Can fixed views of ability boost performance in the context of favorable stereotypes? ☆

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ABSTRACT

Prior research has demonstrated that stereotypes affect negatively stereotyped groups in part through the implied immutability of group members' abilities. Accordingly, a belief that ability is malleable through effort and hard work has been shown to boost the performance of negatively stereotyped groups. We predicted, however, that among favorably stereotyped groups, a belief that ability is fixed would reinforce the immutability of the group differences upon which stereotype-induced social comparisons are made [Walton, G. M., & Cohen, G. L. (2003). Stereotype lift. *Journal of Experimental Social Psychology*, *39*, 456–467] and result in enhanced performance. We found experimental support for these predictions in two favorably stereotyped groups in math: Asians (Study 1) and men (Study 2). Perceived difficulty of the math test helped explain the performance effects in Study 2. Implications of schooling emphasizing innate ability for exacerbating achievement gaps are discussed.

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Introduction

Recent research has shown that the framing of intergroup achievement differences, particularly with reference to societally held stereotypes, has measurable effects on performance (Steele, Spencer, & Aronson, 2002). Framing a test as diagnostic of one's ability, for example, lowers the performance of group members for whom a stereotype of low ability is applicable (Steele & Aronson, 1995). Among the factors that contribute to such performance decrements is the implied immutability of stereotypic attributes: a suspicion that there is a ceiling to a given group's capabilities and potential that no amount of learning can overcome. Indeed, promoting the value of effort in academic domains (Aronson, Fried, & Good, 2002; Good, Aronson, & Inzlicht, 2003) and framing intergroup achievement differences as societal rather than biological in origin (Dar-Nimrod & Heine, 2006) has been shown to boost the performance of stigmatized group members.

In this article, we address the implications of viewing abilities as immutable versus malleable among individuals on whom stereotypes shine a favorable light. When encountering information that men are better than women at math, for example, does the same implication of fixed ability that can hinder women's performance facilitate the performance of men by entrenching the immutability of their advantage, potentially easing their concerns about performance?

While prior research has demonstrated that stereotypes can boost the performance of group members favored by such stereotypes (Walton & Cohen, 2003), the potential role that the fixedness of stereotypic attributes plays in yielding such boosts has yet to be systematically explored. We test this question in two experiments by manipulating both whether a favorable stereotype about one's group is confirmed or disconfirmed and whether ability is viewed as either fixed or malleable. In so doing, we hope to contribute to a growing body of knowledge examining the implications of fixed views of intelligence in the educational arena for perpetuating—and potentially accentuating—group differences in performance (Sternberg, 1996; Weinstein, 2005).

Lay theories of intelligence and stereotypes

Dweck and colleagues (see Dweck, 1999) have proposed that people vary in the degree to which they believe that the characteristics of a person are malleable and amenable to change. An *entity theory* refers to the belief that qualities such as intelligence are inborn, fixed, and unchangeable. By contrast, an *incremental theory* refers to the belief that abilities are malleable, with an opportunity for change through effort. The manipulation of entity versus incremental theories has short-term (Mueller & Dweck, 1998) and long-term (Henderson & Dweck, 1990; Stipek & Gralinski, 1996) implications for academic achievement, such that incremental theorists perform better over time. In the face of failure, incremental theorists view this outcome as an indication that more effort is

required to succeed at the task at hand, and work harder to succeed. In contrast, entity theorists view failure as an indication that they do not have the natural talent required to succeed, and are thus more likely to disengage from tasks and domains following failure (Dweck & Sorich, 1999).

An independent line of research on stereotype threat (see Steele et al., 2002) has robustly demonstrated that people's achievement may be compromised when there is the possibility that their performance will confirm a negative stereotype. A variety of interrelated mechanisms have been proposed to account for the effects of stereotype threat (see Schmader, Johns, & Forbes, in press), including physiological stress (Blascovich, Spencer, Quinn, & Steele, 2001), arousal (O'Brien & Crandall, 2003), performance monitoring (Beilock, Jellison, Rydell, McConnell, & Carr, 2006) and cognitive demands (Croizet et al., 2004; Schmader & Johns, 2003). On a complementary level of analysis, several researchers (Aronson et al., 2002; Cokley, 2002; Good et al., 2003) have noted that negative stereotypes can be especially threatening because they carry the implication of unmodifiability—that is, that one's abilities and competence in a given domain are inherently limited by one's group membership. As such, under the suspicion of a stereotype, poor performance on a test would signify not just a low score on one test, but rather a diagnostic assessment of low capacity. Stereotype threat has been linked to disengagement and disidentification from domains in which one's identity is threatened (Major, Spencer, Schmader, Wolfe, & Crocker, 1998; Steele, 1997), which, tellingly, are the same kinds of self-protective coping strategies entity theorists have been found to use under the threat of failure (Dweck & Sorich, 1999).

Bringing together insights from the stereotype threat and entity/incremental theories literatures, Aronson and colleagues (2002) found that changing African American students' attitudes about the malleability of intelligence successfully raised their academic performance, although the intervention benefited White students as well. In addition, giving training on incremental theory to middle school students successfully eliminated the gender gap in math performance over the course of one school year (Good et al., 2003). It appears, then, that incremental training may be beneficial for members of negatively stereotyped groups, and may help reduce group differences in performance by counteracting the tendency to view stereotypes as fixed characteristics of devalued group membership.

Entity/incremental theories in the context of favorable stereotypes

Although the effects of entity versus incremental views of ability seem clear among individuals threatened by a stereotype of low ability, there is reason to believe these effects may reverse specifically when one's ingroup is perceived to have an advantage over another. *Stereotype lift* describes the phenomenon where high status group members, when primed with a negative stereotype of the devalued group, experience a performance boost presumably as a result of downward social comparison (Walton & Cohen, 2003; see also Hess & Hinson, 2006). Nevertheless, stereotype lift effects seem less robust than stereotype threat effects, opening the possibility that the relatively subtle main effect of stereotype lift may be masking interactive processes with other important variables (Marx & Stapel, 2006; Walton & Cohen, 2003).

We explore one such interaction here, arguing that an entity view of ability should specifically boost the performance of favorably stereotyped group members by assuring them that their group's advantage, relative to other groups, is immutable. As Walton and Cohen (2003) note, "stereotype-inspired social comparison may alleviate the self-doubt, anxiety, and fear of rejection that could otherwise hamper performance on important intellectual tests (p. 457)." We reasoned here that an entity theory of ability,

by reinforcing the fixedness of the group differences on which such social comparisons rely, would accentuate the alleviation of such disruptive processes. Thus, while perceptions of immutable group differences should prove disruptive to performance among members of unfavorably stereotyped groups, the same immutable differences should prove beneficial to performance among members of favorably stereotyped groups. Confirmation of this hypothesis would contribute to a fuller understanding of how educational systems structured around performance and the tracking of students into ability groups (Sternberg, 1996; Weinstein, 2005) may differentially affect members of positively and negatively stereotyped groups.

Preliminary support for these hypotheses comes from Grant and Dweck (2003), who showed that an entity view of intelligence was related to enhanced achievement in a college level course relative to an incremental view, but only among already high-achieving students. Despite being consistent with our hypotheses, this study did not examine the effects of an entity theory specifically when such information is combined with favorable stereotypes. We examine this issue more directly by experimentally manipulating both stereotype information as well as entity/incremental beliefs.

The present studies

In two studies, we used established procedures and materials to experimentally manipulate participants' beliefs, and then assessed participants' test performance in GRE-like math tests. In Study 1, we examined the performance of Asian-background participants who were exposed to information that either confirmed or disconfirmed the notion that Asians outperform Whites in the domain of math, and who were exposed to either an entity or an incremental theory. In Study 2, our goal was to replicate and extend these findings to a different stereotype relevant to the math domain—that men outperform women (Spencer, Steele, & Quinn, 1999). We examined the performance of both men and women in this study, as well as their perceptions of test difficulty.

Study 1

Despite being stigmatized in the social and athletic domain (Crocker & Lawrence, 1999), individuals of Asian descent are stereotyped in the U.S. as being high achievers in academics, especially in the domain of mathematics (Lee, 1994). Aronson et al. (1999) demonstrated that a manipulation confirming the stereotype that Asians are better at math relative to Whites induced stereotype threat, and subsequent performance decrements, among White students. Adopting this procedure, we exposed Asian-background students to information either confirming or disconfirming the superiority of Asians in math relative to Whites. In addition, we exposed participants to information that math achievement either stems from innate ability or from effort. We expected that in the stereotype confirmed condition, those given an entity prime would perform better than participants given an incremental prime. By contrast, with the stereotype disconfirmed and no clear advantage for one's group, we expected to replicate traditional research showing an advantage of effort over ability views on performance (e.g., Dweck, 2006).

Method

Participants

Sixty-nine English-fluent individuals (28 women; M_{age} = 19.7, SD = 1.51) of Asian descent participated in the study. Participants were enrolled in a large university in the Western United States and received course credit for partaking in the study. Two participants of mixed Asian/European heritage were excluded from the fi-

nal sample, as were two other participants who indicated they did not believe the manipulations. The analyses reported below are thus based on the remaining 65 participants in the sample. All participants identified "Asian" as the ethnic category that best described them. Forty-six of the participants were U.S. born. Gender, age, and birth country did not exert main or interactive effects in the analyses reported below and are not discussed further.

Procedure

Participants took part in a study, ostensibly sponsored by the University's "Center for Quantitative Reasoning and Performance," examining the factors that affect math achievement. Participants were seated at a desk and received a purported press release, enclosed in an official-looking leather folder, containing one of four manipulations. The first paragraph either confirmed an Asian-White gap in math performance (Aronson et al., 1999), or disconfirmed it by asserting equal performance between the groups. Within each of these two conditions, a second paragraph described research and testimonials asserting either that innate ability or effort was the most potent predictor of mathematical ability (Chiu, Hong, & Dweck, 1997). This resulted in four groups: stereotype confirmed/entity prime ($n = 15$), stereotype confirmed/incremental prime ($n = 17$), stereotype disconfirmed/entity prime ($n = 20$), and stereotype disconfirmed/incremental prime ($n = 13$).

Following this manipulation, participants completed a math test consisting of ten questions from Graduate Record Examination (GRE) practice tests (Robinson & Katzman, 1992). Items that 55–75% of participants in national samples answered correctly were chosen to ensure our undergraduate sample could solve the GRE questions. Participants' performance, computed as a percentage of correct responses, showed that participants did well overall ($M = .89$, $SD = .14$). Following this test, participants were probed for suspicion, debriefed, and awarded course credit.

Results

A 2 (stereotype: confirmed/disconfirmed) × 2 (theory prime: entity/incremental) analysis of variance revealed no main effects of either stereotype, $F(1,61) = 0.01$, *ns*, or theory prime, $F(1,61) = 1.49$, *ns*. However, the analysis revealed the predicted stereotype × entity/incremental prime interaction, $F(1,61) = 4.11$, $p < .05$, $d = .51$. Fig. 1 shows this interaction graphically.
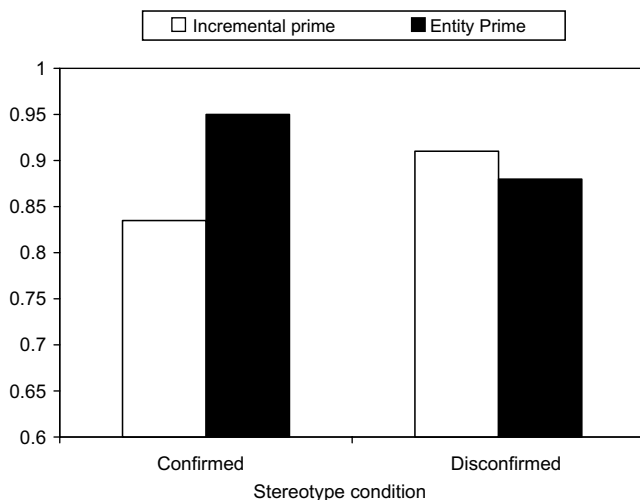

Fig. 1. Quantitative test performance by condition for Asian-background students, Study 1.

Planned comparisons revealed, as expected, that when the stereotype was confirmed, entity prime participants ($M = .95$, $SE = .035$) scored higher than incremental prime participants ($M = .835$, $SE = .033$; $t(30) = 2.30$, $p < .05$). When the stereotype was disconfirmed, entity prime ($M = .88$, $SE = .03$) and incremental prime ($M = .91$, $SE = .038$) participants did not differ ($t(31) = .57$, *ns*). The comparisons across entity prime conditions ($t(33) = 1.42$, $p = .16$) and incremental prime conditions ($t(28) = 1.44$, $p = .16$) were not statistically significant.

Discussion

Study 1 provided initial support for the predicted stereotype × entity/incremental prime interaction on test performance. In Study 2, we examined four additional issues to bolster these findings. First, we aimed to test the generalizability of the Study 1 findings by focusing on a different stereotype; namely, the stereotype that men are better than women at math. Second, Study 1 failed to find the traditionally observed advantage of incremental over entity theory on performance (see Dweck, 2006) in the absence of stereotype confirmation. Therefore we examined this specific comparison with particular interest in Study 2. Third, to establish the specificity of the predicted pattern of results, we examined the performance of both men and women. Finally, we asked participants to report on how difficult they found the test to be. We examined whether perceived test difficulty might help account for the link between the experimental manipulations and test performance, given our rationale that immutable group differences should engender threat for negatively stereotyped groups but alleviate self-doubt and anxiety for positively stereotyped groups.

Study 2

The procedure for Study 2 was similar to that of Study 1, but with four important modifications. First, the entire experiment was presented on a computer. Second, the stereotype manipulations employed in Study 2, though worded equivalently to those of Study 1, either confirmed or disconfirmed a male/female gap rather than an Asian/White gap. Third, given that participants did quite well on the math test in Study 1, and that unchallenging tests can sometimes cause a reversal of stereotype threat effects (O'Brien & Crandall, 2003), we created a longer and more difficult math test. Finally, given that caring about how one performs in the tested domain is an important prerequisite to being affected by stereotype threat (Major et al., 1998; Steele, 1997), we also assessed this variable in Study 2.

Method

Participants

A total of 199 English-fluent students (111 women; $M_{age} = 20.97$, $SD = 3.61$) at a large University in the Western United States participated in this study for either course credit or $10 payment. Ninety-seven participants identified their background as "Asian, Asian-American, or Pacific Islander," 58 as "European-American or White," 13 as ""Hispanic or Latino," 11 as "African American or Black," 6 as "Middle Eastern," 2 as "American Indian or Alaskan Native," and 12 as "other." Forty-seven participants reported not being U.S. born. Country of birth and age did not exert main or interactive effects in the analyses reported below and are not discussed further.

One male participant who was above 3 standard deviations from the sample mean in the time taken to complete the math test was excluded from the analysis. An additional 12 participants (6 women) who did not believe the manipulation were also excluded,

leaving a final sample of 186 participants (105 women) on whom the principal analyses reported below are based.

Procedure

Participants were randomly assigned to the stereotype confirmed/entity ($n = 53$; 30 women), stereotype confirmed/incremental ($n = 54$; 30 women), stereotype disconfirmed/entity ($n = 41$; 23 women), or stereotype disconfirmed/incremental ($n = 38$; 22 women) manipulations. Participants were again presented with a press release ostensibly from the University's "Center for Quantitative Reasoning and Performance" containing the manipulations. The entity/incremental manipulation remained the same as in Study 1. The stereotype confirmed/disconfirmed manipulations were altered from Study 1 to provide information about gender differences in math performance. Following the experimental manipulations, participants completed the math test. They then answered questions about the test and their performance. Participants were not given feedback on how well they did on the test. Finally, participants were debriefed, assigned course credit and dismissed.

Materials

Math test. After reading the press releases, participants completed a 20-item math test compiled from GRE practice tests (Robinson & Katzman, 1992). The test included the 10 test questions used in Study 1 as well as ten new questions answered correctly by 45–55% of original test takers. The increased difficulty of the test was reflected in lower overall performance compared to Study 1 ($M = .64$, $SD = .24$).

Personal investment in performance. Following research showing that the influence of stereotypes may be most pronounced among those who are invested in how they perform in the tested domain (Aronson et al., 1999; Major et al., 1998), we assessed such personal investment following the test. Using a 7-point Likert-type scale, participants indicated their agreement with the following statements: "My performance on math tests influences my self-esteem/self-worth," "I don't really care what tests say about my math ability (reverse-scored)," and "Performing well on math tests is important to me" ($\alpha = 0.75$, $M = 4.0$, $SD = 1.30$).

Perceived difficulty of the test. Participants answered the item 'how difficult did you find the math task to be?' on a 1 ('not at all') to 7 ('very much') scale ($M = 3.51$, $SD = 1.55$).

Results and discussion

Preliminary analyses

Preliminary analyses revealed a main effect of personal investment in performance, $F(1,171) = 17.79$, $p < .001$, $d = .62$, with greater investment positively related to tested math performance. There was also a main effect of ethnicity, $F(6,171) = 9.24$, $p < .001$, $d = .45$, such that participants of Asian descent scored higher than other groups. There were no significant higher-order interactions with these variables. Subsequent analyses therefore retained these two variables as covariates. All analyses reported below are adjusted for the effects of these covariates.

Math performance

The data were analyzed using a 2 (stereotype: confirmed/disconfirmed) × 2 (theory prime: entity/incremental) × 2 (participant gender: female/male) GLM procedure with investment and ethnicity as covariates. The analysis revealed the predicted gender × stereotype × theory prime interaction, $F(1,171) = 4.17$, $p < .05$, $d = .31$. Fig. 2 shows this interaction graphically. Among
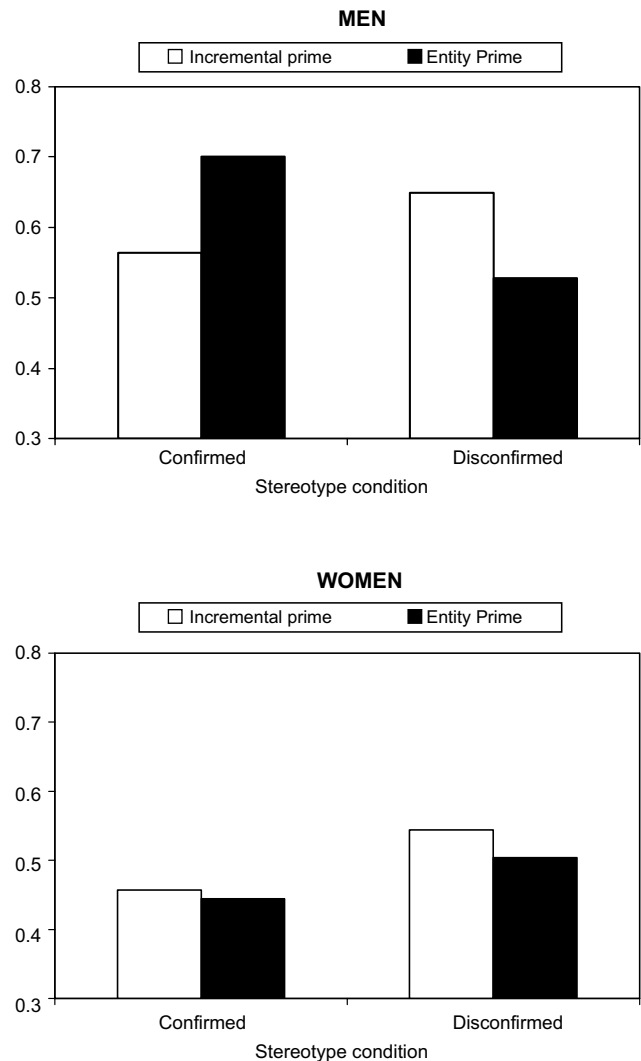

Fig. 2. Quantitative test performance by condition for men & women, Study 2.

men, controlling for personal investment and ethnicity, there was a significant stereotype × theory prime interaction, $F(1,171) = 9.29$, $p < .003$, $d = .46$. As the left panel of Fig. 2 shows, in the stereotype confirmed condition, entity prime participants ($M = .70$, $SE = .046$) scored significantly higher than incremental prime participants ($M = .56$, $SE = .045$; $t(45) = 2.48$, $p = .01$). By contrast, in the stereotype disconfirmed condition, entity prime participants ($M = .53$, $SE = .05$) scored marginally lower than incremental prime participants ($M = .65$, $SE = .055$; $t(32) = 1.85$, $p = .07$). Comparing men's scores across the two entity prime conditions revealed that those who had the stereotype confirmed scored significantly higher than those who had the stereotype disconfirmed ($t(39) = 2.92$, $p < .004$). The means did not differ significantly across the two incremental prime conditions, $t(38) = 1.40$, $p = .16$. This suggests that the effects of the stereotype manipulation were strongest among those with a fixed view of ability.

Among women, we observed only a main effect of stereotype manipulation, ($F(1,171) = 3.83$, $p = .05$, $d = .30$), such that women who had the stereotype confirmed ($M = .45$, $SE = .032$) performed worse than women who had the stereotype disconfirmed ($M = .52$, $SE = .037$). This is consistent with the literature on gender-based stereotype threat (e.g. Spencer et al., 1999).

Perceived difficulty of the test

Controlling for ethnicity and personal investment, we observed a significant gender × stereotype × theory prime interaction on perceived difficulty of the test, $F(1, 171) = 6.35$, $p = .01$, $d = .38$. This interaction, shown in Fig. 3, mirrors the effects for test performance. More specifically, among men, the stereotype × theory prime interaction was significant, $F(1, 171) = 9.48$, $p < .003$, $d = .47$. As expected, men who had the stereotype confirmed and received an entity prime found the test less difficult ($M = 2.30$, $SE = .317$) than those who had the stereotype confirmed but received an incremental manipulation ($M = 3.43$, $SE = .311$, $t(45) = 2.96$, $p < .004$). By contrast, men who had the stereotype disconfirmed and received an entity prime found the test more difficult ($M = 3.71$, $SE = .346$) than those who received an incremental prime ($M = 3.04$, $SE = .381$, $t(32) = 1.49$, $p = .14$), although this difference was not significant. Again, among men who received an entity manipulation, those who had the stereotyped confirmed felt the test was less difficult than those who had the stereotype disconfirmed, $t(39) = 3.46$, $p < .001$. Among men who received an incremental manipulation, the differences were not significant, $t(38) = .91$, $p = .36$.

Among women, we only observed a main effect of stereotype, $F(1, 171) = 4.84$, $p < .03$, $d = .34$, such that women who had the stereotype confirmed ($M = 4.43$, $SE = .225$) felt the test was more difficult than women who had the stereotype disconfirmed ($M = 3.86$, $SE = .255$).
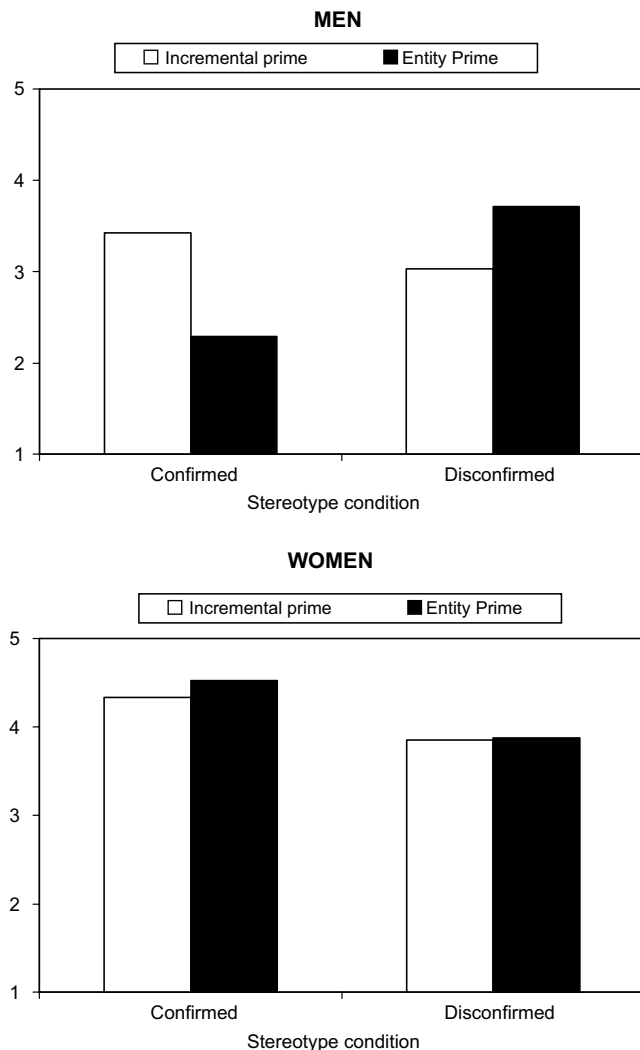

MEN

WOMEN

Fig. 3. Perceived difficulty of the test, Study 2.

Mediational analyses

We tested whether perceived difficulty of the test could help explain the effect of our experimental manipulations on performance. To do so, we first established that the proposed mediator, perceived test difficulty, was positively associated with test performance when controlling for ethnicity and personal investment, $F(1, 177) = 78.83$, $p < .0001$, $d = 1.33$. We then regressed test performance scores onto gender, stereotype prime, theory prime, and their interactions simultaneously with perceived test difficulty. Controlling for ethnicity and personal investment, perceived test difficulty remained a significant predictor of performance, $F(1, 170) = 43.01$, $p < .0001$, $d = 1.0$, whereas the previously observed gender × stereotype × theory prime interaction was no longer significant, $F(1, 170) = 1.0$, $p = .32$, $d = .15$, Sobel's $z = 2.35$, $p < .02$. This suggests that perceived difficulty of the test is a potential mediator of the effects of the independent variables on performance.[1]

General discussion

While previous research has revealed the negative impact of entity theory on unfavorably stereotyped group members, the current study illustrates an opposite yet parallel process affecting favorably stereotyped group members in which entity views *enhance* performance. Asian-background participants in Study 1, and men in Study 2—two groups that enjoy a favorable stereotype of high math aptitude—exhibited the greatest lift in performance when they received confirmation of their in group's advantage and were given information that ability is fixed.

Consistent with research on stereotype threat, in Study 2 we found that women who had the stereotype confirmed found the test more difficult than those who did not, presumably as a result of the disruptive processes that prevent test takers from focusing on the task (Schmader et al., in press). By contrast, men who had a positive stereotyped confirmed and who were additionally primed with an entity view found the test to be the least difficult.

Despite being generally consistent with our expectations, several patterns in the data are worth discussing. It is worth noting that despite replicating the expected stereotype × theory interaction for favored groups across two studies and two different groups (Asians in Study 1; men in Study 2), we did not observe a stereotype lift main effect in either study. This pattern is consistent with the extant literature showing that lift effects are generally more subtle than threat effects, and are sometimes not significant within individual studies (Walton & Cohen, 2003).

A second pattern in our data worth noting is that even though we found support for the expected interaction between stereotype and entity/incremental manipulations among the favored groups, we did not find an interaction for the unfavored group (women) in Study 2 such that incremental beliefs buffered against stereotype threat. Here, the relatively weak effects of stereotype lift compared to stereotype threat may also prove relevant. More specifically, to the degree that stereotype threat effects are more robust, lift and threat effects may be differentially subject to influence through relatively brief and transitory experimental manipulations such as the entity/incremental one employed here. Indeed,

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[1] Given that perceived difficulty was measured after the test, there remains the possibility of the reverse causal order, such that performance influenced the perceived difficulty of the test. When controlling for performance, the direct gender × stereotype × theory prime effect on perceived difficulty, albeit significantly reduced ($z = 1.95$, $p = .05$) nevertheless remained marginally significant, $F(1, 170) = 3.12$, $p = .079$, $d = .27$. We retain emphasis on the alternative model (where perceived difficulty is the mediator) because participants were not given feedback on their test performance, and did not know how well they did on the test. Thus the measure of perceived difficulty more likely captured the ease with which participants felt they could complete the test questions, as we theoretically maintain.

past research documenting the protective effect of incremental beliefs on stereotype threat effect has done so either through cognitive dissonance and public commitment (Aronson et al., 2002), or through a three-month mentoring program (Good et al., 2003), both of which are relatively lengthy procedures designed to induce lasting attitude change. We hope future research will continue to address potential differences in the malleability of threat versus lift effects.

We also note that from the data presented here, it is not possible to tell the relative effects of an entity prime boosting performance versus an incremental prime hurting performance in the presence of a favorable stereotype. There is a rationale for both processes: an entity prime, as we have argued, can solidify confidence in the immutability of one's advantage. On the other hand, given an incremental prime, the inevitability of one's advantage is no longer guaranteed, potentially undermining the benefits of social comparisons. This latter possibility might shed light on the conditions under which favorable stereotypes might lead to "choking" (see Cheryan & Bodenhausen, 2000). We look forward to future research that addresses these issues.

Stereotype lift or stereotype susceptibility?

It is important to note that different mechanisms have been posited in the literature to account for performance boosts in the presence of positive stereotypes. As we have outlined, Walton and Cohen (2003) posit that downward social comparisons can alleviate performance concerns. An alternative account (see Shih, Ambady, Richeson, Fujita, & Gray, 2002; Shih, Pittinsky, & Ambady, 1999) proposes that positive stereotypes can boost performance through a more implicit priming process. According to this account, if a positive stereotype is both accessible and applicable (c.f., Higgins, 1996) to a given target, targets can become susceptible to the stereotype through a process where activated trait concepts produce corresponding behavioral tendencies (see also Dijksterhuis & Bargh, 2001).

Based on the relatively blatant nature of the stereotype manipulations used here, we believe that the effects observed in the present studies are more aligned with stereotype lift than with stereotype susceptibility accounts. The fact that we observed performance boosts with our manipulations is consistent with Walton and Cohen's (2003) finding that stereotype lift effects are equivalent across blatant (e.g., explicit mention of gender differences in the test) versus more subtle (e.g., mention of test diagnosticity) manipulations in stereotype treatment conditions. By contrast, research shows that while stereotype susceptibility effects are evident following subtle stereotype activation, blatant activation wipes out these effects, presumably because explicit activation introduces additional self-presentational concerns (Shih et al., 2002). Thus, the findings here are more consistent with the social comparison processes posited by a stereotype lift account than the priming processes posited by a stereotype susceptibility account.

Boundary conditions

Although the current findings provide initial evidence that performance may benefit from an entity theory when one already expects to do well, it is of theoretical as well as practical importance to note that people do not always perform to expectations. Despite enjoying a performance boost, members of favorably stereotyped groups can also encounter difficulties on the road to achievement—difficulties that may prove particularly damaging in the face of achievement expectations. A wealth of literature suggests that an incremental lay theory protects people when they receive failure feedback by helping them frame failure as an opportunity to grow and learn (Dweck, 2006). Conversely, as previously observed, an entity theory predisposes people to view failure information as diagnostic of their abilities, and to subsequently avoid or disidentify from the domain. Failing in a domain that one's ingroup is supposed to excel in may magnify the emotional and behavioral manifestations of entity theories (e.g., avoidance of the domain, anxiety and threat) due to a belief that if one underperforms even when one is supposed to have a sure advantage, then one must have especially low ability. Future research should address the implications of failure feedback for high status group members, both for performance as well as identity management.

Conclusions

The current studies' examination of high status groups in a short-term laboratory setting is useful in elucidating the differential implications of entity theories for our understanding of achievement gaps in the United States. The current findings, when combined with the prior literature, begin to suggest that it is not merely that low status groups are harmed by the fixed nature of stereotypes, but also that high status groups are bolstered. Americans are likely to believe in the fixed nature of intelligence and that school success is determined by natural ability (Steinberg, 1996). To the degree that the educational system reaffirms an entity view of intellectual abilities through ability tracking and intelligence testing (Weinstein, 2005), the current findings suggest an exacerbation and maintenance of performance gaps between groups about whom stereotypes exist. Further implications of the current study may be felt in areas such as career choice, such that entity-minded individuals may overselect favorably stereotyped domains in which performance is boosted. A cycle in which a favorably stereotyped groups' success then confirms societal expectations, and perpetuates inequities, understandably follows.

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