Research Report

WHEN POSITIVE STEREOTYPES THREATEN INTELLECTUAL PERFORMANCE: The Psychological Hazards of "Model Minority" Status

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Abstract—*Asian-American women's performance on a test of quantitative skill was studied as a function of whether their Asian, female, or individual identity was salient at the time of testing. In previous research, ethnicity salience was found to result in enhanced math performance among Asian women. However, the investigators relied on a subtle manipulation of ethnicity salience that likely did not invoke concerns about group reputation nor make salient the common cultural stereotypes concerning Asians' mathematical prowess. We induced a focus on ethnic identity in a manner that was likely to make other people's high performance expectations more salient. Under these conditions, ethnicity salience resulted in diminished ability to concentrate, which in turn led to significantly impaired math performance. Thus, although people commonly hold positive stereotypes about Asians' mathematical skills, making these stereotypes salient prior to performance can create the potential for "choking" under the pressure of high expectations.*

A number of recent investigations have shown that negative stereotypes can undermine the academic performance of even very talented members of the stereotyped group. For example, African-American students were found to perform significantly more poorly than their European-American counterparts on a test that was characterized as diagnostic of intelligence, but when the same test was characterized in a manner that undermined the relevance of prevailing stereotypes of intellectual inferiority, differential performance was eliminated (Steele & Aronson, 1995). Similar results have emerged regarding other stereotyped groups, including Caucasian students of low socioeconomic backgrounds (Croizet & Claire, 1998) and women performing in mathematical and technical domains (e.g., Spencer, Steele, & Quinn, 1999). The picture emerging from this growing literature reveals that negative stereotypes undermine performance by creating concern on the part of members of the stereotyped group that their performance might serve to confirm the negative expectations other people hold about their group (Steele, 1997). Steele and his colleagues (e.g., Steele, 1997; Steele & Aronson, 1995) used the term *stereotype threat* to refer to the extra cognitive burden involved in worrying about confirming the low performance expectations of others.

Recently, Shih, Pittinsky, and Ambady (1999) reported intriguing evidence that intellectual performance can be moderated by manipulations influencing the salience of stereotyped social identities. Shih et al. examined the influence of gender versus ethnicity salience on mathematics performance in a sample of Asian-American women. This manipulation is particularly interesting because one of the relevant identities ("woman") is typically negatively stereotyped in the domain of quantitative skill (e.g., Benbow, 1988), whereas the other ("Asian") is typically positively stereotyped in this domain (e.g., Kao, 1995). Confirming the logic of Steele's stereotype-threat hypothesis, Shih et al. found in two experiments that the participants in the gender-prime condition performed more poorly on a mathematics test than a control group of Asian-American women. Intriguingly, Shih et al. also found a positive effect of the ethnicity prime in one of their experiments. Specifically, participants prompted to think of themselves in terms of their Asian identity earned higher math scores than participants in the control condition. This result suggests that although negative stereotypes can threaten intellectual performance, positive stereotypes can actually provide a performance boost.

Although the data reported by Shih et al. (1999) did not provide evidence as to the processes mediating the "stereotype boost" effect seen in the ethnicity-prime condition, previous research suggests one likely candidate. Specifically, it is likely that activating an identity that is associated with positive stereotypes leads to confidence and expectations for personal success, which have been shown to facilitate actual performance (e.g., Baumeister, Hamilton, & Tice, 1985). However, the research of Baumeister et al. reveals a crucial moderator of the effects of expectations for success. When such expectations are held privately, they are likely to provide a confidence boost that contributes to successful performance. However, when a positive performance is anticipated by an external audience, an individual may experience apprehension about meeting those high expectations, and such feelings can lead to the phenomenon known as "choking under pressure." Thus, the effects of positive expectancies need not always be beneficial.

The ethnicity-salience manipulation used by Shih et al. (1999) was purposely chosen to be subtle and indirect. It involved asking respondents whether they lived in coed housing (gender salience) or spoke more than one language (ethnicity salience). The manipulation made no reference to how other people view the groups in question, so it was unlikely to create much of a sense of public, external expectations for performance. For this reason, any positive expectations for math performance among the Asian-American students were likely to be operating in the private sphere that has been found to enhance performance (Baumeister et al., 1985). However, one can readily imagine a different performance context in which high expectations for the performance of one's group are more salient. Would these more public expectations still provide a performance boost, or could they possibly lead to choking? In the present experiment, we tested the idea that positive stereotypes can also threaten performance by creating concern about failure to meet the high expectations held for one's group. We repeated the basic experiment conducted by Shih et al., giving Asian-American women a challenging mathematics test after making salient their ethnic or gender identity. However, we changed the identity manipulation in order to make public, group-related expectancies more salient. We also examined a range of potential me-

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diating variables in order to understand the psychological reasons for any observed effects of the identity-salience manipulation on mathematical performance.

METHOD

Overview

Forty-nine self-identified Asian-American women were recruited for the study. All were undergraduates enrolled at a Midwestern university. We restricted the sample to students who reported that math performance was very important to them (operationalized as a rating of 5 or 6 on a 6-point scale of math importance). This restriction was imposed because previous research suggested that the effects of stereotype threat are limited to individuals who value the performance domain highly (e.g., Aronson et al., 1999). Each student participated individually and was randomly assigned to one of three identity-salience conditions (ethnic identity, gender identity, or a personal-identity control condition). After completing a questionnaire designed to manipulate identity salience, the respondents completed a quantitative skills test and then completed a posttest questionnaire assessing several reactions to the test.

Procedure and Materials

Participants reported to a laboratory room individually to participate in a study examining "predictors of math ability." Thus, in line with most previous research in which effects of stereotype threat have been demonstrated, the test was presented as diagnostic of the stereotyped ability. The various tasks were administered in a private cubicle containing a computer. The first task was a 10-item survey designed to manipulate identity salience. In the ethnicity condition, the 10 items were taken from the Collective Self-Esteem Scale (Luthanen & Crocker, 1992) and adapted specifically to ethnic identity (e.g., "Overall, my race is considered good by others," "I am a worthy member of the racial group I belong to"). In the gender condition, the same items were reworded to focus on gender instead of ethnicity. This salience manipulation was expected to be much more likely than the procedure used by Shih et al. (1999) to make public, group-based performance expectancies salient to the participants. In the control condition, no social identity was made salient; instead, the students answered 10 questions about their personal, individual identity.

After completing the initial questionnaire, participants were given 20 min to complete a challenging quantitative skills test consisting of 20 multiple-choice items taken from previous versions of the Graduate Record Examination. After completing the math test, the students were asked to answer a final questionnaire containing items measuring several potential mediators, including, among others, (a) task motivation, (b) ability to concentrate on the task, and (c) self-handicapping (i.e., excuses for poor performance, such as getting little sleep the previous night). Finally, participants were debriefed and offered $5 compensation for their participation.

RESULTS

Math Performance

Following Shih et al. (1999), we measured math performance by computing the ratio of the number of questions answered correctly to the number of questions attempted (see also Steele & Aronson, 1995).[1] In the control, personal-identity condition ($n = 16$), students correctly answered an average proportion of .83 of the items ($SD = 0.09$). In line with the possibility that positive expectations for performance could cause choking under pressure when the positively stereotyped Asian identity was salient, performance in the ethnicity condition ($n = 16$) was markedly lower, $M = .71$, $SD = 0.17$. In contrast, performance in the gender condition ($n = 17$) was comparable to performance in the control condition, $M = .81$, $SD = 0.14$. A one-way analysis of variance confirmed the significant effect of the identity-salience manipulation, $F(2, 46) = 4.04$, $p < .025$. Planned contrasts confirmed specifically that performance was significantly lower in the ethnicity condition than in the control condition, $t(46) = 2.63$, $p < .015$ (all reported p values are two-tailed); however, there was no reliable difference between the gender condition and the control condition, $t(46) = 0.40$, $p > .65$. Thus, we did not observe a gender threat effect in this sample (see the Discussion section).

Potential Mediators

As was the case in the studies of Shih et al. (1999), we found that task motivation was not influenced by our identity-salience manipulation. Students in all conditions reported being motivated. We also did not find any differential invocation of post hoc excuses for poor performance (such as life stress or poor sleep on the previous night). However, we did find evidence that lower performance in the ethnicity condition was attributable in large part to impaired concentration in this condition. Participants in the ethnicity-salience condition reported that they had experienced significantly poorer ability to concentrate during the math task than did participants in the control condition, Ms $= 4.00$ ($SD = 1.32$) versus 5.13 ($SD = 1.41$), respectively, on a 7-point scale; $t(30) = 2.34$, $p < .025$.[2] This pattern is consistent with the possibility that concerns about living up to the high expectations held for Asians impeded performance by interfering with participants' mental focus during the math test. To test this possibility, we conducted a series of regression analyses. The resulting regression coefficients are depicted in Figure 1, which shows that ethnicity focus was associated with significantly reduced concentration ability; in turn, concentration ability was positively related to math performance. More crucial for our mediational argument, the significant direct pathway from ethnicity focus to math performance (shown above the arrow) is reduced to nonsignificance when the effects of the concentration variable are statistically controlled (shown below the arrow). The modified Sobel test advocated by Kenny, Kashy, and Bolger (1998) indicated that the reduction in the path coefficient was marginally significant, $Z = 1.65$, $p < .10$. These results confirm that the deleterious impact of ethnicity focus on math performance was partially mediated through the effects of

1. Inasmuch as the great majority of respondents completed all or almost all of the test items, results were substantially similar when the absolute frequency of correct responses was analyzed.

2. Concentration scores of the students in the gender-salient condition were at an intermediate level, $M = 4.59$, and were not reliably different from scores for the control condition, $t(31) = 1.13$, $p > .25$.

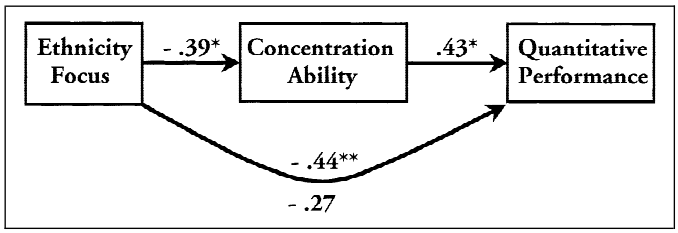

Fig. 1. Mediation of ethnicity-salience effects on math performance. The regression coefficient shown above the arrow from ethnicity focus to quantitative performance is for the direct pathway between these variables; the coefficient below this arrow is from an analysis in which the effects of the concentration variable were statistically controlled. *$p < .05$. **$p < .01$.

identity salience on participants' ability to concentrate on the math problems.[3]

DISCUSSION

These results extend current understanding of the role of identity issues in academic performance in several important ways. Most notably, these findings show that even a positively stereotyped social identity can constitute a threat to academic performance. Unlike Shih et al. (1999), we found that focusing our Asian-American participants' attention on their ethnicity did not improve their performance; instead, it created difficulties in concentration that translated into significantly impaired performance. Whereas Shih et al. relied on a relatively subtle means for making ethnicity salient, we used a procedure that made participants reflect on how their ethnic group is viewed publicly. This focus presumably led them to contemplate the possibility of failing to exhibit the positive quantitative skills commonly expected of Asians. Just as fear of confirming a negative stereotype can undermine performance, so can fear of failing to confirm a positive stereotype. However, the latter effect appears to be limited to conditions in which public expectations of success are salient (Baumeister et al., 1985). When expectations of success are activated in a more private fashion, membership in a positively stereotyped group may confer performance benefits (as in the experiment by Shih et al.).

Although Asian Americans are often characterized as a "model minority" (Kao, 1995), this characterization may in itself be quite limiting (Lee, 1996). Asians may well have good reason to be concerned about the consequences of failing to live up to the positive stereotypes held about their group, because previous research suggests that they can pay a heavy cost for falling short. Ho, Driscoll, and Loosbrock (1998) found that Asian-American students who performed poorly on a mathematical test were given substantially fewer points by graders than European-American students who performed identically. Failing to meet high expectations can thus be accompanied by greater punishment than would have occurred in the absence of any particular expectations. Add to this the possibility that one's poor performance may undermine the reputation of one's group, and there is ample reason why Asian students may experience unique performance pressures when positive stereotypes of their ethnic group are activated.

This research also underscores the fluidity of self-definition and its role in academic performance. Being Asian, per se, was not the issue; rather, the crucial factor concerned whether participants thought about themselves in terms of a (potentially) stereotyped identity. In this regard, it is interesting to note that the gender-salience manipulation we used failed to create any stereotype-threat effects among our participants. These results are actually similar to those obtained by Shih et al. in their experiment most analogous to ours, in which they used a sample of Asian women from the United States (Shih et al., 1999, Experiment 1). In that study, performance of students in the gender-salient condition was not substantially different from performance of students in the control condition (mean proportion correct = .43 and .49, respectively; a direct statistical comparison of these means was not provided). It may be that the particular test items used were not difficult enough to generate gender-based stereotype-threat effects (cf. Spencer et al., 1999), although they were sufficiently difficult to create problems for our ethnicity-focused participants. Another potential explanation may lie in the possibility that Asian women are less susceptible to gender-related stereotype threat than other women, because they can call upon an identity dimension that is positively stereotyped in the math domain (i.e., the Asian side of their identity) to bolster their private confidence in themselves, should they begin to experience gender-related threat. In this sense, their latent, positively stereotyped identity constitutes a ready basis for private self-affirmation (Steele, 1988) when negative gender stereotypes are salient. This possibility awaits further empirical exploration. The present findings should therefore certainly not be taken as evidence against the more general existence of gender-based stereotype-threat effects in the domain of math performance.

Whatever the reason for the lack of impact of negative, gender-based stereotypes in the present study, the findings with respect to ethnic stereotypes document a striking effect. Specifically, positive stereotypes (at least when they form the basis for salient public expectations) can place a considerable burden on members of the stereotyped group, adversely affecting their performance in the stereotyped domain. Future research needs to further explore the conditions under which both positive and negative stereotypes can undermine achievement in consequential settings such as academic performance.

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3. We of course could not ask participants about their ability to concentrate on the math problems prior to undertaking the test, and to do so during the test could itself have interfered with their mental focus. Thus, this measure (as well as all the potential mediators) was assessed immediately after the math test. This could create some interpretational ambiguity, because it is possible that the respondents who experienced difficulty on the test reported concentration problems as a way of rationalizing or explaining their performance. Two facts argue against this interpretation. First, there were many possible mediators assessed, and any one of them could have been used as a post hoc basis for explaining poor performance. None of these other measures were related to performance, however. Thus, it does not appear that our participants' responses to the mediational questions served a rationalization strategy. Rather, their reports of concentration ability seem to reflect their actual state of mind during the test. Second, mediational analyses in which the causal direction was reversed (i.e., poor performance was assumed to cause reports of concentration problems) did not yield meaningful results.

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