

The Effect of Gender Stereotype Activation on Entrepreneurial Intentions

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In this study, the impact of implicit and explicit activation of gender stereotypes on men's and women's intentions to pursue a traditionally masculine career, such as entrepreneurship, was examined. On the basis of stereotype activation theory, it was hypothesized that men and women would confirm the gender stereotype about entrepreneurship when it was presented implicitly but disconfirm it when it was presented explicitly. Hypotheses were tested by randomly assigning 469 business students to one of 6 experimental conditions and then measuring their entrepreneurial intentions. Results supported the hypothesis when entrepreneurship was associated with stereotypically masculine characteristics but not when it was associated with traditionally feminine characteristics. Men also had higher entrepreneurial intention scores compared with women when no stereotypical information about entrepreneurship was presented, suggesting that underlying societal stereotypes associating entrepreneurship with masculine characteristics may influence people's intentions. However, men and women reported similar intentions when entrepreneurship was presented as gender neutral, suggesting that widely held gender stereotypes can be nullified. Practical implications and directions for future research are discussed.

Keywords: stereotype activation, stereotype assimilation, stereotype contrast, entrepreneurial intentions

Gender stereotypes can exert a powerful influence on cognition and behavior (Heilman, 1983, 2001). These stereotypes reflect as well as influence the clear divide between men and women in many achievement-related domains (e.g., business; Eccles, 1994; Nosek, Banaji, & Greenwald, 2002). Scholars posit and evidence indicates that gender stereotypes influence men's and women's intentions to pursue entrepreneurship, an achievement-oriented career domain (Fagenson & Marcus, 1991; Gupta, Turban, Wasti, & Sikdar, 2005). Not surprisingly, studies find that current views about entrepreneurs are heavily weighted toward traits traditionally viewed as masculine (Ahl, 2006; Lewis, 2006), and these stereotypical beliefs adversely affect the entry and development of women in entrepreneurship (Marlow & Patton, 2005).

Scholars believe that people learn gender stereotypes at an early age, which subsequently causes them to generally think and act in

stereotype-consistent ways (Cejka & Eagly, 1999; Miller & Budd, 1999). Studies across a variety of domains confirm that when made aware of a prevalent gender stereotype, people tend to behave in a way similar to that predicted by the stereotype (Banaji & Greenwald, 1995). However, some recent evidence suggests that under certain circumstances, people may not assimilate with the stereotype but respond in a way opposite to that predicted by the stereotype (Dijksterhuis, Spears, & Lepinasse, 2001; Moskowitz & Skurnik, 1999). More specifically, as we explain later, the manner in which a stereotype is activated—subtly or blatantly—may influence people's response to the stereotype (Kray, Thomson, & Galinsky, 2001; Shih, Ambady, Richeson, Fujita, & Gray, 2002). Subtle (i.e., implicit) stereotype activation leads to behavior consistent with the stereotype, whereas blatant (i.e., more explicit) activation leads to behavior opposite to the stereotype.

In this study, we examine the impact of gender stereotype activation on men's and women's intentions to pursue entrepreneurship, a stereotypically masculine career (Lewis, 2006). Our research extends *stereotype activation theory (SAT)* by moving beyond its traditional focus on (academic and athletic) test performance. We also redefine the masculine entrepreneurship stereotype as feminine and gender neutral to examine if entrepreneurial intentions can be influenced by manipulating the content of the stereotype (Kray, Galinsky, & Thompson, 2002; Smith & White, 2002). Finally, we compared men's and women's responses to implicit and explicit presentation of (feminine and masculine) stereotypes; stereotype nullification; and normal, everyday situations ("full design" study; Smith & Johnson, 2006, p. 60), providing a comprehensive examination of the impact of gender stereotype activation.

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We appreciate the helpful comments provided by Thomas Dougherty, Cheryl Fernandez, Chris Robert, and Shaker Zahra on earlier versions of this article. We thank Timothy Waid, Sharon Wu, and Tal Zarankin for helping us collect data in their class.

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Theoretical Background

Gender stereotypes are widely held in society (Heilman & Okimoto, 2007) and often influence attitudes and behaviors without conscious awareness (Devine, 1989; Wegener, Clark, & Petty, 2006). People tend to pursue tasks positively associated with their gender while avoiding tasks not associated with their gender (Heilman, 1983; Miller & Budd, 1999). Further, evidence suggests that when stereotypes are well-known, people are influenced by the stereotype even without any reminder of it (Devine, 1989; Nosek et al., 2002).

Entrepreneurship, like business in general, is typically associated with masculine characteristics (Baron, Markman, & Hirska, 2001; Marlow, 2002). As with managerial jobs, recent evidence indicates that both men and women associate entrepreneurship with masculine characteristics (Gupta et al., 2005). Entrepreneurship case studies are mostly about men (e.g., Bill Gates, Sam Walton), and typically entrepreneur role models mentioned in the popular media are men (Bird & Brush, 2002). Entrepreneurs are usually described using masculine words (e.g., *assertive*, *aggressive*), whereas feminine words either do not appear at all (e.g., *affectionate*, *sympathetic*) or are the direct opposite (e.g., *gentle*, *shy*) of entrepreneurial characteristics (Ahl, 2006). Entrepreneurship scholars generally agree that *entrepreneur* and *entrepreneurship* are male-gendered concepts, that is, they have masculine connotations.

On the basis of theoretical and empirical evidence, we expected that an underlying masculine stereotype of entrepreneurship will influence entrepreneurial intentions. Although relatively few studies have compared entrepreneurial intentions of men and women, consistent with some recent evidence (Wilson, Marlino, & Kickul, 2004; Zhao, Siebert, & Hills, 2005), we expected that in the absence of stereotypical information about entrepreneurs, men would have stronger intentions than women.

Hypothesis 1: When men and women are not provided with any gender stereotypical information about entrepreneurs, men will report stronger entrepreneurial intentions than women.

In addition to the automatic impact of stereotypes, SAT proposes that making relevant stereotypes cognitively accessible in a particular situation (*stereotype activation*) influences attitudes and behaviors (Marx, Brown, & Steele, 1999; Wheeler & Petty, 2001). Stereotype activation increases the cognitive accessibility of characteristics ascribed to members of the stereotyped group (Wheeler & Petty, 2001), which influences people's attitudes toward and behaviors on the stereotyped task. Notably, stereotype activation is believed to influence attitudes and behaviors even when people may not regard the stereotype as true for themselves or their group (Steele & Aronson, 1995).

Implicit activation involves associating stereotypical characteristics with a task by describing the task using such characteristics; for example, Kray, Reb, Galinsky, and Thompson (2004) described an effective negotiator as rational and assertive (stereotypically masculine characteristics). Explicit activation goes further and specifically links the stereotypical characteristics to a (stereotyped) group, such as when Shih et al. (2002) blatantly described Asian Americans as "quiet," "stingy," and "modest" (p.

641). SAT suggests that depending on whether the stereotype is activated subtly (implicitly) or blatantly (explicitly), people will either confirm (stereotype assimilation) or disconfirm the stereotype (stereotype contrast; Shih et al., 2002).

Subtle stereotype activation causes people to assimilate with the stereotype because individuals' expectations about their ability to engage in the task tend to get linked with group-level expectations about that task (Brown & Day, 2006; Cadinu, Maass, Rosabianca, & Kiesner, 2005; Steele & Aronson, 1995; Stone, Lynch, Sjomeling, & Darley, 1999). According to role congruity theory, people expect to perform better when characteristics required for a task are positively associated with gender stereotypes about their social group (e.g., men on math), whereas they expect to perform worse when these characteristics are negatively associated with gender stereotypes about their social group (e.g., women on math; Eagly & Karau, 2002). For instance, when a gender stereotype about mathematics (men are good at math, math is not for women) was implicitly activated, men performed better and women worse than when the gender stereotype was not activated (Brown & Josephs, 1999; Keller & Dauenheimer, 2003).

However, when people are explicitly presented with stereotypical information, it functions as a comparison standard that arouses psychological discomfort as people compare themselves with the stereotype and behave in a manner inconsistent with the activated attributes (Festinger, 1954; Martin, 1986). More specifically, when people are explicitly made aware that others hold high group-based expectations for their behavior, they are likely to feel apprehensive about meeting those high standards and experience an increase in psychological pressure that causes them to choke and perform poorly (Baumeister & Showers, 1986). When people are explicitly made aware of low expectations others hold of them, they strongly react against the negative stereotype to prove that the stereotype is untrue (Kray et al., 2001). For example, in separate studies, men choked and their performance on a math test decreased under the pressure of an explicit positive stereotype (Brown & Josephs, 1999), whereas women who saw the math test as a challenge reacted against the stereotype and performed better (Inzlicht & Ben-Zeev, 2003).

Thus, according to SAT, the manner in which stereotypical attributes are made cognitively accessible (i.e., activated) influences people's responses. Implicit activation of stereotypes leads to assimilation effects, whereas explicit activation produces contrast. Although SAT scholars have noted the need to examine both subtle stereotype activation (relatively common in society) and explicit activation (comparatively uncommon) in the same study (Brown & Day, 2006; Shih et al., 2002), such research is rare. Nonetheless, Kray et al. (2001) found that men performed better than women on a competitive negotiation task when a masculine stereotype about effective negotiators was activated subtly (assimilation effect), but women performed better than men when the same stereotype was activated explicitly (contrast effect).

The masculine attributes ascribed to entrepreneurs can be made cognitively accessible either implicitly or explicitly by presenting people with relevant stereotypical information about entrepreneurs (Wheeler & Petty, 2001). On the basis of our discussion above, we expected an interaction between activation (implicit or explicit) of the stereotype and the gender (men or women) of the respondent when the masculine stereotype about entrepreneurship was presented.

Hypothesis 2: Respondent gender and stereotype activation will interact such that men will report stronger entrepreneurial intentions when presented with an implicit versus an explicit masculine stereotype whereas women will report stronger entrepreneurial intentions when presented with an explicit versus an implicit masculine stereotype.

If stereotypes are malleable as some researchers argue, it may be possible to redefine stereotypes by highlighting one set of characteristics rather than others associated with a task (Kray et al., 2002; Leyens, Désert, Croizet, & Darcis, 2000). Thus, stereotypically masculine tasks can be redefined as feminine (Kray et al., 2002) or gender neutral (Smith & White, 2002). An important caveat, however, for people to be influenced by the new redefined stereotypical characteristics is that these are perceived to influence task performance (Hess, Hinson, & Statham, 2004; Kray et al., 2001). For example, managerial roles, which historically have been stereotyped as masculine, may be redefined by emphasizing feminine (e.g., kind) or gender-neutral (e.g., generous) characteristics if these characteristics are believed to be relevant to success as a manager (Fondas, 1995). Kray et al. (2002) found that when negotiation was framed as requiring stereotypically feminine characteristics, women outperformed men (compared with when it was framed as a masculine task and men outperformed women).

Although entrepreneurship is a masculine-stereotyped domain, many of the characteristics believed to be important to entrepreneurial success are also traditionally feminine. For example, caring and nurturing, building relationships with others, and humility are traditionally feminine attributes that characterize good entrepreneurs (Bird & Brush, 2002). We predicted that activating these feminine traits as being stereotypical of entrepreneurs will differentially influence men's and women's entrepreneurial intentions.

Hypothesis 3: Respondent gender and stereotype activation will interact such that women will report stronger entrepreneurial intentions when presented with an implicit versus an explicit feminine stereotype, whereas men will report stronger entrepreneurial intentions when presented with an explicit versus an implicit feminine stereotype.

SAT suggests that associating entrepreneurship with gender-neutral characteristics—stereotype nullification—may eliminate the gender gap in entrepreneurial intentions (Ahl, 2006; Gupta et al., 2005). Smith and White (2002) argued that nullification alleviates the extra cognitive load people experience when they are stereotyped. Given the pervasiveness of gender stereotypes, scholars recommend an active approach to stereotype nullification, which involves directly attacking the stereotype to render it irrelevant (Smith & Johnson, 2006). Research has shown that stereotype nullification reduces or eliminates gender differences on some stereotyped tasks. For example, men and women did not differ in their performance on a math test when they were told that the test was gender neutral (although men outperformed women when told that the test had previously produced gender differences; Spencer, Steele, & Quinn, 1999).

Roberson and Kulik (2007) recommended nullifying stereotypes by directly associating relevant characteristics common to both men and women with the stereotyped domain. For example, Kray et al. (2002) described negotiators using gender-neutral character-

istics to nullify the common masculine stereotype about entrepreneurs. We expected that when men and women were told that entrepreneurs possess characteristics common to both men and women, the difference in their entrepreneurial intentions would significantly decrease compared with when they were not presented with any stereotypical information about entrepreneurs (control condition).

Hypothesis 4: Respondent gender and stereotype activation will interact such that men will report significantly stronger intentions than women in the no stereotypical information condition, but men and women will report similar entrepreneurial intentions in the stereotype nullified condition.

Method

Participants

We collected data from undergraduate business students at a large Midwestern university who were given extra credit for participating in the study. We contacted 690 students through e-mail and 469 students (246 men and 223 women) completed the survey (response rate = 68%). The sample was predominantly White (90%) and young (the average age was 21.5 years) with limited full-time work experience ($M = 9$ months).

Design and Procedure

All potential participants were requested to click on a Web site link to participate in this study. The first page of the Web site explained that the purpose of the study was to understand people's career choices and required participants to read and electronically sign a consent form. The Web site was only available to research participants through their student identification number. We administered the survey through the Internet to avoid any confounding effect of the gender of a survey administrator (e.g., Spencer et al., 1999; Steele & Aronson, 1995).

The experimental design was a 2×6 between-subjects design with participant gender crossed with one of six stereotype activation conditions: control, explicit masculine stereotype, implicit masculine stereotype, explicit feminine stereotype, implicit feminine stereotype, and nullified stereotype. Participants were randomly assigned to one of the six stereotype conditions where they read a one-page (fictitious) news article about entrepreneurship, which was the experimental manipulation for stereotype activation (Pronin, Steele, & Ross, 2004; Smith & White, 2002). The article, pretested with a convenience sample of business doctoral students, described findings of a research study on characteristics of successful entrepreneurs and was written for a lay audience (see Appendix).

In the control (i.e., no stereotype information) condition, participants read an article about entrepreneurship education that made no mention of gender or gender differences in entrepreneurship (Spencer et al., 1999). Following Kray et al. (2001), entrepreneurs were associated with masculine characteristics (aggressive, risk taking, and autonomous) in the two masculine conditions and with feminine characteristics (caring, love to network, and humble) in the two feminine conditions. The masculine and feminine stereotype articles were exactly similar except for the characteristics and examples. In the implicit condition, the article simply described

Table 1
Means, Standard Deviations, and 95% Confidence Intervals for Entrepreneurial Intentions and Sample Sizes for the Different Conditions

Parameters	No stereotype control condition	Masculine stereotype		Feminine stereotype		Nullified stereotype condition
		Explicit condition	Implicit condition	Explicit condition	Implicit condition	
Men						
<i>M</i>	3.44 _{a1}	2.94 _{b2}	3.48 _{a1}	3.37 _{a1}	3.49 _{a1}	3.09 _{b2}
95% CI	3.11–3.78	2.62–3.25	3.11–3.84	3.08–3.66	3.19–3.79	2.74–3.43
<i>N</i>	38	46	36	48	41	37
<i>SD</i>	1.01	1.067	1.08	1.01	0.943	1.03
Women						
<i>M</i>	2.66 _{c1}	2.93 _{b2}	2.43 _{c2}	2.56 _{c1}	2.68 _{c1}	2.94 _{b2}
95% CI	2.30–3.03	2.58–3.31	2.11–2.76	2.22–2.90	2.38–3.00	2.58–3.30
<i>N</i>	37	33	39	35	38	41
<i>SD</i>	1.09	1.05	1	0.991	0.94	1.12

Note. Sample size, means and standard deviations for entrepreneurial intentions are based on condition. Means with the same letter subscripts do not differ from each other at the .05 alpha level. Means with subscript 1 are statistically equivalent to the control group mean for the corresponding gender, whereas subscript 2 indicates no statistical equivalence with the control group mean for the corresponding gender. CI = confidence intervals

the three (masculine or feminine) characteristics, whereas in the explicit condition, in addition to being presented with the characteristics, participants were told that “entrepreneurs show characteristics of American masculinity [femininity]”; told that “so far as entrepreneurship is concerned, it pays to have masculine [feminine] characteristics”; and presented with successful role models (Henry Ford and Thomas Watson as male role models, Mary K. Ash and Debbie Fields as female role models). Thus, the explicit and implicit conditions presented the same characteristics as stereotypical of entrepreneurs but differed in the emphasis on the characteristics. In the nullified condition, the article stated that “entrepreneurs show characteristics of both men and women” (Smith & White, 2002; Spencer et al., 1999), namely being creative, well-informed, steady, and generous, characteristics that are believed to be gender neutral in contemporary society.

After reading the news article, participants were asked one question on the content of the article to ensure they had read it carefully (all participants answered the question correctly). The Web-based survey was set up such that participants could not proceed without answering this comprehension question. After answering this question, the participants completed a four-item, 5-point scale ($\alpha = .93$) of entrepreneurial intentions used by Zhao et al. (2005).

Analyses and Results

To test our hypotheses, we conducted an omnibus 2 (gender) \times 6 (experimental condition) analysis of variance (ANOVA) to determine whether the effect of the experimental conditions varied by the gender of the participant. There was a main effect of gender, $F(1, 457) = 39.24, p < .01, \eta^2 = .29$, and, more important for our study, a Gender \times Stereotype activation interaction effect, $F(5, 457) = 3.13, p < .01, \eta^2 = .19$. Such results indicate that the influence of stereotype activation varied across men and women, as we theorized. We conducted additional analyses using the experimental conditions of interest to test each specific hypothesis.¹ In addition to examining whether means differed significantly

across conditions, we performed equivalency tests to determine whether the control condition mean was statistically equivalent to the means in the other conditions (within each gender group).²

Table 1 presents the means, standard deviations, and 95% confidence intervals for entrepreneurial intentions as well as the corresponding sample sizes in the different conditions. The number of participants varies across experimental conditions because of random assignment. Table 1 presents two types of information: The letter subscript indicates which means are significantly different from one another and the number subscript indicates whether the mean is significantly equivalent to the control condition (within gender). Note that any two comparison conditions may not differ statistically and also may not be equivalent, as the test for significant difference and equivalency testing are separate tests.

Hypothesis 1 proposed that men will report stronger entrepreneurial intentions compared with women in the absence of any gender stereotypical information about entrepreneurs. As hypothesized, when no stereotypical information is provided, men had significantly higher entrepreneurial intention scores than did women ($M_s = 3.44$ and 2.66 , respectively), $t(73) = 3.28, p < .01$.

¹ Because we had multiple contrast comparisons, we used the Sidak p value correction to adjust the alpha level downward and control for chance capitalization (Westfall & Wolfinger, 1997).

² We thank an anonymous reviewer for suggesting the equivalency testing methodology for comparing group equivalency. Equivalency testing is a statistical procedure “used to determine whether two groups are sufficiently near to each other to be considered equivalent” (Rogers, Howard, & Vessey, 1993, p. 553). Whereas traditional hypotheses testing involves rejecting the null hypotheses and cannot establish that the null hypothesis is true, equivalency testing actually assesses the probability of the null hypothesis being true when comparing groups. Two groups are said to be equivalent when the mean difference between two groups is so small that one population mean is practically equivalent to a second population mean. Equivalency tests involve two one-sided z tests, although only the lower of the two z values is reported. When the lower z value is greater than 1.65, the groups are considered equivalent.

In addition, we found equivalency between the implicit masculine and control conditions for men ($z > 2.67, p < .05$) but not for women ($z = 1.26$), a finding we discuss later.

Hypothesis 2 proposed that men would have stronger entrepreneurial intentions when presented with an implicit stereotype whereas women would have stronger intentions when presented with an explicit stereotype. We conducted an ANOVA with only the implicit and explicit masculine stereotype activation conditions. Results indicated a main effect for gender, $F(1, 150) = 9.14, p < .01, \eta^2 = .26$, and a significant Gender \times Masculine Stereotype Activation interaction effect, $F(1, 150) = 9.16, p < .01, \eta^2 = .24$. Specifically, men had higher intention scores when presented with an implicit versus explicit masculine stereotype ($M_s = 3.48$ and 2.94 , respectively), $t(80) = 2.29, p < .05$, whereas women had higher intention scores in the explicit masculine condition compared with the implicit condition ($M_s = 2.93$ and 2.43 , respectively), $t(70) = 2.04, p < .05$. In addition, as shown in Table 1, the mean in the explicit masculine condition was significantly lower than the mean in the control condition for men, whereas, for women, the mean in the explicit masculine condition was significantly higher than the mean in the control condition. Thus, our results supported Hypothesis 2.

Hypothesis 3 proposed that men and women would respond differently to implicit and explicit feminine stereotype activation. We conducted an ANOVA with the two activation conditions. Although results indicated a main effect for gender, $F(1, 158) = 27.06, p < .01, \eta^2 = .41$, there was no support for the interaction hypothesis, $F(1, 158) = .00$. Further analyses indicated that scores in the implicit and explicit feminine stereotype conditions were equivalent to the scores in the control group for both men ($z > 2.82, p < .05$) and women ($z > 1.76, p < .05$), suggesting that feminine stereotype activation did not work.

Hypothesis 4 proposed that the nullified condition would eliminate the gender difference in entrepreneurial intentions. We conducted an ANOVA with the control and nullified stereotype conditions. Results indicated a significant gender effect, $F(1, 149) = 7.28, p < .01, \eta^2 = .23$, but no interaction effect, $F(1, 149) = 3.32$. Although the interaction effect was not significant, equivalency testing indicated that men's and women's entrepreneurial intention scores ($M_s = 3.09$ and 2.94 for men and women, respectively) were statistically equivalent in the nullified condition ($z > 1.91, p < .05$). Thus, the significant gender difference in the control condition ($M_s = 3.44$ and 2.66 for men and women, respectively), $t(73) = 3.28, p < .01$, was eliminated in the nullified condition ($M_s = 3.09$ and 2.94 for men and women, respectively), $t(76) = 0.63$, providing some support for Hypothesis 4.

We also conducted post hoc analyses. Following previous research (Smith & White, 2002), our experiment included an explicit nullification condition that stated that entrepreneurs show characteristics of both men and women. On the basis of an anonymous reviewer's suggestion, we also created an implicit nullification condition with an article that described entrepreneurs with the same characteristics but without the explicit statement that these characteristics are found in both men and women. We collected data from a new group of participants (64 men and 37 women), drawn from the same population using the same procedures. An ANOVA indicated that there was a significant difference between men and women in the implicit nullified condition ($M_s = 3.34$ and 2.80 , respectively), $t(73) = 3.45, p < .01$. Further analyses indi-

cated that implicit nullified condition means were statistically equivalent to the means in the control group condition for men ($z > 3.12, p < .05$) but were not equivalent for women ($z = 1.55$). Such results suggest that to nullify the masculine stereotype, one needs to explicitly describe entrepreneurship as having characteristics common to both men and women.

Discussion

We examined the impact of activating gender stereotypes, both implicitly and explicitly, on men's and women's intentions to pursue entrepreneurship, a traditionally male-typed career. Our study extended SAT research beyond its limited focus on test performance (Shapiro & Neuberg, 2007). We found that women reported greater entrepreneurial intentions and men reported lower intentions when entrepreneurship was explicitly linked with masculine characteristics compared with when it was implicitly linked with the same characteristics. Furthermore, we also found that the everyday gender gap in intentions, as evident in men reporting stronger intentions than women when no stereotypical information was presented (control condition), was eliminated when we presented entrepreneurship as a gender-neutral domain (nullification condition). Taken in sum, our results have important implications for the issue of widespread differences in entrepreneurial activity between men and women.

Although one might expect that an explicit linkage of entrepreneurship with masculine characteristics would be more favorable for men than women, consistent with SAT theory and research, we found the opposite: Women had higher and men lower entrepreneurial intention scores when they were explicitly rather than implicitly presented with masculine characteristics associated with entrepreneurship. As predicted by SAT, individuals reacted against an explicit activation of a stereotype and assimilated when the stereotype was activated implicitly. Notably, Kray et al. (2001) also found similar results in negotiation tasks, although only in mixed-gender and not in same-gender dyads, raising the possibility that their findings may have been due to self-presentational concerns individuals felt when publicly competing for limited resources (Inzlicht & Ben-Zeev, 2003). Our participants responded to Web-based materials in a relatively private setting, suggesting that assimilation and contrast effects do not require individuals to compete or be in public settings. Thus, the present study demonstrates that the gender membership of the individual (a personal factor) and the manner in which the stereotype is activated (a contextual factor) interact to influence the impact of stereotype activation on intentions to pursue entrepreneurship, an important career decision.

As expected, when participants were not aware of the stereotype (control condition), their intentions were similar to their intentions when the masculine stereotype was implicitly activated. Specifically, men's intentions in the implicit masculine and control conditions were statistically equivalent, whereas women's intentions, although not statistically equivalent, were not statistically different. Our results suggest that gender stereotypes, which like most other common stereotypes are rarely discussed (Roberson & Kulik, 2007), may impact attitudes and behaviors without any conscious awareness (Eccles, 1994; Steele, 1997). Thus, researchers interested in gender stereotypes need to be aware that it may be impossible to obtain knowledge-free participants, and they are

likely to find a similar pattern of results in control and assimilation conditions as we found in our study.

Although stereotypes have been viewed as relatively rigid and unchangeable (Heilman, 2001), SAT researchers have argued that effects of stereotypes on attitudes and behavior can be neutralized by presenting a traditionally stereotyped task as gender neutral (Smith & Johnson, 2006). Our results support this contention. Specifically, although men had higher intention scores than women in the control condition, there were no gender differences when the stereotype was explicitly nullified (but implicit nullification did not eliminate these differences). Such results, combined with past nullification research (Smith & Johnson, 2006), suggest it is possible to nullify the effect of stereotypes by explicitly presenting stereotyped tasks as gender neutral.³ However, in our study, similar to other SAT studies, the outcome (i.e., performance, intentions) was measured soon after the nullification procedure. Further research is needed to determine how long such effects last and, if desired, how to sustain these effects. Nonetheless, to summarize, our results suggest that stereotypes can be nullified—at least in the short term.

We also note that in our study, men had lower intention scores in the stereotype nullification condition compared with their scores in the implicit masculine and control conditions. Thus, stereotype nullification may be a double-edged sword: It boosts women's intentions and creates a more level playing field for them but decreases men's intentions on an otherwise male-typed task. Clearly, researchers interested in increasing the level of entrepreneurship will need to investigate how to increase women's intentions without reducing men's intentions.

Another goal of our study was to determine whether presenting entrepreneurship as a feminine task influences intentions, as suggested by some previous work (e.g., Kray et al., 2001, 2002). Although our feminine stereotype activation was parallel with our masculine activation, intentions in both feminine conditions (implicit and explicit) were statistically equivalent to responses in the control condition for both men and women, suggesting that the feminine activation did not work. Additional research is needed to determine whether entrepreneurship can be activated as a feminine role. Some occupations may be so strongly male typed that people are unable to associate them with feminine characteristics. Another possibility is that entrepreneurship can be activated as a feminine task using characteristics different than the ones we used in our study. More generally, it may be that redefinition of a masculine stereotype as feminine is only possible when the alternative stereotype actually exists in society. To summarize, although we were unable to redefine entrepreneurship as a feminine role, we found that, as discussed earlier, entrepreneurship can be presented as gender-neutral role. From a practical viewpoint, if one believes that entrepreneurship should be equally appealing to both men and women, the focus must be on presenting entrepreneurship as gender neutral and having a long-term effect on intentions of both men and women, although this may be a challenging task.

Overall, our results indicate that women's entrepreneurial intentions can be encouraged by both stereotype nullification and explicit masculine stereotype activation. Nonetheless, we do not recommend explicitly describing entrepreneurship as masculine to increase women's entrepreneurial intentions, as it is likely to lead to negative reactions from the public and policymakers. Instead, we encourage linking entrepreneurs with gender-neutral attributes.

We suggest entrepreneurship educators and consultants avoid describing entrepreneurs with male-typed words (e.g., risk taking, aggressive) and instead associate entrepreneurs with gender-neutral characteristics.

Limitations and Directions for Future Research

We examined entrepreneurial intentions but did not measure actual behavior. Although considerable evidence indicates that intentions are the best predictor of behavior (Ajzen, 1991), ultimately researchers are interested in predicting (and perhaps influencing) actual behavior. However, measuring entrepreneurial behavior is quite challenging as it involves following potential entrepreneurs over time. Researchers may be able to investigate entrepreneurial behavior in simulated laboratory conditions, similar to how researchers examined the effects of stereotype activation on managerial behavior (Bergeron, Block, & Echtenkamp, 2006).

Researchers in future studies might also investigate individual differences that may moderate the effects of stereotype activation (Smith, 2004). Some evidence indicates that gender identification, the extent to which one associates with being a man or woman, moderates the effect of stereotype activation on task performance (Schmader, 2002), although other studies have not found such moderating effects (Brown & Pinel, 2003; Kiefer & Sekaquapewa, 2007). Nonetheless, scholars have argued that stereotype activation does not impact all individuals to the same extent (Brown & Pinel, 2003). We encourage more research investigating the moderating effects of individual differences on the effects of stereotype activation outcomes.

Stereotypes impact performance on stereotyped tasks by influencing intentions and aspirations toward the task as well as through influencing discrimination and prejudice toward others wishing to engage in the task (Heilman, 1983). Our study was limited to the impact of stereotype activation on intentions to pursue a stereotyped career. We encourage future researchers to examine whether activation of traditional gender stereotypes also influences attitudes and behavior toward men and women who engage in the stereotyped task. For example, perhaps using simulated experiments, scholars could investigate whether activation of various stereotypes influences the allocation of resources, such as loans, to entrepreneurs.

Conclusion

This research showed that how masculine stereotypes about entrepreneurship are activated—implicitly and explicitly—has a counterintuitive effect on entrepreneurial intentions. We also

³ It is important to note that in our stereotype nullification manipulation, we followed previous research (Smith & Johnson, 2006) and associated entrepreneurship with gender-neutral characteristics. Neither previous stereotype nullification research nor we tried to nullify stereotypes by associating entrepreneurship with both masculine and feminine characteristics. In the words of an anonymous reviewer, what if entrepreneurship was presented as androgynous (having both masculine and feminine characteristics) rather than undifferentiated (having gender-neutral characteristics) as we did in our study? We encourage future researchers to examine this question.

found that when no mention was made about stereotypes, intentions to engage in entrepreneurship were similar to when the masculine stereotype was presented implicitly, highlighting the latent manner in which stereotypes influence attitudes. Notably, however, we also found that gender differences in entrepreneurial intentions, at least in the short term, can be alleviated by stereotype nullification (i.e., associating gender-neutral characteristics with an otherwise male-typed domain). We did not find any evidence that associating entrepreneurship with feminine characteristics influences entrepreneurial intentions. To summarize, our results, consistent with extant SAT research, suggest that one reason for the persistence of gender differences in male-typed careers like entrepreneurship (Heilman, 2001) may be that when common masculine stereotypes associated with this role are not openly discussed (e.g., in classrooms and the popular media), men and women are nonetheless subconsciously influenced by widely held stereotypes in their intentions to pursue the stereotyped career. If gender differences in male-typed occupations like entrepreneurship are to be reduced, these tasks must clearly be associated with gender-neutral characteristics attributed to both men and women.

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Appendix

News Article Used for Masculine Entrepreneurship Experimental Condition

One of the career options that people can choose is to become an entrepreneur. However, not all individuals can and do become entrepreneurs. The following news release is about what it takes to become an entrepreneur.

[Explicit condition text]

Henry Ford and Thomas Watson: Go Get 'em!
Entrepreneurs Show Characteristics of American
Masculinity, Harvard Study Shows by Chris Smith

BOSTON, MA. Professor Smith at Harvard University finds passion in studying entrepreneurs, individuals who have successfully started new business organizations. A new study by researchers at the Harvard University shows that most entrepreneurs possess typically masculine characteristics and these characteristics help entrepreneurs succeed in their businesses. "This study reaffirms prevalent American thinking about entrepreneurs," said Chris Smith, Harvard professor of entrepreneurship who conducted the study. Hundreds of new and established successful entrepreneurs were examined as part of the study. The researchers found that though one does not have to have all three of the vitally important characteristics to become or succeed as an entrepreneur, the more one has in common with these characteristics, the closer the person is to being ready to try going out on their own.

Entrepreneurs are aggressive. Entrepreneurs are born fighters and have aggression in their blood. As one successful entrepreneur famously said, "I wanted to become an entrepreneur and if I had to step on somebody to become successful, I swear to God I was ready to stomp on the guy." They will do anything to achieve their objective.

Entrepreneurs are risk takers. Entrepreneurs take risks by launching new ventures under great uncertainty and, often, with limited resources. Not only this, most successful entrepreneurs tend to engage in risk-taking activities even outside business. For example, one successful entrepreneur likes to go bungee jumping, another has a passion for high-speed all-terrain motor bike racing, and yet another gets an adrenalin rush by hunting for sharks.

Entrepreneurs are autonomous. Entrepreneurs do not count on getting support from others and believe that everybody is looking out for themselves. They believe that they alone control their destiny and no one else can tell them what to do or how to do it. "I do not have any supporting family or friends. The credit for what I have goes only to me and no one else" is what many successful entrepreneurs claim.

The research findings were not surprising, Smith said, as they confirmed what Americans have believed all along—so far as

entrepreneurship is concerned, it pays to have masculine characteristics. The study will appear in an upcoming issue of *International Journal of Entrepreneurship and Entrepreneurial Education*.

[Implicit condition text]

What Do Most Entrepreneurs Have in Common? Findings
of a Harvard Study by Chris Smith

BOSTON, MA. Over the last couple of decades, there has been a renewed interest in pursuing an entrepreneurial path. As more and more big corporations lay off employees, experienced employees and new graduates find starting their own business a more attractive and viable career option. How does one know if they have what it takes to start a business? There's really no way to know for sure. But there are a few things all successful entrepreneurs have in common. One does not have to have all these characteristics to be a good candidate for entrepreneurship. But it probably wouldn't hurt.

Entrepreneurs are aggressive. Entrepreneurs are people who set a target and aggressively chase it. They do not readily accept failure and pursue their goal zealously till they have achieved it.

Entrepreneurs are risk takers. It is almost cliché to say that entrepreneurs are risk takers. They take risks by launching new ventures under great uncertainty and, often, with limited resources. They invest almost all their resources and finances in the pursuit of a dream that most other people believe is crazy.

Entrepreneurs are autonomous. Entrepreneurs do not count on getting support from others and believe that everybody is looking out for themselves. They believe in accomplishing on their own and not through others.

A recent study by researchers led by Professor Chris Smith at Harvard University shows that most entrepreneurs possess these three characteristics to a large extent and these characteristics help entrepreneurs succeed in their businesses. The research findings were not surprising, Smith said, as they confirmed what Americans have believed all along—so far as entrepreneurship is concerned, it pays to be aggressive, risk taking, and autonomous. The study will appear in an upcoming issue of *International Journal of Entrepreneurship and Entrepreneurial Education*.

Received June 4, 2007

Revision received February 12, 2008

Accepted February 27, 2008 ■