Stereotype Threat Affects Financial Decision Making
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What is This?
Although women make up more than half of the labor force in Fortune 500 companies, they lead only 3% of these companies (Catalyst, 2009). Many factors are likely to contribute to this disparity. Gender stereotypes that women are more loss averse and risk averse than men when making decisions, and are also not as adept at mathematics and finance as men, may be an important cause of underrepresentation of women in these fields. Such stereotypes could affect hiring decisions (Davison & Burke, 2000). In addition, by triggering stereotype threat—the situational threat of confirming as self-relevant a negative stereotype about one’s group (Steele, 1997)—stereotypes may affect the decisions that women make, and shape their chances of success in arenas that value risk taking. In the research presented in this article, we examined whether stereotype threat increases loss aversion (the tendency to strongly prefer avoiding losses to acquiring gains) and risk aversion (the tendency to strongly prefer options of higher certainty when different options have the same expected payoff), phenomena that previous research has shown to be more prevalent in women than in men (Brooks & Zank, 2005; Byrnes, Miller, & Schafer, 1999).

Decision making is often understood as the product of stable cognitive processes, for example, as driven by cognitive representations of utility (Kahneman & Tversky, 1979). In addition, gender differences in decision making are attributed to innate or internalized factors (i.e., biology and socialization), which lead to differences in cognitive representations (Apicella et al., 2008; Grasmick, Hagan, Blackwell, & Arneklev, 1996). However, recent studies have shown that decision making can be shaped by more situation-sensitive factors, such as emotions (e.g., Lerner & Keltner, 2000; Loewenstein, Weber, Hsee, & Welch, 2001). In an approach that complements this perspective, we propose that stereotype threat, triggered by situational cues that make negative stereotypes self-relevant, may contribute to gender differences in decision making.

Why would stereotype threat influence decision making? Studies have shown that targets of stereotype threat, as they try to suppress thoughts of negative stereotypes, experience a depletion of self-control resources, that is, ego depletion (Inzlicht, McKay, & Aronson, 2006). This ego depletion could affect decision making. In order to understand how ego depletion affects decision making, it is important to note that decision making is thought to be shaped by two systems—one

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If stereotype threat produces ego depletion and increases reliance on the intuitive system, stereotype threat may also affect decision making, and increase loss aversion and risk aversion. Moreover, when a person is under threat, the intuitive-affective system may assess risk and loss particularly negatively, further increasing loss-aversion and risk-aversion behaviors: Indeed, studies have found that stereotype threat creates an increased prevention focus, which is a heightened focus on protecting what one has (Seibt & Forster, 2004), as well as increased vigilance for losses and errors (Brodish & Devine, 2009; Forbes, Schmader, & Allen, 2008). These findings suggest that losses and mistakes may feel particularly costly when one is threatened.

Physical threat and stressors, which are believed to hinder deliberative processing, increase risk aversion (Porcelli & Delgado, 2009). We propose that a potent psychological threat, like stereotype threat, which often burdens members of stigmatized groups, such as women, may also affect decision making. Findings supporting our hypothesis would be the first indication that decision making can be influenced by situational concerns about negative stereotypes. Such findings would indicate that gender differences in decision making are not necessarily innate and would highlight the need for creating environments that do not interfere with the decision-making process: environments that are nonthreatening and identity safe (i.e., that do not trigger stereotype threat or highlight negative stereotypes).

Study 1

In Study 1, we tested whether or not stereotype threat increases loss-aversion behavior in women.

Method

Participants. Participants were 37 Stanford University undergraduates (18 female, 19 male), as well as 16 employees (7 female, 9 male) of a Fortune 500 company. All 53 participants were paid $5 in exchange for taking part in the study.

Stereotype-threat manipulation. Stereotype threat is experienced when negative stereotypes about one’s group are relevant. We manipulated whether negative stereotypes about women’s abilities were relevant or irrelevant, by using established stereotype-threat manipulations of task diagnosticity and salience of the threatened identity (Steele & Aronson, 1995). In the stereotype-relevant condition (designed to be threatening to women), participants were told they would complete tasks that would measure their mathematical, logical, and rational reasoning abilities. Participants were asked to indicate their gender prior to beginning the tasks. In the stereotype-irrelevant condition (designed to be nonthreatening to women), participants were told that the tasks they would be required to complete were puzzle-solving exercises. Participants were asked to indicate their gender after completing the tasks.

Loss-aversion measure. Mixed (gain/loss) gambles such as coin-toss lotteries are generally used to assess loss-aversion behavior (e.g., Kahneman & Tversky, 1979; Tom, Fox, Trepel, & Poldrack, 2007). In our study, we also used a mixed-gambles task to measure loss aversion. Participants were presented with six coin-toss lotteries and were asked to indicate whether they would be willing to play each lottery using their own money (method adapted from Gachter, Johnson, & Hermann, 2007). All six lotteries offered a 50% chance of winning $6 and a 50% chance of losing an amount of money that varied between $1 and $6 (e.g., “If the coin turns up heads, you win $6; if the coin turns up tails, you lose $3”). No lotteries had negative expected values. We calculated loss aversion as the number of lotteries each participant rejected. To ensure that participants’ responses were consistent with their true preferences, we told all participants that they might be chosen at the end of the study to play the lotteries they accepted, with real money (5 of the 53 participants were selected to do so; for these participants, the average additional payout was $2.25). In other words, during the experiment, all participants thought they might be playing for real money.

Procedure. Participants received one of the two experimental manipulations, solved two mathematics equations in 2 min (this task lent credence to the cover story regarding our interest in mathematics and puzzles), and then completed the loss-aversion measure. Subjects participated in mixed-sex groups of 2 to 4 individuals, with male experimenters.

Results and discussion

We hypothesized that participants who experienced stereotype threat (women in the stereotype-relevant condition) would exhibit the greatest loss-aversion behavior. A gender-by-condition analysis of variance (ANOVA) on loss aversion yielded a main effect of gender, \(F(1, 49) = 10.06, p_{rep} = .98\), and the predicted gender-by-condition interaction, \(F(1, 49) = 5.55, p_{rep} = .95, \eta_p^2 = .10\) (see Fig. 1). Women in the stereotype-relevant condition were more loss averse than women in the stereotype-irrelevant condition, \(t(49) = 2.47, p_{rep} = .95, d = 1.05\). Women in the stereotype-relevant condition were also more loss averse than men in the stereotype-relevant condition, \(t(49) = 3.74, p_{rep} = .98, d = 1.68\), or the stereotype-irrelevant condition, \(t(49) = 2.82, p_{rep} = .97, d = 1.18\). We did not find a gender difference when stereotypes were irrelevant, \(t < 1\). In
addition, whether participants were students or employees did not moderate the effect observed, \( F < 1 \).

Study 2

In Studies 2a and 2b, we investigated the effect of stereotype threat on risk-aversion behavior. The designs for these two studies were identical, except that Study 2b also explored whether ego depletion mediated the effects of stereotype threat on decision making.

Method

Participants. In Study 2a, 70 Stanford University undergraduates (41 female, 29 male) participated, and in Study 2b, 56 Stanford University undergraduates (31 female, 25 male) participated. All participants were paid $10 in exchange for taking part in the study.

Stereotype-threat manipulation. The experimental manipulation carried out in Study 2 was identical to that in Study 1.

Risk-aversion measure. For the risk-aversion measure, we asked participants to choose between options with differing associated risk (e.g., Kahneman & Tversky, 1979). Participants were presented with 14 trials in the domain of gains (method adapted from Porcelli & Delgado, 2009), each offering a choice between two options that had equal expected values (range of expected values = $1.00–$8.00) but differed in riskiness (e.g., a 20% chance of winning $4.00 vs. an 80% chance of winning $1.00). The number of trials in which participants chose the lower-risk option was used as a measure of risk aversion. To vary the stimuli, on 7 trials we offered participants a choice between a 20% chance and an 80% chance of winning, and on the other 7 trials we offered a choice between a 40% chance and a 60% chance of winning. The analyses were collapsed across trial types. Participants were told they might be selected to play the gambles they had chosen with real money (5 participants were selected in each study; for these participants, the average additional payout was $3.50).

Ego-depletion measure. We assessed ego depletion in Study 2b using a computerized Stroop task, which requires the use of self-control resources to inhibit the reading response on incompatible trials. The Stroop task is one of the most commonly used measures of ego depletion (e.g., Gailliot et al., 2007). On each trial, a color word was displayed in a font color that was either compatible (e.g., the word red in red font) or incompatible (e.g., the word blue in red font). After 8 practice trials (all compatible), participants were presented with 18 compatible trials and 18 incompatible trials in randomized order, with a string of Cs displayed for 500 ms between trials. Participants reported the font color of each word as quickly as possible by pressing color-coded keys. The mean difference in time taken to identify the color between compatible trials and incompatible trials was used as a measure of ego depletion. Incorrect trials (i.e., those in which the font color was not identified correctly; < 1%) were excluded.

Procedure. In Study 2a, participants received one of the two experimental manipulations, solved two equations, and then completed the risk-aversion measure. In Study 2b, the same method as in Study 2a was used, with the exception that participants completed the Stroop task between solving the equations and completing the risk-aversion measure. Subjects participated in mixed-sex groups of 2 to 4 individuals, with male experimenters.

Results and discussion: Study 2a

As predicted, we found that stereotype threat increased risk aversion. We conducted an ANOVA on risk aversion and found a main effect of gender, \( F(1, 66) = 5.07, p_{rep} = .94 \), as well as a gender-by-condition interaction, \( F(1, 66) = 8.54, p_{rep} = .98, \eta^2 = .12 \) (see Fig. 2). Women in the stereotype-relevant condition were significantly more risk averse than those in the stereotype-irrelevant condition, \( t(66) = 2.11, p_{rep} = .93, d = 0.68 \). Women in the stereotype-relevant condition were also significantly more risk averse than men in the stereotype-relevant condition, \( t(66) = 3.40, p_{rep} = .99, d = 1.32 \), and tended to be more risk averse than men in the stereotype-irrelevant condition, \( t(66) = 1.51, p_{rep} = .85, d = 0.50 \). There was no gender difference in the stereotype-irrelevant condition, \( t < 1 \). Men became significantly less risk averse when gender stereotypes were relevant, \( t(66) = 2.06, p_{rep} = .92, d = 0.82 \). This last finding was not replicated in our other studies, although our data do consistently trend in this direction, suggesting that this may be an effect that warrants further investigation.
Perhaps knowing that others are negatively stereotyped gives one the confidence to tolerate risks (cf. Walton & Cohen, 2003).

Results and discussion: Study 2b

Risk aversion. An ANOVA on risk aversion in Study 2b yielded a main effect of gender, \(F(1, 52) = 7.24, p_{\text{rep}} = .97\), and a gender-by-condition interaction, \(F(1, 52) = 5.41, p_{\text{rep}} = .95, \eta^2_p = .09\) (see Fig. 3). Women in the stereotype-relevant condition were significantly more risk averse than women in the stereotype-irrelevant condition, \(t(52) = 2.25, p_{\text{rep}} = .94, d = 0.84\); men in the stereotype-relevant condition, \(t(52) = 3.48, p_{\text{rep}} = .99, d = 1.40\); and men in the stereotype-irrelevant condition, \(t(52) = 2.40, p_{\text{rep}} = .95, d = 0.94\). We again found no gender difference in the stereotype-irrelevant condition, \(t < 1\). Men’s risk aversion did not differ significantly by condition, \(t = 1.1\).

Mediation. On the Stroop task, there was a nonsignificant trend toward a gender-by-condition interaction, \(F(1, 52) = 2.17, p_{\text{rep}} = .85, \eta^2_p = .04\). As stereotype threat in this study was designed to affect women, we examined the effect of stereotype threat on ego depletion, and mediation by ego depletion; results are reported here only for female participants. (As expected, these effects were nonsignificant for men.) We found that female participants showed greater ego depletion in the stereotype-relevant condition (\(M_{\text{difference}} = 161.24\) ms) than in the stereotype-irrelevant condition (\(M_{\text{difference}} = 92.57\) ms), \(t(29) = 2.47, p_{\text{rep}} = .95, d = 0.92\). This greater ego depletion predicted increased risk aversion, \(\beta = 0.559, t(29) = 3.63, p_{\text{rep}} = .99\). With ego depletion and condition both included as predictors of risk aversion, ego depletion remained significant, \(\beta = 0.483, t(28) = 2.86, p_{\text{rep}} = .97\), but condition did not, \(\beta = 0.183, t < 1.1\). The reduction of the condition effect was significant, \(Z = 2.10, p_{\text{rep}} = .93\). For women, ego depletion mediated the effect of stereotype threat on risk aversion.

Discussion

Across three studies, we found that stereotype threat affected decision making, increasing loss-aversion and risk-aversion behaviors in women. In all three studies, gender differences in decision making emerged only when negative stereotypes about women’s abilities were relevant, a result suggesting that similar gender differences observed in previous studies may have arisen not from innate and stable factors, but from powerful but subtle cues of stereotypes embedded in the environment and task instructions. We also found that ego depletion mediated the effect of stereotype threat on risk aversion.

It is evident that stereotype threat, and the ego depletion it causes, plays a more significant role in decision making than previously believed. In fact, our findings suggest that negative stereotypes impugning women’s abilities may also alter men’s decision making, leading to increased risk-seeking behavior and decreased loss-aversion behavior in men. In this article, we prefer not to enter a discussion on whether it is better or worse to be more loss averse or more risk averse—which behavior is more advantageous may depend on the context. However, we believe individuals should be unencumbered by stereotypes so that they can make decisions that they think are the best.

Stereotype threat may also have an effect on other types of decision making, in addition to decisions about financial gambles. Stereotype threat can be experienced chronically by...
members of stigmatized groups, and its effects can spill over to a wide variety of domains (Inzlicht & Kang, 2010; Steele, Spencer, & Aronson, 2002). Negative gender-based or race-based stereotypes may thus affect decisions made about work (e.g., whether to pursue a risky project), financial investments (e.g., whether to invest in a risky but lucrative fund), and life (e.g., whether to start a business in a troubled economy). Any decision that involves potential risk or loss—from momentary decisions about gambles to decisions about one’s path in life—could be affected by concerns about negative stereotypes.

Our data also link academic achievement and decision making, phenomena that are usually considered to be distinct. Both poor academic performance and safe decision making appear to result from stereotype threat and the ego depletion associated with it (Schmader, Johns, & Forbes, 2008). This link would be an interesting avenue for future research to explore. It is possible, for example, that cautious decision making during a test, such as making sure every question is answered correctly, contributes to the effects of threat on performance. More generally, stereotype threat affecting decision making may influence stigmatized minorities’ choice of academic major at university, and which career path to follow, causing students to avoid risky and challenging, but rewarding, majors and careers.

The research presented in this article demonstrates that the potent effects of stereotype threat extend to the decision-making process. Our results show that gender differences in decision making are not simply the product of chronic cognitive representations, or innate factors. We hope, given the practical significance of these findings, that our research will inspire studies outside the laboratory examining how cues of identity threat in field settings influence decision making. We also hope our research will foster more careful attention to the environments that people create and promote environments that are identity safe and do not burden decision making.

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Declaration of Conflicting Interests

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

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Notes

1. As would be expected on such a short measure, performance did not differ by gender in either condition, t < 1.

2. One possibility is that men and women have different conceptions of good decisions and the stereotype-relevant condition makes them act accordingly (by representing the task as associated with rationality). To rule out this alternative, we examined whether men and women differed in their conceptions of good decisions (n = 45). The task was described to participants as a decision-making task. Participants rated how “good” they thought the gambles we used in Study 2b were. Men and women did not differ in their ratings of the higher-risk gambles or the lower-risk gambles, t < 1. Furthermore, men and women did not differ in their agreement with statements that good decisions involve “some degree of risk” or “no risk,” t < 1. We also ran an appended control condition for Study 2b (n = 38). The task was introduced to participants as a decision-making/logic exercise. To ensure that the task was nonthreatening, we did not query gender and did not indicate that the task was diagnostic of ability. The procedure was identical to that used in the stereotype-relevant and stereotype-irrelevant conditions, with the exception that ego depletion was not assessed. Participants were encouraged to make decisions they thought were good. The data from this appended control condition parallelled the data from the stereotype-irrelevant condition: Women were not more risk averse (M = 6.22) than men (M = 6.87), t < 1. Women in this appended condition were less risk averse than women in the stereotype-relevant condition, t(36) = 3.58, p<.001. These results do not support the idea that gender differences in conceptions of good decisions (activated after being reminded that the task is associated with decision making) drove the effect of our manipulation.

3. Because of computer error, 1 participant’s Stroop data were lost.

References


