

Do Diversity Awards Discourage Applicants From Marginalized Groups From Pursuing More Lucrative Opportunities?



Adriana L. Germano , Sianna A. Ziegler, Laura Banham, and Sapna Cheryan

Department of Psychology, University of Washington

Psychological Science
1–16

© The Author(s) 2021

Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/0956797621993109

www.psychologicalscience.org/PS



Abstract

Four studies reveal that offering diversity awards (i.e., awards for applicants from marginalized groups) has unintentionally negative implications for equity. Across the four studies, applicants from marginalized groups were more likely to select the more lucrative award when two unrestricted awards were offered (Study 1: adults from racial groups underrepresented in U.S. colleges who were recruited from Amazon Mechanical Turk, $N = 168$; Studies 2–4: college women, N range = 152–628). However, the presence of a less lucrative diversity award caused applicants to apply for and prioritize diversity awards over more lucrative unrestricted awards. Fit, or how much applicants felt the award was for someone like them, mediated their increased likelihood of applying for diversity awards over unrestricted awards. These findings suggest that diversity awards may inadvertently siphon applicants from marginalized groups out of application pools for unrestricted awards. Greater examination of unrestricted awards is needed to increase their attractiveness and fit, especially in instances when diversity awards are also offered.

Keywords

diversity, marginalized groups, academic awards, fit, inequity, open data, open materials, preregistered

Received 11/7/19; Revision accepted 11/25/20

With rising tuition costs (Snyder et al., 2019), scholarships that can offset the cost of college have become increasingly important to students and their families. The amount of all educational scholarships offered in the United States increased by 119% (accounting for inflation) between 2000 and 2010 and by an additional 24% over the next decade, totaling \$140.9 billion in 2020 alone (Ma et al., 2020).

Although awards are designed to increase opportunity, an examination of who wins awards reveals that White applicants are more likely to win than applicants of color (Ginther et al., 2011, 2016), and men are more likely to win than women (Hechtman et al., 2018; Lincoln et al., 2012). To offset systemic funding biases (Hoppe et al., 2019) and increase winning opportunities for groups less likely to receive awards, organizations have historically offered *diversity awards* (i.e., awards for applicants from marginalized groups; e.g., the National Institutes of Health's National Research Service Award to Promote Diversity). However, despite their helpful intent, these awards may bring negative

consequences. Diversity awards may lead applicants from marginalized groups to be less likely to apply for *unrestricted awards*, leaving those applicant pools considerably Whiter and more male. Diversity awards may be inadvertently siphoning applicants from marginalized groups out of the applicant pool for unrestricted awards.

The Benefits and Costs of Diversity Awards

Diversity awards provide many beneficial opportunities to students from marginalized groups, including networking, recognition as a top scholar, and feelings of belonging within academic contexts in which they may be more likely to face discrimination and contend

Corresponding Author:

Adriana L. Germano, University of Washington, Department of Psychology

E-mail: agermano@uw.edu

with feelings of not fitting in (e.g., Stephens et al., 2014). Yet at the same time, diversity and unrestricted awards are not viewed equally. When evaluating which award carried a higher status, undergraduates were more likely to select unrestricted over diversity awards (Germano & Cheryan, 2021). Students may not have the time and resources to apply for both diversity and unrestricted awards or may be explicitly prohibited from applying for both awards (e.g., the Swiss National Science Foundation prohibits women from applying for both the PRIMA women's award and the Eccellenza unrestricted award). In addition to their many benefits, diversity awards may also have costs.

Why Choose Diversity Awards Over Unrestricted Awards?

Offering diversity awards may lead applicants from marginalized groups to choose diversity over unrestricted awards because of perceptions of fit. Individuals prefer contexts that provide high fit between how they see themselves and who is prototypical in that particular context (Cheryan & Plaut, 2010; Niedenthal et al., 1985). Because people from marginalized groups are frequently reminded of the ways in which they do not fit and are not typical (Eagly & Carli, 2007; Heilman, 1983), particularly in academic contexts (Cheryan et al., 2009; Good et al., 2012; Walton & Cohen, 2007), diversity awards may provide a unique space for applicants to feel increased fit.

Fit is a strong behavioral motivator (e.g., Oyserman et al., 2006). Women's estimations of fit between themselves and who they perceive as the prototypically "successful person" in a particular context can influence the educational and vocational opportunities they select (Barbulescu & Bidwell, 2013; Bian et al., 2018; Cheryan et al., 2009). For example, many women are more interested in workplaces that value feminine versus masculine attributes, ultimately leading them to select more feminine over masculine jobs (Diekmann et al., 2010; Gaucher et al., 2011). In the pursuit of fit, applicants from marginalized groups may be similarly motivated to apply for educational opportunities (i.e., diversity awards) matching their self-views.

Aside from fit, there may be alternative explanations drawing applicants toward diversity awards. For instance, because fewer people are eligible for diversity awards, applicants may perceive an increased likelihood of winning. Applicants may believe that committees evaluating diversity awards will be less discriminatory (Kaiser et al., 2013) or value their identities more (Plaut et al., 2009; Purdie-Vaughns et al., 2008). Applicants may also perceive that diversity awards are easier to apply for. We examined these and other alternative explanations.

Statement of Relevance

Organizations frequently offer diversity awards, such as scholarships for students from racial groups that are typically underrepresented in U.S. colleges. These awards are intended to help offset systemic funding biases and increase winning opportunities for applicants from marginalized groups. However, offering diversity awards may bring unintended negative consequences. We provide experimental evidence that offering diversity awards leads application pools for lucrative unrestricted awards to become less diverse. This research illuminates an important dilemma: the siphoning of competitive applicants from marginalized groups away from more lucrative unrestricted award pools. We suggest that policies addressing this issue should not focus on changing the behavior of people from marginalized groups or on eliminating diversity awards altogether. Instead, we propose that solutions should focus on making changes to awards themselves (e.g., changing the program announcements and aims of unrestricted awards to more explicitly value diversity) to increase equity.

Present Research

Across four studies, we tested whether the presence of a less lucrative (i.e., smaller) diversity award deters applicants from marginalized groups from applying for a more lucrative (i.e., larger) unrestricted award. Study 1 tested diversity awards for members of racial groups that are typically underrepresented in U.S. colleges, whereas Studies 2 to 4 tested diversity awards for women. In the Supplemental Material available online, we report a mini meta-analysis conducted to test our hypothesis regarding how the presence of a diversity award influences applicants (eight studies in total). Studies conducted between 2014 and 2015 with smaller sample sizes are described in the Supplemental Material. Procedures for all studies were reviewed and approved by the institutional review board.

Study 1

In Study 1, we predicted that the presence of a diversity award would deter applicants from applying for a larger unrestricted award.

Method

Participants. Only participants who indicated being members of racial groups typically underrepresented in

Table 1. Descriptions of Unrestricted and Diversity Awards in Studies 1 to 3 (Smaller \$2,500 Award) and Study 4 (Smaller \$20 Award)

Study and variable	Unrestricted award (control condition)	Diversity award (experimental condition)
Study 1		
Who	This scholarship is available to anyone.	This scholarship is available to members of an underrepresented ethnic or racial minority.
What	This award provides each recipient with a scholarship of \$2,500.	This award provides each recipient with a scholarship of \$2,500.
Study 2		
Who	This scholarship is available to freshmen, sophomores, juniors, and seniors.	This scholarship is available to women who are freshmen, sophomores, juniors, and seniors.
What	Four men and four women will be selected to receive this award, which provides each recipient with a scholarship of \$2,500.	Four women will be selected to receive this award, which provides each recipient with a scholarship of \$2,500.
How	Last year about 400 students applied.	Last year about 400 students applied.
Study 3		
Who	This scholarship is available to freshmen, sophomores, juniors, and seniors.	This scholarship is available to women who are freshmen, sophomores, juniors, and seniors.
What	Four students will be selected to receive this award, which provides each recipient with a scholarship of \$2,500.	Four students will be selected to receive this award, which provides each recipient with a scholarship of \$2,500.
How	Last year about 400 students applied.	Last year about 400 students applied.
Study 4		
Who	This scholarship is available to students who participate in the Psychology Subject Pool.	This scholarship is available to women who participate in the Psychology Subject Pool.
What	This award provides the recipient with a scholarship of \$20.	This award provides the recipient with a scholarship of \$20.

Note: Participants saw either unrestricted or diversity descriptions for the smaller \$2,500 award (Studies 1–3) and for the smaller \$20 award (Study 4). All participants also saw a larger unrestricted award (\$5,000 in Studies 1–3 and \$30 in Study 4) that was open to everyone (not included in the table). In the “How” section of the awards in Studies 2 and 3, all participants also saw, “Recipients are selected on the basis of scholastic achievement, leadership activities, community service and financial need.”

U.S. colleges (e.g., Black, Latinx, Native American) were permitted to complete the survey. Our initial sample consisted of 196 Amazon Mechanical Turk workers living in the United States who completed the online study for monetary compensation. After we removed 26 participants who failed the eligibility check and two participants who indicated not being a member of a racial group typically underrepresented in U.S. colleges, 168 participants remained (94 women, 71 men, three another gender; 89 Black, 58 Latinx, nine Native American, seven multiracial, two another unlisted racial group, one Aboriginal American, one Middle Easterner, one Pacific Islander). The mean age was 29.03 years ($SD = 9.87$).

Materials and procedure. Participants first completed demographic items to determine their eligibility as members of racial groups typically underrepresented in U.S. colleges. If eligible, participants next read descriptions of two counterbalanced awards—one valued at \$5,000 and another valued at \$2,500. The larger award (Scholarship F) was always framed as unrestricted. Each participant was randomly assigned to learn about one of two smaller

awards (Scholarship J). One award was a diversity award that was open just to applicants from racial groups typically underrepresented in U.S. colleges (experimental condition). The other was an unrestricted award that was open to everyone (control condition). Across conditions, award descriptions were otherwise identical in terms of the judging criteria and the requirements for applying (for award descriptions, see Table 1). Thus, participants were choosing between a larger unrestricted award and a smaller diversity or an unrestricted award.

Eligibility check. Participants were asked after each award, “Are you eligible for Scholarship F/J?” and given the option to select either “yes” or “no.” Only participants who indicated “yes” for both awards were considered to have passed the eligibility check. In line with the preregistrations for Studies 2 and 3, analyses included only participants who successfully passed this eligibility check.

Manipulation and attention checks. To determine whether participants were attending to the details of each condition, we tested participants on who the award was

for (i.e., everyone, only members of racial groups typically underrepresented in U.S. colleges) and each award's value (i.e., \$5,000, \$2,500) after they saw each award's description. If a participant answered one of these questions incorrectly, the award description was presented again, and participants were given a second chance to answer the question correctly.

Award choice. Participants were asked, "If you could only apply for one of these scholarships, which would you choose to apply for?" They could select either the smaller or the larger award. Participants' likelihood of applying for each award was measured via the item, "How likely would you be to apply for Scholarship F/J?" which they answered on a scale ranging from 1 (*very unlikely*) to 7 (*very likely*).

Why choose diversity awards over unrestricted awards? We administered five items to initially explore why participants might select diversity awards over similarly valued unrestricted awards. These items included our proposed mediator, *fit*, "Scholarship J is for people like me," which participants answered on a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*), and four alternative items measuring (a) similarity ("How similar do you think you are to other applicants for Scholarship J?" 1 = *not at all similar*, 7 = *very similar*), (b) competitiveness ("How competitive do you think Scholarship J is?" 1 = *not at all competitive*, 7 = *extremely competitive*), (c) prestige ("How prestigious do you think Scholarship J is?" 1 = *not at all prestigious*, 7 = *extremely prestigious*), and (d) likelihood of winning ("If you were to apply for Scholarship J, how likely do you think it is that you would get it?" 1 = *very unlikely*, 7 = *very likely*).

To understand which award participants felt they had the best chance of winning, we asked participants the forced-choice item, "Which scholarship do you think you would have the best chance of getting?" They had the option to select either the smaller or the larger award.

Other items. Participants also answered other items beyond the scope of the hypotheses: These other items assessed how likely they would be to apply for both awards and measured the strength of their racial identification. Strength of racial identity was measured using a modified version of the four-item importance-to-identity subscale of the Collective Self-Esteem Scale (Luhtanen & Crocker, 1992).¹

Results

Eligibility check. Twenty-six participants were excluded from Study 1's analyses for not passing eligibility checks. Including these participants revealed similar results on

award choice, $\chi^2(1, N = 194) = 17.52, p < .001, \phi = .30$. However, including them changed the results of our 2 (award amount: larger, smaller; within subjects) \times 2 (award type: diversity award, unrestricted award; between subjects) analysis of variance (ANOVA) on likelihood of applying for the smaller award; we found a main effect of award amount, $F(1, 192) = 7.55, p = .01$, and no interaction between award amount and award type, $F(1, 192) = 0.001, p = .98$.

Manipulation and attention checks. Five of the 168 participants did not correctly recall either the award's value or who the award was for on their second attempt. When we removed these participants, the overall pattern of findings on choice did not change, $\chi^2(1, N = 163) = 19.03, p < .001, \phi = .34$, but the interaction on participants' likelihood of applying for the smaller award was no longer statistically significant, $F(1, 161) = 3.56, p = .06$.

Award choice. In line with our hypothesis, when both awards were unrestricted, the vast majority of participants selected the larger award over the smaller award (87.0%). However, when the smaller award was a diversity award, significantly fewer participants selected the larger unrestricted award (55.3%), $\chi^2(1, N = 168) = 21.02, p < .001, \phi = .35$ (see Fig. 1).

In an examination of participants' likelihood of applying for either award, we conducted a 2 (award amount: larger, smaller; within subjects) \times 2 (award type: diversity award, unrestricted award; between subjects) ANOVA. Results revealed no main effects of award amount, $F(1, 166) = 2.12, p = .15$, or award type, $F(1, 166) = 0.88, p = .35$, but a significant interaction between award amount and award type, $F(1, 166) = 4.34, p = .04$ (see Fig. 2). When both awards were framed as unrestricted, participants reported being more likely to apply for the larger award ($M = 5.99, SD = 1.46, 95\% \text{ confidence interval } [CI] = [5.69, 6.29]$) relative to the smaller award ($M = 5.54, SD = 1.56, 95\% CI = [5.22, 5.87]$), $F(1, 166) = 6.92, p = .01, d_{av} = 0.29$.² However, when the smaller award was framed as a diversity award, participants reported being no more likely to apply for the larger award ($M = 5.91, SD = 1.58, 95\% CI = [5.55, 6.27]$) than for the smaller award ($M = 5.99, SD = 1.31, 95\% CI = [5.69, 6.29]$), $F(1, 166) = 0.18, p = .67$. In a 2 (award amount: larger, smaller; within subjects) \times 2 (award type: diversity award, general award; between subjects) \times 2 (award order: larger award presented first, smaller award presented first; between subjects) ANOVA, we found that this interaction was moderated by the order in which participants saw each award, $F(1, 164) = 15.90, p < .001$.³

Why choose diversity awards over unrestricted awards? An exploratory analysis. We conducted a

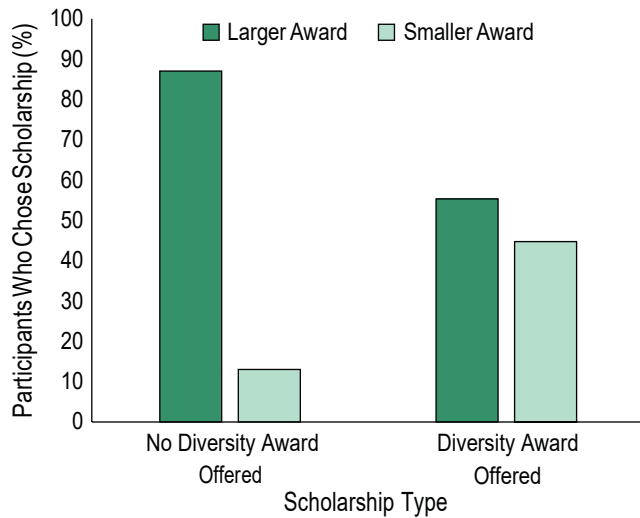


Fig. 1. Percentage of participants who chose to apply for larger and smaller awards when the smaller award was framed as either a second unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 1.

one-way multivariate ANOVA (MANOVA) to test the effect of award type on our proposed mediators and detected a statistically significant effect, Pillai's trace = .08, $F(5, 162) = 2.87$, $p = .02$. In a series of separate univariate ANOVAs, we found significant condition differences on fit, our proposed mediator. Participants who saw the smaller diversity award felt greater fit with the smaller award ($M = 5.82$, $SD = 1.16$, 95% CI = [5.55, 6.08]) relative to URMs who saw the smaller unrestricted award ($M = 5.26$, $SD = 1.44$, 95% CI = [4.96, 5.56]), $F(1, 166) = 7.36$, $p = .01$, $d = 0.42$. There were no differences between URMs who saw the smaller award framed as either a diversity or an unrestricted award in how similar they expected to be to the other winners of the smaller award, $F(1, 166) = 2.30$, $p = .13$; how competitive they perceived the smaller award to be, $F(1, 166) = 3.27$, $p = .07$; how prestigious they perceived the smaller award to be, $F(1, 166) = 1.20$, $p = .28$; or how likely they would be to win the smaller award, $F(1, 166) = 2.25$, $p = .14$. Although similarity and fit are sometimes brought into one construct (e.g., Cheryan et al., 2009), we did not find high correlation between these two items and tested each individually (for correlations, see Table 2).

When asked which award they felt they had a better chance of winning, the smaller or the larger award, participants who saw both awards as unrestricted were somewhat more likely to choose the smaller award (58.7%). However, participants who saw the smaller award as a diversity award were overwhelmingly more likely to indicate that they had a better chance of winning the smaller award (84.2%) than the larger award, $\chi^2(1, N = 168) = 12.96$, $p < .001$, $\phi = .28$.

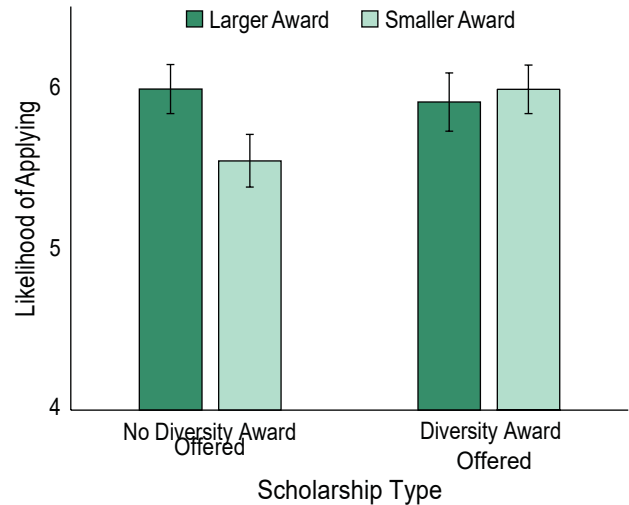


Fig. 2. Participants' likelihood of applying for larger and smaller awards when the smaller award was framed as either a second unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 1. Likelihood of applying was rated on a scale from 1 to 7. Error bars represent standard errors.

Discussion

When no diversity award was present, participants from racial groups typically underrepresented in U.S. colleges were more likely to select the larger award over the smaller award. However, when the smaller award was a diversity award, participants were significantly less likely to select the larger award. Participants felt increased fit with and a greater chance of winning the diversity award than the unrestricted award. We investigated these and other mechanisms in Study 2.

Study 2

We had four aims in Study 2. First, we investigated whether results would generalize to members of another marginalized group: women. Second, we investigated whether women would select smaller over larger awards even when the number of potential female winners for each award was controlled. Third, we conducted a pre-registered test of our hypothesis. Fourth, we explored possible mechanisms motivating women's likelihood of applying for diversity awards over unrestricted awards.

Method

Participants. Six hundred eighty-eight students who identified as women were recruited through the psychology participant pool. All completed the study online in exchange for course credit. After we removed participants who failed the eligibility check, 628 participants remained (627 women, one participant who identified as

Table 2. Means, Standard Deviations, and Correlations Between Potential Mediators in Study 1

Variable	<i>M</i>	<i>SD</i>	Correlations			
			2	3	4	5
1. Fit	5.51	1.34	.53**	.12	.19*	.55**
2. Similarity	5.05	1.48	—	.07	.15	.37**
3. Competitiveness	5.37	1.47		—	.33**	-.02
4. Prestige	4.49	1.48			—	.14
5. Own odds	4.70	1.62				—

* $p < .05$. ** $p < .01$. (two-tailed)

both a woman and a man; 324 Asian, 182 White, 52 multiracial, 34 Latinx, 17 Black, 17 another unlisted racial group, one Native American, one provided no racial group). The sample size (including power analyses), procedure, hypotheses, and analysis plan were preregistered and can be accessed at <https://osf.io/2cdk7/>.

Our preregistered target sample was at least 580 participants who passed eligibility checks. We collected an additional 48 participants to surpass our minimum target. We did not analyze the data when it approached or exceeded the target N of 580 until data collection was complete.

Materials and procedure. Procedures were identical to those in Study 1 except that more possible mediator questions were included, and the award descriptions differed in two primary ways. First, the diversity award was for women. Second, all award descriptions included an additional statement that out of the expected 400 applicants, either four women (experimental condition) or four men and four women (control condition) would be selected as winners (for award descriptions, see Table 1).

Eligibility check. Participants answered the same eligibility-check items as in Study 1. Following the preregistration, we included in our analyses only participants who successfully passed the eligibility-check question.

Manipulation and attention checks. Participants answered manipulation-check items that were similar to those in Study 1 but modified to be specifically about gender, as well as two additional items testing participants' recall of the number of each award's previous applicants and total number of winners.

Award choice. Participants completed the same forced-choice items as in Study 1. Likelihood of applying for the larger and smaller awards was measured via two items: "How likely would you be to apply for Scholarship F/J?" (1 = *very unlikely*, 7 = *very likely*) and "How interested would you be in applying for Scholarship F/J?" (1 = *not*

at all interested, 7 = *very interested*; larger award $\rho = .89$, smaller award $\rho = .89$).

Understanding the motivation to apply for diversity awards over unrestricted awards. We administered items measuring our proposed mediator: participants' feelings of fit with the award. We measured the following as alternative mediators: participants' perceptions of how likely evaluators of diversity awards or unrestricted awards would be to understand and care about them,⁴ how biased they expected diversity- and unrestricted-award committees to be, the perceived ease with which applicants could imagine what they would write in an application for a diversity award or an unrestricted award, participants' perceived odds of winning each award compared with other award applicants (i.e., other women or other women and men), how proud and empowered participants would feel to win a diversity award or an unrestricted award, how risky it would feel to apply for a diversity award or an unrestricted award, and the perception that winners of diversity and unrestricted awards would be members of their gender. All items were measured on 7-point Likert scales. For a complete list of all scale measures and reliabilities, see Table 3.

After completing these items, participants reported demographic information.

Results

Eligibility check. Following our preregistration, we excluded 60 participants from analyses because they indicated that they were not eligible for one or more of the awards. Our findings were similar regardless of whether these participants were included or not (for analyses, see the Supplemental Material).

Manipulation and attention checks. On a second attempt, 13 participants did not correctly recall the award's value, the target population for the award, how many people had previously won, or how many people were eligible to win one or both of the awards presented.

Table 3. Items and Scales for the Smaller Award in Studies 2 and 3

Construct and item	Study	
	2	3
Fit (Study 2: $\alpha = .95$, Study 3: $\alpha = .95$)		
Scholarship J is a good match for someone like me.	Y	Y
Scholarship J is for people like me.	Y	Y
Scholarship J is a good fit for me.	Y	Y
Scholarship J is looking for someone like me.		Y
I am the kind of person Scholarship J is looking for.	Y	
I have a lot in common with other applicants for Scholarship J.	Y	
I feel a sense of connection with Scholarship J.	Y	
Winners of Scholarship J will be students similar to me.	Y	
I would feel comfortable applying for Scholarship J.	Y	
Evaluators care (Study 2: $\alpha = .91$, Study 3: $\alpha = .88$)		
People who care about someone like me will be evaluating Scholarship J.	Y	Y
People who understand my experiences will be evaluating Scholarship J.	Y	Y
People who value my experiences will be evaluating Scholarship J.	Y	Y
Evaluators biased (Study 2: $\rho = .65$, Study 3: $\rho = .83$)		
The evaluation committee of Scholarship J will not discriminate against applicants of my gender.	Y	
I expect the evaluation committee of Scholarship J to be fair.	Y	
The evaluation committee of Scholarship J will discriminate against applicants of my gender.		Y
The evaluation committee of Scholarship J will be biased against applicants of my gender.		Y
Ease of applying (Study 2: $\rho = .82$, Study 3: $\rho = .80$)		
In an application for Scholarship J, I think I'd be able to sell myself well.	Y	Y
In an application for Scholarship J, it is easy for me to imagine what I would write.		Y
It is easy for me to imagine what I would write in an application for Scholarship J.	Y	
High odds (Study 2: $\alpha = .82$, Study 3: $\alpha = .89$)		
I think my odds of winning Scholarship J are high.	Y	Y
I am likely to get Scholarship J if I apply.		Y
I am likely to win Scholarship J based on the quality of other applicants.		Y
If you were to apply for Scholarship J, how likely do you think it is that you would get it?	Y	
Based on the quality of applicants for Scholarship J, I am likely to win.	Y	
How competitive do you think Scholarship J is?	Y	
Someone like me is likely to receive Scholarship J.	Y	
Empowered (Study 2: $\rho = .89$)		
Winning Scholarship J would feel like a proud achievement to me.	Y	
Winning Scholarship J would feel empowering.	Y	
Risk		
Applying for Scholarship J feels like a risky application choice.	Y	
Same gender		
The winners of Scholarship J will be students of my gender.	Y	

Note: In the rightmost columns, a Y indicates that this item was included in the study.

Following our preregistration, we included these 13 participants in analyses. However, excluding these participants did not alter our results (for analyses, see the Supplemental Material).

Award choice. As predicted, and consistent with the pattern in Study 1, results showed that when both awards were unrestricted, a majority of women selected the larger award (73.0%). When the smaller award was a diversity award, only a minority of women selected the

larger award (38.1%), $\chi^2(1, N = 627) = 77.25, p < .001, \phi = .35$ (see Fig. 3).

As predicted, a 2 (award amount: larger, smaller; within subjects) \times 2 (award type: diversity award, unrestricted award; between subjects) ANOVA on the likelihood of applying for the smaller award revealed no main effect of award amount, $F(1, 626) = 0.02, p = .88$, or award type, $F(1, 626) = 0.20, p = .65$, but a significant interaction between award amount and award type, $F(1, 626) = 30.68, p < .001$ (see Fig. 4). As predicted, when

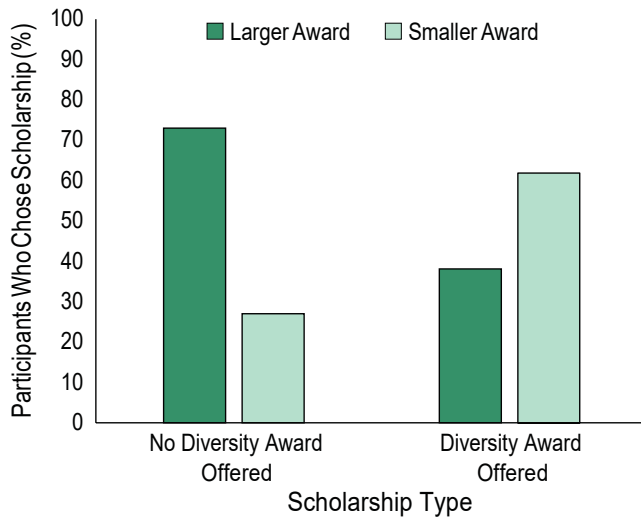


Fig. 3. Percentage of participants who chose to apply for larger and smaller awards when the smaller award was framed as either a second unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 2.

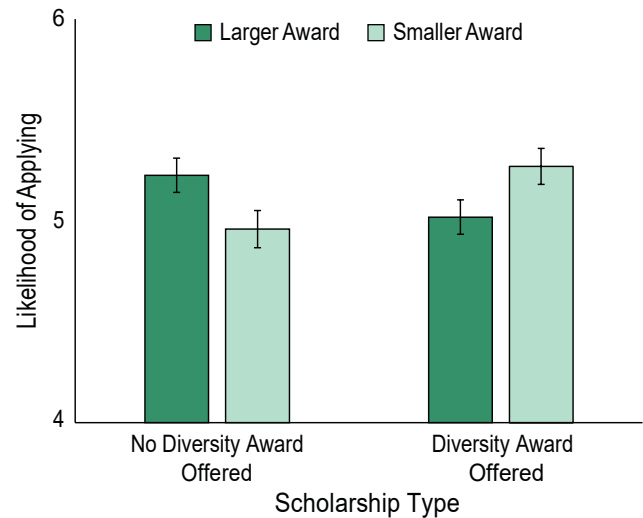


Fig. 4. Participants' likelihood of applying for larger and smaller awards when the smaller award was framed as either a second unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 2. Likelihood of applying was rated on a scale from 1 to 7. Error bars represent standard errors.

the smaller award was unrestricted, women were more likely to apply for the larger award ($M = 5.23$, $SD = 1.51$, 95% CI = [5.06, 5.39]) than the smaller award ($M = 4.96$, $SD = 1.52$, 95% CI = [4.79, 5.13]), $F(1, 626) = 16.25$, $p < .001$, $d_{av} = 0.18$. However, when the smaller award was a diversity award, women were less likely to apply for the larger award ($M = 5.02$, $SD = 1.63$, 95% CI = [4.84, 5.20]) than the smaller award ($M = 5.27$, $SD = 1.59$, 95% CI = [5.09, 5.45]), $F(1, 626) = 14.46$, $p < .001$, $d_{av} = 0.16$. This effect was not moderated by the order in which participants saw each award, $F(1, 624) = 0.93$, $p = .34$.

To examine whether our observed effects were stronger for women of color relative to White women, we conducted an exploratory 2 (award amount: larger, smaller; within subjects) \times 2 (award type: diversity award, unrestricted award; between subjects) \times 2 (race: women of color, White women; between subjects) ANOVA on women's likelihood of applying for diversity and unrestricted awards. We found no three-way interaction between award type, amount, and race, $F(1, 623) = 0.002$, $p = .97$. One caveat is that we collapsed across women of color, who were predominately Asian in our sample. Our sample size did not enable us to make statistical comparisons between racial minority groups.

Understanding the motivation to apply for diversity awards over unrestricted awards (not preregistered). To investigate whether women's feelings of fit between themselves and diversity awards motivated their likelihood of applying for a smaller diversity award as opposed to a smaller unrestricted award, we conducted a

multiple mediation analysis (for descriptive statistics and correlations, see Table 4).

Before running a multiple mediation analysis, we first determined whether we could rule out any potential mediators on the basis of a lack of condition differences between women who saw the smaller award framed as a diversity award and those who saw it framed as an unrestricted award. Using a one-way MANOVA, we found a significant main effect, Pillai's trace = .45, $F(9, 617) = 56.59$, $p < .001$. In a series of separate univariate ANOVAs, we found no significant condition differences in how empowered participants would feel to win the smaller award, $F(1, 625) = 3.56$, $p = .06$; how easy it would be to complete the smaller award's application, $F(1, 625) = 0.16$, $p = .69$; and how risky it would feel to complete an application for the smaller award, $F(1, 625) = 0.37$, $p = .54$. The differences between conditions were significant for all other potential mediators.

We ran a multiple mediation with 10,000 bootstrapped resamples (SPSS PROCESS Macro 3.4) to examine what mediated women's greater likelihood of applying for the smaller award when it was framed as either a diversity award or an unrestricted award (see Fig. 5). The specific indirect effect of fit was significant, $b = 0.32$, $SE = 0.09$, 95% CI = [0.16, 0.50]; women's increased likelihood of applying for the diversity award over the unrestricted smaller award was mediated by women's increased feelings of fit with the smaller award. The specific indirect effects of how likely the evaluators of the award would

Table 4. Means, Standard Deviations, and Correlations Between Potential Mediators in Study 2

Variable	<i>M</i>	<i>SD</i>	Correlations							
			2	3	4	5	6	7	8	9
1. Fit	4.97	1.18	.59**	.20**	.25**	.69**	.72**	.39**	-.17**	.21**
2. Evaluators care	4.72	1.27	—	.40**	.44**	.43**	.54**	.35**	-.02	.29**
3. Evaluators biased (nondiscriminatory)	5.50	1.42		—	.49**	.10**	.13**	.24**	-.11**	.38**
4. Evaluators biased (fair)	5.67	1.22			—	.21**	.25**	.33**	-.04	.19**
5. Ease of applying	4.86	1.32				—	.65**	.34**	-.22**	.08
6. High odds	4.17	1.03					—	.23**	-.12**	.12**
7. Empowered	5.89	1.07						—	.01	.26**
8. Risk	3.71	1.53							—	-.04
9. Same gender	5.49	1.44								—

** $p < .01$. (two-tailed)

be to care about and value women's experiences, $b = 0.02$, $SE = 0.03$, 95% CI = $[-0.04, 0.09]$; how high women's odds of winning would be, $b = 0.02$, $SE = 0.02$, 95% CI = $[-0.01, 0.06]$; the likelihood of the winner of the award being a woman, $b = -0.01$, $SE = 0.08$, 95% CI = $[-0.18, 0.14]$; how nondiscriminatory evaluators would be toward women, $b = -0.03$, $SE = 0.03$, 95% CI = $[-0.08, 0.02]$; and how fair women expected evaluators to be, $b = -0.00$, $SE = 0.01$, 95% CI = $[-0.02, 0.02]$, were not significant.

Turning to our measure of which award participants felt they had the best chance of winning, we found that about half of participants who saw the smaller award as unrestricted believed they had a better chance of winning it (52.7%) than of winning the larger award. In contrast, a larger percentage of participants who saw the smaller award as a diversity award believed they had a better chance of winning it (68.6%) than of winning the larger award, $\chi^2(1, N = 167) = 16.58$, $p < .001$, $\phi = .16$.

Discussion

Even with equal numbers of female winners, the presence of a diversity award caused women to select this award over a more lucrative unrestricted award. When no diversity award was offered, women were more likely to choose the lucrative award. Women's increased likelihood of applying for the smaller diversity award than the unrestricted award was best mediated by perceived fit.

Study 3

We had two goals in Study 3. First, we conducted a preregistered test of our hypothesized mechanism: perceived fit. Second, we tested our hypothesis using

another method of controlling the likelihood of winning by providing the number of total students, not just women, able to win each award. We predicted that even with the same number of winners, when a diversity award was available, women would select and be more likely to apply for it than for an unrestricted award and that this choice would be mediated by women's increased perceptions of fit.

Method

Participants. Undergraduates were recruited through the psychology participant pool in exchange for course credit ($n = 501$) and voluntarily in public campus spaces ($n = 130$). After we removed 50 participants who failed the eligibility check, 581 participants remained (580 women, one participant who identified as both a woman and nonbinary; 321 Asian, 153 White, 46 multiracial, 30 Latinx, 19 Black, nine another unlisted racial group, three provided no racial group). Our preregistered stopping goal was 580 participants, and one extra participant was run because of initial miscounting of exclusions. The sample size (including power analyses), procedure, hypotheses, and analysis plan were preregistered and can be accessed at <https://osf.io/54wzq/>.

Materials and procedure. Study 3's procedures closely mirrored those of Study 2 with one change. Specifically, the award descriptions for both the larger and smaller awards included the total number of winners with the statement, "Four students will be selected to receive this award."

Eligibility, attention, and manipulation checks. Participants completed the same items as in Study 2 except that participants run on campus using paper questionnaires

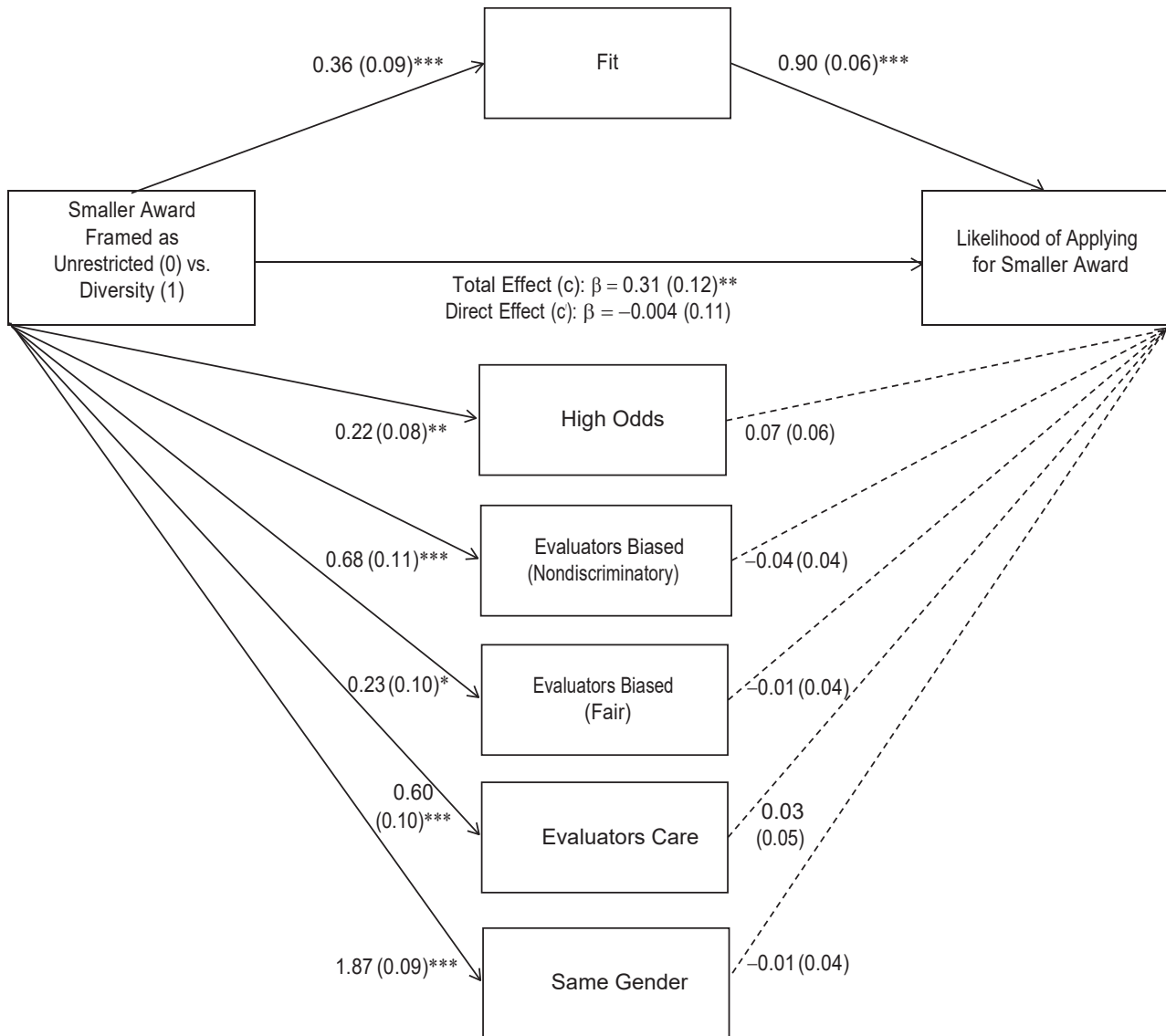


Fig. 5. Multiple mediation model showing whether framing smaller awards as either diversity or unrestricted awards affected the likelihood of participants' applying for those awards, as mediated by each of six factors in Study 2. Unstandardized coefficients are shown, and standard errors are given in parentheses. Asterisks on solid lines indicate significant paths (* $p < .05$, ** $p < .01$, *** $p < .001$); dashed lines indicate nonsignificant paths.

were asked the attention questions only once. Following the preregistration, we included in our analyses only participants who successfully passed the eligibility-check question.

Award choice. Participants completed the same items used in Study 2. Reliabilities were high for the likelihood-of-applying items—larger award: $\rho = .90$, smaller award: $\rho = .91$.

Mediation. We measured five different potential mediators about each award—perceived fit, perceived odds of winning, ease of applying, perceptions that evaluators

will be biased, and perceptions that evaluators will value their experiences. All items were measured on a Likert scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*; for all measures and reliabilities, see Table 3; for correlations between all Study 3 mediators, see Table 5).

After completing these items, participants completed demographic items.

Results

Eligibility check. Following our preregistration, we excluded 50 participants from analyses because they indicated that they were not eligible for one or more of

Table 5. Means, Standard Deviations, and Correlations Between Potential Mediators in Study 3

Variable	<i>M</i>	<i>SD</i>	Correlations			
			2	3	4	5
1. Fit	5.15	1.20	.54**	-.04	.66**	.48**
2. Evaluators care	4.89	1.09	—	-.09*	.44**	.43**
3. Evaluators biased	2.28	1.27		—	.01	.09*
4. Ease of applying	4.89	1.24			—	.52**
5. High odds	3.49	1.29				—

* $p < .05$. ** $p < .01$. (two-tailed)

the awards. As in Study 2, including these participants in analyses did not change our findings (for analyses, see the Supplemental Material).

Manipulation and attention checks. Five participants run in the lab did not correctly recall the value, target population, number of applicants per year, or number of winners of one or both of the awards that they saw on the second attempt. Although these participants were included in our analyses, excluding them did not alter our findings (for analyses, see the Supplemental Material).

Scholarship choice. When both the smaller and larger awards were framed as unrestricted, most women were more likely to select the larger award (73.6%); however, when the smaller award was framed as a women's diversity award, women were significantly less likely to select

the larger award (38.6%), $\chi^2(1, N = 577) = 71.96, p < .001, \phi = .35$ (see Fig. 6).

To determine whether seeing the smaller award framed as either a diversity award or an unrestricted award would influence women's likelihood of applying for it, we conducted a 2 (award amount: larger, smaller; within subjects) \times 2 (award type: diversity award, unrestricted award; between subjects) ANOVA. We found a main effect of award amount, $F(1, 579) = 8.62, p = .003$; no main effect of award type, $F(1, 579) = 1.29, p = .26$; and a significant interaction between award amount and award type, $F(1, 579) = 47.07, p < .001$ (see Fig. 7). When both awards were unrestricted, women were more likely to apply for the larger award ($M = 5.29, SD = 1.44, 95\% CI = [5.12, 5.45]$) relative to the smaller award ($M = 4.89, SD = 1.51, 95\% CI = [4.72, 5.06]$), $F(1, 579) = 48.58, p < .001, d_{av} = 0.27$. However, when the smaller award was a diversity award, women reported

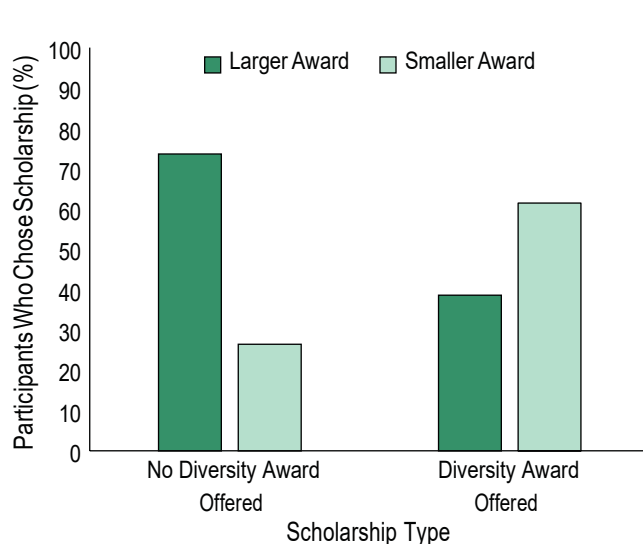


Fig. 6. Percentage of participants who chose to apply for larger and smaller awards when the smaller award was framed as either a second unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 3.

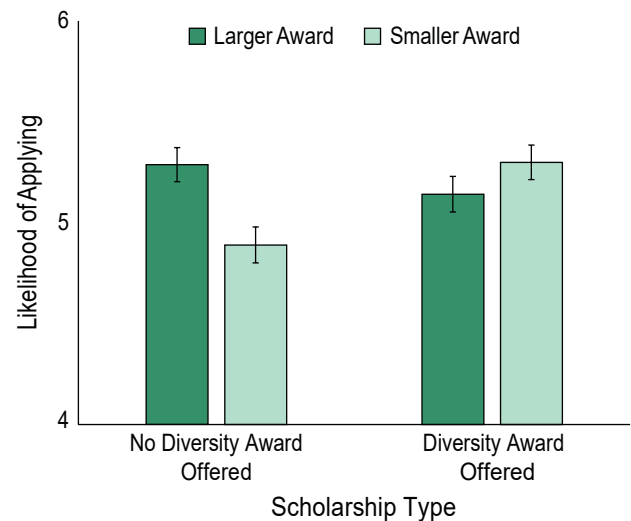


Fig. 7. Participants' likelihood of applying for larger and smaller awards when the smaller award was framed as either an unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 3. Likelihood of applying was rated on a scale from 1 to 7. Error bars represent standard errors.

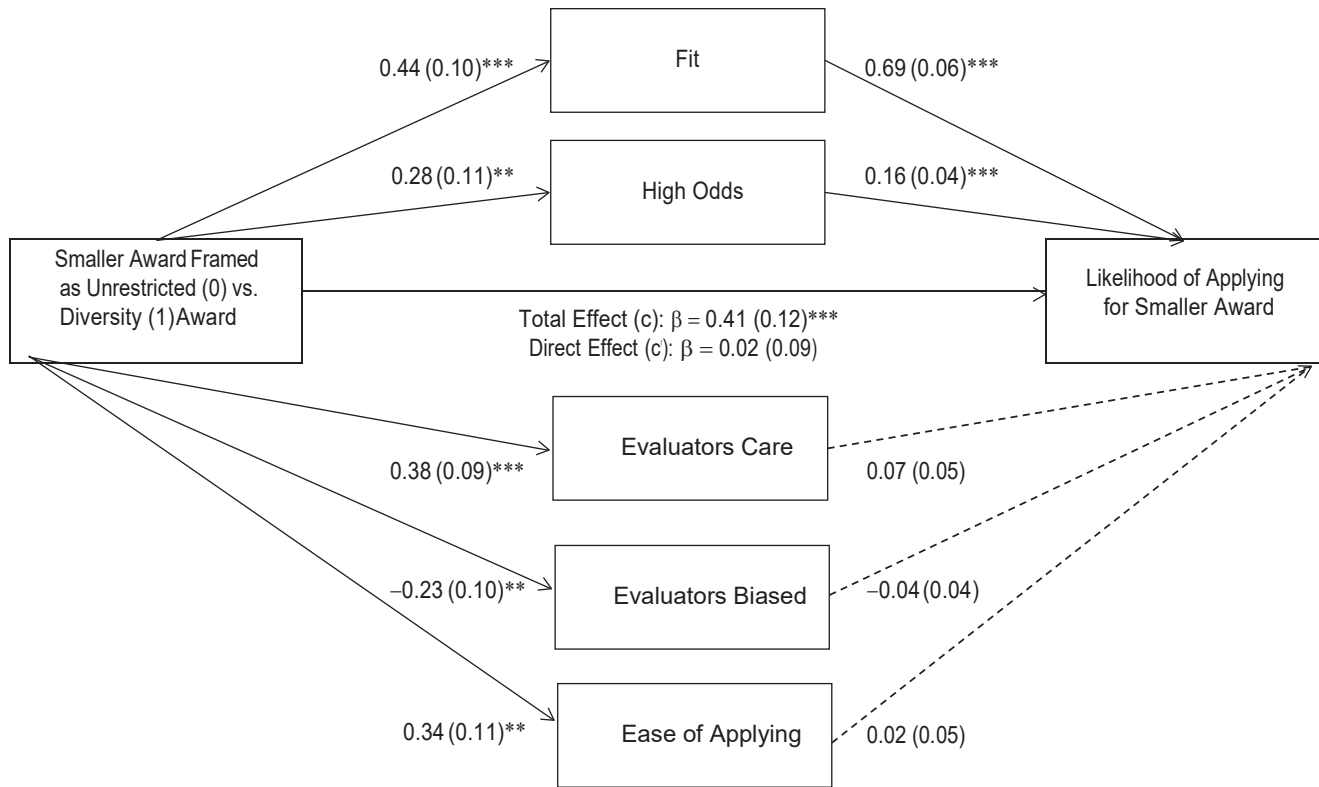


Fig. 8. Multiple mediation model showing whether framing smaller awards as either diversity or unrestricted awards affected the likelihood of participants' applying for those awards, as mediated by each of five factors in Study 3. Unstandardized coefficients are shown, and standard errors are given in parentheses. Asterisks on solid lines indicate significant paths (** $p < .01$, *** $p < .001$); dashed lines indicate nonsignificant paths.

being more likely to apply for the smaller award ($M = 5.30$, $SD = 1.45$, 95% CI = [5.13, 5.47]) than the larger award ($M = 5.14$, $SD = 1.51$, 95% CI = [4.96, 5.32]), $F(1, 579) = 7.61$, $p = .01$, $d_{av} = 0.11$. The order in which the smaller and larger awards were presented to participants did not moderate this effect, $F(1, 461) = 0.08$, $p = .78$.

Mediation. As in Study 2, prior to running a multiple mediation analysis, we tested for condition differences between participants who saw the smaller award framed as either a diversity or an unrestricted award on each of our proposed mediators using a one-way MANOVA (for all tested Study 3 variables, see Table 3). We found a significant main effect of award type on the mediators, Pillai's trace = .05, $F(5, 575) = 5.89$, $p < .001$, and in separate univariate ANOVAs, we found significant differences between conditions for all potential mediators.

We conducted a multiple mediation using 10,000 bootstrapped resamples (SPSS PROCESS Macro 3.4) testing whether women's increased likelihood of applying for a smaller award when it was framed as a diversity, relative to an unrestricted, award was mediated by our preregistered mediator, fit, or by alternative mediators (see Fig. 8). The specific indirect effects of women's

feelings of fit, $b = 0.31$, $SE = 0.07$, 95% CI = [0.17, 0.46], and perceived higher odds of winning, $b = 0.04$, $SE = 0.02$, 95% CI = [0.01, 0.09], were both significant; women's greater likelihood of applying for the diversity award than for the unrestricted smaller award was mediated by both women's increased feelings of fit and women's perceived higher odds of winning the smaller award. However, women's feelings of fit was the stronger predictor of this relationship, $b = 0.26$, $SE = 0.07$, 95% CI = [0.13, 0.41]. The specific indirect effects of how likely the evaluators of the award would be to care about and value women's experiences, $b = 0.03$, $SE = 0.02$, 95% CI = [-0.02, 0.08]; how biased evaluators of the award would be toward women, $b = 0.01$, $SE = 0.01$, 95% CI = [-0.01, 0.04]; and perceptions of how easy it would feel to apply for the award, $b = 0.01$, $SE = 0.02$, 95% CI = [-0.04, 0.05], were not significant.

Discussion

Even with an equal number of winners, women were less likely to apply for the larger unrestricted award when the smaller award was a diversity award. However, when the smaller award was unrestricted, women

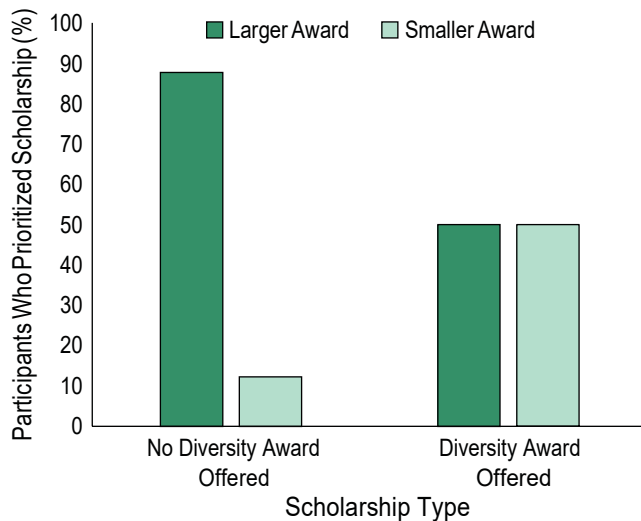


Fig. 9. Percentage of participants who prioritized applications for larger and smaller awards when the smaller award was framed as an unrestricted award (no diversity award offered) or a diversity award (diversity award offered) in Study 4.

were more likely to select the larger award. Women's feelings of fit and their perceived odds of winning the diversity award best mediated their increased likelihood of applying for it over an unrestricted award, with fit being the stronger predictor.

Study 4

Our goal in Study 4 was to demonstrate that the findings of Studies 1 to 3 had important behavioral consequences. In this study, women completed real applications (e.g., including writing essays) for two awards.

Method

Participants. One hundred fifty-two undergraduate women (75 Asian, 53 White, 10 multiracial, six Black, two another unlisted racial group, four Latinx, two Native American) were recruited through the online psychology participant pool. All participated in a study in the lab in exchange for course credit.

Materials and procedure. As in Studies 1 to 3, women read descriptions of two awards presented in a counterbalanced order. However, in this study, women had the chance to apply for and actually win these awards. In the experimental condition, women read about two awards—one \$30 unrestricted award and one \$20 diversity award for women. The control condition differed only in that the \$20 award was an unrestricted award rather than a diversity award and the scholarship name was changed from the “Marilyn L. Carter Scholarship” to the “M. L. Carter Scholarship” (for award descriptions, see Table 1).

Essays. Participants were given the opportunity to enter a raffle to win either one or both of the scholarships by writing unique 500-word essays. Both the essay prompts (either on one's past achievements or one's goals) and order of the presentation of the larger and smaller awards were counterbalanced.

Participants were asked to choose which, if any, application they would like to work on first. After completing the first essay, participants were prompted with the option either to work on the second award's essay or to leave the study having applied for just one award. Of primary interest was which essay, the essay for the larger or smaller award, participants prioritized and chose to work on first when the smaller award was presented as either a diversity award or an unrestricted award.

Manipulation check. Participants were asked the same test items as in Studies 1 to 3 regarding who each award was for and each award's value. Participants who answered incorrectly were not prompted with the questions again.

Other items. Before and after completing application essays, participants completed items such as, “How much would/did applying for the Hughes/Carter Scholarship allow you to express the kind of person you are?” and “How much would/did you enjoy applying for the Hughes/Carter Scholarship?” Results for these items can be found in the Supplemental Material.

Last, participants completed demographic items and were debriefed. Award winners were randomly selected and paid.

Results

Thirty-one percent of participants ($n = 47$) chose to leave without completing either essay, 37% ($n = 56$) completed one essay, and 32% ($n = 49$) completed both essays. Whether participants completed none or at least one of the essays did not differ between conditions, $\chi^2(1, N = 152) = 1.79, p = .18$. We had a sample of 105 women who completed at least one essay.

We examined which of the two awards women were most likely to prioritize. When both awards were unrestricted, the vast majority of women (87.7%) prioritized applying for the larger award. However, when the smaller award was a diversity award, only half of the women prioritized the larger award (50.0%), $\chi^2(1, N = 105) = 17.82, p < .001, \phi = .41$ (see Fig. 9).

Of interest was whether women who opted to complete just one essay ($n = 56$) were more likely to choose to complete the larger or smaller essay when a diversity award was either offered or not offered. When no diversity award was offered, 90.9% of women elected to apply for the larger award. However, when a diversity award

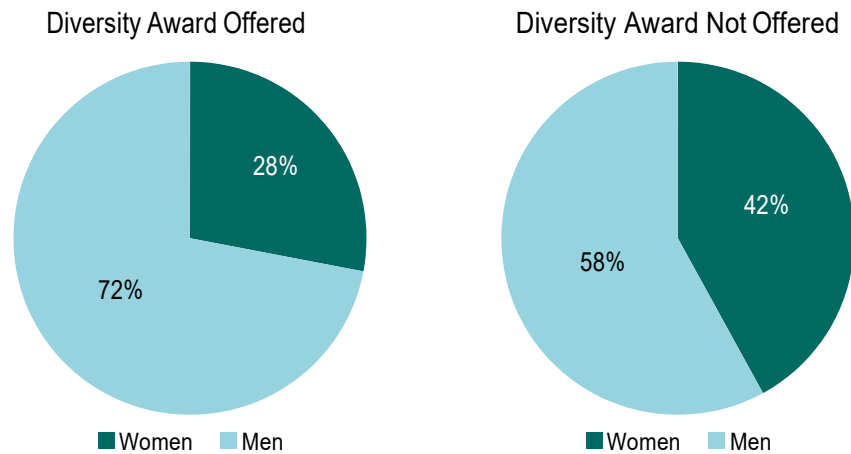


Fig. 10. Models of what the applicant pool for unrestricted awards (women vs. men) would look like if no diversity award was offered (right) and if a diversity award was offered (left).

was offered, only 39.1% of women elected to apply for the larger award, $\chi^2(1, N = 56) = 17.19, p < .001, \phi = .55$.

Discussion

Even with real money at stake and completing real award applications, when a diversity award was offered, women were more likely to prioritize and complete applications for diversity awards than for larger unrestricted awards. In contrast, women selected the larger award when the diversity award was not offered.

General Discussion

Diversity awards can provide applicants from marginalized groups with increased winning opportunities and feelings of belonging within institutions that are frequently biased against them. However, offering these awards can have drawbacks. When two unrestricted awards were available, applicants from marginalized groups were more likely to apply for the larger award. However, the presence of a smaller diversity award caused applicants from marginalized groups to apply for and prioritize the diversity award over the larger unrestricted award. This pattern held when students prepared real award applications, the odds of winning were equal, and awards were for members of racial groups typically underrepresented in U.S. colleges and women. Offering diversity awards may prevent applicants from marginalized groups from applying for an unrestricted award, even when that award is more lucrative.

Fit, or the perception that the diversity award is a good match for someone like them, predicted applicants' likelihood of applying for diversity awards. Fit was the strongest predictor of this relationship even

when we accounted for applicants' perceived odds of winning, perceptions that award committees would be less biased or more likely to value their identity, how easy it would be to apply, how empowering it would feel to win, how much less risky it would be to apply for the award, and how likely someone of the applicants' gender was to win.

This research illuminates an important dilemma: the siphoning of talented applicants from marginalized groups away from unrestricted award pools. Imagine two awards for which 100 women and 100 men each apply. Using the percentage of women who applied for unrestricted awards, we can model the distribution of women and men applicants when diversity awards are and are not offered (see Fig. 10). Using Study 2's data, we found that if a smaller diversity award is offered in conjunction with a larger, more lucrative unrestricted award, and 38 women and 100 men (who are ineligible for the diversity award) apply for the unrestricted award, 28% of the applicants would be women. However, if no diversity award is offered and both awards are unrestricted, 73 women would apply for the larger unrestricted award. Even if all 100 men apply for the larger award, women would account for 42% of applicants. This illustration suggests that offering diversity awards can skew unrestricted applicant pools toward male applicants, perhaps counterintuitively providing a financial leg up to already high-status groups.

Given the disparities that offering diversity awards can create, what can be done? First, we believe that policies addressing this issue should not focus on changing the behavior of people from marginalized groups or on eliminating diversity awards altogether. Instead, we propose four possible solutions. First, applicants can be automatically entered into

unrestricted pools. When award committees offer two awards and one is a diversity award, the application submitted for diversity awards could be automatically entered into unrestricted award pools. Second, unrestricted awards should more explicitly value diversity. Because our findings show the importance of how much applicants felt the award was for someone like them in making decisions, the program announcements of unrestricted awards should be altered to increase fit with people from marginalized groups. Third, the perceived prestige of diversity awards should be increased. Increasing the financial value of diversity awards may enhance their perceived prestige and overall net benefit to applicants, serving as a mechanism to decrease historic wealth gaps between people from marginalized and nonmarginalized groups (e.g., Kraus et al., 2017). And fourth, selection committees for unrestricted awards could reduce their biases so that they are equally likely to select applicants from marginalized groups, even when they account for smaller proportions of the applicant pool. One method could be to broaden how award committees define “merit” to encompass a greater range of experiences. Although these solutions do not remedy the systemic inequality spurring the original need for diversity awards, they offer local structural solutions that could be paired with larger systemic solutions to reduce bias toward people from marginalized groups.

Future research could address potential constraints on the generalizability of our findings. It is unclear whether our effect would generalize to awards for members of high-status groups, such as men, or whether our effect is specific to applicants from marginalized groups. One possibility is that men may be less likely than women to feel a sense of fit with same-gender awards because their gender identification tends to be weaker (Rudman & Goodwin, 2004). Additionally, future research could examine whether applicants from marginalized groups perceive funding agencies and universities that do and do not offer diversity awards differently.

Although diversity awards can have many benefits to applicants from marginalized groups, they may also have unintentional drawbacks. Because of better perceived fit between applicants and diversity awards, offering those awards led applicants from marginalized groups to forgo applying for higher value, and often more prestigious, unrestricted awards. Common diversity opportunities warrant closer examination to ensure that they do not have negative consequences for equity.

Transparency

Action Editor: Ayse K. Uskul

Editor: D. Stephen Lindsay

Author Contributions

A. L. Germano, S. A. Ziegler, and S. Cheryan designed the study. A. L. Germano and S. A. Ziegler conducted testing and data collection. A. L. Germano analyzed and interpreted the data under the supervision of S. Cheryan. L. Banham created all public materials, data sets, and codebooks for this project and verified all reported statistical analyses. A. L. Germano drafted the manuscript, and S. A. Ziegler, L. Banham, and S. Cheryan provided critical revisions. All the authors approved the final manuscript for submission.

Declaration of Conflicting Interests

The author(s) declared that there were no conflicts of interest with respect to the authorship or the publication of this article.

Funding

This work was supported by National Science Foundation grants (EHR-1919218 and DRL-1420351).

Open Practices

Deidentified data and materials for all studies have been made publicly available via OSF and can be accessed at <https://osf.io/vtpf8> and <https://osf.io/t8bnx>, respectively. The design and analysis plans for Studies 2 and 3 were preregistered and can be accessed at <https://osf.io/2cdk7> and <https://osf.io/54wzq>, respectively. Studies 1 and 4 were not preregistered. This article has received the badges for Open Data, Open Materials, and Preregistration. More information about the Open Practices badges can be found at <http://www.psychologicalscience.org/publications/badges>.



ORCID iD

Adriana L. Germano  <https://orcid.org/0000-0001-9368-2466>

Supplemental Material

Additional supporting information can be found at <http://journals.sagepub.com/doi/suppl/10.1177/0956797621993109>

Notes

1. These other items were the same in Studies 1 and 2. In Study 3, only the importance-to-identity subscale was included. In Studies 2 and 3, the importance-to-identity subscale measured participants' gender rather than racial identity.
2. Cohen's d_{av} is used to calculate effect sizes in within-subject designs by standardizing the mean difference with the average of the standard deviations of both dependent variables (see Lakens, 2013).
3. This order effect did not occur again in other studies.
4. Because of a programming error, the evaluators-care measure in the control condition included one repeated item and one original item. This error was corrected in Study 3.

References

- Barbulescu, R., & Bidwell, M. (2013). Do women choose different jobs from men? Mechanisms of application segregation in the market for managerial workers. *ORGANIZATION*

- Science*, 24(3), 737–756. <https://doi.org/10.1287/orse.1120.0757>
- Bian, L., Leslie, S.-J., Murphy, M. C., & Cimpian, A. (2018). Messages about brilliance undermine women's interest in educational and professional opportunities. *Journal of Experimental Social Psychology*, 76, 404–420. <https://doi.org/10.1016/j.jesp.2017.11.006>
- Cheryan, S., & Plaut, V. C. (2010). Explaining underrepresentation: A theory of precluded interest. *Sex Roles*, 63(7), 475–488. <https://doi.org/10.1007/s11199-010-9835-x>
- Cheryan, S., Plaut, V. C., Davies, P. G., & Steele, C. M. (2009). Ambient belonging: How stereotypical cues impact gender participation in computer science. *Journal of Personality and Social Psychology*, 97(6), 1045–1060. <https://doi.org/10.1037/a0016239>
- Dickman, A. B., Brown, E. R., Johnston, A. M., & Clark, E. K. (2010). Seeking congruity between goals and roles: A new look at why women opt out of science, technology, engineering, and mathematics careers. *Psychological Science*, 21(8), 1051–1057. <https://doi.org/10.1177/0956797610377342>
- Eagly, A. H., & Carli, L. L. (2007). *Through the labyrinth: The truth about how women become leaders*. Harvard Business Press.
- Gaucher, D., Friesen, J., & Kay, A. C. (2011). Evidence that gendered wording in job advertisements exists and sustains gender inequality. *Journal of Personality and Social Psychology*, 101(1), 109–128. <https://doi.org/10.1037/a0022530>
- Germano, A. L., & Cheryan, S. (2021). *Relative to awards open to all groups, diversity awards are seen as lower status*. Manuscript in preparation.
- Ginther, D. K., Kahn, S., & Schaffer, W. T. (2016). Gender, race/ethnicity, and National Institutes of Health R01 research awards: Is there evidence of a double bind for women of color? *Academic Medicine*, 91(8), 1098–1107. <https://doi.org/10.1097/ACM.0000000000001278>
- Ginther, D. K., Schaffer, W. T., Schnell, J., Masimore, B., Liu, F., Haak, L. L., & Kington, R. (2011). Race, ethnicity, and NIH research awards. *Science*, 333(6045), 1015–1019. <https://doi.org/10.1126/science.1196783>
- Good, C., Rattan, A., & Dweck, C. S. (2012). Why do women opt out? Sense of belonging and women's representation in mathematics. *Journal of Personality and Social Psychology*, 102(4), 700–717. <https://doi.org/10.1037/a0026659>
- Hechtman, L. A., Moore, N. P., Schulkey, C. E., Miklos, A. C., Calcagno, A. M., Aragon, R., & Greenberg, J. H. (2018). NIH funding longevity by gender. *Proceedings of the National Academy of Sciences, USA*, 115(31), 7943–7948. <https://doi.org/10.1073/pnas.1800615115>
- Heilman, M. E. (1983). Sex bias in work settings: The lack of fit model. *Research in ORGANIZATIONAL Behavior*, 5, 269–298.
- Hoppe, T. A., Litovitz, A., Willis, K. A., Meseroll, R. A., Perkins, M. J., Hutchins, B. I., Davis, A. F., Lauer, M. S., Valantine, H. A., Anderson, J. M., & Santangelo, G. M. (2019). Topic choice contributes to the lower rate of NIH awards to African-American/Black scientists. *Science Advances*, 5(10), Article eaaw7238. <https://doi.org/10.1126/sciadv.aaw7238>
- Kaiser, C. R., Major, B., Jurcevic, I., Dover, T. L., Brady, L. M., & Shapiro, J. R. (2013). Presumed fair: Irony effects of organizational diversity structures. *Journal of Personality and Social Psychology*, 104(3), 504–519. <https://doi.org/10.1037/a0030838>
- Kraus, M. W., Rucker, J. M., & Richeson, J. A. (2017). Americans misperceive racial economic equality. *Proceedings of the National Academy of Sciences, USA*, 114(39), 10324–10331. <https://doi.org/10.1073/pnas.1707719114>
- Lakens, D. (2013). Calculating and reporting effect sizes to facilitate cumulative science: A practical primer for *t*-tests and ANOVAs. *Frontiers in Psychology*, 4, Article 863. <https://doi.org/10.3389/fpsyg.2013.00863>
- Lincoln, A. E., Pincus, S., Koster, J. B., & Leboy, P. S. (2012). The Matilda effect in science: Awards and prizes in the US, 1990s and 2000s. *Social Studies of Science*, 42(2), 307–320. <https://doi.org/10.1177/0306312711435830>
- Luhtanen, R., & Crocker, J. (1992). A collective self-esteem scale: Self-evaluation of one's social identity. *Personality and Social Psychology Bulletin*, 18(3), 302–318. <https://doi.org/10.1177/0146167292183006>
- Ma, J., Pender, M., & Libassi, C. J. (2020). *Trends in college pricing and student aid 2020*. College Board.
- Niedenthal, P. M., Cantor, N., & Kihlstrom, J. F. (1985). Prototype matching: A strategy for social decision making. *Journal of Personality and Social Psychology*, 48(3), 575–584. <https://doi.org/10.1037/0022-3514.48.3.575>
- Oyserman, D., Brickman, D., Bybee, D., & Celious, A. (2006). Fitting in matters: Markers of in-group belonging and academic outcomes. *Psychological Science*, 17(10), 854–861. <https://doi.org/10.1111/j.1467-9280.2006.01794.x>
- Plaut, V. C., Thomas, K. M., & Goren, M. J. (2009). Is multiculturalism or color blindness better for minorities? *Psychological Science*, 20(4), 444–446. <https://doi.org/10.1111/j.1467-9280.2009.02318.x>
- Purdie-Vaughns, V., Steele, C. M., Davies, P. G., Dittmann, R., & Crosby, J. R. (2008). Social identity contingencies: How diversity cues signal threat or safety for African Americans in mainstream institutions. *Journal of Personality and Social Psychology*, 94(4), 615–630. <https://doi.org/10.1037/0022-3514.94.4.615>
- Rudman, L. A., & Goodwin, S. A. (2004). Gender differences in automatic in-group bias: Why do women like women more than men like men? *Journal of Personality and Social Psychology*, 87(4), 494–509. <https://doi.org/10.1037/0022-3514.87.4.494>
- Snyder, T. D., de Brey, C., & Dillow, S. A. (2019). *Digest of education statistics, 2017*. National Center for Education Statistics. <https://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2018070>
- Stephens, N. M., Hamedani, M. G., & Destin, M. (2014). Closing the social-class achievement gap: A difference-education intervention improves first-generation students' academic performance and all students' college transition. *Psychological Science*, 25(4), 943–953. <https://doi.org/10.1177/0956797613518349>
- Walton, G. M., & Cohen, G. L. (2007). A question of belonging: Race, social fit, and achievement. *Journal of Personality and Social Psychology*, 92(1), 82–96. <https://doi.org/10.1037/0022-3514.92.1.82>