar to those of women's studies courses (Astin, 1993a), the total number of

diversity-related courses was computed. (Note that preliminary analyses with the current sample showed each of the three types of courses had similar effects on cognitive outcomes.) To reflect potential nonlinear relationships between the number of diversity courses and cognitive outcomes, several dummy-coded variables were used in the final analyses: taking zero diversity courses, one course, two courses, and three or more courses.

Several demographic control variables were included in the analyses; these variables were expected to be significantly related to the number of diversity courses taken and/or cognitive development (for a review, see Pascarella & Terenzini, 2005). Parental income was recoded into several categories, because over 10% of participants did not report their parents' income. Dummy variables were computed for low-income students (parents' combined income less than \$35,000 per year), high-income students (at least \$100,000 per year), and students who did not report their income (many of whom reported that they were economically self-sufficient). Middle-income students (\$35,000–\$99,999) served as the referent group. The lower income cutoff is approximately 150% of the 2007 poverty line for a family of four (U.S. Census Bureau, 2008b). The high-income category is designed to include students whose families are comfortable financially (though clearly, no single income cutoff can perfectly make this distinction). Dummy variables were computed for White/Caucasian students and students who did not report their race; students of color served as the referent group. Other variables indicated gender (0 = female, 1 = male) and whether participants were traditional college age (0 = 19 years old and younger at the beginning of freshman year, 1 = 20 or older). Students who were in their 20s or older upon entering college were considered above traditional college age, because they would almost certainly be at least 24 years old when receiving their bachelor's degrees; in addition, these students probably took at least 1 year off from school between high school and college, which also represents a "nontraditional" (though increasingly prevalent) route to first-time college attendance.

Two additional precollege variables were used. High school grade point average was in-

cluded; because the original variable was strongly skewed, dummy codes were created for students who had a B average (B+ to B–) and for those with a C or D average (C+ or lower). Students who had an A average (A+ to A–) served as the referent group. The racial/ethnic composition of one's high school was also included. Oftentimes, the direction of the relationship between high school racial composition and diversity related outcomes, such as positive interactions with diverse peers and intercultural development, depends upon the race/ethnicity of the participant (Kendall Brown, 2008; Locks, Hurtado, Bowman, & Oseguera, 2008). As a result, this variable was coded such that higher values reflect a high school student body that is similar to oneself. Specifically, for White students, 1 = almost all students of color and 5 = almost all White students; for students of color, 1 = almost all White students and 5 = almost all students of color.

As noted earlier, previous studies on the impact of diversity courses do not explicitly account for the proclivity to take diversity courses. It seems quite likely that students who take diversity courses in their first year of college differ in critical ways from those who do not. To assess this inclination, students' openness to diversity and challenge (e.g., "I enjoy taking courses that challenge my beliefs and values"; see Pascarella et al., 1996) was included as a control variable. This scale consisted of seven items ($\alpha = .87$), and each item was measured on a five-point Likert scale (1 = strongly disagree, to 5 = strongly agree).

Students' college experiences and institutional characteristics were used as additional control variables. Continuous single-item measures gauged the number of hours spent participating in cocurricular activities and the number of hours spent relaxing and socializing (for both items, 1 = 0 hours, to 8 = more than 30 hours). To ensure that any effects of diversity courses were not merely the product of taking coursework of any kind, the number of courses taken in each of nine subject areas was added to create an index of total number of courses taken. Finally, institutional type was included to gauge institutional differences that were not captured by other college experience variables. Dummy-coded variables were created for research universities, regional universities, and community

colleges, with liberal arts colleges as the referent group.

Analyses

The data were weighted to make the sample representative of the incoming freshman class of these institutions. Specifically, participants were weighted according to each institution's first-year undergraduate population by sex, race/ethnicity, and ACT quartile (or equivalent score). To control for potential confounding variables, ordinary least squares multiple regression analyses were conducted, with Time 2 levels of need for cognition, DIT2 scores, and CAAP critical thinking scores serving as dependent variables. In Block 1, the independent variables for all analyses were parental income, gender, race/ethnicity, age, high school grade point average, high school demographics, institutional type, time spent participating in cocurricular activities, time spent relaxing and socializing, total courses taken, openness to diversity/challenge, number of diversity courses taken, and the relevant dependent variable at Time 1. To test whether taking multiple diversity courses provides greater cognitive development than taking just one course, one diversity course served as the referent group, with zero, two, and three or more courses as dummy variables.

To examine whether the effects of diversity courses might be more or less pronounced for students from privileged social groups, blocked hierarchical multiple regression analyses were conducted. Because the phenomenon of interest for these analyses was whether and how diversity courses have any impact on cognitive outcomes, zero diversity courses served as the ref-

erent group, with one, two, and three or more courses as dummy variables. In Block 1, the same independent and dependent variables as the previous regression analyses were included. In Block 2, three sets of interaction terms were added. These included interaction terms between the number of diversity courses taken (i.e., one diversity course, two courses, and three or more courses) and high family income (\$100,000 or more), interactions between diversity courses and gender (male), and interactions between diversity courses and being White/Caucasian. As Aiken and West (1991) recommend, when significant interactions were observed for a demographic group in a particular analysis, separate regressions were performed to determine the effect of diversity courses for each subgroup.

Results

As expected, students who take one diversity course experience greater gains in need for cognition than those who take no courses, $B = -.12, p < .001$ (see Table 2). Also as predicted, there is no difference in need for cognition between students who take one course versus those who take two courses or three or more courses. Contrary to expectations, the effects of diversity courses for the two other cognitive variables are weak or nonexistent; in fact, the only other significant difference is that students who take three or more courses exhibit marginally smaller gains in critical thinking than those who take no courses, $B = -.11, p < .04$. Regression analyses that use zero courses as a referent group yield similar substantive findings (see Table 3). Relative to students who take no

Table 2
Unstandardized Regression Coefficients for Diversity Courses Predicting Cognitive Outcomes (One Diversity Course as Referent Group)

Independent variable	Dependent variable		
	Need for cognition	Moral reasoning	Critical thinking
No diversity courses	-.12*** (.03)	-.07 (.05)	-.05 (.04)
Two diversity courses	.05 (.04)	-.04 (.06)	-.00 (.05)
Three or more diversity courses	.05 (.04)	.02 (.06)	-.11* (.05)
R^2	.569	.555	.670

Note. Standard errors in parentheses. All analyses controlled for gender, race/ethnicity, income, age, HSGPA, high school racial composition, relevant outcome at Time 1, institutional type, time spent in co-curricular activities, time spent relaxing and socializing, total courses taken, and openness to diversity/challenge.

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

Table 3
Unstandardized Coefficients From Block 1 of Hierarchical Regression Analyses Predicting Cognitive Outcomes (Zero Diversity Courses as Referent Group)

Independent variable	Dependent variable		
	Need for cognition	Moral reasoning	Critical thinking
One diversity course	.12*** (.03)	.07 (.05)	.05 (.04)
Two diversity courses	.17*** (.04)	.03 (.05)	.05 (.05)
Three or more diversity courses	.17*** (.04)	.09 (.05)	-.06 (.05)
R ²	.569	.555	.670

Note. Standard errors in parentheses. All analyses controlled for gender, race/ethnicity, income, age, HSGPA, high school racial composition, relevant outcome at Time 1, institutional type, time spent in co-curricular activities, time spent relaxing and socializing, total courses taken, and openness to diversity/challenge.

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

diversity courses, students who take one course, two courses, or three or more courses experience greater gains in need for cognition, $Bs \geq .12$, $ps < .001$. No significant differences are apparent for the other two outcomes.

However, a lack of main effects does not imply that diversity courses have the same impact for all college students. Block 2 of the hierarchical regression analyses tests this possibility directly by adding interaction terms between demographic characteristics and diversity coursework. Students from high-income families experience smaller gains from taking diversity coursework than do other students on need for cognition and critical thinking (see Table 4). Specifically, the effects of taking one course or three or more courses on need for cognition are

smaller for students from high-income families than for students from lower- or middle-income families, $B = -.17$, $p = .01$, and $B = -.27$, $p < .001$, respectively. Similar social class differences are apparent for critical thinking for the effect of taking one course, $B = -.29$, $p < .001$, two courses, $B = -.29$, $p < .005$, and three or more courses, $B = -.21$, $p < .04$.

On the other hand, additional results show that students from some privileged groups actually receive larger benefits from diversity coursework. As shown in Table 4, relative to students of color, White students who take two courses experience greater gains in need for cognition, $B = -.22$, $p = .01$. Moreover, there is a borderline significant interaction between high-income students and diversity coursework,

Table 4
Unstandardized Coefficients From Block 2 of Hierarchical Regression Analyses Predicting Cognitive Outcomes (Zero Courses as Referent Group)

Independent variable	Dependent variable		
	Need for cognition	Moral reasoning	Critical thinking
High-income \times 1 diversity course	-.17* (.07)	.06 (.10)	-.29*** (.08)
High-income \times 2 diversity courses	-.09 (.08)	.22* (.11)	-.29** (.10)
High-income \times 3 + diversity courses	-.27*** (.08)	-.05 (.11)	-.21* (.10)
Male \times 1 diversity course	.02 (.06)	-.06 (.09)	.06 (.08)
Male \times 2 diversity courses	.06 (.07)	.10 (.11)	.09 (.09)
Male \times 3 + diversity courses	.01 (.07)	-.02 (.10)	-.13 (.09)
White \times 1 diversity course	.12 (.09)	-.06 (.13)	-.00 (.11)
White \times 2 diversity courses	.22* (.09)	-.22 (.13)	-.09 (.11)
White \times 3 + diversity courses	.11 (.09)	.12 (.13)	.07 (.11)
R ²	.572	.559	.676

Note. Standard errors in parentheses. All analyses controlled for gender, race/ethnicity, income, age, HSGPA, high school racial composition, relevant outcome at Time 1, institutional type, time spent in co-curricular activities, time spent relaxing and socializing, total courses taken, and openness to diversity/challenge.

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

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such that wealthier students have greater increases in moral reasoning than less wealthy students as a result of taking two courses, $B = .22, p < .05$.

Separate subgroup regressions were conducted for the four combinations of demographic groups and outcomes in which significant interactions occurred ($p < .05$): family income predicting need for cognition, family income predicting moral reasoning, family income predicting critical thinking, and race/ethnicity predicting need for cognition. As shown in the top three rows of Table 5, taking diversity courses is not associated with any cognitive benefits for students from high-income backgrounds. In contrast, for students from middle- or lower-income families, significant gains in need for cognition accrue from taking one, two, or three or more diversity courses, $Bs \geq .20, ps < .001$. Moreover, for these less affluent students, taking two diversity courses is associated with greater critical thinking gains, $B = .12, p < .04$, and taking three or more courses is associated with greater gains in moral reasoning, $B = .20, p < .005$.

Substantial discrepancies are also apparent by race/ethnicity. White students who take one, two, or three or more diversity courses experience greater gains in need for cognition than White students who take no such courses, $Bs \geq .14, ps < .001$. On the other hand, students of

color do not receive any significant benefits from taking diversity coursework.

Discussion

In sum, taking diversity courses is associated with overall gains in need for cognition. More specifically, significant gains accrue from taking one course (as opposed to none), and additional courses are not related to higher levels of need for cognition. This pattern is consistent with the novelty of learning about diversity-related content for many college students. These students' interest seems to be piqued by their initial exposure to diversity issues, which then leads to increased interest in ideas and effortful thinking. Taking multiple diversity courses neither promotes additional need for cognition (because the introduction to these ideas serves as the main impetus for change) nor does it lead to decreases in this form of intellectual curiosity.

In contrast, taking diversity courses does not contribute to greater critical thinking or moral reasoning. This finding seems to contradict an earlier study (Hurtado et al., 2003) that found a significant, positive effect of diversity coursework on moral reasoning using the same instrument as the current study (DIT2). However, the model in the previous study included only three predictor variables (preclass DIT2 levels, enrollment in a diversity course, and active thinking skills), whereas the current study used

Table 5
Unstandardized Regression Coefficients for Diversity Courses Predicting Cognitive Outcomes by Subgroup

Subgroup	Independent variable	Dependent variable		
		Need for cognition	Moral reasoning	Critical thinking
Students from high-income families	1 diversity course	.03 (.06)	.10 (.08)	-.07 (.07)
	2 diversity courses	.11 (.06)	.12 (.09)	-.14 (.08)
	3 + diversity courses	-.00 (.07)	-.05 (.09)	-.15 (.08)
Students from lower- or middle-income families	1 diversity course	.21*** (.04)	.09 (.06)	.10 (.05)
	2 diversity courses	.23*** (.05)	-.02 (.07)	.12* (.06)
	3 + diversity courses	.29*** (.05)	.20** (.07)	-.03 (.06)
White students	1 diversity course	.14*** (.04)		
	2 diversity courses	.21*** (.04)		
	3 + diversity courses	.18*** (.04)		
Students of color	1 diversity course	-.00 (.08)		
	2 diversity courses	.02 (.08)		
	3 + diversity courses	.15 (.08)		

Note. Standard errors in parentheses. All analyses controlled for gender, race/ethnicity, income, age, HSGPA, high school racial composition, relevant outcome at Time 1, institutional type, time spent in co-curricular activities, time spent relaxing and socializing, total courses taken, and openness to diversity/challenge.

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

numerous precollege characteristics and college experiences to account for differences between students who did and did not take a diversity course. Thus, the current work provides a more conservative estimate of the unique effect of diversity courses on moral reasoning. In addition, some previous research suggested that ethnic and women's studies courses bolster critical thinking (Hurtado, 2001; Tsui, 1999), but these studies were based on self-reported gains, which are poor proxies for objective measures of cognitive development (Bowman, 2009; Pike, 1993, 1999). The current study is consistent with longitudinal research that shows no impact of diversity coursework on analytical problem-solving skills (Hurtado, 2004). In this study, the lack of change in critical thinking and moral reasoning was found on objective measures that are designed to be content-free, which leaves open the possibility that diversity courses contribute to cognitive skills in particular domains. That is, students who take a diversity course may be better able to identify and critique the assumptions underlying certain public policies and institutional practices (i.e., those that have implications for group equality and social justice). However, these skills may not generalize to domains in which diversity-related issues are less relevant.

Clear differences in the impact of diversity coursework across demographic groups are apparent, but the patterns provide mixed support for each of the two perspectives proposed earlier (i.e., exploration and resistance). Overall, students from less affluent families experience greater cognitive growth from taking diversity courses than do their more affluent counterparts. These findings are quite consistent with the resistance perspective, because students from high-income families who take diversity courses receive virtually no benefits in cognitive outcomes. On the other hand, White students who take diversity courses experience substantial gains in need for cognition, whereas students of color who take these courses receive no significant benefits. This finding is consistent with an exploration perspective, because White students—who, on average, are presumably less familiar with or have less exposure to diversity-related perspectives—are the ones who benefit most from this coursework.

Although still speculative, one explanation provides a plausible account for this apparent

discrepancy. Introductory diversity courses at many colleges and universities are likely designed so as to minimize resistance among White students. In other words, in their efforts to alleviate students' resistance and defensiveness (McFalls & Cobb-Roberts, 2001; Ukpokodu, 2002), many instructors of college diversity courses may focus primarily on resistance related to students' race or ethnicity, but not on their socioeconomic status or gender. In support of this interpretation, racial/ethnic differences in need for cognition are primarily apparent among students who take one or two courses, whereas students of color who take three diversity courses experience benefits that are similar to those of White students (compare regression coefficients for the two groups in Table 5). Because the first one or two diversity courses a student takes are most likely to be introductory in nature, one might expect that the impact of these introductory courses should vary by race/ethnicity—if they focus largely on engaging White students. Furthermore, although there was considerable variation in the racial/ethnic composition of the 19 institutions in the current sample, White students constituted the majority of undergraduates on every campus. These White students would likely be the main audience for introductory diversity courses, especially at institutions that have a diversity coursework requirement in place. Thus, instructors may feel a need to cater to White students, who constitute the numerical majority and who may be the most vocal in their resistance to course content (Higginbotham, 1996).

Before drawing strong conclusions from the findings, some limitations should be noted. Students who are required to take a diversity course as part of a college or departmental requirement may engage in these courses in a different manner than those who choose such courses out of pure intellectual curiosity. To date, no study has adequately examined the effects of this potential difference in student motivation, so it is unclear how this might affect the results of the current study. The inclusion of students' openness to diversity/challenge as a control variable should mitigate, to some degree, the potential impact of these motivations. On a related note, students who take one diversity course likely differ in important ways from students who take multiple courses and those who take no such

courses. This study attempted to account for these differences by controlling for students' entering characteristics (i.e., demographics, high school characteristics, openness to diversity, and cognitive development) and several college experiences. Because experimentally manipulating students' coursework would present numerous logistical and ethical difficulties, controlling for potential confounding variables possibly constitutes the best plausible approach. Finally, the sample only contains first-year students, and the vast majority of these students are from 4-year institutions. Thus, the current findings may not generalize to students at 2-year colleges or to advanced undergraduates.

Implications and Future Directions

This study begs the question of whether and how cognitive development can be promoted for all students. Diversity courses contribute to overall gains only on need for cognition, but further analyses showed that these benefits were generally limited to White students and students from less affluent families. Instructors who seek to reduce the resistance and defensiveness of White students may be ignoring other students from privileged groups who are prone to the same sort of disengagement with class material. Attending to—and explicitly discussing—multiple dimensions of diversity may help address this problem. The efficacy of addressing particular form(s) of diversity can be explored through more detailed studies and analyses; for example, disparate outcomes by gender may be most likely to occur in women's studies courses, differences by socioeconomic status may be most pronounced in poverty studies classes, and so on. In contrast, the opposite may actually be true: By bringing issues of gender to the forefront in women's studies classes, issues relevant to race or social class could be ignored, which may lead to disparate outcomes across these groups.

A key assumption of both the exploration perspective and resistance perspective is that meaningful engagement with diversity course material is necessary to realize cognitive growth. It seems quite likely that this same meaningful engagement is also a prerequisite for experiencing other benefits of diversity coursework, such as greater commitment to social action (e.g., Nelson Laird,

Engberg, & Hurtado, 2005), increased cultural awareness (e.g., Astin, 1993a), and reduced modern racism and sexism (e.g., Hogan & Mallott, 2005; Malkin & Stake, 2004). The relationships between cognitive and democratic outcomes of diversity courses have not been explored. For example, cognitive growth may be either a precursor or a by-product of changing one's attitudes and values. This area of inquiry could provide fruitful insights into the overall effectiveness of diversity coursework in promoting student growth.

According to the current results, the cognitive benefits of taking diversity classes tend to level off after taking just one course, which might imply that institutions should only require one course. However, other benefits of diversity courses, such as greater psychological well-being or positive orientations toward diversity, only accrue from taking multiple courses (Bowman, in press-a, in press-b). Thus, colleges and universities should consider requiring multiple courses to promote all outcomes that stem from exposure to classroom diversity. Although introductory experiences with diversity are sufficient to bolster students' generalized interest in ideas, additional engagement is necessary for promoting sustained commitment and positive attitudes toward diversity.

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