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A Brief Pro-Diversity Social Marketing Intervention Improves Grades and Well-Being of Students From Marginalized Groups

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Abstract
Despite much research on improving intergroup relations, the evidence for long-term effects in real-world settings is mixed. We used the social marketing approach to create an "Inclusivity Page" that could be added to course syllabi. The page contained three targeted pro-diversity messages based on social norms, personal benefits, and concrete behavioral recommendations. We tested our intervention in a large randomized controlled trial in university classrooms (N_{students} = 1,799). We obtained students' course grades and overall college GPAs several years later. A subset of students also completed an outcome survey three months after the intervention. Students from underrepresented racial groups exposed to the intervention early in college had better course grades and GPAs. We also observed an enhanced sense of belonging and better emotional and physical health among students from all marginalized groups. Our research demonstrates the utility of employing a targeted approach to improve experiences of members of marginalized groups.

Keywords
diversity and inclusion, interventions, social marketing, intergroup relations

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Differential treatment and exclusion based on social group membership negatively impact the lives of many individuals (Campbell & Brauer, 2021; English et al., 2020). Many historically marginalized groups, including, but not limited to, people of color, members of the LGBTQ+ community, immigrants, people with disabilities, and religious minorities are the target of discrimination (Esses, 2021; Hatzenbuehler et al., 2010; R. T. Lee et al., 2019; Murrar et al., 2024). Although numerous methods have been proposed to create more inclusive environments, many do not achieve their intended goals, or, worse, are counterproductive, resulting in defensive reactions from majority group members (Bezrukova et al., 2016; Chang et al., 2019; Dobbin & Kalev, 2016).

In the present research, we evaluate the effectiveness of a social marketing intervention to improve the grades and well-being of students from marginalized groups in a university setting. Social marketing is a relatively young discipline that combines classical marketing theories with relevant contextual information and psychological theory to design behavior change interventions (N. R. Lee et al., 2023). Although social marketing has guided intervention development in other areas, little empirical research has applied this approach to the intergroup relations domain (Campbell & Brauer, 2020). After conducting extensive background research, we created an intervention to promote inclusion among university students, with a specific focus on improving the well-being and grades of students from marginalized groups.

Creating Inclusive Environments

Although social psychologists have proposed numerous methods for improving intergroup relations, many of these methods lack clear evidence of real-world impact (Paluck et al., 2021). Such "clear evidence" requires the use of randomized controlled trials, a demonstration of the longevity of the effect, and the assessment of "consequential" outcome

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measures (e.g., grades, mental or physical health) showing that members of marginalized groups have a better experience as a result of the method (Okonofua et al., 2022). A search of the literature found that only a handful of published articles satisfy these criteria (Campbell & Brauer, 2020). Although numerous theoretical advancements have identified ways that could improve intergroup outcomes, many have been limited to laboratory contexts and have not been evaluated in real-world settings (Brauer & Kennedy, 2023; Paluck & Green, 2009).

One reason for the limited evidence of real-world impact is the lack of a systematic approach to designing and evaluating interventions. For instance, although educational interventions are often created to promote the success of marginalized students, a recent review noted that many fail to consider the perspective of marginalized groups during either the design or evaluation phases (Devine & Ash, 2022). Furthermore, accumulating evidence suggests that the effectiveness of interventions, particularly in educational settings, can be dependent on contextual factors, such as the discipline in which the intervention was implemented (i.e., chemistry vs. biology; Harackiewicz et al., 2023) or the instructor's beliefs (Yeager et al., 2022). For example, helping students from marginalized groups reframe their concerns about belonging as a common and transient part of the transition to college is only successful at universities where students from marginalized groups have a high level of belonging but lower levels of achievement (Walton et al., 2023). These and similar findings have led some to propose that researchers should anticipate heterogeneity in treatment effects across contexts (Bryan et al., 2021; Walton & Yeager, 2020). Likewise, there is a growing recognition that promoting diversity and inclusion requires tailored organization-specific strategies (Onyeador et al., 2021). As such, there is a need for a systematic approach to designing pro-inclusion interventions that is sensitive to variations in students' concerns and the university setting. Social marketing is such an approach.

The Social Marketing Approach

The social marketing approach uses insights from marketing, behavioral economics, and public health to guide the development of interventions aimed at solving societal problems (Campbell & Brauer, 2022). The idea underlying this approach is to change a behavior, or set of related behaviors, within a specified target audience, considering both the benefits (motivators) and the barriers (costs) for the target audience to enact the desired behavior (N. R. Lee et al., 2023). Social marketing has been used to successfully change important outcomes in several domains, including reducing underage drinking (Jones et al., 2017), increasing HIV testing rates (Solorio et al., 2016), and encouraging sustainability (McKenzie-Mohr, 2011). Recent theorizing suggests that the social marketing approach can and should be applied to develop interventions to improve intergroup relations as well as the well-being and academic performance of individuals from marginalized groups (Campbell & Brauer, 2020). Below, we briefly outline the core components of this approach.

The development of a standard social marketing campaign begins by conducting background research to identify a target behavior (or a group of interrelated behaviors) and a target audience. Intervention developers, whether researchers or practitioners, will often rank potential behaviors and population segments using prespecified criteria, allowing the findings from the background research to guide the identification of the behavior that will have the most significant impact on the problem to be addressed (the target behavior) and the segment that is the most movable and reachable (the target audience). Note that although the intervention is designed with a particular target audience in mind, individuals from the entire population will usually be exposed to the intervention.

Researchers then consider both the benefits and the barriers for the target audience to engage in the target behavior. Barriers decrease the likelihood of engaging in the behavior, whereas benefits increase it. Successful interventions require minimizing the psychological barriers while highlighting the psychological benefits. Finally, as with classical marketing theory, a social marketing approach involves making deliberate choices about "the four P's": the location of the intervention (place), the incentives (price), the intervention materials (product), and the distribution channels (promotion; Andreasen, 2005; Campbell & Brauer, 2020).

The social marketing approach consists of using information learned from background research to design the intervention, rather than testing predictions derived from a specific theory. As such, researchers do not decide a priori which specific behavior or segment should be targeted. Doing so has the benefit of ensuring that the intervention's intended recipients are directly involved in its creation. In the case of improving intergroup relations, members of historically marginalized groups share their perspectives on which behaviors need to change and who should be responsible for initiating such changes. These principles align with other community-engaged research practices that emphasize the needs and priorities of the communities that are most affected by the research topic (e.g., participatory action research; Brydon-Miller, 1997; Gomez et al., 2021; Kidd & Kral, 2005; Ochocka et al., 2010).

The Present Research

We used the social marketing approach to develop an intervention to improve the experience of students from marginalized groups at a large, public Midwestern university in the United States. We then evaluated the effectiveness of the intervention in a large randomized controlled trial using delayed outcome measures (i.e., 7–10 weeks later). The specifics of how the intervention was developed are described elsewhere (see Brauer et al., 2021). However, below, we will briefly describe the key elements of the intervention development, such as the identification of the target behavior, the selection of the target audience, and the use of relevant psychological theory.[1]

We first conducted background research to learn how university students from both marginalized and non-marginalized groups perceived campus climate. As part of our background research, we convened separate focus groups with both students of color and White students at the university. These focus groups followed a "bottom-up approach," such that students, specifically those for whom the intervention was designed to benefit (i.e., students from marginalized groups), could identify both the target behavior and the target audience that the intervention should address.

During the focus groups, many students of color reported that overt discrimination was rare, yet they frequently experienced social exclusion or social distancing from their peers, such as being the last to be chosen for group projects (consistent with Campbell & Brauer, 2021). When asked, many students of color thought that White students with neither highly positive nor highly negative attitudes toward members of other social groups would be the ideal population segment to target.

Based on this information, we decided that our intervention would aim to promote a specific set of inclusive behaviors (our target behavior) among students who were neither highly racist nor highly motivated to be inclusive (our target audience). Note that many of these students identify as White. The inclusive behaviors are listed in the bottom half of the "Inclusivity Page" in the Supplemental Appendix. Examples include "have a conversation with a student who has a different background from you" and "choose students from different social groups for class projects."

Our focus groups with members of the target audience helped us understand the barriers and benefits. Many White students reported that they cared about diversity and equity, yet lacked experience interacting with individuals of different racial or ethnic backgrounds as well as knowledge of what exactly it meant to be inclusive. This lack of experience and knowledge caused White students to worry about offending peers from marginalized groups, leading them to avoid intergroup interactions (consistent with research on interracial interactions; Richeson & Shelton, 2007). Several surveys administered on campus supported the findings from the focus groups. For example, a large-scale climate survey ($N = 8,652$) revealed that a majority of White students (82%) reported a desire to make the campus environment inclusive, yet a little under half (49%) acknowledged often spending time with students from different racial or ethnic backgrounds.

In the subsequent stage of intervention development, we used a "top-down approach" in which we leveraged psychological theory to craft intervention materials that addressed the target audience's barriers and benefits. We created relevant messages around three themes: social norms, personal benefits, and concrete behavioral recommendations. These three were selected for their potential to motivate the target audience to engage in the desired behaviors. Notably, we opted to use a "theoretical synergy" strategy by combining several theories, thus increasing the likelihood of the intervention's effectiveness (Paluck et al., 2021). The messages were used to create an "Inclusivity Page" that instructors in the intervention condition added to their course syllabi (more details are provided in the Methods section).

Prior research has found that social norms messaging can be used to improve a university's social climate, leading students from marginalized groups to report being treated more respectfully by their peers and have an increased sense of belonging (Murrar et al., 2020). Classrooms that implement pro-inclusion social norms have also been shown to have a reduced achievement gap in course grades between marginalized and non-marginalized students (Murrar et al., 2020). We used both descriptive and injunctive norm messages, as prior research has found that employing both types of messages in tandem can be effective in field experiments (Rhodes et al., 2020; Schultz et al., 2007). In addition, positive framing of inclusive behavior may motivate students who value diversity but do not always behave inclusively (i.e., the target audience) to engage in the desired behaviors (Brauer et al., 2021). This framing includes highlighting the personal benefits of the behavior to the target audience, which has been shown to affect students' motivation in related domains (e.g., Eccles & Wigfield, 2002; Harackiewicz et al., 2016). Thus, we emphasized the importance of being able to work and get along with people from different backgrounds for students' future personal and professional lives. Finally, we provided concrete examples of inclusive behaviors, as one finding from our focus groups was that students from non-marginalized social groups valued diversity but were unfamiliar with specific inclusive behaviors. We theorized that less ambiguity, combined with a desire to maintain an inclusive self-image, would increase the likelihood of the target audience engaging in inclusive behaviors (O'Brien et al., 2010). Doing so is consistent with recent recommendations that suggest promoting inclusion by providing people with concrete behavioral strategies (Carter et al., 2020).

Note that our inclusivity page encouraged all students, not just White students, to behave inclusively. We opted for messages addressed to all students to avoid reactance from non-marginalized groups, which would have undermined the intervention's purpose and effectiveness (Brannon et al., 2018; Kaiser et al., 2022).

Although students from all social groups were exposed to the intervention, the goal was to encourage non-marginalized students to be inclusive. Thus, this work is part of a growing body of research on "context-focused" interventions that aim to change features of the classroom environment, such as teacher practices (L. M. Brady et al., 2024; Canning et al., 2022; Silverman et al., 2023) or peer behavior (Destin et al., 2018; Murrar et al., 2020) rather than placing the onus on students from marginalized groups by trying to get them to change their attributions and behaviors (see also Destin, 2020; Wu, in press).

Evaluation Plan and Hypotheses

We tested the intervention in a large cluster randomized controlled trial across two semesters of data collection. Random assignment to condition occurred at the classroom level, rather than at the level of the individual student. At the end of each semester, a subset of students completed an outcomes survey assessing several relevant constructs. We then obtained course grades and overall college GPAs for all students 4 years after the intervention had been implemented. Given the delay between the implementation of the intervention and outcome collection, our primary interest was the effect on the grades of students from marginalized backgrounds. If the intervention truly affected the intergroup climate in classrooms, we would expect to see decreases in grade disparities that often exist between marginalized and non-marginalized students. Thus, we formulated our first (pre-registered) hypothesis:

Hypothesis 1 (H1): Students from marginalized backgrounds in classrooms where the intervention is implemented will earn better course grades.

Some academic interventions have long-term effects, especially if they cause students to reconceptualize their college experience and to attribute a different meaning to the events that happen to them (S. T. Brady et al., 2020; Walton & Wilson, 2018). Although we had no prior data to speak to the long-term effects of our intervention, we formulated an exploratory—and admittedly somewhat optimistic—hypothesis:

Hypothesis 2 (H2): Students from marginalized backgrounds in classrooms where the intervention is implemented will have a higher overall GPA at the end of college.

We predicted that our intervention would change students' attitudes toward outgroups ("allophilia") and increase the number of self-reported inclusive behaviors. We expected this change to occur for all students, both those who did and those who did not belong to marginalized groups. Our prediction that the intervention would change the attitudes and behaviors of all students was based on two arguments. First, the individuals exposed to our intervention were students from all social groups, and highlighting the benefits of intergroup contact should have beneficial effects on all students. Second, the definition of diversity we employed in the intervention materials was broad, and our messages were created to appeal to all students. Thus, the intervention should affect the attitudes and behaviors of all students, not just certain groups. Finally, we expected the intervention to have a beneficial effect on students belonging to marginalized groups. More precisely, we expected the psycho-social well-being gap to be smaller in classrooms in which students were exposed to our intervention. We thus formulated our third and fourth a priori (but not pre-registered) hypotheses:

Hypothesis 3 (H3): Students from all backgrounds in classrooms where the intervention is implemented will have higher scores on allophilia and report a greater number of inclusive behaviors.

Hypothesis 4 (H4): The differences between marginalized and non-marginalized students in sense of belonging, emotional and physical health, and intentions to persist in college will be smaller in intervention classrooms than in control classrooms.

Method

We report all manipulations, measures, and exclusions in this study. All data, materials, and analysis code are available on OSF.[2] At the time that the intervention was implemented, the study was not pre-registered as it was conducted before formal pre-registration procedures were established in the lab. However, we later received grade data beyond what we initially expected at the start of this project. We pre-registered the focal hypothesis (H1) and planned analyses before we analyzed the grade data (https://osf.io/dc7sm).

Participants

During both semesters, our sample size was determined by the number of instructors, and their respective courses, who agreed to participate. We aimed to recruit as many courses as possible from across the university. In Semester 1, the instructors of 34 courses at a large, public Midwestern university volunteered to participate. In Semester 2, the instructors of 13 courses participated. One of the 13 courses was a large-lecture course with 20 discussion sections. For this course we randomized at the level of the discussion section, resulting in 32 clusters (12 courses plus 20 discussion sections) for Semester 2.

We obtained grade data on 2,022 students across both semesters. Consistent with the pre-registration, we removed any student who was in more than one participating course or whose race/ethnicity was categorized by the registrar as "international" ($N = 198$). We further removed students whose race/ethnicity was categorized as "unknown" ($N = 18$) or whose official grade was not on the standard 4.0 scale (i.e., took the course pass/fail, received an incomplete, etc.; $N = 7$). Our final sample size for the grade analysis was 1,799 after these exclusions.

Of the 2,022 eligible students, 1,378 completed the outcomes survey (68%). Fifty-three students were excluded because they did not meet the predetermined time or completion criteria, and two were removed for having ages highly unrepresentative of the student population (i.e., 44 and 57), leaving a total of 1,323 students. Students received extra credit in their participating course in exchange for completing the outcomes survey.

Of the 1,799 students whose grade data were included in this study, 1,500 students identified as White (83.4%), 33 as Black or African American (1.8%), 111 as Hispanic/Latinx (6.2%), 99 as Asian (5.5%), 5 as Native American/American Indian (0.3%), and 51 identified as two or more races (2.8%). In terms of gender, 847 identified as women (47.6%), and 952 identified as men (52.9%). The mean age of the sample was 20.32 years ($SD = 2.43$). These statistics are reflective of the student body at the university as a whole.

Materials

Instructors with courses in the intervention condition were given a one-page syllabus insert entitled "Inclusivity at University of Wisconsin-Madison" (see Supplemental Appendix). The page was broken into four short sections, each designed to address one of the relevant barriers or benefits that were identified during our background research. The first section, a "Message from campus leaders," served as an injunctive norms message and included quotes from the University's Dean of Students and Chancellor indicating their support for diversity and inclusion. The next section positively framed inclusive behavior, thus motivating students to engage in the desired behavior. Clearly communicating the benefits of engaging in the targeted behavior was important, as doing so made salient the non-monetary incentives (i.e., "price") of inclusive behaviors. The third section—entitled "What your peers think"—included a descriptive norms message revealing that 87% of the university students agreed with the statement "I embrace diversity and make sure that people from all backgrounds feel part of the UW-Madison community." The numbers in this paragraph were based on actual surveys. The final section provided concrete behavioral recommendations on how to behave more inclusively (e.g., "choose students from different social groups for class projects").

Procedure

Instructors who volunteered provided information about their courses, including class size, educational level, and department. Based on this information, we created matched pairs of similar courses. Within each pair, we randomly assigned one course to the intervention condition and the other to the control condition. Consistent with the social marketing approach, the one-page syllabus insert was our "product" that was delivered by instructors ("promotion") in classrooms ("place"). Instructors with courses in the intervention condition appended the intervention to their course syllabi and were instructed to reference the page briefly on the first day of class. Having instructors present the page was crucial as our background research revealed that instructors were respected by students. Presenting the page on the first day of class also provided an opportunity to "set the tone" for the semester, thus taking advantage of recursive processes (Yeager & Walton, 2011). Instructors were told to limit their presentation of the page to 2 min. Limiting the instructors' involvement increased the focus on the message relative to the messenger and maximized the implementation fidelity across classrooms. Instructors with courses in the control condition either taught their courses as usual (Semester 1) or included a short, generic diversity statement in their syllabi and read it on the first day of class (Semester 2). Some control condition instructors in Semester 1 indicated they already mentioned diversity in their syllabus or course materials, and they were instructed to maintain these elements.[3]

Later in the semester, students received an email asking them to participate in a climate survey. Instructors encouraged their students to participate in this survey and offered them extra credit in the course as an incentive to do so. In Semester 1, the survey was sent to students in the seventh week of the semester and remained open for 3 weeks. In Semester 2, the survey was sent to students in the tenth week of the semester and remained open for 2 weeks. At the end of the survey, participants were debriefed and told the purpose of the survey was to evaluate a short intervention that had been implemented on the first day of class.

Measures

Our primary outcome measure was students' grades. We obtained letter grades for students enrolled in a participating course from the university registrar. All letter grades were converted to their corresponding numeric value on a 4-point scale (i.e., A = 4.0, AB = 3.5, B = 3.0, etc.).

The outcomes survey assessed multiple constructs. We developed novel scales to measure academic persistence and the likelihood of confronting discrimination and adapted the remaining scales from prior classroom intervention research. Unless otherwise noted, all scales had previously been used by Murrar and colleagues (2020).

Of particular interest were the scales that measured students' attitudes toward outgroups ("allophilia") and self-reported inclusive behaviors (H3) as well as the scales that measured sense of belonging, emotional health, physical health, and intentions to persist in college (H4). We included numerous other scales for exploratory purposes because we usually include them in all classroom intervention studies conducted by our lab. Unless otherwise noted, participants used a seven-point Likert-type response scale with endpoints labeled "1, *strongly disagree*" and "7, *strongly agree*."

1. *Allophilia*. This eight-item scale measured general enthusiasm for diversity and attitudes toward different ethnic and racial groups as a whole (Pittinsky

et al., 2011). A sample item is "I am motivated to get to know people from different ethnic and racial groups" ($\alpha = 0.90$).

2. *Inclusive behaviors*. Participants indicated how frequently they had engaged in a series of eight inclusive behaviors over the course of the semester (e.g., "Gotten to know someone from a different social background than yours"), using a labeled six-point response scale from "I haven't done this semester" to "Daily" ($\alpha = 0.83$).
3. *Sense of belonging*. Using a four-item scale participants rated how much they felt they belonged at the University (e.g., "I feel like I fit in at my University"; $\alpha = 0.88$).
4. *Emotional health*. Participants indicated the extent to which they had felt numerous emotions over the preceding two months using a scale from "1, *not at all*" to "7, *extremely*." Six of these emotions indicated depression or emotional distress: sad, worried, depressed, lonely, worthless, and isolated. We averaged across the six ratings and then reverse-coded the total score to compute an indicator of emotional health ($\alpha = .90$).
5. *Physical health*. One item asked participants to rate their global physical health using a scale ranging from "1, *poor*" to "7, *excellent*" (the midpoint was labeled "4, *good*").
6. *Academic persistence*. Participants indicated how confident they were they would complete their degree at the University, how much they had thought about dropping out of the University that semester, and how much they had thought about transferring that semester. The latter two were reverse-scored before all three items were averaged together ($\alpha = .76$).
7. *University commitment*. Participants rated the extent to which they believed that the University's administration, instructors, and overall philosophy valued diversity and inclusion, using one item for each of these targets (e.g., "Top administrators at UW-Madison care deeply about diversity and inclusion"; $\alpha = .84$).
8. *Support for pro-diversity policies*. Participants indicated their support for four concrete (e.g., "The University should support campus organizations that are resources for students from underrepresented groups, like racial/ethnic minority students and LGBTQ students") and abstract (e.g., "Diversity makes this University a better place") pro-diversity policies. ($\alpha = .79$).
9. *Social norms*. Using a four-item scale, participants indicated the extent to which they believed pro-diversity values and behaviors were common among other students (e.g., "A large majority of UW-Madison students do their best to behave inclusively"; $\alpha = .82$).
10. *Intergroup comfort*. Participants rated their degree of comfort interacting with members of different social groups using a four-item scale (e.g., "When having a conversation with someone from a different social group than me, I expect it to go well."). Note that intergroup comfort is simply the opposite of intergroup anxiety (see Stephan & Stephan, 1985, 2000; Trawalter et al., 2009; $\alpha = .71$).
11. *Concern about discrimination*. Responses on this four-item scale represented how pressing of issue participants considered discrimination to be, adapted from Devine et al. (2012; e.g., "I consider discrimination to be a serious social problem"; $\alpha = .83$).
12. *Confronting discrimination*. A four-item scale measured participants' likelihood of confronting discrimination if they saw it occurring (e.g., "I intervene when I see people being treated unfairly because of their social background"; $\alpha = .86$).
13. *Climate evaluation.* Using two items, participants indicated the extent to which they believed the University was already inclusive (e.g., "The UW-Madison community is welcoming and inclusive toward students from all social backgrounds"; $\alpha = .83$).
14. *Attitudes toward minorities*. Participants completed a series of feelings thermometers (American National Election Studies, 2021) toward 21 social groups using a scale from "0, *very cold*" to "100, *very warm*." An exploratory factor analysis suggested ratings of 12 groups represented the same latent construct. We removed non-marginalized groups included in this set of 12 and computed the average of the remaining 10 groups: Black people, Hispanic people, Arab people, Asian people, Muslim people, gay men, lesbian women, trans individuals, people with disabilities, and people with mental illnesses ($\alpha = 0.95$).[4]

In the second semester of testing, we added one additional outcome measure of interest for all students as well as two measures of potential mediators of the intervention's effects on the student survey outcomes:

15. *Diversity of social network*. At the outset of the survey, students were asked to list the five peers in the course with whom they spent the most time. Later, they reported which of these individuals belonged to marginalized social groups. Of the total number of peers provided, we calculated the percentage that belonged to a marginalized social group.
16. *Perceptions of peer respect*. Using two items, participants indicated the extent to which they believed their peers in the course treated them with respect (e.g., "I feel that others value my thoughts and opinions in this course"; $\alpha = .83$).

17. *Perceptions of peer inclusiveness*. Using two items, participants indicated the extent to which they believed their peers in the course behaved in a welcoming, inclusive way (e.g., "In general, other students in this course behave inclusively toward people from different backgrounds than themselves"; (α = .72).

Results

Effect of the Intervention on Course Grades

Our first hypothesis (H1) was that students from marginalized social groups (i.e., African American, American Indian, Latinx/Hispanic, LGBTQ+, Muslim, and students with disabilities) would have better grades if they were in the classrooms in which we implemented our intervention. However, the university registrar does not record demographic data on LGBTQ+ status, religion, or whether the student has a disability. As such, as specified in the pre-registration, we compared academic outcomes for "underrepresented minority" (URM) students (African American, Native American/American Indian, Latinx/Hispanic, and students with two or more races) to "non-underrepresented minority" (non-URM) students. Note that our definition of URM is identical to that of the National Science Foundation (2023). Of the 1,799 students in the sample, 200 were classified as URM and 1,599 as non-URM.

Note that one limitation of the registrar's classification system is that all biracial students are placed in the "two or more races" category. A participant who chooses both "Asian" and "White" is thus considered a URM student. To account for this problem, we also ran additional analyses in which we considered participants identifying as two or more races (N = 51) as non-URM students (i.e., in the same category as White and Asian students). This change did not affect the results (see Supplemental Material for additional analyses).

Unless otherwise stated, all results reported in this section and the sections below were conducted using linear mixed-effects models, including a random intercept for course/section to account for clustering by classroom. Degrees of freedom for analyses conducted using linear mixed-effects models were computed using the Kenward–Roger approximation (Judd et al., 2012; Kenward & Roger, 1997). To test H1, that students from underrepresented minority groups in classrooms where the intervention was administered would have better grades, we first regressed students' course grades on Condition (−0.5 = control, 0.5 = inclusivity page), URM status (−0.5 = non-URM, 0.5 = URM), and their interaction. Neither the main effect of Condition nor the Condition x URM status interaction were significant ($ps > .184$).

Although the predicted Condition x URM status interaction was not significant, this prediction assumes that students are equally affected by the intervention regardless of their year in school or how long they had been at the university when exposed to the inclusivity page. However, many theories related to educational interventions predict that the optimal time to intervene would be during the transition to college, as students' concerns about belonging, identity, and achievement would be most salient (Cook et al., 2012; Harackiewicz & Priniski, 2018). If this were the case, then we would expect our results to be moderated by year in school, such that the intervention would be particularly beneficial for URM students who were exposed to our intervention early in college. We thus created a variable representing each student's year in school at the time of intervention (e.g., 1 = *first-year student*, 2 = *sophomore, etc*.). Year in School was calculated by the registrar's office and is determined based on the number of credits a particular student had completed by the start of the semester in which the study took place. For this analysis, we opted to exclude graduate students or "special students"—visiting students enrolled for only short periods of time—as we did not have information on how long they have been enrolled at the university, bringing the sample size to 1,729 (N_{URM} = 192, $N_{\text{Non-URM}}$ = 1,537)

If the intervention was most beneficial for students earlier in their college careers, then we would expect Year in School to moderate the Condition x URM status interaction. To test this proposition, we regressed course grade on Condition (−0.5 = control, 0.5 = inclusivity page), URM status (−0.5 = non-URM, 0.5 = URM), Year in School (mean-centered), and all possible two- and three-way interactions. We again did not find a main effect of Condition or a Condition x URM status interaction ($ps > .177$), but, as theorized, the results indicate a significant Condition × URM status × Year in School interaction, $b = -0.192$, 95% confidence interval [CI]: [−0.378, −0.006], $F(1, 1693.08) = 4.085$, $p = .043$, $\eta_p^2 = .002$. As can be seen in Figure 1, the significant three-way interaction indicates that students from URM groups who were enrolled in a course assigned to the intervention condition had better grades than those in the control condition, but this effect was stronger for students in their earlier rather than later years in college. These results suggest that the intervention had a particularly beneficial effect on course performance for students earlier in college who identified as members of a URM group.

One limitation of the Year in School variable is that many first-year students arrive on campus with Advanced Placement or International Baccalaureate credits. Thus, although they are new to the university, they may be counted as second-year students based on the number of credits they have earned. We thus sought to conceptually replicate the observed three-way interaction using another operationalization of time spent at the university. Specifically, we created a variable to represent the number of semesters each student had been enrolled at the university at the time of intervention (i.e., 0 = *first semester at the university*, 1 = *second semester at the university, and so forth*). We then regressed course grade on Condition (-0.5 = control, 0.5 = inclusivity page), URM status (−0.5 = non-URM, 0.5 = URM), Number of Semesters Enrolled at the university at the time of

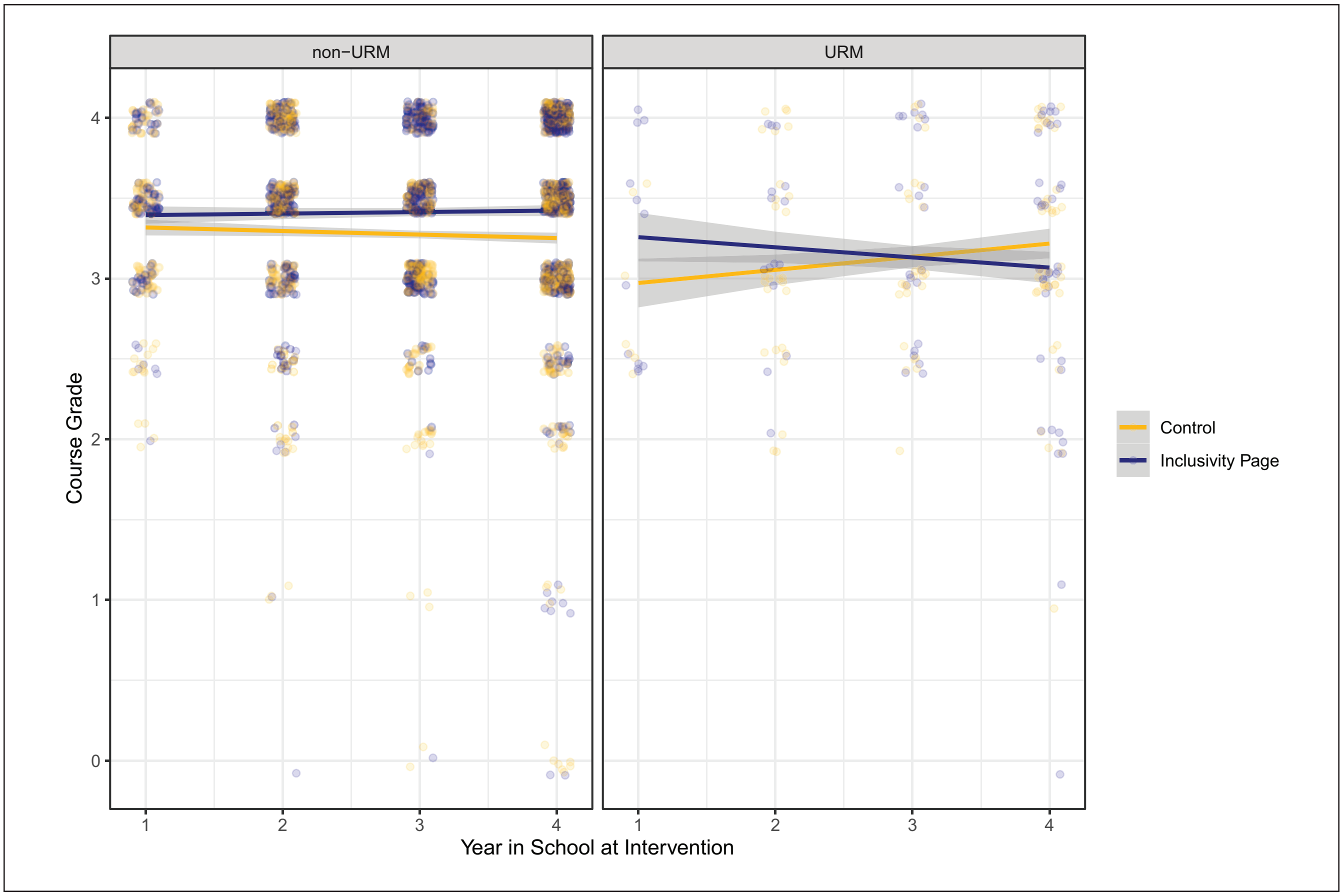

Figure 1. Course Grade as a Function of Condition, URM Status, and Year in School (Assessed on a 4.0 Scale). Error Bands Are ±1 SE of the Point Estimate.

intervention (mean-centered), and all possible two- and three-way interactions. We again did not find a significant main effect of Condition or a Condition × URM status interaction ($ps > .272$), but there was a significant interaction between Condition, URM Status, and Number of Semesters Enrolled, $b = -0.073$, 95% CI [-0.122, -0.025] $F(1, 1691.17) = 8.644$, $p = .003$, $\eta_p^2 = .005$, suggesting that the intervention improved the course grades of students from URM groups if early in college they took a class in which the instructor implemented our intervention. Thus, regardless of whether students identifying as "two or more races" were classified as URM or non-URM, and across two operationalizations of the amount of time each student had spent at the university when the study began (Year in School and Number of Semesters Enrolled), we find the same pattern: Being in a classroom where the instructor included the Inclusivity Page to their syllabus had beneficial effects for students from underrepresented groups who took the course early on in their time at the university.

Effect of the Intervention on Cumulative GPAs

Four years after the intervention was implemented, we obtained additional data from the registrar, including the grades that students received in all the courses they had taken at the university. We used these data to compute a cumulative GPA for each student to assess their overall academic performance at the university. These additional data allowed us to examine H2 on the longevity of the effect of the Inclusivity Page. We regressed students' cumulative GPA on Condition (−0.5 = control, 0.5 = inclusivity page), URM status (−0.5 = non-URM, 0.5 = URM), Year in School (mean-centered), and all possible two- and three-way interactions. As with the analysis for student's course grades, we did not find a significant main effect of Condition or a Condition × URM status interaction ($ps > .340$), but we did find a significant three-way interaction between Condition, URM status, and Year in School, $b = -0.132$, 95% CI [−0.252, −0.012], $F(1, 1700.80) = 4.650$, $p = .031$, $\eta_p^2 = .003$. As shown in Figure 2, the data suggest that, for URM students who were earlier in college, being in a classroom with the inclusivity page had a particularly strong and positive effect on their overall college performance. Perhaps not surprisingly, there was little effect for more senior students, as, by that point, their GPA was more or less already determined.

As done for the course grade analysis, we again sought to conceptually replicate this effect by examining the interaction between Condition, URM status, and Number of

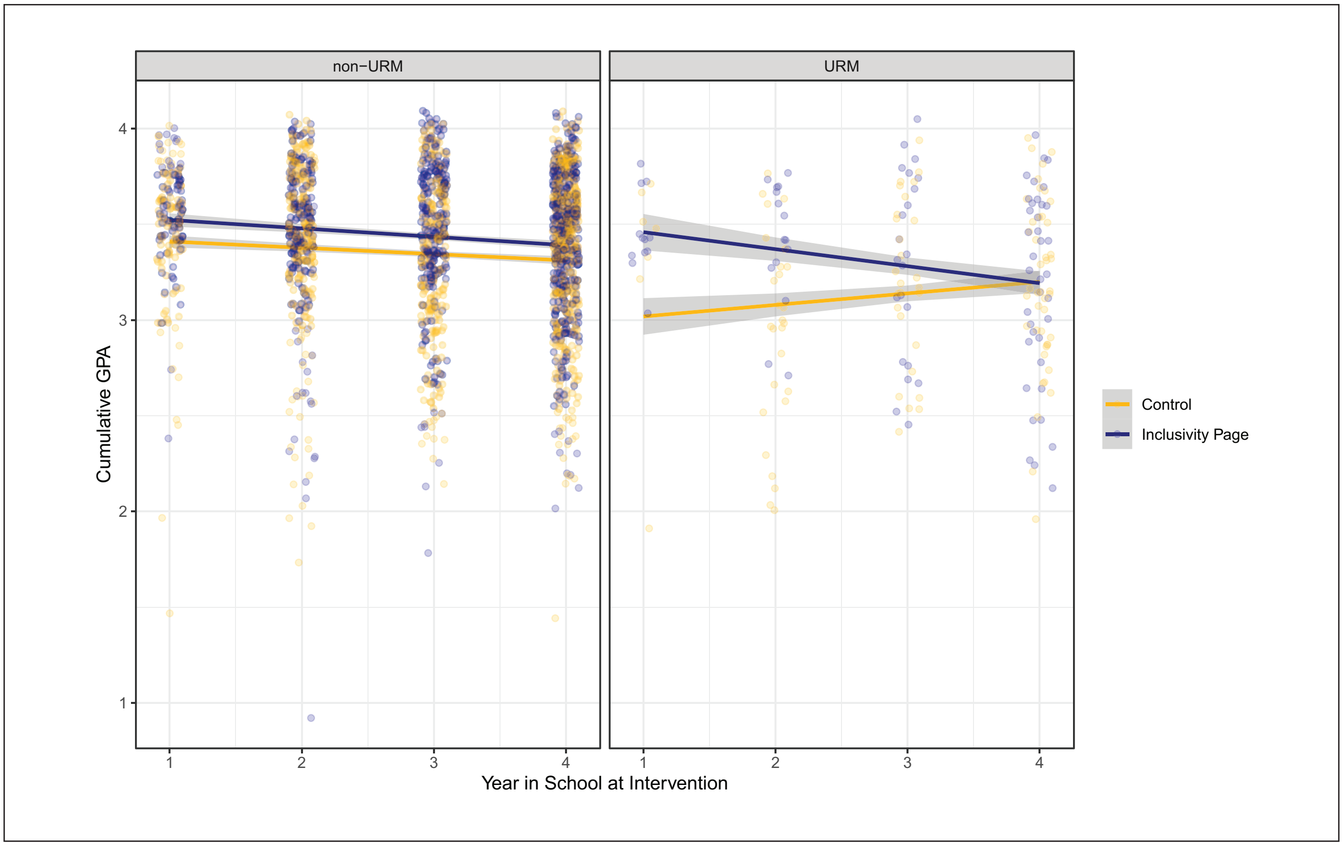

Figure 2. Cumulative GPA as a Function of Condition, URM Status, and Year in School (Assessed on a 4.0 scale). Error Bands Are ±1 SE of the Point Estimate.

Semesters Enrolled at the university. There was not a main effect of Condition or Condition x URM status interaction ($ps > .538$), but there was, again, a significant interaction between, Condition, URM status, and Number of Semesters Enrolled, $b = -0.038$, 95% CI [−0.069, −0.007], $F(1, 1{,}699.60) = 5.600$, $p = .018$, $\eta_p^2 = .003$.

Student Outcomes Survey

Although we evaluated our intervention's effectiveness primarily by examining consequential, unobtrusive outcomes, such as student's academic performance, we were also interested in understanding how the intervention affected students' perceptions of inclusive classroom and university climate. We thus analyzed students' responses to the climate survey administered toward the end of the semester. Likely because of the small sample size for students belonging to URM groups ($N = 88$) who completed the survey, less than half of the URM students for whom we had grade data ($N = 200$), we did not find many significant results when we tested for differences between URM and non-URM students (see Supplemental Material for these analyses).

However, unlike the data obtained from the registrar, the climate survey contained more detailed demographic questions about students' race/ethnicity, religion, LGBTQ+ status, and disability status. Although we operationalized marginalized status based solely on race/ethnicity for analyses using the grade data provided by the registrar, this decision was based on necessity, rather than our original intention when designing the intervention, which was to consider the intervention's effects for all groups that experience discrimination and exclusion in university settings. Our intervention was specifically designed with broad messages related to inclusion rather than just focused on one specific social group (e.g., the Inclusivity Page included recommendations on avoiding terms such as "ghetto," "that's gay," and "retarded"). As such, we conducted a set of exploratory analyses in which we considered students of color (i.e., those identifying as Black/African American, Hispanic/Latinx, Native American/American Indian, Pacific Islander, or Arab/Middle Eastern), LGBTQ+ students, Muslim students, and students with disabilities as "marginalized" ($N = 421$). The remaining students ($N = 875$) were categorized as "non-marginalized."

Using this operationalization of marginalized status, we regressed each of the outcome variables from the climate survey on Condition (−0.5 = control, 0.5 = inclusivity page), Marginalized status (−0.5 = non-Marginalized, 0.5 = Marginalized), and their interaction. As with the analyses for students' grades, we ran linear mixed-effects models, including a random intercept for course/section to account for

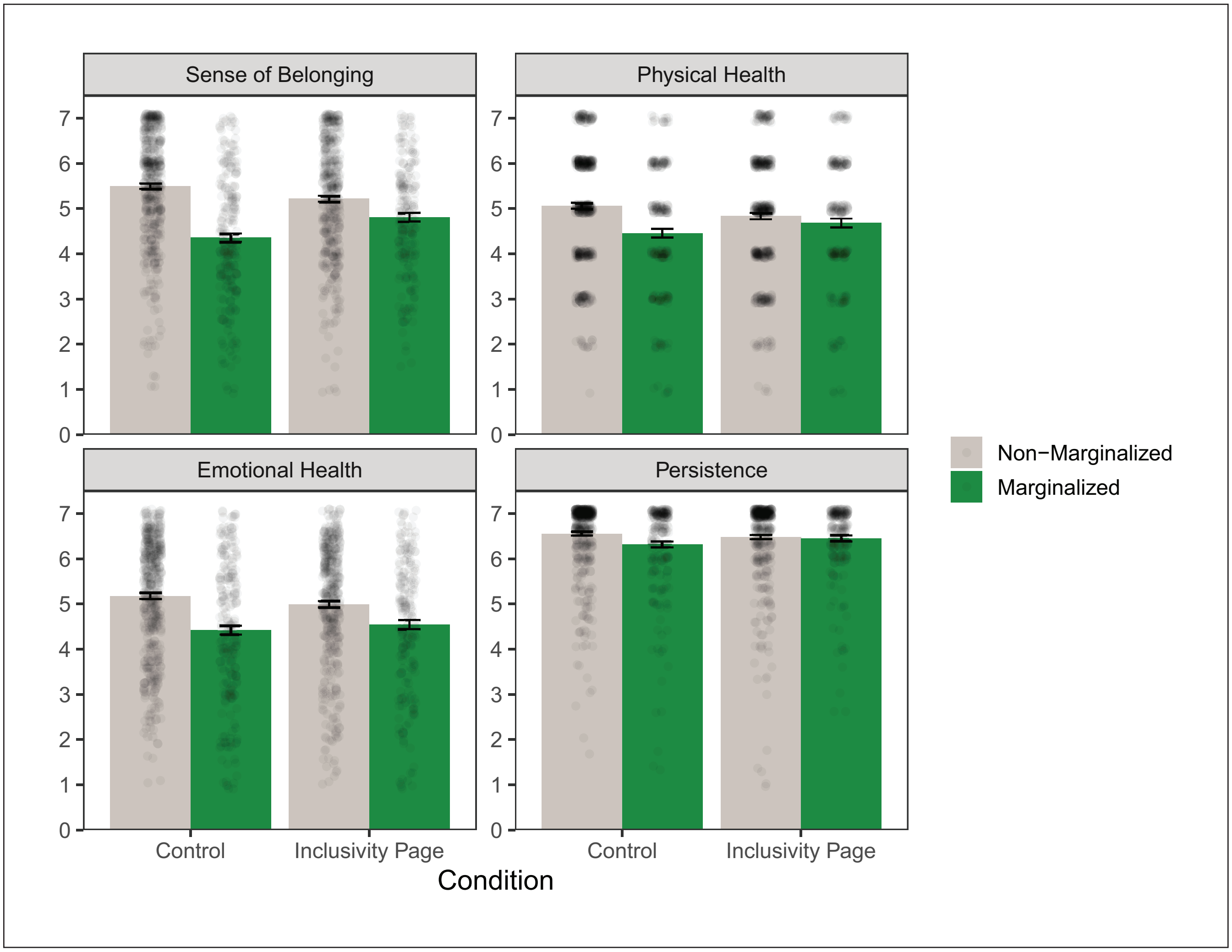

Figure 3. Students' Scores on the Well-Being Related Outcome Variables as a Function of Condition and Marginalized Status. Error Bars Are ±1 SE of the Point Estimate.

non-independence due to classroom. The results from all outcome variables are reported in the Supplemental Material.

We first assessed H3, according to which all students in a classroom assigned to the intervention condition would have higher scores of allophilia and report more inclusive behavior. When accounting for non-independence due to clustering by classroom, the results revealed a marginally significant main effect of Condition on allophilia, such that all students in a classroom with the inclusivity page had marginally higher levels of allophilia (M = 5.54) than students in control classrooms (M = 5.41), b = 0.140, 95% CI [0.002, 0.276], $F(1, 51.08) = 3.930$, $p = .053$, $\eta_p^2 = .07$. The Condition × Marginalized status interaction for allophilia was not significant ($p = .186$).[5] We then assessed inclusive behaviors by regressing the self-reported number of inclusive behaviors on Condition. Although students in the intervention condition reported more inclusive behaviors (M = 3.11) than in the control condition (M = 3.02), this difference was not significant, b = 0.091, 95% CI [−0.004, 0.188], $F(1, 34.328) = 3.053$, $p = .090$. For the number of inclusive behaviors, we observed neither a main effect of Condition nor a Condition x Marginalized status interaction ($ps > .079$). Thus, H3 is partially supported as students in intervention classrooms had higher levels of allophilia but did not report significantly more inclusive behaviors.

We then assessed H4, stating that the psycho-social well-being gap between students from marginalized backgrounds and non-marginalized backgrounds would be smaller in classrooms in which the intervention was implemented. The results confirmed H4, in that we observed a significant or near-significant Condition x Marginalized status interaction for sense of belonging, b = 0.725, 95% CI [0.413, 1.040], $F(1, 1251.17) = 20.402$, $p < .001$, $\eta_p^2 = .02$, self-reported physical health, b = 0.489, 95% CI [0.160, 0.816], $F(1, 1244.90) = 8.504$, $p = .004$, $\eta_p^2 = .007$, emotional health, b = 0.334, 95% CI [−0.006. 0.670], $F(1, 1232.15) = 3.739$, $p = .053$, $\eta_p^2 = .003$, and for intentions to persist, $b = 0.209$, 95% CI [−0.011, 0.428], $F(1, 1252.00) = 3.448$, $p = .064$, $\eta_p^2 = .003$ (see Figure 3; and see Supplemental Material for simple effects analyses). The findings suggest that our intervention reduced differences in psycho-social well-being between students from marginalized groups and students from non-marginalized groups.

Discussion

The results demonstrate the effectiveness of using a targeted and tailored approach–social marketing—to craft an intervention to promote inclusive attitudes and behaviors and facilitate the academic success of members of marginalized groups. We conducted background research to identify a target audience, a target behavior, and the barriers and benefits. We integrated these findings with relevant psychological theories to create our intervention. The intervention (product) was briefly presented by instructors (promotion) in classrooms (place) and it emphasized the benefits of engaging in inclusive behavior (price). We utilized several psychological theories that we expected, when used together, to maximize the intervention's effectiveness: social norms messaging to indicate leadership buy-in and the widespread peer support of diversity, positive framing to increase the target audience's motivation, and concrete behavioral recommendations to clarify what is, and is not, inclusive behavior.

Our research provides evidence for the effectiveness of our social-psychological intervention aimed at improving the academic performance and well-being of students from marginalized groups, as well as the attitudes and behaviors of all students. The results of our large-scale field experiment revealed that in the classrooms in which instructors added our "Inclusivity Page" to their syllabus, there was a significantly reduced gap between marginalized and non-marginalized students in their sense of belonging, emotional and physical health, and intentions to persist in college. In these classrooms, all students—not just students from marginalized groups—reported more positive attitudes toward members of other ethnic and racial groups. As part of H3, we had also predicted that our intervention would increase self-reported inclusive behaviors, but the data did not support this prediction.

Our main hypothesis (H1) was that our intervention would lead to better grades for students from marginalized groups. This (pre-registered) hypothesis was not confirmed. Instead, our (exploratory) analyses revealed a series of significant three-way interactions suggesting that students from marginalized groups who were freshmen or sophomores benefited from our intervention, whereas more advanced students from marginalized groups did not. Importantly, we observed this effect not only on grades in the course in which we implemented our intervention but also on overall GPA. In other words, students from marginalized groups who in their early years of college took a class in which the instructor added the "Inclusivity Page" to the syllabus and talked about it for 2 min had a higher overall GPA when they graduated several years later, compared with students from marginalized groups who took a class assigned to the control condition. The increase in overall GPA among students from marginalized groups was substantial (see Figure 2): The boost was 0.358-grade points for first-year students and 0.207 grade points for sophomores on a four-point scale (where A = 4, B = 3, and so forth). These findings are quite notable, given that our intervention was relatively minor, took less than 2 min, and, unlike many similar interventions, did not use writing exercises to internalize the core message (Walton & Crum, 2020). Beyond the applied implications of our findings, there is theoretical value in demonstrating that a minor manipulation of an independent variable can influence a hard to change dependent variable, such as persistent achievement gaps in education (Prentice & Miller, 1992).

It is interesting to observe that, on average, marginalized students reported increased well-being, but only students from underrepresented racial and ethnic groups in their early years in college had better grades as a result of our intervention. Given that we had not predicted this pattern of results we can at best provide a post hoc explanation based on findings in the existing literature. It could be that by the third year in college students' study habits, commitment to academic success, evaluation of their abilities, career goals, and ways of approaching testing situations (e.g., stereotype threat, self-handicapping; Schwinger et al., 2014; Steele & Aronson, 1995) are set and can no longer be influenced by changes in sense of belonging and emotional health. Support for this interpretation comes from numerous studies showing that educational interventions are often more effective for students during transition periods when beliefs and concerns about belonging and achievement are more amenable to change (Cook et al., 2012; Walton & Wilson, 2018). For example, S. T. Brady and colleagues (2018) found that an anxiety reappraisal message improved first-year college students' exam performance, but these effects did not extend to more senior students, presumably because first-year students have less experience taking exams and are thus more receptive to the message. The findings from our study support the importance of intervention timing, empirically demonstrating that the effect of the intervention on marginalized students' grades varies as a function of their year in school at the time of implementation.

Limitations and Future Work

Our research has some notable limitations. The survey results need to be interpreted with caution. Given that only 68% of the students whose grade data we obtained from the registrar completed the outcome survey, the survey respondents may not be representative of all students enrolled in one of the courses that participated in our study.

Although our intervention undoubtedly has positive effects on students from marginalized groups, we do not know for sure what produces the effect on students' academic performance or psycho-social outcomes. None of the measures we included as potential mediators of the effect of the intervention on the survey outcomes were significant. It is not the case, for example, that students from non-marginalized groups in the intervention condition self-reported a significantly larger number of inclusive behaviors or a greater likelihood of confronting discrimination if they were to witness it. It is also not the case that students from marginalized groups in the intervention condition judged their peers to be more inclusive or evaluated the social climate in the classroom more positively. The only variables affected by the intervention are those related to well-being: Students from marginalized groups reported an enhanced sense of belonging, better emotional and physical health, and greater intentions to persist in college. Additional research is required to identify the underlying mechanism for the observed effect.

Our intervention consisted of three components, social norms messaging, highlighting the benefits of inclusive behavior, and concrete behavioral recommendations. Future research could examine how the components of the intervention differentially affect the observed outcomes. Although prior publications, theory, and our background research suggest that each of the components likely contributed to the effectiveness of the intervention, it could be that only a subset or even only a single component did.

Applications

We conducted our study in a particular setting: classrooms in a large Midwestern university with a particular campus climate. We do not know if the effects of our intervention generalize to other settings, e.g., other universities or organizational settings. Given recent studies highlighting the importance of identifying contextual factors that moderate a given effect (Bryan et al., 2021; Walton et al., 2023; Yeager et al., 2019), additional research is necessary to examine the extent to which the effects of messages used in the intervention depend on contextual factors. Important factors to consider include perceptions of the administration, relevance of the message, perceptions of the highlighted benefits, existing social norms, and demographics of the student body. Our own results indicate that year in school at time of implementation moderates the effectiveness of the intervention on course grades for students from underrepresented racial groups. With more research, the identification of factors that affect intervention outcomes will contribute to a general understanding of what features of a given context are relevant for selecting a certain kind of targeted component over another.

For reasons outlined in the previous paragraph, we do not think it makes sense to use our Inclusivity Page in other settings without first conducting background research. In fact, we recommend adapting, not directly applying, the intervention. The central contribution of this article, in our view, is the demonstrated utility of the specific approach we employed to develop a pro-inclusion intervention based on relevant social marketing principles. We suggest that researchers and practitioners working in other settings can employ similar methods for obtaining background information, then use this information to craft interventions in the manner we described: working with communities most affected by a particular social problem to identify a target behavior and target audience, identify relevant barriers and benefits, decide on a form and implementation plan for the intervention based on the “4 Ps,” and assess the effectiveness intervention using empirical methods and compelling outcomes. We believe this approach can easily be utilized by many individuals seeking to foster inclusion in various settings.

A New Approach to Creating Inclusive Environments?

The present research demonstrates the effectiveness of the social marketing approach to intervention development (i.e., extensive background research to identify what affects the sense of belonging of students from marginalized groups and the barriers and benefits of students from non-marginalized groups) and intervention assessment (i.e., delayed outcomes, use of randomized controlled trials). One notable advantage of the social marketing approach is that it directly seeks the input of individuals from marginalized groups. When well-meaning researchers try to design interventions for social problems without first attending to the concerns of the people who are most affected by those problems, they can unintentionally cause harm (see Adams et al., 2012; Miller et al., 2019). In contrast, the social marketing approach begins with background research, thus ensuring that, if done correctly, the perspectives of members of marginalized groups are the foundation of the intervention development process. Interventions can then be designed that bring about behavior change deemed most important to individuals from marginalized groups. As such, the approach is less about testing specific predictions from one theory, and more about using theory to achieve desired outcomes. Such an approach has great potential to make progress at the intersection of basic and applied work, ensuring that psychological theory is directly relevant to real-world outcomes.

The intervention tested here improved the well-being and academic success of marginalized students while also providing additional evidence for the roles that perceptions of social norms, perceptions of personal benefits, and concrete behavioral guides play in shaping intergroup behaviors. We hope this approach serves as a model for future researchers who are interested in advancing psychological theory while also having a real-world impact on some of our society’s most pressing challenges.

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Supplemental Material

Supplemental material is available online with this article.

Notes

1. Brauer et al. (2021) describe the development of this intervention in detail but do not report any data demonstrating its effectiveness. The paper is recommended for those interested in learning how to develop their own intervention using the social marketing approach.
2. Link to OSF: https://osf.io/af5wj/.
3. A small number of the findings reported below were moderated by the semester of implementation, but the (few) interactions were inconsistent and sometimes in opposite directions. They thus appear to be type I errors.
4. Results do not differ if the other two groups, democrats and atheists, are also included in this average, but neither of these groups is considered "marginalized" for the purposes of this study.
5. We should note that the intraclass correlation for this measure was very low at .015. When we regress allophilia on Condition (−0.5 = control, 0.5 = inclusivity page), Marginalized status (−0.5 = non-Marginalized, 0.5 = Marginalized), and their interaction, without accounting for non-independence, there is a statistically significant main effect of Condition, $b = 0.148$, 95% CI [0.033, 0.265], $F(1, 1267) = 6.315$, $p = .012$, $\eta_p^2 = .005$.

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