Empirical Research Paper

Difference-Education Improves First-Generation Students' Grades Throughout College and Increases Comfort With Social Group Difference

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Abstract

Difference-education interventions teach people a *contextual theory of difference*: that social group difference comes from participating in and adapting to diverse sociocultural contexts. At two universities, we delivered difference-education interventions during the college transition and examined long-term academic and intergroup outcomes. Nearly 4 years later, first-generation students who received a difference-education intervention earned higher grades and were more likely to attain honors standing than those in the control condition. Based on an end-of-college survey with students at one of the two universities, both first-generation and continuing-generation students showed greater comfort with social group difference compared with students in the control condition. Our results demonstrate for the first time that teaching first-generation students a contextual theory of difference can lead to long-term academic benefits that persist until graduation. This work also provides new evidence that difference-education can improve comfort with social group difference.

Keywords

social class, first-generation students, academic performance, higher education, intervention, intergroup relations

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For graduates of 4-year degree programs, the attainment of honors standing and higher cumulative grade point averages (GPAs) at graduation are associated with tangible benefits in the labor market (e.g., higher income; Jones & Jackson, 1990; Khoo & Ost, 2018; Thomas, 2000). However, first-generation college students (i.e., students whose parents do not have 4-year degrees) confront background-specific obstacles that can hinder their academic achievement compared with their continuing-generation peers (i.e., students who have at least one parent with a 4-year degree; e.g., Duncan & Murnane, 2011; Fiske & Markus, 2012; Phillips et al., 2020). *Difference-education* interventions can improve first-generation students' initial academic performance by providing an understanding of how people's different backgrounds and social group memberships shape their experiences and outcomes (i.e., a contextual theory of difference; Stephens et al., 2014, 2019; Townsend et al., 2019). In this article, we extend work on difference-education in two critical ways. First, we examine whether first-generation students continue to experience the academic performance benefits of difference-education throughout their 4 years in college. Second, we investigate whether the intervention affects an important new outcome for both first- and continuing-generation students: comfort with social group difference.[1]

Do the Academic Benefits of Difference-Education Persist Throughout College?

The social psychological literature on intervention science documents that seemingly small interventions can change students' long-term academic outcomes by giving them a new "lay theory" or way of construing their experiences in school (Blackwell et al., 2007; Cohen & Sherman, 2014; Wilson, 2011; Yeager & Walton, 2011). Leveraging this

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approach, difference-education teaches students a *contextual theory of difference*: that social group differences come from participating in and adapting to diverse sociocultural contexts (e.g., contexts that differ by race, ethnicity, or social class; Stephens et al., 2019). This contextual theory can help students to understand that their differences or experiences of feeling different in college are not a result of personal weaknesses or deficiencies, but instead a product of their particular backgrounds or life experiences before college. In addition to normalizing students' experiences of difference, a contextual theory can also convey that differences can serve as an asset or strength. As a result, this new theory can help students feel that they fit in college and are empowered to succeed. Supporting our theorizing, first-generation students who participated in difference-education interventions achieved higher cumulative GPAs (Stephens et al., 2014; Townsend et al., 2019) compared with first-generation students in control conditions.

Although these academic benefits have been found through students' second year in college, it is unclear whether they will persist until graduation. On the one hand, it is possible that the effects may fade. Indeed, students often experience a transition as they begin to focus on coursework in their academic major(s) as well as on their future career plans (e.g., Kelly et al., 2007). This key transition might mean that the benefits of the intervention will not sustain themselves over time. Recent research conducted at a large, broad-access university is consistent with this possibility (Murphy et al., 2020). This work examined the benefits of belongingness interventions, which are similar to difference-education interventions in that they also give students a new way to understand their experiences in school. Murphy and colleagues found that the initial improvements in racial-ethnic minority and first-generation students' grades did not persist.

On the other hand, as we propose here, it is possible that the academic benefits of difference-education may persist over time. Wise interventions, such as difference-education, can initiate a set of *recursive* or self-reinforcing processes, in which the newly learned lay theory produces a change in experience or behavior that further reinforces or amplifies the theory (Miller et al., 2017). For example, when struggling to select a major, a first-generation student who has learned a contextual theory of difference may feel that they fit and can be successful in college despite this challenge. This perception may help to improve their academic performance. Subsequently, this experience of success may then reinforce their belief in a contextual theory. We theorize that difference-education interventions should operate in this way, initiating these kinds of self-reinforcing processes. Accordingly, we propose that the intervention's benefits will persist throughout students' college careers. Consistent with this possibility, studies of other wise interventions find evidence that the benefits on students' grades persist over long periods of time (i.e., belongingness, Walton & Cohen, 2007; values affirmation, Tibbetts et al., 2016).

Does Difference-Education Increase Students' Comfort With Social Group Difference?

Given difference-education's focus on normalizing difference, we also theorize that it should have effects beyond students' academic performance. We have previously theorized that learning a contextual theory of difference should improve students' intergroup outcomes, defined as understanding and navigating across social group differences (Stephens et al., 2019). We refine our theorizing about intergroup outcomes and label this construct *comfort with social group difference*. Specifically, we conceptualize comfort with social group difference as encompassing both intergroup skills, which we define as individuals' comfort with other people's memberships in different social groups (e.g., cross-class friendships) and intragroup pride, which we define as individuals' comfort with their own social group memberships (e.g., participation in identity-relevant activities). We propose that learning a contextual theory of difference should improve both first-generation and continuing-generation students' comfort with social group difference, measured as a composite of these subthemes.

We base our theorizing on research in both social psychology and education. Social psychological research offers evidence that using a contextual (vs. an essentialist) theory of difference produces less discriminatory behavior, less intergroup conflict, and a reduced attachment to the status quo (e.g., Lee et al., 2014; Levy et al., 2001; No et al., 2008; Williams & Eberhardt, 2008). Related education research on intergroup dialogues demonstrates that teaching students about the historical and contextual nature of persistent intergroup conflicts helps foster psychological tendencies that suggest students may be more comfortable with diversity (e.g., Gurin et al., 2013; Zúñiga et al., 2012). For example, compared with students who did not enroll in an intergroup dialogue course, those who completed one showed increases in perspective taking, understanding of their own group's history, participation in identity-relevant extracurricular activities, and positive attitudes toward diversity (e.g., Gurin et al., 2013).

Initial findings from difference-education research, which sampled a range of outcomes associated with students' experiences in college, are consistent with our theorizing that difference-education increases comfort with social group difference. For example, both first- and continuing-generation students in a difference-education intervention reported greater appreciation of difference (i.e., that students with different backgrounds and experiences can find their own way of being successful at their school and that it is important to have multiple perspectives on campus; Stephens et al., 2014). In addition, a lab study offers evidence for increased comfort with social group difference. In this study, students who had previously participated in a difference-education intervention gave a speech about how their backgrounds matter in

college. Both first-generation and continuing-generation students in the intervention condition were more willing to discuss how different aspects of their backgrounds (e.g., family) impacted their college experiences compared with those in the control condition (Stephens et al., 2015). We build on this work in this study and, for the first time, systematically test our theorizing that difference-education will improve first- and continuing-generation students' comfort with social group difference—measured as a composite of intergroup skills (e.g., cross-class friendships) and intragroup pride (e.g., participation in identity-relevant activities).

This Study

We investigated academic and comfort with social group difference benefits of difference-education by following up with participants from two previous interventions, which were conducted in different selective universities (i.e., Stephens et al., 2014; Townsend et al., 2019). We combined data across these two sites to examine students' academic performance at the end of 4 years in college. We considered two indicators of academic performance: students' cumulative GPAs and their attainment of honors standing (i.e., cum laude, magna cum laude, or summa cum laude). The persistence of difference-education's benefits on these two dimensions of academic performance is practically significant as they offer tangible benefits when students graduate and join the workforce. In particular, higher cumulative college GPA and attainment of honors standing are both independently associated with greater earnings (e.g., Finnie et al., 2016; Jones & Jackson, 1990; Khoo & Ost, 2018). Moreover, students may view the attainment of honors standing as an important, visible signal of success in college and a source of empowerment as they enter the workforce. To examine students' comfort with social group difference, we surveyed participants in one of the intervention studies (Townsend et al., 2019) at the end of their fourth year.

We tested two hypotheses. Because we theorized that students' contextual theory of difference would initiate a set of recursive processes, changing students' experiences in ways that reinforce the theory and produce further changes in their expereinces, we expected that academic performance benefits among first-generation students in the difference-education condition would persist throughout college. Specifically, we hypothesized as follows:

> **Hypothesis 1 (H1):** First-generation students in the difference-education condition will have higher cumulative GPAs and be more likely to attain honors standing at the end of their fourth year in college, compared with first-generation students in the control condition.

In addition, we theorized that teaching students a contextual theory of difference would improve both first- and continuing-generation students' comfort with social group difference. Thus, we hypothesized as follows:

> **Hypothesis 2 (H2):** Both first- and continuing-generation students in the difference-education condition will show greater comfort with social group difference compared with students in the control condition.

Method

We analyzed the end-of-college academic outcomes of students who participated in two difference-education intervention studies. Both interventions conveyed a contextual theory of difference, but one was in-person and one was online (see Stephens et al., 2014; Townsend et al., 2019, for details). In the in-person intervention, participants in the audience listened to a diverse group of junior and senior students share their stories (Stephens et al., 2014). In the online intervention, participants read a set of stories ostensibly written by a diverse group of junior and senior students (Townsend et al., 2019). Each university's registrar's office provided the grades, honors standing attainment, and course history of all students who participated in the interventions. Before merging the data, we preregistered our analysis plan for students' academic outcomes (https://osf.io/mtwsr/?view_only=277c7375a2bd4052a0c59da8f00cfbe5). In addition, we recruited students who had participated in the online intervention study to complete an online survey in the last half of the last term of their fourth year. The survey included measures of comfort with social group difference. We report all measures, manipulations, and exclusions.

Participants

Participants were students who had participated in the in-person and online interventions during their college transitions. In these interventions, due to the small number of first-generation students in the population at the two selective universities, we recruited as many incoming first-generation students as possible. As a comparison group, we then recruited comparable numbers of continuing-generation students who roughly matched the gender and racial and ethnic backgrounds of first-generation students at those schools (see Stephens et al., 2014; Townsend et al., 2019, for full details). For this study, data for 10 participants were missing from university records. However, these students were both first-generation and continuing-generation, and were distributed evenly across conditions.[2] In addition, we included grade and honors standing data for three participants in the online study who had complete grade data at the end of their fourth year, but whose end-of-second-year cumulative GPAs were previously missing (all were continuing-generation students, one in the control condition and two in the difference-education condition).

The final sample included 250 participants (i.e., 126 from the in-person intervention and 124 from the online intervention). In total, 104 participants were first-generation students (i.e., neither parent had a 4-year college degree), and 146 were continuing-generation students (i.e., at least one parent had a 4-year college degree). The majority of first-generation students (69.23%) were low income (i.e., Pell grant recipients), compared with a minority of continuing-generation students (14.38%), $\chi^2(1, N = 250) = 78.21$, $p < .001$. Due to our matched-sample recruiting, participants' race/ethnicity did not differ significantly according to their generation status. To examine racial and ethnic differences between first-generation and continuing-generation students, we created a dummy variable (0 = disadvantaged, 1 = advantaged). Given the relationship between race and academic performance in the United States (e.g., Kao, 1995; Steele, 2010), students who were White, Asian, or Asian American were classified as academically advantaged, whereas students who were African American, Latino, Pacific Islander, and Native American were classified as academically disadvantaged. First-generation students were not more likely to be from a disadvantaged racial or ethnic background (37.50%) than continuing-generation students (34.93%), $\chi^2(1, N = 250) = 1.12$, $p = .289$. See the Supplemental material for demographics by intervention site.

Academic Performance: GPA and Honors Standing

To evaluate the long-term impact of difference-education on students' end-of-college academic performance, we examined students' cumulative GPAs and whether they received academic honors (0 = no, 1 = yes).[3] To retain as much data as possible in the analyses, we included 19 participants who took 3 years to graduate. For these participants, we used their end-of-third-year cumulative grades (i.e., final grades upon graduation) as their end-of-college grades. In addition, we included 24 participants who did not graduate by the spring of their fourth year. For these participants, we used their end-of-fourth-year grades as their end-of-college grades.[4]

End-of-Fourth-Year Survey

During the last half of the last term of their fourth year, we recruited participants in the online intervention study to complete a survey. Overall, 85 students participated (difference-education condition $n = 44$, control condition $n = 41$). Intervention participants who completed the survey did not differ from those who did not complete it in terms of generation status, study condition, family income (based on Pell grant eligibility), gender, attainment of honors standing, or cumulative GPA. They did, however, differ in terms of their racial background: students who completed responded to the survey were more likely to be from an academically advantaged racial background (62.35%) than those who did not respond, 35.90%, $\chi^2(1, N = 124) = 7.53$, $p = .006$. Importantly, this does not change the interpretation of the finding that difference-education increases students' comfort with social difference.

The online survey included five measures of comfort with social group difference: belief that universities should acknowledge and value difference ("diversity endorsement"), motivation to bridge social group differences in school ("bridging difference"), significance of cross-class friendships at school ("significance of cross-class friendships"), pride in one's social class group ("social class pride"), and engagement in social identity-relevant extracurricular activities ("identity-relevant activities"). We created composites for each of these measures, as described below. We then standardized each composite and averaged these together to create an overall measure of comfort with social difference. We examined condition differences on this overall measure in a one-way (intervention condition: difference-education vs. control) analysis of covariance (ANCOVA) with the covariates mentioned below. See the Supplemental material for results of a multivariate analysis of covariance including the five individual composite measures as well as separate univariate ANCOVAs on each.[5]

Diversity endorsement. To measure participants' support for diversity efforts in higher education, we used a six-item measure (Plaut et al., 2011). Participants reported their agreement with these items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). An example item is as follows: "Universities should foster environments where differences are valued." We averaged responses on these items to create a composite, alpha = .922, $M = 6.35$, $SD = 0.96$.

Bridging difference. To measure participants' motivation to bridge social group differences in college, we included two items: "During my time at [university name], I tried to educate others about my social groups (e.g., race, gender, and social class background)," and "During my time at [university name], I learned about social groups (e.g., race, gender, and social class background) different from my own" (Nagda et al., 2004; Nagda & Zuniga, 2003). Participants reported their agreement with these items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). We averaged responses on these items to create a composite, $r = .521$, $M = 5.20$, $SD = 1.44$.

Significance of cross-class friendships. To measure the significance of participants' cross-class friendships at school, we asked participants to report the number of close friends they have at school who are from a different social class background than them. Participants responded using the following scale: 0 (*none*), 1 (*one*), 2 (*two through five*), 3 (*six through ten*), and 4 (*more than ten*). We then we asked participants to report how often they spend time with friends from a different social class background when they are at

school. Participants responded using the following scale: 0 (*never*), 1 (*occasionally*), 2 (*sometimes*), 3 (*quite a lot*), and 4 (*all the time*). We then multiplied across these two items to create a composite so that higher scores indicate greater significance of cross-class friendships at school ($r = .670$, $M = 7.34$, $SD = 4.68$).[6]

Social class pride. To measure participants' pride in their social class group, we adapted three items from the multigroup ethnic identity measure (Phinney, 1992). An example item is as follows: "I feel a strong sense of pride about people with the same social class background as me." Participants reported their agreement with these items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*). We averaged responses on these items to create a composite, alpha = .748, $M = 4.92$, $SD = 1.24$.

Identity-relevant activities. To measure participants' engagement in social identity-relevant extracurricular activities, we asked them to list the university events they had attended outside of course requirements and the student clubs or organizations in which they were members. We then coded participants' responses for whether the event or organization was relevant to a social identity group. Specifically, we asked participants to "please describe all of the non-mandatory [university name] events that you chose to attend during the current academic year" and provided them with 10 text boxes in which they were to list 10 or fewer events. On the following page, we asked participants to "please list ten of the most meaningful clubs, activities, and/or organizations in which you have been involved in throughout your college experience (i.e., anything outside of paid employment and classes)." Next to each of the 10 event and 10 organization text boxes, we also provided participants with space to briefly describe the event or organization, which we used to assist in our subsequent coding.

Following data collection, we coded participants' responses to both the events and organizations items for whether they were (a) related to a social group identity (i.e., race/ethnicity, gender, sexual orientation, religion, or first-generation status), (b) unrelated to a social group identity (e.g., a Harry Potter–themed event), or (c) not an extracurricular event or organization (e.g., attending a lecture as required for a class). Two research assistants coded all participants' responses and achieved good reliability (event responses, $\kappa = .88$; organization responses, $\kappa = .92$, Landis & Koch, 1977). Therefore, we used one coder's values (results are unchanged if we use the other coder's values). Overall, participants reported attending under one identity-related event ($M = 0.74$, $SD = 1.34$) and being a member of under one identity-related organization ($M = 0.87$, $SD = 1.48$). Because these two were highly correlated, $r = .675$, $p < .001$, we created a composite measure of total engagement in identity-related activities by averaging the event and organization totals ($M = 0.80$, $SD = 1.29$).

Results

We include five covariates in our analyses, all of which were used in the grade analyses in the in-person intervention study (Stephens et al., 2014). In the Supplemental material, we report the results of our primary analyses without covariates included.[7] To ensure that the effects resulted from the intervention rather than from preexisting differences in students' academic skills or demographic characteristics, we controlled for high school GPA, highest Scholastic Aptitude Test (SAT) scores, gender (0 = male, 1 = female), family income (0 = not low socioeconomic status [SES], 1 = low SES; based on Pell status), and race and ethnicity. To control for race and ethnicity, we used the above-described dummy variable (0 = disadvantaged race, 1 = advantaged race). For the analyses of academic outcomes, we also included the intervention study in which students participated (0 = in-person, 1 = online).[8] For the analysis of comfort with social difference, we also included generational status (0 = first-generation student, 1 = continuing-generation student). We report raw, unadjusted GPA means for ease of interpretation. We report 90% confidence intervals (CIs) for the ANCOVA effects (following Lakens, 2013) and 95% CIs for the logistic regression effects, both in brackets.

Academic Achievement

We examined whether the difference-education intervention improved first-generation students' academic achievement at the end of college, by examining participants' end-of-fourth-year cumulative GPA and attainment of honors standing. See Table 1 for complete results.

GPA. We conducted a 2 (intervention condition: 0 = control vs. 1 = difference-education) × 2 (generation status: 0 = first-generation vs. 1 = continuing-generation) ANCOVA with our standard set of covariates mentioned above. This analysis revealed a significant main effect for intervention condition, $F(1, 240) = 10.11$, $p = .002$, $\eta_p^2 = .040$, CI = [0.009, 0.088], such that participants in the difference-education condition ($M = 3.50$, $SD = 0.33$) performed better than those in the control intervention ($M = 3.39$, $SD = 0.33$). Importantly, this main effect was qualified by a significant condition by generation status interaction, $F(1, 240) = 5.12$, $p = .025$, $\eta_p^2 = .021$, CI = [0.001, 0.060]. A sensitivity power analysis, using G*Power (Faul et al., 2007) with an alpha of .05 and a two-tailed test, indicated that we had 80% power to detect an effect size of $\eta^2 = .031$. As such, we were underpowered for the interaction effect ($\eta^2 = .018$), but well-powered to detect our predicted simple effect ($\eta^2 = .045$). Given our somewhat low power, we also examined the data by estimating a Bayes factor using JASP (Love et al., 2019), comparing the fit of the data under the alternative hypothesis and under the null hypothesis. Providing some support for our theorizing, we found $BF_{10} = 2.36$, which

Table 1. Univariate Analysis of Variances Results for Grade Point Average (GPA) and Logistic Regression Results for Honors Standing.

	Variable	
	GPA	Honors standing
	F	Wald χ^2
Covariates		
High school GPA	4.36*	3.43†
Highest SAT score	2.61	3.26†
Race and ethnicity	2.60	0.14
Gender	0.94	0.72
Low-income status	1.35	3.09†
Intervention delivery	0.90	0.19
Main and interactive effects		
Condition	10.11**	13.39***
Generation	1.26	0.01
Condition × Generation	5.12*	5.19*

Note. Degrees of freedom (*df*) for GPA = 1,240, *N* for honors standing = 250. Gender (0 = male, 1 = female), family income (0 = not low socioeconomic status [SES], 1 = low SES; based on Pell status), race (0 = disadvantaged race, 1 = advantaged race), intervention delivery (0 = in-person, 1 = online), condition (0 = control, 1 = difference-education), and generation (0 = first-generation, 1 = continuing-generation). SAT = Scholastic Aptitude Test.
†$p < .10$. *$p < .05$. **$p < .01$. ***$p < .001$.

suggests that the data were 2.36 times more likely to occur under a model including effects of our intervention, of generation status, and of an interaction between the two, rather than a model without including these.

Next, to examine the simple effects, we conducted post hoc tests with Bonferroni adjustments. Supporting H1 and as shown in Figure 1, first-generation students in the difference-education condition ($M = 3.48$, $SD = 0.35$) earned higher end-of-college grades than first-generation students in the control condition ($M = 3.28$, $SD = 0.30$), $F(1, 240) = 12.55$, $p < .001$, $\eta_p^2 = .050$, CI = [0.014, 0.101]. Supporting our theorizing, we also found $BF_{10} = 4.66$, suggesting that, among first-generation students, it is over 4 times more likely for there to be an effect (vs. no effect) of our intervention. Conversely, continuing-generation students in the difference-education condition ($M = 3.51$, $SD = 0.32$) did not differ from those in the control condition ($M = 3.47$, $SD = 0.33$), $F(1, 240) = 0.52$, $p = .470$, $\eta_p^2 = .002$, CI = [0.000, 0.004], $BF_{01} = 5.10$. This Bayes factor suggests that, among continuing-generation students, it is 5 times more likely for there to be no effect (vs. an effect) of our intervention.

In addition, there was a significant social class achievement gap in the control condition, $F(1, 240) = 5.44$, $p = .020$, $\eta_p^2 = .022$, CI = [0.002, 0.062], such that first-generation students had lower GPAs than continuing-generation students. We also found $BF_{10} = 18.78$, suggesting that, in the control condition, it is more than 18 times more likely for there to be a social class gap in GPA than no difference. However, this gap was closed in the difference-education condition, $F(1, 240) = 0.30$, $p = .586$, $\eta_p^2 = .001$, CI = [0.000, 0.002]. We found $BF_{01} = 4.32$, which suggests that in the difference-education condition it is 4 times more likely for there to be no difference (vs. a difference) between first-generation and continuing-generation students' GPAs.

Honors standing. We conducted a logistic regression analysis with generation status, intervention condition, and their interaction as predictors and with our standard set of covariates mentioned above. We found a significant main effect of intervention condition, such that participants in the difference-education condition (48.41%) more often obtained academic honors than those in the control condition (28.22%), Wald $\chi^2(1, N = 250) = 13.39$, $p < .001$, Exp(B) = 2.99, CI = [1.66, 5.38]. In addition, the generation status by condition interaction was significant, Wald $\chi^2(1, N = 250) = 5.19$, $p = .023$, Exp(B) = 0.239, CI = [0.070, 0.819], see Figure 2. A sensitivity power analysis using G*Power with an alpha of .05, two-tailed test, indicated that we were well-powered (i.e., 80% power to detect an effect size of *odds ratio* = .155). To examine our specific predictions, we conducted simple slopes analyses and report Bonferroni-adjusted significance levels. Consistent with H1, that difference-education would benefit first-generation students academically, 3 times as many first-generation students earned honors in the difference-education condition (46.15%) than in the control (15.38%), Wald $\chi^2(1, N = 250) = 15.93$, $p < .001$, Exp(B) = 7.44, CI = [2.70, 20.49]. In contrast, the intervention did not significantly impact continuing-generation students' attainment of honors standing, Wald $\chi^2(1, N = 250) = 2.42$, $p = .480$, Exp(B) = 1.78, CI = [0.861, 3.67] (difference-education: 50.00%, control: 37.50%).

The social class achievement gap was not significant in the control condition, Wald $\chi^2(1, N = 250) = 2.29$, $p = 1.00$, Exp(B) = 2.29, CI = [0.83, 6.31], meaning that first-generation students did not attain honors significantly less often than continuing-generation students. In addition, first-generation and continuing-generation students did not differ in their attainment of honors standing in the difference-education condition, Wald $\chi^2(1, N = 250) = 1.69$, $p = .776$, Exp(B) = 0.547, CI = [0.22, 1.36].

Comfort With Social Group Difference

We examined whether the difference-education intervention improved both first- and continuing-generation students' comfort with social group difference by conducting a one-way ANCOVA: intervention condition (intervention condition: 0 = *control* vs. 1 = *difference-education*). As mentioned above, we included our standard set of covariates as well as participants' generation status to account for potential preexisting differences between first-generation and continuing-generation students. Consistent with H2, we found a significant

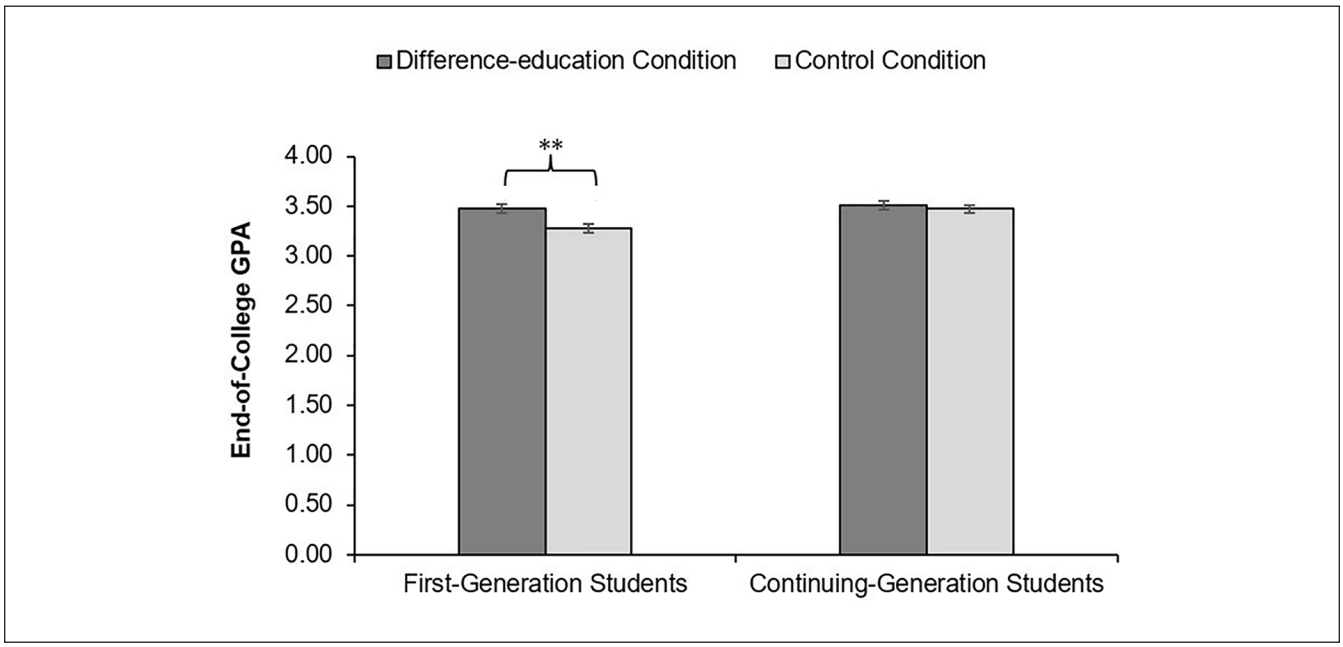

Figure 1. Mean cumulative GPA at the end of college as a function of generation status and intervention condition (raw means displayed). Error bars represent ±1 standard error of the mean.
Note. GPA = grade point average.
**$p < .01$.

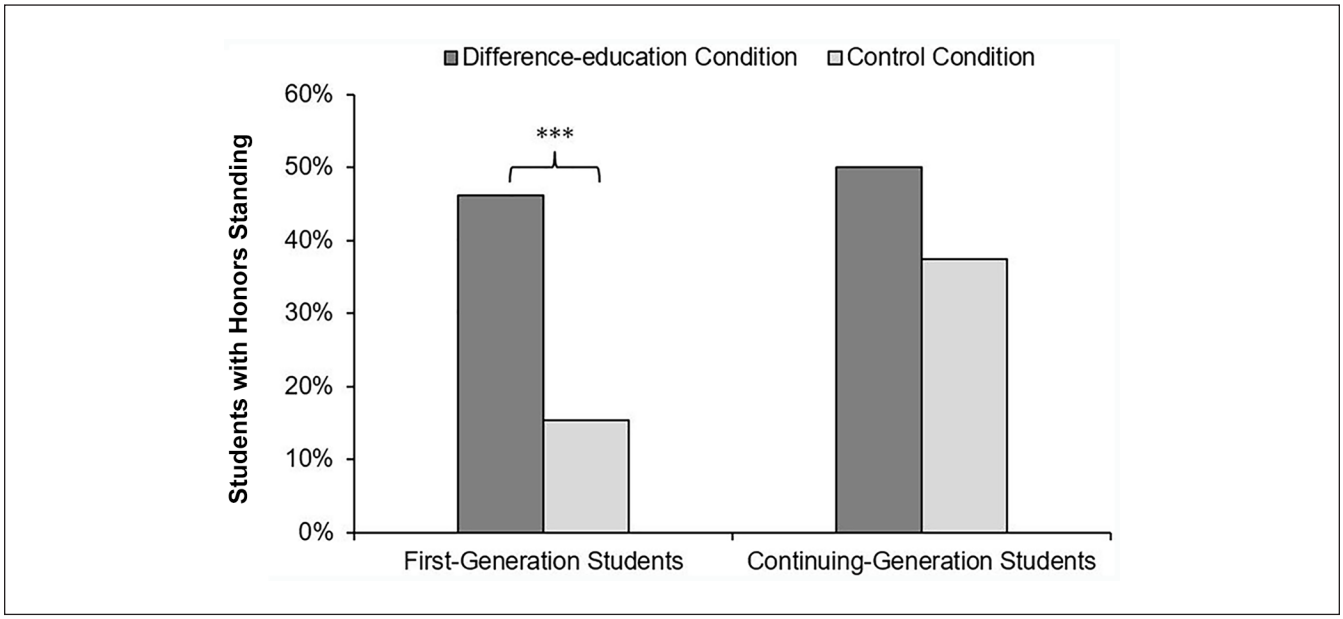

Figure 2. Percentage of students who attained honors standing at the end of college as a function of generation status and intervention condition.
***$p < .001$.

overall effect of intervention condition such that participants in the difference-education condition showed greater comfort with social group difference than those in the control condition,, $F(1, 77) = 7.31$, $p = .008$, $\eta_p^2 = .087$, CI = [0.013, 0.195]. Unfortunately, we were not able to obtain as many survey respondents as we had hoped and a sensitivity power analysis using G*Power with an alpha of .05 indicated that we were underpowered (i.e., we had 80% power to detect an effect size of $\eta^2 = .086$ and our obtained effect was $\eta^2 = .071$). Given our low power, we also examined the data by

estimating a Bayes factor using JASP (Love et al., 2019). Providing some support for our theorizing, we found BF_{10} = 1.94, which suggests that it is almost 2 times more likely for the intervention to have affected (vs. not affected) participants' comfort with social class difference.

Discussion

We examined the long-term outcomes of difference-education interventions delivered during students' transition to college. We asked the following questions: (a) Do the academic performance benefits of difference-education observed among first-generation students persist throughout their 4 years in college? and (b) Does participating in the difference-education intervention improve both first- and continuing-generation students' comfort with social group difference? Our results suggest that the answer to both of these questions is yes. This work makes important theoretical contributions to literatures in both intervention science and intergroup relations.

Advancing psychological intervention research, our work demonstrates that teaching first-generation students a contextual theory of difference can provide long-term academic benefits. Even as they graduate and/or finish their fourth year, first-generation students who participated in a brief difference-education intervention at the start of their college careers fared better academically (i.e., earned higher grades and were more likely to attain honors standing) than their peers in the control condition. As theorized, this suggests that the provision of a contextual theory of difference initiates a series of recursive processes that persist over time to shape students' long-term outcomes. Importantly, these persistent benefits emerged with an intervention delivered at relatively elite universities. In contrast, recent research conducted at a broad-access university found that the GPA benefits of a belongingness intervention did not persist (Murphy et al., 2020). Together, these findings suggest that the persistence of academic benefits may be moderated by the type of intervention site (i.e., relatively elite vs. more broad-access institutions), and some academic benefits may only persist in the long run in relatively elite settings.

In addition, this study contributes to work on intergroup relations by providing initial evidence that difference-education offers conveys intergroup and intragroup benefits. Specifically, for both first- and continuing-generation students, we found that difference-education produced greater comfort with social group difference, including elements of intergroup skills and intragroup pride. We consider this evidence preliminary because we were not able to obtain as many survey respondents as we had hoped. Additional research, with a larger sample, is needed to examine the ability of difference-education to improve comfort with social group difference, and to compare relative gains in intergroup skills versus intragroup pride.

Implications and Future Directions

Studies of difference-education have (a) documented academic benefits of the intervention (e.g., grades), (b) identified empowerment as one key mechanism that helps explain these benefits (Stephens et al., 2014; Townsend et al., 2019), and (c) demonstrated how the intervention can shape responses to specific situations (Stephens et al., 2015). Given this previous research, the aims of this article were to examine whether the academic benefits persist until the end of college and extend results to a new domain of outcomes: comfort with social group difference. We accomplished these two goals. Yet, we did not test the mediation pathways through which these benefits were sustained throughout students' 3 or 4 years. Additional research is needed to specify the precise psychological and behavioral pathways through which the academic and comfort with social difference benefits of difference-education accumulate and build over time.[9]

By demonstrating benefits of educating students about social class differences, our research stands in contrast to recent work that has shown that making people aware of gender differences can have negative consequences for women's motivation and experiences (e.g., lower empowerment; Martin & Phillips, 2017, 2019). Importantly, in this work, participants learn simply that gender differences exist and are important. However, in the difference-education intervention, participants learn about the contextual origins of social class differences—that people have different experiences and outcomes as a result of their different backgrounds. Taken together, these divergent findings suggest that the effect of making social group differences salient may differ depending on the social groups (e.g., race vs. social class vs. gender) and/or on *how* those differences are made salient (e.g., whether the differences are explained vs. simply highlighted). Future work should examine whether difference-education might be a new route for acknowledging gender differences in a contextual way that does not perpetuate inequality.

Difference-education effectively reduces the social class achievement gap and increases students' comfort with social group difference. Not only are these effects evident nearly 4 years after the intervention, they may continue to impact students' outcomes even after they graduate from college and transition to the workplace. First-generation students who received the intervention may enter the workplace with stronger resumes (i.e., higher GPAs and honors standing) than those who did not receive the intervention, and this may translate into gaining tangible benefits in the labor market (e.g., Khoo & Ost, 2018). In addition, equipped with a contextual theory of difference, both first- and continuing-generation students may be better prepared to connect with members of different social groups, ultimately building more diverse and effective networks.

Authors' Note

Due to the inclusion of student grades, the authors have not posted their data to a data-sharing platform. However, they are able to provide the data on an individual basis to interested researchers with IRB approval.

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Supplemental Material

Supplemental material is available online with this article.

Notes

1. We use the term social group difference to refer to variation in the experiences, opportunities, or outcomes of diverse social groups (e.g., race, gender, and social class).
2. Three first-generation and two continuing-generation students were in the difference-education condition, and three first-generation and two continuing-generation students were in the control condition.
3. Universities have different GPA standards for awarding honors. In the in-person intervention, the university awards honors to the Top 25% of the students in each school (e.g., humanities), but the GPA cutoffs are not made public. In the online intervention, the university awards honors to those who achieve a minimum overall GPA of 3.5 or higher. We deferred to how each university defined honors standing.
4. All of these students were in the online intervention and most (i.e., 20) were registered for a subsequent term at the same university, indicating that they either continued their undergraduate studies or began a co-terminal graduate program. The remaining four students may have filed for graduation after the spring deadline. We assigned honors standing according to university rules and based on their end-of-fourth-year cumulative GPAs. The pattern and significance of our academic performance results do not change when we exclude these students from the analysis.
5. We also measured participants' psychological empowerment because difference-education has been shown to improve first-generation students' empowerment. We predicted a 2 (intervention condition: difference-education vs. control) $\times$ 2 (generation status: first-generation vs. continuing-generation) interaction. Although the pattern of differences on this measure was consistent with our predictions, we are unable to draw meaningful conclusions given the low power for this analysis and that the interaction effect was not significant. We also measured participants' belief that their university appreciates difference to examine the intervention's effects on students' perceptions of their school. See the Supplemental material for results of analyses on both measures.
6. We also measured the significance of participants' cross-class relationships outside of school as a comparison that should not be affected by our intervention. Results confirm this prediction, see the Supplemental material.
7. The interactions predicting GPA and honors standing became marginal ($p < .08$); the predicted simple effects and the univariate analysis of covariance on comfort with social difference remained significant.
8. Because participants were nested within school, we also examined the intraclass correlation coefficient and found that it was small, $p < .001$. Given that the GPAs of participants within each intervention study were independent, we do not report multilevel analysis. However, we find identical results with those analyses.
9. We measured psychological empowerment in our survey of online intervention participants. As we report in the Supplemental material, first-generation students in the difference-education condition showed greater empowerment than those in the control condition. However, we did not run mediation analyses.

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