

# Closing the Social-Class Achievement Gap: A Difference-Education Intervention Improves First-Generation Students' Academic Performance and All Students' College Transition

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## Abstract

College students who do not have parents with 4-year degrees (first-generation students) earn lower grades and encounter more obstacles to success than do students who have at least one parent with a 4-year degree (continuing-generation students). In the study reported here, we tested a novel intervention designed to reduce this social-class achievement gap with a randomized controlled trial ( $N = 168$ ). Using senior college students' real-life stories, we conducted a difference-education intervention with incoming students about how their diverse backgrounds can shape what they experience in college. Compared with a standard intervention that provided similar stories of college adjustment without highlighting students' different backgrounds, the difference-education intervention eliminated the social-class achievement gap by increasing first-generation students' tendency to seek out college resources (e.g., meeting with professors) and, in turn, improving their end-of-year grade point averages. The difference-education intervention also improved the college transition for all students on numerous psychosocial outcomes (e.g., mental health and engagement).

## Keywords

sociocultural factors, social class, culture, higher education, intervention

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A paradox is undermining social mobility in the United States. On the one hand, earning a 4-year college degree is the surest path to higher socioeconomic status (Bowen, Kurzweil, & Tobin, 2005). On the other hand, college students who do not have parents with 4-year college degrees (i.e., *first-generation* students) receive lower grades and drop out at higher rates than students who have at least one parent with a 4-year degree (i.e., *continuing-generation* students; Pascarella, Pierson, Wolniak, & Terenzini, 2004; Sirin, 2005). Consequently, over the past 50 years, U.S. colleges and universities have continued to reproduce and widen, rather than close, the *social-class achievement gap* (Duncan & Murnane, 2011;

Fiske & Markus, 2012). In the current article, we report a novel intervention that significantly reduces this gap.

Many colleges and universities seek to mitigate social-class disparities by offering programs to help first-generation students transition into higher education (e.g., Engle, Bermeo, & O'Brien, 2006; Inkelas, Daver, Vogt, & Leonard, 2007). These programs are often founded on the assumption that first-generation students lack the

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financial resources (e.g., money for books) or academic skills (e.g., extra preparatory coursework) that they need to be successful. For example, the standard approach of many institutions is to offer “bridge” programs that teach students general academic tips and strategies, such as how to study for exams or choose a major.

Although financial resources and academic skills are necessary, they do not guarantee success for first-generation students as they transition into the world of higher education. First-generation students also need psychological resources, including the belief that people who have backgrounds like theirs deserve to attend college and can thrive there (Oyserman & Destin, 2010; C. M. Steele, 2010; Stephens, Markus, & Fryberg, 2012). Compared with their continuing-generation peers, first-generation students are especially likely to feel left out and to have trouble finding their place (Housel & Harvey, 2009; Johnson, Richeson, & Finkel, 2011; Ostrove & Long, 2007). Many also struggle to navigate the middle-class culture of higher education, learn the “rules of the game,” and take advantage of college resources (Housel & Harvey, 2009; Ostrove & Long, 2007). For example, first-generation students frequently lack knowledge about how to select a major, find an internship, or build their resumes (Reay, Crozier, & Clayton, 2009). These background-specific obstacles can undermine first-generation students’ academic performance and limit their opportunity to succeed (Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012; Stephens, Townsend, Markus, & Phillips, 2012). Because U.S. colleges and universities seldom acknowledge how social class can affect students’ educational experiences,<sup>1</sup> many first-generation students lack insight about why they are struggling and do not understand how students “like them” can improve.

Interdisciplinary research on multicultural education suggests that one way to provide students with this insight is to educate them about how their different backgrounds matter (cf. Denson, 2009; Gurin & Nagda, 2006; Gurin, Nagda, & Zuniga, 2013; Milem, Chang, & Antonio, 2005). For example, in a semester-long series of weekly intergroup dialogues, Gurin and colleagues (2013) encouraged students from diverse backgrounds to explore how significant social differences—such as race, ethnicity, gender, social class, and sexual preference—can shape their own and others’ experiences and opportunities in college and in life. They found that students’ participation in these dialogues increased intergroup understanding and collaboration, empathy, and civic engagement. This research indicates that helping students understand how their different backgrounds matter is a powerful insight that has the potential to not only increase students’ sense of comfort and ability to operate in diverse settings, but also equip them to better navigate their own college experience.

Building on the intergroup dialogue paradigm, we asked whether educating first-generation students about how their different backgrounds matter can improve their transition to college and enable them to overcome background-specific obstacles to success. To examine this question, we developed a difference-education intervention in which students learned about difference and why it matters; in particular, they were shown how their social-class backgrounds can affect what they experience in college. To ensure that the intervention was empowering and identity safe, rather than stigmatizing or threatening, we emphasized how students’ different backgrounds can be a source of both challenge and strength, and provided students with strategies that they need to be successful (cf. D. M. Steele & Cohn-Vargas, 2013). To evaluate the intervention’s effectiveness, we compared it with a control condition modeled after the bridge programs used by many colleges and universities—the standard approach.

In both intervention conditions, a demographically diverse group of junior and senior college students (panelists) shared stories with incoming students (participants) about how they adjusted to and found success in college. The key difference between conditions was whether the panelists’ stories highlighted how their social-class backgrounds mattered for their college experience—that is, whether the participants learned content that was background specific. In the difference-education condition, the contrast between first-generation and continuing-generation students’ stories provided participants with a framework to understand how their backgrounds matter. This framework included the understanding that students’ different backgrounds can shape the college experience in both positive and negative ways and that students need to utilize strategies for success that take their different backgrounds into account. Students in the standard control condition, in contrast, were exposed to similar stories, yet these stories did not convey background-specific information about how students’ college experiences and strategies for success can differ according to their social class.

We theorized that the difference-education intervention would provide first-generation students with a framework to understand how difference matters, thereby equipping them with the psychological resources they need to effectively transition to college and improve their academic performance. Specifically, this framework should help students to make sense of their particular college experiences, increase students’ overall sense of comfort, and improve their ability to transition and adjust to the novel college context. This framework should also provide them with the strategies they need to tackle the background-specific obstacles that they are likely to encounter and improve their academic performance. As

noted earlier, a background-specific obstacle that first-generation students frequently experience is being unaware of the “rules of the game” (e.g., knowing that professors expect students to seek out extra help when they need it). Thus, we assessed students’ tendency to seek out college resources because first-generation students tend to underutilize the resources available to them, and seeking out these resources holds great potential to improve their academic success (Calarco, 2011; Kim & Sax, 2009).

By providing students with a framework to understand how their backgrounds matter, we hypothesized that the difference-education intervention would improve first-generation students’ college transition and equip them to better take advantage of college resources. We also expected that their increased use of resources would, in turn, help them improve their academic performance and close the social-class achievement gap.

## Method

### Participants

Using a convenience-sampling method, we sent all first-generation students and a targeted group of continuing-generation students at a private university an e-mail invitation to participate in the “[university name] Student Project.” (See the Supplemental Material available online for recruitment methods and the sampling procedure.) Specifically, 1 month before the start of the academic year, they were asked to attend a student panel led by a culturally diverse group of their senior peers. To avoid stigmatizing participants, we told them that the goal of this project was to improve all students’ college transition.

During the first month on campus, incoming first-year students ( $N = 168$ ; mean age = 18.05 years,  $SD = 0.41$ ; 86 females, 82 males) attended an hour-long student discussion panel about college adjustment. Participants received \$50 for attending the panel and \$20 for completing a survey at the end of the academic year. Twenty-one participants did not complete the end-of-year survey assessing the study’s key outcomes, so they were excluded from all analyses. (See the Supplemental Material for information about sample representativeness and attrition analyses.)

Of the 147 participants who completed the full study, 66 were first generation (neither parent had a 4-year college degree), and 81 were continuing generation (at least one parent had a 4-year college degree). As indicated by official university records, the majority of first-generation students (59.10%) were low income (i.e., received Pell grants), compared with a minority of continuing-generation students (8.64%),  $\chi^2(1, N = 147) = 43.05, p = .000$ .

Participants’ race or ethnicity did not differ significantly according to their generation status.<sup>2</sup> Among first-generation students, 45.45% self-identified as White, 16.67% as Asian or Asian American, 13.63% as African American, and 24.24% as Latino. Among continuing-generation students, 51.85% self-identified as White, 24.70% as Asian or Asian American, 7.41% as African American, 14.81% as Latino, and 1.23% as Native American.

The study also included a campus-wide control group of all other students in the same academic cohort as the intervention participants. This control group was used for analyses of grade point averages (GPAs) and made it possible for us to compare the end-of-year cumulative GPAs of first-generation and continuing-generation intervention participants with (a) the 87 nonparticipants identified as first generation by the university and (b) the 1,697 nonparticipants identified as continuing generation by the university.

### Intervention manipulation

We used panelists’ real-life stories to educate students about how their different backgrounds matter in college (Gurin et al., 2013). Participants were randomly assigned to two discussion panels: a difference-education panel (experimental condition;  $n = 75$ ) and a standard panel (control condition;  $n = 72$ ).<sup>3</sup> Across both conditions, participants heard the same demographically diverse group of college seniors (three first generation, five continuing generation) respond to a series of planned questions asked by a moderator. Panelists’ responses across conditions highlighted how they adjusted to and found success in college and were also comparable in valence, length, and appeal. (See the Supplemental Material for supporting analyses and additional intervention methods.)

The key difference between the two conditions was whether the panelists’ stories highlighted how their backgrounds mattered for their college experience—that is, whether students learned content that was background specific. In the difference-education condition, panelists’ stories provided this framework by linking the content of the stories to panelists’ social-class backgrounds. For instance, panelists in the difference-education condition were asked, “Can you provide an example of an obstacle that you faced when you came to [university name] and how you resolved it?” One first-generation panelist responded, “Because my parents didn’t go to college, they weren’t always able to provide me the advice I needed. So it was sometimes hard to figure out which classes to take and what I wanted to do in the future. But there are other people who can provide that advice, and I learned that I needed to rely on my adviser more than other students.” In contrast, after previously mentioning her parents’ graduate-level degrees, one continuing-generation panelist

responded, “I went to a small private school, and it was great college prep. We got lots of one-on-one attention, so it was a big adjustment going into classes with 300 people. I felt less overwhelmed when I took the time to get to know other students in the class.” As these two examples reveal, panelists’ stories not only highlighted their different social-class backgrounds (e.g., parents’ educational attainment), but also linked those backgrounds to their particular college experiences (e.g., the first-generation student found it difficult to choose classes) and strategies needed to be successful (e.g., the first-generation student found it helpful to get extra advice).

In the standard condition, panelists’ stories provided general content that was not linked to their social-class backgrounds. Therefore, participants did not gain a framework to understand how their different social-class backgrounds can affect their college experience. For example, panelists were asked, “What do you do to be successful in your classes?” One panelist advised, “Go to class, and pay attention. If you don’t understand something or have a hard time with the material, meet with your teaching assistant or professor during office hours.” As this example reveals, like participants in the difference-education condition, participants in the standard condition learned about panelists’ different experiences in college (e.g., a student found coursework to be difficult) and strategies needed to be successful (e.g., a student found it helpful to meet with a professor). This content, however, was not background specific. (See the Supplemental Material for the full list of questions and sample responses.)

### ***Postintervention measures***

After the panel concluded, participants completed a short survey and created a video testimonial, which served as a manipulation check. (See the Supplemental Material for the full list of questions.) First, to assess whether the difference-education condition provided students with a framework to understand how their diverse backgrounds matter, participants responded to two open-ended questions: “What are the top three lessons you learned from the student panel today?” and “If you were going to advise future incoming students based on what you learned today, what would you say?” Next, participants created a short video testimonial that would allegedly be used to share the panel’s main teachings with next year’s students. This activity provided a chance for students to internalize what they learned through the *saying-is-believing* effect (Yeager & Walton, 2011), as well as additional content to assess the manipulation’s effectiveness.

### ***End-of-year outcomes***

We obtained participants’ official first-year cumulative GPAs from the university registrar. Seven participants

who did not consent to have their grades accessed were excluded only from analyses involving grades (i.e., academic performance and mediation). Six GPA outliers were excluded from all subsequent analyses reported in the main article.<sup>4</sup>

Participants’ GPAs in the standard condition were statistically equivalent to those in the campus-wide control group, which suggests that the standard condition provided the typical content that students receive when they transition to college. This was true for both first-generation students (standard condition:  $M = 3.16$ , campus-wide control condition:  $M = 3.21$ ),  $F(1, 110) = 0.77$ ,  $p = .38$ , and continuing-generation students (standard condition:  $M = 3.46$ , campus-wide control condition:  $M = 3.39$ ),  $F(1, 1728) = 1.00$ ,  $p = .32$ .

Participants also completed an end-of-year survey assessing three key outcomes. First, to evaluate whether participants retained what they learned in the difference-education condition, we measured their understanding of how difference matters (i.e., appreciation of difference) and willingness to consider different perspectives (i.e., perspective taking; Gurin et al., 2013). Second, to assess the tendency to take advantage of college resources, we asked participants how often they e-mailed or met with professors, or sought extra help. Third, to evaluate their college transition, we assessed how well participants fared on a wide range of psychosocial measures (i.e., stress and anxiety, psychological adjustment, academic engagement, and social engagement). (See the Supplemental Material for additional information.)

## **Results**

### ***Manipulation check***

We created a hypothesis-driven coding scheme to assess whether participants in the difference-education condition learned that students’ diverse backgrounds can shape their college experiences. Two themes emerged across participants’ open-ended responses to the postintervention survey and video-testimonial activity: (a) People’s different backgrounds matter, and (b) people with backgrounds “like mine” can succeed. We therefore pooled the data across these two open-ended measures. Two undergraduate coders, blind to hypotheses and condition, identified whether each coding category was present or absent in participants’ responses. After we coded the data and achieved substantial reliability ( $\kappa = .61-.65$ ; Landis & Koch, 1977), we resolved the remaining coding disagreements through consensus.

Confirming that the difference-education condition increased participants’ understanding of how students’ diverse backgrounds matter in college, chi-square analyses revealed that participants in the difference-education condition more often mentioned that people’s different backgrounds matter and that people with backgrounds

like theirs can succeed than did participants in the standard condition. (See Table 1 for the percentage of responses in each condition that fell into the two coding categories, as well as sample responses.)

### End-of-year outcomes

**Academic performance.** To ensure that the effects resulted from the intervention rather than from preexisting differences in students' demographic characteristics or academic skills, we controlled for race and ethnicity,<sup>5</sup> gender, income, highest SAT scores, and high school GPA in all analyses. A 2 (generation status: first vs. continuing) × 2 (intervention condition: difference education vs. standard) analysis of covariance on cumulative GPA revealed a main effect of intervention condition,  $F(1, 125) = 7.75$ ,  $p = .006$ , qualified by the predicted Generation Status × Intervention Condition interaction,  $F(1, 125) = 4.34$ ,  $p = .039$ . Whereas a gap of .30 grade points emerged between first-generation and continuing-generation students in the standard condition,  $F(1, 61) = 6.56$ ,  $p = .01$ , their grades did not differ significantly in the difference-education condition,  $F(1, 59) = 0.004$ ,  $p = .95$ . In fact, the achievement gap in the difference-education condition was 63% smaller than in the standard condition.<sup>6</sup>

Further supporting our hypotheses, results showed that first-generation students in the difference-education condition had higher GPAs than did first-generation students in the standard condition,  $F(1, 53) = 14.61$ ,  $p = .0004$ ; Cohen's  $d = 0.70$  (see Fig. 1).<sup>7</sup> They also earned higher GPAs than did first-generation students in the campus-wide control group,  $F(1, 110) = 5.60$ ,  $p = .02$ ; Cohen's  $d = 0.49$ . In contrast, continuing-generation students in the difference-education condition did not differ from continuing-generation students in the standard condition,  $F(1, 67) = 0.19$ ,  $p = .66$ , nor from continuing-generation students in the campus-wide control group,  $F(1, 1726) = 2.69$ ,  $p = .10$ . Notably, the intervention's GPA

effects could not be explained by differences in students' course selection (the Supplemental Material provides supporting analyses).

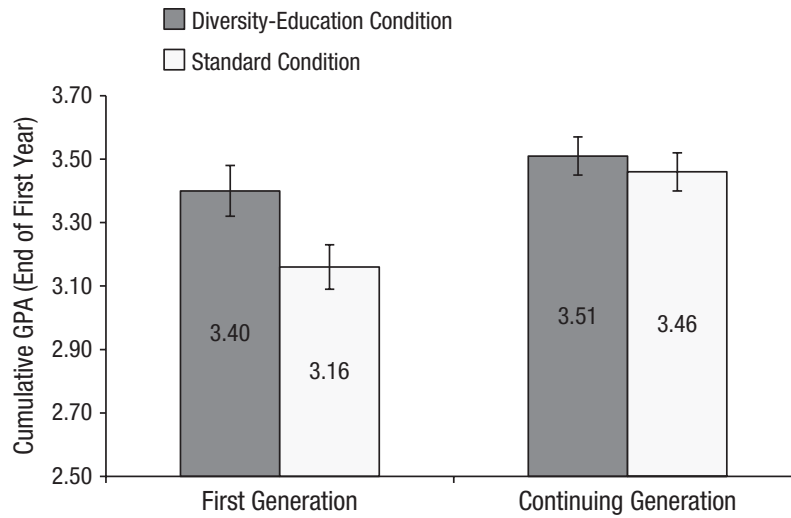
**Tendency to seek college resources.** The difference-education intervention also equipped first-generation students to take advantage of college resources and improve their academic performance. Examining whether students sought college resources, we found a significant Generation Status × Intervention Condition interaction,  $F(1, 129) = 3.99$ ,  $p = .048$ .<sup>8</sup> Whereas first-generation and continuing-generation students in the standard condition showed the typical social-class gap in their tendency to take advantage of college resources,  $F(1, 62) = 9.46$ ,  $p = .003$ , the gap in the difference-education condition was statistically eliminated,  $F(1, 62) = 0.40$ ,  $p = .53$ . In addition, first-generation students in the difference-education condition sought college resources marginally more often than did first-generation students in the standard condition (i.e., 30% more often),  $F(1, 55) = 3.05$ ,  $p = .087$ ; Cohen's  $d = 0.43$ . For continuing-generation students, the tendency to seek college resources did not differ significantly by intervention condition,  $F(1, 69) = 1.38$ ,  $p = .24$  (see Fig. 2).

**Mediation analyses.** We used mediated moderation analyses to test whether the difference-education condition influenced academic performance by equipping first-generation students to more fully take advantage of college resources (e.g., by e-mailing or meeting with professors).<sup>9</sup> Specifically, we examined whether the observed differences in seeking college resources explained the Generation Status × Intervention Condition interaction on cumulative GPA. The mediation model included generation status by intervention condition as the independent variable, the tendency to seek resources as the mediator, and our standard set of covariates. Using the indirect SPSS Version 20 macro, we conducted a

**Table 1.** Between-Conditions Comparison of the Percentage of Responses Coded Within Each Coding Category

Coding category	Sample responses	Difference-education		$\chi^2(1, N = 140)$
		condition	Standard condition	
People's different backgrounds matter	"People from different backgrounds have different expectations of college." "College means very different things to different people."	44.29	12.86	16.94***
People with backgrounds "like mine" can succeed	"People have come from a background like mine." "I feel like I'm in the right place because students from backgrounds like mine understand the stresses I have."	67.14	18.57	33.72***

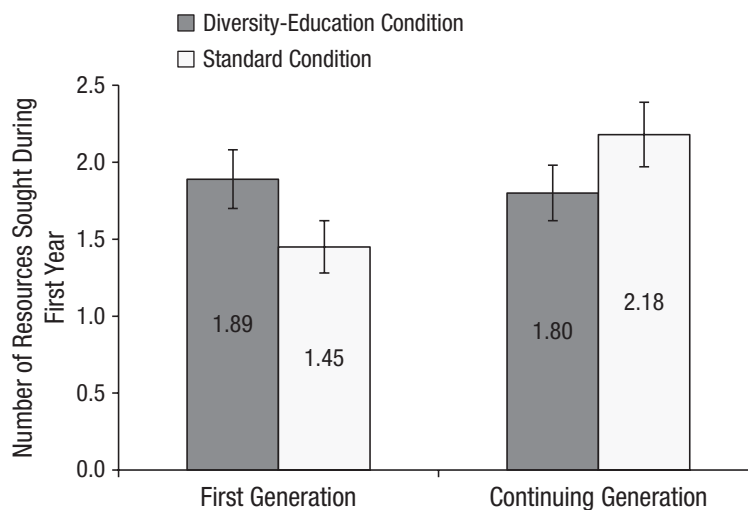
\*\*\* $p \leq .001$ .



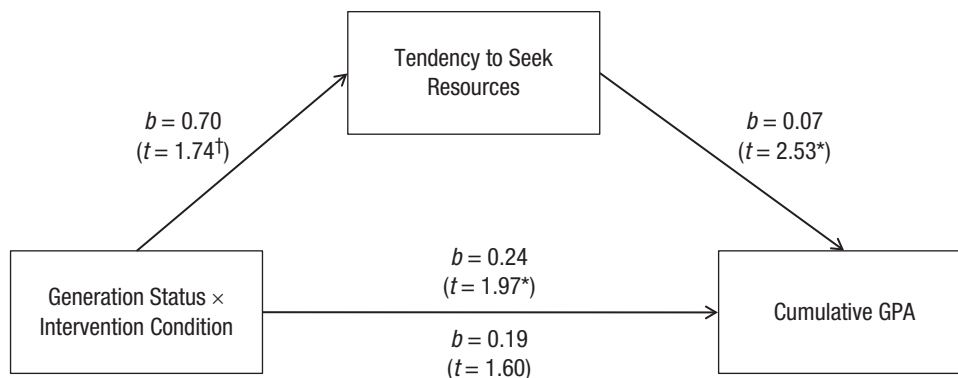
**Fig. 1.** Mean end-of-year cumulative grade point average (GPA) as a function of generation status and intervention condition. Error bars show standard errors of the mean.

mediated moderation analysis with 5,000 bootstrap resamples (Preacher & Hayes, 2008). This procedure yields an inference about the proposed mediator's indirect effect size and a 95% confidence interval based on the sample distribution. If the confidence interval does not include zero, the mediation pathway is considered significant. As predicted, we found that the tendency to seek college resources (point estimate = 0.05, 95% confidence interval = [0.003, 0.12]) significantly mediated the Generation Status  $\times$  Intervention Condition interaction on cumulative GPA. (See Fig. 3 for regression coefficients for each mediation path.)

As hypothesized, the results reveal that first-generation students in the difference-education condition more fully took advantage of college resources and that this behavioral change improved their academic performance. Taken together with the earlier results, these findings demonstrate that exposure to a 1-hr difference-education panel equipped students with strategies that students with backgrounds like theirs needed to tackle the particular obstacles they face, take advantage of the college experience, and improve their academic performance. As a result, the social-class achievement gap was statistically eliminated between first-generation and continuing-generation students.



**Fig. 2.** Mean number of college resources sought as a function of generation status and intervention condition. Error bars show standard errors of the mean.



**Fig. 3.** Mediation model showing the effect of the Generation Status  $\times$  Intervention Condition interaction on students' cumulative grade point average (GPA), as mediated by their tendency to seek resources. Symbols indicate the significance level of coefficients ( $^\dagger p \leq .10$ ,  $^* p \leq .05$ ). Along the lower path, the values above the arrow show the total effect of the Social Class  $\times$  Intervention Condition interaction on cumulative GPA, and the values below the arrow show the direct effect.

**Psychosocial outcomes.** Because we assessed the quality of students' college transition with a wide range of psychosocial measures, we used multivariate analysis of covariance (MANCOVA) to evaluate the effects of the intervention. A 2 (generation status)  $\times$  2 (intervention condition) MANCOVA on students' end-of-year psychosocial outcomes revealed a significant overall effect of intervention condition,  $F(8, 119) = 2.44$ ,  $p = .02$ ; Wilks's  $\Lambda = 0.86$ , but no significant interactions. Univariate analyses revealed that participants in the difference-education condition experienced less stress and anxiety, better adjustment to college life, and more academic and social engagement than did participants in the standard condition (see Table 2).<sup>10</sup> These results demonstrate the power of difference education to improve the college transition not only for first-generation students, but also for continuing-generation students.

**Difference-education framework.** Finally, we examined whether participants retained the understanding that students' different backgrounds matter throughout the first year in college. We conducted 2 (generation status)  $\times$  2 (intervention condition) analyses of covariance, which revealed main effects of intervention condition, but no significant interactions. Participants in the difference-education condition reported both greater appreciation of difference and perspective taking than did participants in the standard condition. (See Table 3 for results and the Supplemental Material for measures.)

## Discussion

We asked whether an educational experience designed to help students understand how difference matters could

be utilized to enable first-generation students to more effectively transition to college and overcome background-specific obstacles to success. The answer is yes. Using the personal stories of senior college students, a 1-hr difference-education intervention at the beginning of college reduced the social-class achievement gap among first-generation and continuing-generation college students by 63% at the end of their first year and also improved first-generation students' college transition on numerous psychosocial outcomes (e.g., psychological adjustment and academic and social engagement).

The intervention provided students with the critical insight that people's different backgrounds matter and that people with backgrounds like theirs can succeed when they use the right kinds of tools and strategies. Because first-generation students tend to experience a particularly difficult transition to college and confront background-specific obstacles that can undermine their opportunity to succeed, this framework for understanding how students' backgrounds matter is especially beneficial to them. Yet, at the same time, given the intervention's clear benefits for continuing-generation students' psychological health and levels of engagement, our results suggest that this difference-education experience holds the potential to ease all students' transition to college.

This study contributes to a growing literature on interventions to reduce achievement gaps among students from diverse social groups (e.g., Blackwell, Trzesniewski, & Dweck, 2007; Destin & Oyserman, 2009; Johns, Schmader, & Martens, 2005; Wilson, 2011; Yeager et al., 2013). Several successful interventions take a threat-reduction approach, which seeks to protect students from threats that can arise from having a potentially

**Table 2.** Multivariate Analysis of Covariance Results for the Psychosocial Measures

Measure	Sample item	Difference-education condition	Standard condition	<i>F</i> (1, 126)
Stress and anxiety				
Psychological distress	“During the past 30 days, how much of the time did you feel worried?”	2.24 (0.09)	2.49 (0.09)	3.65 <sup>†</sup>
Social-identity threat	“Other students at [university name] make unfair assumptions about me based on my background and previous experiences.”	2.80 (0.16)	3.23 (0.15)	3.75 <sup>†</sup>
Psychological adjustment				
Psychological well-being	“At present, how satisfied are you with your life?”	3.40 (0.08)	3.16 (0.08)	4.73*
Social fit	“I expect that I will belong as a student at [university name].”	5.63 (0.12)	5.13 (0.11)	9.45**
Academic engagement				
Perceived preparation	“I am well prepared to be academically successful as a student at [university name].”	5.93 (0.13)	5.60 (0.13)	3.40 <sup>†</sup>
Academic identification	“How important is being a college student to you?”	6.41 (0.11)	6.06 (0.11)	5.12*
Social engagement				
Social support	“How often do you feel like you have someone who understands your problems?”	3.39 (0.08)	3.19 (0.08)	3.53 <sup>†</sup>
Maintain relationships	“Number of hours talking on phone to family and friends from home.”	4.76 (0.50)	3.03 (0.48)	6.11*

Note: Numbers in the condition columns are estimated marginal means. Numbers in parentheses are standard errors of the mean. All analyses included race and ethnicity (0 = disadvantaged, 1 = advantaged), gender (0 = male, 1 = female), income (0 = not low income, 1 = low income), highest SAT scores, and high school grade point average as covariates.

<sup>†</sup> $p \leq .10$ . \* $p \leq .05$ . \*\* $p \leq .01$ .

stigmatized background or particular social identity (e.g., Cohen, Garcia, Apfel, & Master, 2006; Harackiewicz et al., 2013; Sherman et al., 2013; Walton & Cohen, 2007, 2011). A common assumption in this literature is that difference is a source of threat for students from stigmatized groups; therefore, the most effective way to intervene is to shift attention away from difference. Drawing on the literature on multicultural education (e.g., Denson, 2009; Gurin et al., 2013; Milem et al., 2005), we theorize that difference need not be a source of threat, and, further, we challenge the notion that difference-blind approaches are

the optimal way to reduce threat. Indeed, our difference-education approach reveals that engaging students about difference can be empowering if students have the opportunity to learn about the significance of their backgrounds in a supportive, constructive, and identity-safe manner. Specifically, difference-education can help students to make sense of the source of their particular experiences in college and, at the same time, equip them with the tools they need to manage and overcome the challenges their different backgrounds might present (cf. Markus, Steele, & Steele, 2000).

**Table 3.** Analysis of Covariance Results for the Difference-Education-Framework Measures of Intergroup Understanding

Measure	Sample item	Difference-education condition	Standard condition	<i>F</i> (1, 126)
Appreciation of difference	“Students with different backgrounds can find their own way of being successful at [university name].”	5.84 (0.09)	5.59 (0.09)	3.91*
Perspective taking	“Before criticizing somebody, I try to imagine how I would feel if I were in their place.”	3.85 (0.06)	3.67 (0.06)	4.00*

Note: Numbers in the condition columns are estimated marginal means. Numbers in parentheses are standard errors of the mean. All analyses included race and ethnicity (0 = disadvantaged, 1 = advantaged), gender (0 = male, 1 = female), income (0 = not low income, 1 = low income), highest SAT scores, and high school grade point average as covariates.

\* $p \leq .05$ .



Unlike most other interventions designed to close achievement gaps in educational settings, our difference-education intervention improved psychosocial outcomes not only for the disadvantaged group but also for mainstream students. These results indicate that understanding how people's different backgrounds matter is a powerful insight that can improve all students' transition to the novel context of university life. The difference-education framework, therefore, likely benefits students in multiple ways. For example, educating students about how their different backgrounds matter may improve all students' comfort with and ability to navigate across their own and others' experiences of difference. Likewise, it may render their differences a normal, rather than stigmatizing, part of the college experience. By changing the perspectives of both first-generation and continuing-generation students, the intervention can also begin to challenge the mostly middle-class cultural norms and assumptions that typically structure U.S. higher education (Fryberg & Markus, 2007; Stephens, Fryberg, et al., 2012). A difference-education approach has the potential to foster college contexts that are more inclusive and accepting of the different perspectives and experiences of students from diverse sociocultural backgrounds.

Although the current study suggests that a difference-education approach can be effective for both reducing achievement gaps and improving all students' college transition, future research should specify the precise mechanisms through which the intervention produced these benefits. For example, although all students in the difference-education condition fared better than did those in the standard condition on numerous psychosocial outcomes, these main effects could have unfolded in different ways over time for first-generation and continuing-generation students. The mediation analyses also revealed that first-generation students' increased tendency to take advantage of college resources explained their academic gains in the difference-education condition. Yet many other related processes—such as an increased sense of entitlement, confidence, or resilience—also likely contributed to these changes in behavior. In addition, future studies should consider whether education about how different backgrounds or identities matter can empower other disadvantaged groups (e.g., women in predominantly male fields) to overcome background-specific obstacles.

Educators at leading colleges and universities increasingly identify understanding and navigating sociocultural diversity as a critical 21st-century competency. This study presents an initial blueprint for educating students about difference and equipping them to more effectively participate in higher education. This approach has the potential to not only facilitate students' transition to college but also provide them with the skills to be informed,

engaged, and productive citizens in our multicultural world. Although the intervention targeted first-generation college students, its main message—people's different backgrounds matter, and people with different backgrounds can be successful—can and should be leveraged to foster more inclusive and equitable schools, workplaces, and communities.

### Author Contributions

N. M. Stephens and M. G. Hamedani designed the study, developed the theory, and wrote the manuscript. N. M. Stephens was primarily responsible for data collection and data analysis. M. Destin contributed to the study design, assisted with data collection, and provided suggestions on manuscript revisions. All authors approved the final version of the manuscript for submission.

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### Declaration of Conflicting Interests

The authors declared that they had no conflicts of interest with respect to their authorship or the publication of this article.

### Supplemental Material

Additional supporting information may be found at <http://pss.sagepub.com/content/by/supplemental-data>

### Notes

1. American society rarely acknowledges how social class shapes people's opportunity to succeed (Kingston, 2000; Mantsios, 2006).
2. A series of chi-square analyses comparing generation status in each of the five racial categories revealed that none of the racial categories significantly differed by generation status, all  $ps > .10$ .
3. Follow-up analyses indicated that random assignment was successful. (See the Supplemental Material.)
4. Outliers—that is, students with GPAs greater than 2 standard deviations below the mean—were distributed across generation status and intervention condition. They were excluded because the intervention was designed to help students overcome background-specific obstacles, not extreme life challenges (e.g., depression, lack of academic skills) that often lead to severe underperformance.
5. We created a dummy variable (0 = advantaged, 1 = disadvantaged) to control for race and ethnicity. Given the relationship between race and academic performance in the United States (e.g., Kao, 1995; Steele, 2010), Whites and Asians or Asian Americans were classified as advantaged, whereas African Americans, Latinos, and Native Americans were classified as disadvantaged.

6. For all analyses involving end-of-year GPAs and the tendency to seek college resources, we report raw means to make the observed differences between conditions clear.

7. The pattern of results was identical when we included GPA outliers. That is, in the difference-education condition, first-generation students performed significantly better than in the standard condition, and the achievement gap was statistically eliminated.

8. Analyses of the tendency to seek resources included individuals who did not provide permission to access their grades.

9. Mediation analyses excluded individuals who did not provide consent to access their grades. The reduced sample size is the reason why the effect of the Generation Status  $\times$  Intervention Condition interaction on the tendency to seek resources (see Fig. 3) was marginally significant compared with prior analyses.

10. The multivariate effect of intervention condition held even after we included the nonsignificant dependent measures reported in the Supplemental Material,  $F(16, 109) = 1.76, p < .05$ ; Wilks's  $\Lambda = 0.80$ .

## References

- Blackwell, L. S., Trzesniewski, K. H., & Dweck, C. S. (2007). Implicit theories of intelligence predict achievement across an adolescent transition: A longitudinal study and an intervention. *Child Development, 78*, 246–263.
- Bowen, W. G., Kurzweil, M. A., & Tobin, E. M. (2005). *Equity and excellence in American higher education*. Charlottesville: University of Virginia Press.
- Calarco, J. M. (2011). "I need help!" Social class and children's help-seeking in elementary school. *American Sociological Review, 76*, 862–882.
- Cohen, G. L., Garcia, J., Apfel, N., & Master, A. (2006). Reducing the racial achievement gap: A social-psychological intervention. *Science, 313*, 1307–1310.
- Denson, N. (2009). Do curricular and cocurricular diversity activities influence racial bias? A meta-analysis. *Review of Educational Research, 79*, 805–838.
- Destin, M., & Oyserman, D. (2009). From assets to school outcomes: How finances shape children's perceived possibilities and intentions. *Psychological Science, 20*, 414–418.
- Duncan, G. J., & Murnane, R. J. (2011). *Whither opportunity? Rising inequality, schools, and children's life chances*. New York, NY: Russell Sage.
- Engle, J., Bermeo, A., & O'Brien, C. (2006). *Straight from the source: What works for first-generation college students*. Washington, DC: Pell Institute for the Study of Opportunity in Higher Education.
- Fiske, S. T., & Markus, H. R. (2012). A wide-angle lens on the psychology of social class. In S. T. Fiske & H. R. Markus (Eds.), *Facing social class: Social psychology of social class* (pp. 1–12). New York, NY: Russell Sage.
- Fryberg, S. A., & Markus, H. R. (2007). Cultural models of education in American Indian, Asian American, and European American contexts. *Social Psychology of Education, 10*, 213–246. doi:10.1007/s11218-007-9017-z
- Gurin, P., & Nagda, B. (2006). Getting to the what, how, and why of diversity on campus. *Educational Research, 35*, 20–24.
- Gurin, P., Nagda, B. A., & Zuniga, X. (2013). *Dialogue across difference: Practice, theory, and research on intergroup dialogue*. New York, NY: Russell Sage.
- Harackiewicz, J. M., Canning, E. A., Tibbetts, Y., Giffen, C. J., Blair, S. S., Rouse, D. I., & Hyde, J. S. (2013). Closing the social class achievement gap for first-generation students in undergraduate biology. *Journal of Educational Psychology*. Advance online publication. doi:10.1037/a0034679
- Housel, T. H., & Harvey, V. L. (2009). *The invisibility factor: Administrators and faculty reach out to first-generation college students*. Boca Raton, FL: Brown Walker Press.
- Inkelas, K. K., Daver, Z. E., Vogt, K. E., & Leonard, J. B. (2007). Living-learning programs and first-generation college students' academic and social transition to college. *Research in Higher Education, 48*, 403–434.
- Johns, M., Schmader, T., & Martens, A. (2005). Knowing is half the battle: Teaching stereotype threat as a means of improving women's math performance. *Psychological Science, 16*, 175–179.
- Johnson, S. E., Richeson, J. A., & Finkel, E. J. (2011). Middle class and marginal? Socioeconomic status, stigma, and self-regulation at an elite university. *Journal of Personality and Social Psychology, 100*, 838–852.
- Kao, G. (1995). Asian Americans as model minorities? A look at their academic performance. *American Journal of Education, 103*, 121–159.
- Kim, Y. K., & Sax, L. J. (2009). Student-faculty interactions in research universities: Differences by student gender, race, social class, and first-generation status. *Research in Higher Education, 50*, 437–459.
- Kingston, P. W. (2000). *The classless society*. Stanford, CA: Stanford University Press.
- Landis, J. R., & Koch, G. G. (1977). The measurement of observer agreement for categorical data. *Biometrics, 33*, 159–174.
- Mantsios, G. (2006). Class in America: Myths and realities. In P. S. Rothenberg (Ed.), *Race, class and gender in the United States: An integrated study* (7th ed., pp. 182–197). New York, NY: Worth Publishers.
- Markus, H. R., Steele, C. M., & Steele, D. M. (2000). Colorblindness as a barrier to inclusion: Assimilation and nonimmigrant minorities. *Daedalus, 129*, 233–259.
- Milem, J. F., Chang, M. J., & Antonio, A. L. (2005). *Making diversity work on campus: A research-based perspective*. Washington, DC: Association of American Colleges and Universities.
- Ostrove, J. M., & Long, S. M. (2007). Social class and belonging: Implications for college adjustment. *Review of Higher Education, 30*, 363–389.
- Oyserman, D., & Destin, M. (2010). Identity-based motivation: Implications for intervention. *The Counseling Psychologist, 38*, 1001–1043.
- Pascarella, E., Pierson, C., Wolniak, G., & Terenzini, P. (2004). First-generation college students: Additional evidence on college experiences and outcomes. *Journal of Higher Education, 75*, 249–284.
- Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879–891.
- Reay, D., Crozier, G., & Clayton, J. (2009). "Strangers in paradise"? Working-class students in elite universities. *Sociology, 43*, 1103–1121.

- Sherman, D. K., Hartson, K. A., Binning, K., Purdie-Vaughns, V., Garcia, J., Taborsky-Barba, S., . . . & Cohen, G. (2013). Deflecting the trajectory and changing the narrative: How self-affirmation affects academic performance and motivation under identity threat. *Journal of Personality and Social Psychology, 104*, 591–618.
- Sirin, S. R. (2005). Socioeconomic status and academic achievement: A meta-analytic review of research. *Review of Educational Research, 75*, 417–453.
- Steele, C. M. (2010). *Whistling Vivaldi and other clues to how stereotypes affect us*. New York, NY: W. W. Norton.
- Steele, D. M., & Cohn-Vargas, B. (2013). *Identity safe classrooms*. Thousand Oaks, CA: Corwin.
- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology, 102*, 1178–1197.
- Stephens, N. M., Markus, H. R., & Fryberg, S. A. (2012). Social class disparities in health and education: Reducing inequality by applying a sociocultural self model of behavior. *Psychological Review, 119*, 723–744.
- Stephens, N. M., Townsend, S. S. M., Markus, H. R., & Phillips, T. (2012). A cultural mismatch: Independent cultural norms produce greater increases in cortisol and more negative emotions among first-generation college students. *Journal of Experimental Social Psychology, 48*, 1389–1393.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology, 92*, 82–96.
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science, 331*, 1447–1451.
- Wilson, T. D. (2011). *Redirect: The surprising new science of psychological change*. New York, NY: Little, Brown.
- Yeager, D. S., Purdie-Vaughns, V., Garcia, J., Apfel, N., Brzustoski, P., Master, A., . . . Cohen, G. L. (2013). Breaking the cycle of mistrust: Wise interventions to provide critical feedback across the racial divide. *Journal of Experimental Psychology: General*. Advance online publication. doi:10.1037/a0033906
- Yeager, D. S., & Walton, G. M. (2011). Social-psychological interventions in education: They're not magic. *Review of Educational Research, 81*, 267–301.

## Supporting Information: Method

### *Study Setting*

The intervention was conducted at a highly selective, mid-sized private university where first-generation students are a minority on campus (about 10% of overall population of students). The SAT scores of first-generation participants ( $M = 1405.15$ ,  $SD = 110$ ) were significantly lower than those of continuing-generation participants [ $M = 1442.59$ ,  $SD = 99.99$ ],  $t(145) = -2.15$ ,  $p = .03$ , Cohen's  $d = .36$ ].

### *Pre-intervention Recruitment Method*

**Sampling procedure.** We used a convenience sampling procedure to recruit participants for the intervention. Specifically, using a list of all first-generation and continuing-generation students in the incoming class, we emailed all 158 incoming first-generation students on the list and asked them to participate. Of the total population of 158 first-generation students, 41.77% ( $n = 66$ ) completed both the initial session and the end-of-year survey.

In the case of the continuing-generation students, we sought to match the continuing-generation participants in our study to the racial and ethnic demographics of the entire population of 1776 continuing-generation students so that our sample would be as representative as possible. To accomplish this goal, we set up targeted percentages for each racial or ethnic group based on the racial and ethnic composition of the entire population of continuing-generation students. For example, since the overall population of continuing-generation students included was 62% White, we randomly selected White continuing-generation students for recruitment until we reached our targeted number. All racial and ethnic groups were recruited simultaneously. We stopped recruiting students once we had a sufficient number of continuing-generation students to compare to our first-generation student sample.

**Representative sample.** To confirm that the first-generation participants in our study were representative of first-generation students at the entire university, we first compared the sample of 66 first-generation students who completed the entire intervention study to the first-generation students ( $n = 87$ ) who did not participate in the intervention. As for the demographic composition of the sample, a series of Chi-square tests for gender and each racial or ethnic group revealed no significant differences between our participants and the demographics of the overall population of first-generation students ( $p$ -value range = .26-.87,  $p$ -value  $M = .50$ ). These data suggest that our first-generation participants are representative of the demographics of the entire population of first-generation students where the study was conducted.

As for academic preparation, the first-generation participants in our intervention ( $M = 1405.15$ ,  $SD = 110.44$ ) did not differ significantly on their SAT scores from the first-generation students who did not participate in the intervention ( $M = 1387.82$ ,  $SD = 125.29$ ),  $t(151) = -.89$ ,  $p = .37$ . However, the intervention participants did have higher high school GPAs ( $M = 4.35$ ,  $SD = .49$ ) compared to students who did not participate ( $M = 4.20$ ,  $SD = .37$ ),  $t(147) = -2.10$ ,  $p = .04$ . These data indicate that, although the first-generation students who elected to participate in the intervention had comparable academic abilities to the overall population of first-generation students, they were somewhat more academically successful in high school.

We did the same comparisons for continuing-generation students between the 81 continuing-generation students who completed the entire study and those who did not participate ( $n = 1697$ ). As for demographics, a series of Chi-square tests for gender and each racial and ethnic group revealed no differences by gender and also no differences for students who identified as Asian/Asian American or African American ( $p$ -value range = .52-.69,  $p$ -value  $M = .61$ ). However, there were differences for three of the racial and ethnic groups: among the continuing-generation students in the intervention, there were marginally fewer Whites [51.85% vs. 62.34%;  $\chi^2(1, N = 1778) = 3.61$ ,  $p = .06$ ], significantly more Latinos [14.81% vs. 7.19%;  $\chi^2(1, N = 1778) = 6.45$ ,  $p = .01$ ] and significantly more Native Americans [1.23% vs. .18%;  $\chi^2(1, N = 1778) = 3.85$ ,  $p = .05$ ] compared to the overall population. These data indicate that our

sample of continuing-generation students was somewhat more likely to include racial and ethnic minorities compared to the general population of continuing-generation students.

As for academic preparation, the continuing-generation participants in our intervention ( $M = 1446.46$ ,  $SD = 101.76$ ) did not differ on their SAT scores from the continuing-generation students who did not participate in the intervention ( $M = 1442.59$ ,  $SD = 99.99$ ),  $t(1776) = .34$ ,  $p = .74$ . However, as was the case with first-generation participants, the continuing-generation intervention participants did have higher high school GPAs ( $M = 4.32$ ,  $SD = .52$ ) compared to students who did not participate ( $M = 4.17$ ,  $SD = .42$ ),  $t(1639) = -3.17$ ,  $p = .002$ . These data indicate that, although the continuing-generation students who elected to participate in the intervention had comparable academic abilities to the overall population of continuing-generation students, they were somewhat more academically successful in high school.

### ***Intervention Method***

The panel sessions included two moderators (1 White male and 1 White female) and eight panelists. Of the panelists, 3 were first-generation and 5 were continuing-generation. Among first-generation panelists, 2 were White (1 male, 1 female) and one was Asian American (female). As for continuing-generation panelists, 2 were White (1 male, 1 female), 2 were African American (1 male, 1 female), and one was Middle Eastern (female). We intentionally recruited panelists who were diverse in terms of both race and ethnicity, as well as gender. The efforts to balance race, ethnicity, and gender across first-generation and continuing-generation panelists, however, were limited by the need for panelists who were skilled public speakers, willing to share their personal stories, and available for all eight sessions.

When participants arrived to the intervention session, they were first greeted and asked to sign a consent form. The consent form included a question at the end that asked participants for permission to access their official grades from the registrar's office. Afterward, they were asked to take a seat and wait for the student panel to begin. The panelists were arranged in the front of the room at a long table with microphones, while 20 to 25 participants sat in chairs in the audience. As the discussion panel began, one of the moderators explained the procedure to participants:

Welcome everyone and welcome to [university name]. We appreciate your participation in the [university name] Student Project, and hope that today's experience will be valuable for your transition to college. In this session, you will get to hear the stories and experiences of your peers. They were once first-years too, and look forward to sharing their perspective with you. There will be six questions addressed to the student panel today. Each of the speakers has prepared some thoughts and remarks to share with you. Our panel moderator, [student name], is going to ask the questions. First, the speakers will go around the room and introduce themselves. Then, they will answer a series of questions about their experiences at [university name]. Finally, we will ask you to complete a short activity and then a brief survey about what you learned. Now it's time for the speakers to introduce themselves. They will start by saying their name, year, major, and where they are from.

After the moderator gave an overview of the intervention procedure, in both conditions, the panelists took turns introducing themselves with the information noted above. Upon completing introductions, the moderator then introduced the material to be included in the session. In the difference-education condition, the moderator emphasized differences in students' backgrounds: "The speakers are excited to have you here and to share their stories with you. Students come from very different backgrounds before arriving at [university name]. These differences make [university name] an amazing place to be." In contrast, in the standard condition, the moderator did not mention differences in students' backgrounds, but instead mentioned students' diverse interests: "The speakers are excited to have you here and to share their stories with you. Students' interests span a wide range of topics and areas of study. These differences make [university name] an amazing place to be."

The panelists then took turns answering the six intervention questions that the moderator asked the student panel. In both conditions, the student panel lasted for about 45 minutes. In the difference-education condition, the students answered the following questions: (1) “People come to college for many different reasons. What did coming to college mean to you?”; (2) “Students can have a wide variety of experiences when they transition to college and come from many different backgrounds. Thinking back, what was the transition to [university name] like for you?”; (3) “Now we’d like you to share some specific challenges about coming to college. Can you provide an example of an obstacle that you faced when you came to [university name] and how you resolved it?”; (4) “Did your decision to attend [university name] affect your relationships with your friends and family at home? If yes, how?”; (5) “What would you advise other students to do with backgrounds similar to your own?”; and (6) “What experiences that you had prior to [university name] prepared you to excel in ways that you wouldn’t have anticipated at the time?” In the standard condition, the students answered the following questions: (1) “Trace your path for finding your major.”; (2) “What were some of the experiences that led you to your major and what were some challenges?”; (3) “What has been your favorite class and least favorite so far and why?”; (4) “What do you do to be successful in your classes? For example, how do you plan your courses and what are some strategies for being successful in those courses?”; (5) “How do you study for midterms and final exams? What are some challenges that you encounter?”; (6) “What are some options that you are considering as a future career path? How did you come to recognize those options? What are the advantages and/or disadvantages of the different paths you are considering?”

### ***Difference-Education Intervention Sample Responses***

To illustrate how students’ stories in the difference-education condition conveyed the framework for understanding how different backgrounds matter, below we included sample responses from first-generation panelists and continuing-generation panelists. The contrast between the examples from first-generation and continuing-generation panelists reveal that (I) students’ different social class backgrounds can shape the college experience in both (A) positive and (B) negative ways and that (II) students need to utilize strategies for success that take their different social class backgrounds into account.

### ***(I) Different Social Class Backgrounds can Shape the College Experience in Both Positive and Negative Ways.***

#### ***(A) Positive impact of different social class backgrounds:***

##### ***First-generation sample responses***

I’ve been through a lot in my life and am sure that I’m not alone in that experience but that defines everything about me. It gave me perspective that made [university name] a lot easier to tackle. Midterms and papers seem hard, and they are, but at the same time they just seem like another drop in the bucket and I love that perspective.

The fact that [university name] seemed like such an improbable destination for me as a public school student, and the fact that I feel like I overcame the odds to be here, has prompted me to work harder and contribute more to [university name] now that I’m here.

##### ***Continuing-generation sample responses***

I’ve always been really motivated to learn new things and motivated to be in school just for the sake of learning so college was an obvious choice in that respect. Also everyone wants to be successful in their future job and I think going to a good school, like [university name], is definitely key in having success later in life in terms of occupation. In terms of family

background I think my parents definitely had an influence because they went to college and really valued that experience.

My choice to attend [university name] really was supported by everyone in my family. There was no sort of imposition by my parents, “you need to go to the university of Texas”, or anything like that. It was like, “wherever you want to go we’ll fully support you in any way that we really can” and so they were very open with it. There was really no after effect with any of my friends or anything like that so it was actually a really lucky situation to be in.

***(B) Negative impact of different social class backgrounds:***

***First-generation sample responses***

I definitely feel different from other students and not necessarily having the best network behind me to make the best decision about my future. And because of my background and not having a network of people, family, and parents to go to and say, “What did you do when you were in college? What are the best options?”, I found that it was hard to get the advice that I needed.

As far as my family goes it has caused some strain. School puts a financial strain on my family and I’ve gotten into numerous arguments with my mother and they tend to end with her telling me that we wouldn’t have had to worry about everything if I had just gone to a different university. That definitely makes things hard. Another thing is my mom didn’t go to college- so sometimes she just doesn’t understand a lot of things that I’m going through. So when I’m stressed, she doesn’t get it. That changes things.

***Continuing-generation sample responses***

I went to a pretty small private school. And sometimes it did feel like a bit much because we were doing online searches for college as freshman so I got into high school going, “Why are you having me look at colleges?”. But, it was definitely a big adjustment for me going into huge classes. I was used to individual attention so being in big classes were kind of hard. So I think my background of having really individual learning and a lot of individual attention was definitely a challenge because in college you don’t have that quite as much.

I’m an only child and my family and I spend a lot of time together. So it was actually really hard to say bye when they dropped me off for the first time. In fact it was the first and only time I’ve seen my dad cry. It was really difficult. Also, despite going to a sort of “college prep” high school, I found my existing study habits to be really lagging the college rigors and so really adjusting to both academics and leaving family and being in a completely new place.

***(II) Students Need to Utilize Strategies for Success that Take Their Different Social Class Backgrounds into Account.***

***First-generation sample responses***

Once I came to [university name], I realized that I didn’t have to be strong all of the time and that most people had no expectations of me besides trying my best and putting in effort in classes. After that, I realized that there was no shame in struggling or asking for help. It was a huge step forward in my life. Over time, being able to use my peers as a resource was incredibly helpful. Seeking advice from them was a source of comfort and they especially helped me with deciding what classes to take or how to deal with any personal dilemmas I was having.

If I were to start college again I would tell my parents more about the things that I do here. They don't realize that there is more to a university than just attending classes. I would have liked them to know more about all the clubs and activities that I wanted to be a part of so that they would understand why I wanted to be on campus more often. I wish I had allowed my freshman self to be more involved with student group activities on campus, so that I would have had the opportunity to be more than just a student early on. Studies are important, but I should have also considered the importance of making an impact on the student body as well.

### **Continuing-generation sample responses**

In advising others about how to succeed, I'd tell them that they should sit in the front row of classrooms. I never really thought that that mattered very much but towards the end of the year I saw a lot of my previous professors throughout the year that I had throughout the year and most of them remember me because I sat in the front of the room, I was engaged. Although I didn't always do the best on tests or on homework, they still knew that I was doing my best in class, they knew that I was giving an effort and they appreciated that. I think teachers really appreciate the students that sit in the front of the class, take notes, and show that they actually want to learn.

It's never a bad thing to know more people, to have more connections on campus and definitely, the first week or so during orientation when you're just put into this new environment and everybody else is trying to find their place, try and be more outgoing. I would try and be more outgoing and just try and meet as many possible people as you could because it could never really hurt you. Even if you don't want to join their group just having the connection can be important. To be able to say, "Oh, I know the president of such and such group"- if someone comes up to you and is interested in that particular thing maybe you can put them in contact with it. So it's just don't burn your bridges. That's one of the lessons I've learned.

### ***Standard Intervention Sample Responses***

To illustrate that the stories in the standard condition did not convey background-specific information about how students' experiences and strategies for success can differ by social class, below we included sample responses from the standard condition. Instead, they conveyed general content revealing that (I) students have different college experiences, including both (A) positive and (B) negative examples, and (II) students can utilize different strategies to succeed.

#### ***(I) Students Have Different College Experiences - Both Positive and Negative.***

##### ***(A) Different college experiences (positive):***

I see my career path as coming in stages. I think that I would like to dedicate my life to the field of education, in particular public education reform. As of right now, I plan on being certified for English education after graduation from [university name] and teaching for a few years. I feel like it would be impossible for me to make any important changes in education without being immersed in it and truly knowing what I am dealing with. Some interests to me are administration or curriculum design, possibly working in guidance. Honestly, these options started as just thoughts. But the more time I dedicated to these thoughts, the more I saw the potential of them and the more comfortable I felt about these thoughts becoming my reality.

My favorite class would probably be a research seminar on political history. The research seminar was a combination of a great classroom setting of 12 students in addition to being taught by



arguably the best professor in the History department. There were no exams- just one large paper at the end of the quarter and several presentations. Our grades were primarily based on discussion. I took this class as a sophomore with seniors writing their honors theses. Being among such bright, mature, and well-read students made not only for the most intimidating but invigorating classroom I have ever been in. The material was extremely specific and explains a lot of what is going on in the world today.

***(B) Different college experiences (negative):***

As for challenges, it was definitely frustrating choosing my major because I wasn't quite sure what I wanted to pursue, but I think the system is set up in a way that makes it kind of difficult to test anything out. I think the system sort of demands that you pick something and stick with it. And reality is obviously quite different than that, because most people—or at least a lot of people I know, don't quite know what they want to do right away. So it's just difficult trying to test things out when you're sort of forced to commit to stuff.

In terms of challenges, the quarter system makes exams and papers pile on top of each other in a very short period of time. Managing them along with prior commitments to work and extracurriculars becomes difficult. Stress is the major problem I face while studying for exams because I start to feel really overwhelmed by how much I have to get done in so little time.

***(II) Students Can Utilize Different Strategies to Succeed.***

To study for exams, I start reviewing the material a few days prior to the exam, making sure that all of the reading is done, going over my notes, and touching on everything mentioned on the study guide if one is provided. I go to the review session and I ask questions during the review session or via email if I need further explanation. Whenever I become overwhelmed, I just arrange everything I have to do in order starting with the most important. I try to set aside time for each thing leading up to the exams and just proceed through my list one by one instead of trying to do everything at once.

To be successful in your classes, go to class and pay attention. It isn't good enough to just show up, you have to actually listen to what the professor is saying and resist going on Facebook or checking your email or doing work for another class. It's simple, but effective. It's also really helpful to go to discussion sections, even if they are optional, or meet with your TA during their office hours. I find that meeting with a TA is most helpful when writing a paper because they are going to be the one reading and grading it. They can usually give you an idea if you're on the right track or completely missing the point. You can discuss the material and get a better sense of the direction you want to go with your paper. Meeting with your professor if you don't understand something or have questions is also a good idea especially before midterms and finals.

When the panelists finished answering all of the questions, the moderator then introduced the “video testimonial” activity by saying the following: “Now it's time for a short video activity. Keep in mind that it's your choice to participate in this next activity, but it's highly encouraged. We want to hear from you and learn about your perspective.” Participants were given a “video prompt” survey that explained the purpose of the activity, allowed them to organize their thoughts, and described the types of information that the video should include. They had a total of 25 minutes to complete this activity, and were encouraged to create their videos wherever they felt comfortable (e.g., in a neighboring private classroom). The video prompt sheet included the following instructions: “Please create a short 1 to 2 minute video that communicates the main lessons or insights that you gained from the student panel today. The purpose is to create materials to distribute to future [university name] students to help them

learn what college will be like. To brainstorm for your video testimonial, please jot down notes to the questions below. Keep in mind that there are no right or wrong answers. We want to know about your perspective and experience.”

Upon completing their video testimonials, participants were asked to do a short survey on their own. This survey included a variety of questions about the usefulness of the information in the student panel, the extent to which they related to the panelists, and questions about their experience with the video testimonials. Afterward, they were thanked for their participation, paid \$50, and informed that they would be contacted in the future via email to request their participation in additional paid surveys.

### **Supporting Information: Measures and Analyses**

We conducted a total of three surveys with intervention participants. The first survey was conducted two weeks before the intervention program (Time 1), and assessed a number of baseline variables. The second survey was conducted immediately after the intervention (Time 2), and collected information from participants about what they learned from the intervention experience, which provided a manipulation check. The third survey was conducted at the end of the first year in college (Time 3), and assessed a variety of dependent measures. The results reported in the main article text primarily feature results from Time 3.

#### ***Pre-intervention Survey – Baseline Measures (Time 1)***

After students indicated that they would like to participate in the study in response to the initial invitation letter, they were sent another email two weeks later in which they were first thanked for signing up to participate and then asked to “complete a short survey about [their] expectations about coming to [university name].” The purpose of the pre-intervention survey was to gather baseline information about students before they participated in the intervention. This information allowed us to confirm that: (1) students assigned to different conditions did not differ on pre-intervention baseline measures prior to their participation in the intervention and (2) students who dropped out of the study did not differ systematically from students who completed the study on pre-intervention baseline measures.

The pre-intervention survey did not include any questions that could alert students to the purpose of the study (e.g., questions about social class) or lead them to question whether they belong in college. Instead, we focused on general questions about academic topics that could impact students’ performance in college or that could influence their reactions to the messages conveyed in the intervention. Specifically, we focused on (I) academic engagement (e.g., academic identification, perceived preparation) and (II) perceived ability to succeed in college (e.g., academic efficacy, personal mastery).

#### ***(I) Academic Engagement***

***Perceived preparation.*** To assess perceived preparation, we used the following two items: (1) “I am well prepared to be academically successful as a student at [university name]” and (2) “Even though I know that college can be challenging, I think that in the end I will be successful.” Participants rated their agreement with these two items on a scale from 1(*strongly disagree*) to 7(*strongly agree*). The mean of these two items served as our measure of perceived academic preparation ( $\alpha = .83$ )

***Academic identification.*** To assess academic identification, two items were used (Walton & Cohen, 2011). Specifically, on a scale from 1(*not at all important*) to 7(*essential to who I am*), students answered the following questions: (1) “How important is academic success to you?” and (2) “How important is being a college student to you?” The mean of these two items served as our measure of academic identification ( $\alpha = .49$ ).

#### ***(II) Perceived Ability to Succeed in College***

**Academic efficacy.** To assess academic efficacy, four items were used (Midgley et al., 2000). On a scale from 1(*strongly disagree*) to 7(*strongly agree*), participants rated their agreement with the following items: (1) “I’m certain I can figure out how to do the most difficult classwork”; (2) “I can do all of the work in class if I don’t give up”; (3) “I’m certain I can master the skills taught at [university name] this upcoming year”; and (4) “I can do almost all of the work in class if I don’t give up.” The mean of these four items served as our measure of academic efficacy ( $\alpha = .83$ ).

**Personal mastery.** To measure personal mastery, six items were used from the commonly used mastery and constraint scale (Lachman & Weaver, 1998). On a scale from 1(*strongly disagree*) to 7(*strongly agree*), participants rated their agreement with the following items: (1) “I can do just about anything that I set my mind to”; (2) “I sometimes feel I am being pushed around in life” (reverse coded); (3) “When I really want to do something, I usually find a way to succeed at it”; (4) “I often feel helpless in dealing with problems of my life” (reverse coded); (5) “What happens to me in the future depends mostly on me”; (6) “There is little I can do to change the important things in my life” (reverse coded). The mean of these six items served as our measure of personal mastery ( $\alpha = .68$ ).

### **Pre-intervention Analyses (Time 1)**

**Random assignment.** A series of analyses were conducted to ensure that random assignment to the intervention conditions was successful. Utilizing the final sample ( $N = 147$ ) of participants who completed the study, we examined whether participants differed overall across conditions on demographic indicators and pre-intervention baseline measures. In a second set of analyses, we examined whether first-generation and continuing-generation students separately differed on these measures across conditions.

First, comparing participants overall across conditions, no differences emerged on any demographic variables by condition. That is, men and women, Whites versus non-Whites, and low- versus high-income students were equally likely to be assigned to the difference-education versus standard conditions ( $p$ -value range = .37-.68,  $p$ -value  $M = .47$ ). Comparisons of pre-intervention measures (SAT scores, high school GPA, academic identification, academic efficacy, perceived preparation, and personal mastery) again revealed no significant differences ( $p$ -value range = .15-.94,  $p$ -value  $M = .55$ ).

Second, comparing first-generation and continuing-generation students’ assignment across conditions separately, we again found no significant differences in terms of the likelihood of men and women, Whites versus non-Whites, and low- versus high-income students being assigned to the difference-education versus standard conditions ( $p$ -value range = .10-.75,  $p$ -value  $M = .37$ ). Comparisons of pre-intervention measures (SAT scores, high school GPA, academic identification, academic efficacy, perceived preparation, and personal mastery) again revealed no significant differences ( $p$ -value range = .12-1.00,  $p$ -value  $M = .60$ ).

**Attrition analyses.** The retention rates for our study were excellent. At the end of the first year, 147 of the initial 168 intervention participants had responded to our email invitation to complete the end-of-year survey (retention rate = 87.50%). For the sake of consistency, all analyses reported in the article are based on these 147 participants who participated in the initial intervention and the end-of-year survey.

There was no evidence that attrition varied by generation status, race and ethnicity (White vs. non-White), or condition ( $p$ -value range = .18-.86,  $p$ -value  $M = .51$ ). Moreover, a comparison of participants who completed the end-of-year survey to those who dropped out revealed no differences on any pre-intervention measures (SAT scores, high school GPA, academic identification, academic efficacy, perceived preparation, and personal mastery;  $p$ -value range = .29-.93,  $p$ -value  $M = .64$ ). These findings suggest that the students who completed the study did not differ systematically from those who dropped out.

After attending the student panel (Time 2), participants were asked to give us consent to access to their official university records (e.g., GPAs). Of the 147 participants who completed the end-of-year survey, 140 (i.e., 95.24%) provided us with permission. Whether participants authorized the release of their records did not vary significantly by generation status, race and ethnicity (White vs. non-White), or

condition ( $p$ -value range = .06-.37,  $p$ -value  $M = .23$ ). Moreover, students who did versus did not give permission showed no differences on any pre-intervention measures (SAT scores, high school GPA, academic identification, academic efficacy, perceived preparation, and personal mastery;  $p$ -value range = .16-.98,  $p$ -value  $M = .60$ ).

### ***Post-intervention Survey (Time 2)***

***Intervention perceptions.*** After the video testimonials, participants completed a short survey, in which they were asked a series of questions about their perceptions of the student panel and video testimonials. These questions were designed to assess whether we were successful in making the difference-education and standard conditions equally engaging and appealing to participants. All items on this survey were rated using a scale from 1(*not at all*) to 7(*very much*). The survey included six items that assessed usefulness of the information presented in the student panel: (1) “Do you think the information will be useful?”; (2) “Did you enjoy hearing other [university name] students' stories?”; (3) “Did you learn from this experience?”; (4) “Do you feel better prepared for your transition to [university name]?”; (5) “To what extent would you recommend the program to your peers?”; and (6) “To what extent would you recommend the program to future first-years?” ( $\alpha = .91$ ). The survey include two items that assessed participants' ability to relate to the panelists: (1) “Did you like the students in the panel?”; and (2) “Did you feel like you could relate to the panelists?” ( $\alpha = .71$ ). Finally, the survey included 2 items that assessed participants' experience with the video testimonials: (1) “How much effort did you put into your video testimonial?” and (2) “How much did you enjoy creating the video testimonial?” ( $\alpha = .68$ ).

### ***Post-intervention Analyses (Time 2)***

We examined whether the difference-education and standard conditions were comparably engaging and interesting to intervention participants. To do so, we conducted a series of ANCOVA analyses with intervention condition as the independent variable and participants' perceptions of the student panels and video testimonials as the dependent measures. Our standard set of demographic covariates (described below in detail) was also included in the analyses. As expected, we found no significant effects of intervention condition on participants' perceived usefulness of the information [ $F(1,161) = .40, p = .53$ ], their ability to relate to the panelists [ $F(1,161) = .30, p = .59$ ], or their experience with the video testimonials [ $F(1,161) = .36, p = .55$ ].

### ***End-of-Year Survey - Dependent Measures (Time 3)***

***Overview of measures.*** Students' official end-of-year cumulative GPAs were obtained from the university registrar. The end-of-year survey, which included all of our outcome measures, was conducted about one month before the end of the academic year so that we could assess potential mediators of the hypothesized differences in students' cumulative GPAs. We assessed (I) behaviors (tendency to seek college resources, activism, and extracurricular engagement) and (II) psychological constructs spanning the following domains: (A) stress and anxiety (psychological distress, social identity threat), (B) psychological adjustment (psychological well-being, social fit), (C) academic engagement (perceived preparation, academic identification), (D) social engagement (social support, maintain relationships), (E) intergroup understanding (appreciation of difference, perspective taking), (F) motives for attending college (independent and interdependent), (G) perceived ability to succeed in college (academic efficacy, personal mastery), and (H) views of social class, race, and ethnicity (economic justification, race essentialism). We assessed a wide range of constructs that could have been affected by the difference-education intervention.

***Overview of covariates.*** For all of the analyses reported in this article, we used the same set of five covariates that were obtained from participants' official university entrance data: Race and ethnicity, gender, income, SAT scores, and high school GPA. We included demographic variables (race and

ethnicity, gender, and income) and academic performance measures (SAT scores, high school GPA) that are known to predict future academic outcomes and/or adjustment to college (Eimers & Pike, 1997; Harackiewicz, Barron, Tauer, & Elliot, 2001; Titus, 2006). We also tested all pre-intervention baseline measures as covariates in our analyses and none of them systematically predicted end-of-year cumulative GPAs or psychosocial outcomes, and thus, were not included in any further analyses.

To control for race and ethnicity, we created a dummy variable to represent disadvantaged (African American, Latino, or Native American = 0) versus advantaged (White or Asian/Asian American = 1) racial and ethnic status in university settings. To control for gender and family household income, we created dummy variables for each of these covariates (male = 0, female = 1; not low income = 0, low income = 1). The highest SAT score covariate (calculated by the university) was equal to the best SAT verbal plus best SAT math scores or the ACT composite equated to a 1600-point SAT scale. The high school GPA variable represented participants' high school grade point averages (equated on the same scale calculated by the university).

## **(I) Behaviors**

***Tendency to seek college resources.*** To measure participants' tendency to seek out college resources, we asked the following three questions: (1) "Since you started at [university name], in a typical month, how many times have you emailed a professor to ask a question?"; (2) "Since you started at [university name], how many times have you met with a professor outside of class?"; and (3) "Please estimate how many times you have gone to the writing center since you started at [university name]." They were asked to provide a response to each of these three questions on a sliding scale from "0 times" to "5 times." Given that participants' responses to all three of these items followed the same pattern, we averaged them to create a composite measure of seeking college resources ( $\alpha = .56$ ).

***Activism.*** To assess the propensity to engage in social action, we selected nine items from the activism orientation scale (Corning & Myers, 2003). Participants were asked to rate their likelihood of engaging in each of the following activities in the future on a scale from 1 (*extremely unlikely*) to 4 (*extremely likely*): (1) "Give a lecture or talk about a social or political issue"; (2) "Go out of your way to collect information on a social or political issue"; (3) "Present facts to contest another person's social or political statement"; (4) "Confront jokes, statements, or innuendos that opposed a particular group's cause"; (5) "Distribute information representing a particular social or political group's cause"; (6) "Attend a talk on a particular group's social or political concerns"; (7) "Try to change a friend's or acquaintance's mind about a social or political issue"; (8) "Try to change a relative's mind about a social or political issue"; and (9) "Participate in discussion groups designed to discuss issues or solutions of a particular social or political group." The mean of the nine items served as our measure of activism ( $\alpha = .85$ ).

***Extracurricular engagement.*** To measure participants' tendency to engage in a variety of campus activities, we asked a range of questions. Using the stem, "since you started at [university name]," participants were asked: (1) "have you joined a fraternity or sorority?"; (2) "have you joined a cultural/ethnic group on campus?"; (3) "have you run for student office?" They were asked to mark either "yes" (coded as 1) or "no" (coded as 0) to each of these three questions. We created an extracurricular engagement variable by summing these 3 items.

## **(II) Psychological Constructs**

### **(A) Stress and Anxiety**

***Psychological distress.*** We measured psychological distress using the widely used, 10-item "Psychological Distress Scale" (Kessler et al., 2002), which asks questions about anxiety and depressive symptoms that have been experienced in the last month. Specifically, participants were asked, "During the past 30 days, how much of the time did you feel..." and provided a response scale from 1 (*none of the time*) to 5 (*all of the time*). The 10 items were the following: (1) nervous, (2) worried, (3) hopeless, (4)

worthless, (5) lonely, (6) ashamed, (7) upset, (8) angry, (9) afraid, and (10) frustrated. The mean of the 10 items served as our measure of psychological distress ( $\alpha = .90$ ).

**Social identity threat.** We measured social identity threat using two items (Walton & Cohen, 2011). Using a scale from 1(*strongly disagree*) to 7(*strongly agree*), participants were asked: (1) “I expect that students at [university name] are accepting of people who have had diverse backgrounds and experiences” (reverse coded) and (2) “I have found that other students at [university name] will make unfair assumptions about me based on my background and previous experiences.” The mean of these two items served as our measure of social identity threat ( $\alpha = .62$ ).

### **(B) Psychological Adjustment**

**Psychological well-being.** We assessed psychological well-being using two items drawn from the midlife in the U.S. national survey (Brim et al., 1996). On a scale from 1(*not at all*) to 4(*a lot*), participants responded to the following two items: (1) “Overall, how satisfied are you with your self?” and (2) “At present, how satisfied are you with your life?” The mean of these two items served as our measures of psychological well-being ( $\alpha = .79$ ).

**Social fit.** We assessed participants’ social fit in college using a six item scale (Walton & Cohen, 2007). On a scale from 1(*strongly disagree*) to 7(*strongly agree*), participants rated their agreement with the following items: (1) “I feel like I belong as a student at [university name]”; (2) “I feel like I fit in with the academic community at [university name]”; (3) “If my parents were to visit me or when they have visited me at [university name], I would feel or have felt comfortable introducing them to my friends”; (4) “I feel a part of the [university name] community”; (5) “I expect that the social experience at [university name] will be difficult for me” (reverse coded); and (6) “In the future, I could see myself having a lot of friends at [university name].” Factor analyses confirmed that all six of these items loaded onto the same factor. The mean of these six items therefore served as our measure of social fit ( $\alpha = .82$ ).

### **(C) Academic Engagement**

We used the same perceived preparation ( $\alpha = .81$ ) and academic identification ( $\alpha = .73$ ) measures as in the Time 1 survey.

### **(D) Social Engagement**

**Social support.** To measure social support, we used items from the commonly used social support survey (Sherbourne & Stewart, 1991). On a scale from 1(*none of the time*) to 4 (*all of the time*), participants were asked, “How often is each of the following kinds of support available to you if you need it?” The following seven items were included in the survey: (1) “Someone you can count on to listen to you when you need to talk”; (2) “Someone to give you good advice about a crisis”; (3) “Someone to take you to the doctor if you needed it”; (4) “Someone to confide in or talk to about yourself or your problems”; (5) “Someone to get together with for relaxation”; (6) “Someone whose advice you really want”; and (7) “Someone to turn to for suggestions about how to deal with a personal problem.” The mean of the seven items served as our measure of social support ( $\alpha = .90$ ).

**Maintain relationships.** To measure the time spent maintaining relationships with family and friends from home, we asked them the following two questions: (1) “In a given week, please estimate how many hours you spend talking on the phone with your family” and (2) “In a given week, please estimate how many hours you spend talking on the phone with friends from home.” We summed these two items to create a composite measure of time spent maintaining relationships from home.

### **(E) Intergroup Understanding**

***Appreciation of difference.*** To measure students' appreciation of difference, we drew upon Plaut and colleagues' (Plaut, Garnett, Buffardi, & Sanchez-Burks, 2011) measure of diversity endorsement. Participants were asked to rate their agreement with the following items on a scale from 1(*strongly disagree*) to 7(*strongly agree*): (1) "Students with different backgrounds and experiences can find their own way of being successful at [university name]"; (2) "There are different ways to be a successful [university name] student"; (3) "[University name] makes an effort to include ideas and practices that represent a wide variety of backgrounds"; (4) "I think that my background will help me succeed at [university name]"; (5) "It is important to have multiple perspectives on campus (e.g., cultures, races, ethnicities, genders, socioeconomic backgrounds, and sexualities)." The mean of the five item scale served as our measure of appreciation of difference ( $\alpha = .66$ ).

***Perspective taking.*** We measured perspective taking with the widely used Davis measure (Davis, 1983). On a scale from 1(*does not describe me well*) to 5(*describes me very well*), the measure asks participants to "indicate the extent to which each of the following statements describes you." The following 11 items were included: (1) "I believe that there are two sides to every question and try to look at them both"; (2) "When I'm upset at someone, I usually try to put myself in his shoes for a while"; (3) "I try to look at everybody's side of a disagreement before I make a decision"; (4) "It's rare that some issue is ever black and white – usually the truth is somewhere in between"; (5) "I sometimes find it difficult to see things from the "other guy's" point of view" (reverse coded); (6) "Before criticizing somebody, I try to imagine how I would feel if I were in their place"; (7) "If I'm sure I'm right about something, I don't waste much time listening to other people's arguments" (reverse coded); (8) "It's often harmful to spend lots of time trying to get everyone's point of view. Some decisions have to be made quickly" (reverse coded); (9) "I sometimes try to understand my friends better by imagining how things look from their perspective"; (10) "When I see someone being treated unfairly, I sometimes don't feel very much pity for them" (reverse coded); (11) "I often have feelings like concern for people less fortunate than me." The mean of the 11-item scale served as our measure of perspective taking ( $\alpha = .74$ ).

### ***(F) Motives for Attending College***

To assess students' motives for attending college, we used six items to assess independent motives and six items to assess interdependent motives (Stephens, Fryberg, Markus, Johnson, Covarrubias, 2012). Participants were told, "There are many reasons why people attend college. Please read the following list of possible motivating factors below. Then, indicate the number that best represents the importance of each motive to you." They were provided the following prompt: "I was motivated to attend college because I want to..." They were asked to respond using a scale from 1(*not at all important*) to 7(*extremely important*). The independent items included the following: (1) "become an independent thinker"; (2) "explore new interests"; (3) "expand my knowledge of the world"; (4) "explore my potential in many domains"; (5) "learn more about my interests"; and (6) "expand my understanding of the world." The interdependent items included the following: (1) "give back to my community"; (2) "provide a better life for my own children"; (3) "show that people with my background can do well"; (4) "bring honor to my family"; (5) "be a role model for people in my community"; and (6) "help my family out after I'm done with college." The mean of the independent items served as our measure of independent motives for attending college ( $\alpha = .90$ ) and the mean of the interdependent items served as our measure of interdependent motives for attending college ( $\alpha = .85$ ).

### ***(G) Perceived Ability to Succeed in College***

We used the same academic efficacy ( $\alpha = .93$ ) and personal mastery ( $\alpha = .73$ ) measures as in the Time 1 survey.

### ***(H) Views of Social Class, Race, and Ethnicity***

**Economic justification.** To assess economic justification, we selected nine items from the widely used economic system justification scale (Jost & Thompson, 2000). Participants were asked to rate their agreement with the following items on a scale from 1 (*strongly disagree*) to 9 (*strongly agree*): (1) “If people work hard, they almost always get what they want”; (2) “There are many reasons to think that the economic system is unfair” (reverse coded); (3) “Poor people are not essentially different from rich people” (reverse coded); (4) “Most people who don't get ahead in our society should not blame the system; they have only themselves to blame”; (5) “Social class differences reflect differences in the natural order of things”; (6) “Economic differences in the society reflect an illegitimate distribution of resources” (reverse coded); (7) “Economic positions are legitimate reflections of people's achievements”; (8) “It is unfair to have an economic system which produces extreme wealth and extreme poverty at the same time” (reverse coded); and (9) “There are no inherent differences between rich and poor; it is purely a matter of the circumstances into which you are born.” The mean of the nine items served as our measure of economic justification ( $\alpha = .69$ ).

**Race essentialism.** To assess racial essentialism, we selected 6 items from the race conceptions scale, which is designed to assess the degree to which people hold a biological vs. social theory of race (Williams & Eberhardt, 2008). Participants were asked to rate their agreement with the following items on a scale from 1 (*strongly disagree*) to 7 (*strongly agree*): (1) “No one can change his or her race; you are who you are”; (2) “It's natural to notice the racial group to which people belong”; (3) “I believe physical features determine race”; (4) “How a person is defined racially depends on the social context” (reverse coded); (5) “Young children probably learn about which people fall into which racial groups automatically, without much help from adults”; (6) “The political climate can dictate whether someone is categorized as Black or White” (reverse coded). The reliability of the 6-item measure was poor ( $\alpha = .38$ ). We therefore dropped two items that would serve to increase the reliability from .38 to .61. The two dropped items were the following: “How a person is defined racially depends on the social context” (reverse coded) and “The political climate can dictate whether someone is categorized as Black or White” (reverse coded). The mean of the remaining 4 items served as our measure of race essentialism ( $\alpha = .61$ ).

### ***End-of-Year Survey – Additional Analyses (Time 3)***

**Mediation analyses.** As reported in the main text, we found that differences in seeking college resources explained the generation by condition interaction on end-of-year cumulative GPA. To examine whether the effect could be explained through alternate pathways, we systematically tested whether all other (significant) outcome measures served as mediators of the effect on end-of-year cumulative GPA. Specifically, we tested for: (1) mediation of the main effect of condition on end-of-year GPA, (2) mediated moderation of the generation by condition interaction on end-of-year GPA, and (3) moderated mediation of generation by condition interaction on end-of-year GPA. The tested measures were the following: (1) stress and anxiety (psychological distress, social identity threat), (2) psychological adjustment (psychological well-being, social fit), (3) academic engagement (perceived preparation, academic identification), (4) social engagement (social support, maintain relationships), and (5) intergroup understanding (appreciation of difference, perspective taking). Supporting the significance of the tendency to seek college resources, none of these other measures mediated the end-of-year cumulative GPA effect.

**GPA and course selection.** To rule out the possibility that the difference-education condition improved students' grades by altering students' selection of courses, we conducted a series of follow up analyses. Specifically, we examined whether students across both conditions took classes with comparable GPAs across *subject areas*—that is, courses in which students obtain higher or lower average GPAs. To do so, we first calculated the mean GPA for each of the 102 course subject areas across first-year students, excluding intervention participants' GPAs. Then, for each participant, we calculated the mean subject area GPA for each quarter (fall, winter, and spring of the first year). For example, if a student in fall quarter took 2 Physics courses and 2 Economics courses, and if the average GPA received



in a Physics course was 3.1 and the average GPA received in an Economics course was a 3.3, then the person's mean subject area GPA for fall quarter would be a 3.2.

We then conducted a series of 2(generation status: first vs. continuing)  $\times$  2(intervention condition: difference-education vs. standard) ANCOVAs predicting mean subject area GPA for each quarter. Supporting our theory, we found no differences in subject area GPA that could explain the effects of the difference-education condition on students' end-of-year cumulative GPAs. Specifically, for the fall, winter, and spring quarters, there were no significant main effects of intervention condition [fall:  $F(1,125) = .24, p = .63$ ; winter:  $F(1,125) = 1.04, p = .31$ ; spring:  $F(1,125) = .35, p = .55$ ] or generation by condition interactions [fall:  $F(1,125) = .08, p = .78$ ; winter:  $F(1,125) = .17, p = .68$ ; spring:  $F(1,125) = 3.16, p = .08$ ]. See Table S1 for means and standard errors by generation status and intervention condition.

To lend additional support to the claim that patterns of course selection do not account for the intervention effects observed for end-of-year cumulative GPA, we conducted an additional 2(generation status: first vs. continuing)  $\times$  2(intervention condition: difference-education vs. standard) ANCOVA predicting end-of-year cumulative GPA, and included the mean of the fall, winter, and spring subject area GPAs as an additional covariate. Both the main effect of intervention condition [previously:  $F(1,125) = 7.75, p = .006$ ; including subject area GPA:  $F(1,124) = 9.31, p = .003$ ] and Generation Status  $\times$  Intervention Condition interaction [previously:  $F(1,125) = 4.34, p = .039$ ; including subject area GPA:  $F(1,124) = 5.68, p = .02$ ] became even more significant.

**Additional analyses.** A series of 2(generation status: first vs. continuing)  $\times$  2(intervention condition: difference-education vs. standard) ANCOVA analyses revealed no significant main effects or interactions on the following end-of-year measures: (1) activism, (2) extracurricular engagement, (3) independent motives for attending college, (4) interdependent motives for attending college, (5) academic efficacy, (6) personal mastery, (7) economic justification, and (8) race essentialism (see Table S2).

**Supplementary Table 1**

Estimated Marginal Means and Standard Errors for Subject Area GPA by Intervention Condition, Generation Status, and Academic Quarter

	Difference-Education Condition				Standard Condition			
	First-generation		Continuing-generation		First-generation		Continuing-generation	
<i>Subject Area GPA</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>
Fall	3.36	0.03	3.45	0.03	3.33	0.03	3.44	0.03
Winter	3.32	0.04	3.38	0.03	3.34	0.04	3.43	0.03
Spring	3.37	0.03	3.51	0.03	3.39	0.03	3.45	0.02

**Supplementary Table 2**

Estimated Marginal Means, Standard Errors, and *F* Statistics for Outcome Measures That Did Not Systematically Reveal Main Effects of Intervention Condition or Generation Status x Intervention Condition Interactions

<i>Measure</i>	Difference-Education		Standard		Main Effect		Interaction	
	<i>M</i>	<i>SE</i>	<i>M</i>	<i>SE</i>	<i>F</i>	<i>p</i>	<i>F</i>	<i>p</i>
Activism	2.69	0.08	2.58	0.08	0.92	0.34	0.79	0.38
Extracurricular engagement	.74	.09	.74	.08	.00	.99	3.12	.08
Independent motives	5.82	0.13	5.84	0.13	0.01	0.94	0.18	0.67
Interdependent motives	5.17	0.16	5.08	0.16	0.15	0.70	0.53	0.47
Academic efficacy	5.67	0.13	5.59	0.13	0.18	0.67	0.13	0.72
Personal mastery	5.22	0.13	5.17	0.12	0.07	0.79	0.02	0.89
Economic justification	4.37	0.14	4.29	0.14	0.18	0.67	2.24	0.14
Race essentialism	4.80	0.14	4.47	0.13	3.04	0.08	2.25	0.14

## References

- Brim, O. G., Baltes, P. B., Bumpass, L. L., Cleary, P. D., Featherman, D. L., Hazzard, W. R., ... Shweder, R. A. (1996). "National survey of midlife development in the United States (MIDUS)" (Inter-university Consortium for Political and Social Research, Ann Arbor, MI).
- Corning, A. F., & Myers, D. K. (2003). Individual orientation toward engagement in social action. *Political Psychology, 23*, 703-729.
- Davis, M. H. (1983). Measuring individual differences in empathy: Evidence for a multidimensional approach. *Journal of Personality and Social Psychology, 44*, 113-126.
- Eimers, M. T., & Pike, G.R. (1997). Minority and nonminority adjustment to college: Differences or similarities? *Research in Higher Education, 38*, 77-97.
- Harackiewicz, J. M., Barron, K. E., Tauer, J. M., & Elliot, A.J. (2001). Predicting success in college: A longitudinal study of achievement goals and ability measures as predictors of interest and performance from freshman year through graduation. *Journal of Educational Psychology, 94*, 562-575.
- Jost, J. T., & Thompson, E. P. (2000). Group-based dominance and opposition to equality as independent predictors of self-esteem, ethnocentrism, and social policy attitudes among African American and European Americans. *Journal of Experimental Social Psychology, 36*, 209-232.
- Kessler, R. C., Andrews, G., Colpe, L. J., Hiripi, E., Mroczek, D. K., Normand, S. L. T., ... Zaslavsky, A. M. (2002). Short screening scales to monitor population prevalences and trends in non-specific psychological distress. *Psychological Medicine, 32*, 959-976.
- Lachman, M. E., & Weaver, S. L. (1998). The sense of control as a moderator of social class differences in health and well-being. *Journal of Personality and Social Psychology, 74*, 763-773.
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L., Freeman, K. E., ... Urdan, T. (2000). Manual for the patterns of adaptive learning scales. *Ann Arbor, 1001*, 48109-1259.
- Plaut, V. C., Garnett, F. G., Buffardi, L. E., & Sanchez-Burks, J. (2011). "What about me?" Perceptions

- of exclusion and Whites' reactions to multiculturalism. *Journal of Personality and Social Psychology*, *101*, 337-353.
- Sherbourne, C. D., & Stewart, A. K. (1991). The MOS social support survey. *Social Science & Medicine*, *32*, 705-714.
- Stephens, N. M., Fryberg, S. A., Markus, H. R., Johnson, C., Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality of Social Psychology*, *102*, 1178-1197.
- Titus, M. A. (2006). Understanding college degree completion of students with low socioeconomic status: The influence of the institutional finance context. *Research in Higher Education*, *47*, 371-398.
- Walton, G. M., & Cohen, G. L. (2011). A brief social-belonging intervention improves academic and health outcomes of minority students. *Science*, *331*, 1447-1451.
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, *92*, 82-96.
- Williams, M. J., & Eberhardt, J. L. (2008). Biological conceptions of race and the motivation to cross racial boundaries. *Journal of Personality and Social Psychology*, *94*, 1033-1046.