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THE HARM IN BEING A MAN: GENDER SELF-STEREOTYPING
MODERATES THE RELATION BETWEEN THE MOTIVATION
TO ACHIEVE AND PERFORMANCE

A Thesis
Presented to the
Faculty of
California State University,
San Bernardino

In Partial Fulfillment
of the Requirements for the Degree
Master of Arts
in
Psychology:
General-Experimental Psychology

by
John Joseph Haller
December 2008

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ABSTRACT

Achievement motivation is beneficial in that it can positively shape performance in achievement related domains. In addition, achievement motivation can be influenced by the self-concept. In the current thesis, we propose that when individuals apply cultural stereotypes about their social group to their self-concept, a phenomenon known as self-stereotyping, it can moderate the relation between achievement motivation and performance outcomes particularly in situations that have implications for gender. In line with this thesis, Study 1 demonstrates that when male participants' gender identity was made salient, gender self-stereotyping moderated the relation between achievement motivation and performance on an anagram task such that those who exhibited higher levels of gender self-stereotyping did not benefit from their motivation to achieve on performance. However, among those who exhibit lower levels of gender self-stereotyping, a strong motivation to achieve on the task was associated with better performance. Study 2 extended these findings in an important applied domain, academic performance. Specifically, Study 2 showed that (a) among men who tend to gender self-stereotype, the motivation to invest does not predict their GPA, but among men who do not tend to

gender self-stereotype and for all female participants, regardless of gender self-stereotyping, high motivation to achieve in academics is associated with a high GPA, and (b) gender self-stereotyping partially mediates gender differences in academic GPA. Together, these studies suggest that gender self-stereotyping can influence the academic performance of men such that they do not benefit from achievement motivation, while for men who do not tend to gender self-stereotype and for women in general, achievement motivation determines a strong academic performance.

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CHAPTER ONE

INTRODUCTION

A plethora of research has demonstrated that the motivation to achieve can lead to stronger persistence and better performance on laboratory tasks related to mathematics, substitution, and anagram tasks (Atkinson & Reitman, 1956; Hom & Murphy, 1985; Patten & White, 1977) as well as performance in academic settings (Ali, 1988; Dunham, 1973; Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008). This common relation between achievement motivation, task performance and academic performance is not surprising since overall academic performance is related to performance on specific academic tasks. Often the relation between the motivation to achieve and performance may be moderated by situational factors such as incentives, task failure induced by false time constraints, or classroom structure (Alschuler, 1969; Atkinson, 1958; Patten & White, 1977). Research also suggests that the achievement motivation and performance relation can be influenced by the self-concept (Bandura, 1997, Bandura, Barbaranelli, Caprara, & Pastorelli, 2001; Cury, Elliot, Da Fonseca, & Moller, 2006; Dweck & Leggett, 1988; Eccles & Wigfield, 2002; Elliot & McGregor, 2001).

While these self-concepts contain characteristics specific to the individual (e.g. self-efficacy - see Bandura, 1997), they also contain characteristics related to social group membership (Turner, Hogg, Oakes, Reicher, & Weatherell, 1987). In regards to the latter point, members of a group may apply stereotyped traits to themselves, a phenomenon known as self-stereotyping, which in turn can shape self-evaluations (Sinclair & Huntsinger, 2006). In the current research, we demonstrate that the pervasiveness of self-stereotyping does not end at self-evaluations, but that it can have implications for motivation and performance outcomes. We posit that masculine gender self-stereotyping may exert an extraneous and detrimental role in achievement motivation such that individuals are not able to benefit from motivation on relevant performance.

We tested this idea across two studies that focused on two distinct performance contexts. The first study was a laboratory experiment in which male participants' gender identity was made salient and then they were asked to complete an anagram task. The second study examined male versus female participants' college performance (i.e., grade point average or GPA). In general, we expected that among male participants who were in a context in which

their gender was made salient (in Study 1) or those in the academic context (Study 2), gender self-stereotyping would moderate the relation between achievement motivation and performance. Specifically, among those who exhibited higher levels of gender self-stereotyping, they would not benefit from their motivation to achieve on a laboratory task or academic performance. However, among those who exhibit lower levels of implicit self-stereotyping, a strong motivation to achieve would be associated with better performance. To understand the rationale for our main hypothesis, we review the research on the relation between motivation to achieve and performance and delineate how this relation can be influenced by gender self-stereotyping.

Achievement Motivation and Performance

When examining individual and group differences in performance, such as in an academic context, social psychologists often assess the role of achievement motivation (Ali, 1988; Atkinson & Reitman, 1956; Dunham, 1973; Harackiewicz, Durik, Barron, Linnenbrink-Garcia, & Tauer, 2008; Hom & Murphy, 1985; Patten & White, 1977). Since performance in a domain (e.g. academics) is often determined by performance at domain-specific tasks, the

motivation to achieve is often conceptualized as the psychological drive underlying the choice of, persistence at, and performance on, achievement-related tasks (Wigfield & Eccles, 2000). As is the case with other types of motivation (e.g., self-enhancement - see Lorenzi-Cioldi, 1991; McFarland & Alvaro, 2000; Sedikides, 1993; e.g., affiliative - see Sinclair, Lowery, Hardin, & Colangelo, 2005), achievement motivation shapes behavior such that stronger motivation is associated with relatively superior performance (Atkinson & Reitman, 1956). Indeed, evidence from contemporary achievement motivation theories such as modern expectancy-value theory (Eccles et al., 1983) and achievement goal theory (Dweck, 1986; Dweck & Leggett, 1988) demonstrate that the motivation to achieve often predicts performance (Cury et al., 2006; Elliot & Church, 1997; Elliot & McGregor, 1999; 2001; Harackiewicz, Barron, Carter, Lehto, & Elliot, 1997; Meece, Wigfield, & Eccles, 1990) and that social factors can moderate the achievement motivation-performance link (Atkinson, 1954; Harackiewicz & Elliot, 1993).

Much of the research on the role of achievement motivation in performance essentially argues that achievement motivation is determined by the extent to which individuals either value a given task or the goal of

success on a task (Atkinson, 1964; Elliot & Church, 1997; McClelland, Atkinson, Clark, & Lowell, 1953; Murray, 1938) and their expectation of performing, or learning to perform, competently on the task (Elliot & Church, 1997). Higher task related achievement motivation and performance may then lead to better performance in the related academic domain. In accordance with this conceptualization, achievement motivation is associated with relatively high course grades (Cury et al., 2006; Elliot & Church, 1997; Harackiewicz et al., 1997; Meece, et al., 1990), strong SAT performance (Elliot & McGregor, 1999; 2001), and course selection and enrollment (Eccles, Adler, & Meece, 1984; Feather 1988). In the latter case, value for mathematics or English tasks strongly predicted future enrollment in these respective classes.

Moreover, the relation between achievement motivation and performance can be influenced by situational factors (Atkinson, 1954; Harackiewicz & Elliot, 1993; Hom & Murphy, 1985; Patten & White, 1977). For example, situational cues that a task is achievement related (e.g., a test) enhanced performance in high achievement motivation individuals while producing decreased performance in low achievement motivation individuals (Atkinson, 1954). Similarly, framing a task as a measure

of performance relative to participants' peers enhanced time spent on, and enjoyment of, the task among high achievement oriented individuals (Harackiewicz & Elliot, 1993). Hom and Murphy (1985) manipulated performance for both low and high achievement motivated participants by either assigning goals by the experimenter or asking participants to self-assign goals. They found that highly motivated participants performed better on an anagram task when goals were experimenter-assigned than self-assigned, while low achievement motivated participants performed better when goals were self-assigned than when experimenter assigned. Finally, Patten and White (1977) enhanced the performance of high achievement oriented participants both by forcing failure, and by using ego involving instructions. They found that, forced failure and ego involving instructions led to increased performance for participants high in achievement motivation, while having no effect on performance for participants low in achievement motivation. Together, these studies suggest that the impact of achievement motivation on performance can be shaped by situational cues about the task itself and the implications of the task.

The self-concept is another factor that can influence achievement motivation and its corresponding performance on a related task. For example, beliefs about one's own intelligence predict achievement goals - that is, beliefs that one's intelligence is static often produces performance oriented goals while the belief that one's intelligence is subject to change often produces learning oriented goals (Cury et al., 2006; Dweck & Leggett, 1988; Elliot & McGregor, 2001). Other research demonstrates that strong self-efficacy in the context of task performance predicts success (Bandura, 1997, Bandura et al., 2001). In addition, the motivation to achieve as a function of the value placed on task performance is believed to be highly related to self-schema and identity constructs, which can be heavily influenced by social roles, cultural norms and stereotypes (Byrne & Shavelson, 1987; Eccles, Adler, & Meece, 1984; Eccles & Wigfield, 2002; Feather 1988). For example, the value placed on achieving a goal related to a task is linked to how performing well on the task affirms or disconfirms characteristics of one's social identity such as masculinity or femininity (Eccles & Wigfield, 2002).

One implication of the above work is that when a particular aspect of one's social identity is salient,

achievement on a task may affirm or disconfirm one's social identity, alter the value of achievement on the task, and in turn influence subsequent performance. To illustrate, the development of gender roles at an early age are shown to heavily influence subjective task value for mathematics and English - that is, boys report higher value for mathematics and girls report higher value for English (Byrne & Shavelson, 1987; Eccles, Adler, & Meece, 1984; Feather 1988). These early developmental differences in subjective task value later predict gender differences in course choices and achievement motivation in these respective domains. Together, this research suggests that beliefs about one's self, such as one gender self-concept, can have a significant impact on the relation between achievement motivation and task performance by influencing the types of task-related goals, their beliefs that they can meet these goals, and the subjective value of achievement on the task.

In the current research, we extend the role of the self-concept to the domain of self-stereotyping. We propose that cultural stereotypes applied to the self-concept can influence the relation between achievement motivation and performance. Specifically, when stereotypes endorse the belief that less value and

importance should be placed on a particular task performance, then individuals who absorb such stereotypes into their self-concept may not reap from the beneficial role of achievement motivation in performance. Again, this rationale is in line with theory and research that suggest that the self-concept and identity are highly related to the value individuals place on task performance - that is, how performing well on a particular task espouses one's personal values (Feather, 1988). As a case in point, both male and female college students associate lower academic effort with men and high effort with women, suggesting that displaying high academic effort may be perceived as less than masculine (Grabill et al., 2005). To the extent that men do absorb the belief that high academic effort is a trait associated with women more than men, we would expect that men who gender self-stereotype would not benefit from academic effort.

Self-Stereotyping

Following on the heels of Allport (1954), who proposed that an individual has the tendency to categorize the self as a member of an ingroup, self-categorization theory posits that categorization of the self leads to an increased perception of similarity between the self and

ingroup members and their associated traits (Turner et al., 1987). When these group traits are linked to cultural stereotypes and ingroup members apply such cultural stereotypes to the self-concept, this is called self-stereotyping. Thus far, past research has demonstrated evidence of self-stereotyping at the group level and it has identified some conditions under which relevant social groups show increased self-stereotyping (Dion & Earn, 1975; Guimond et al., 2007; Guimond, Martinot, Chatard, Crisp, & Redersdorff, 2006; Nosek, Banaji, & Greenwald, 2002; Rudman, Greenwald, & McGhee, 2001; Simon & Hamilton, 1994; Sinclair, Huntsinger, Skorinko, & Hardin, 2005; Sinclair, Hardin, & Lowery, 2006; Verkuyten & Nekuee, 1999).

At the group level, research has shown, for example, that men associate their self-concepts with attributes related to power while women associate their self-concepts with attributes related to warmth (Rudman et al., 2001). Also, across cultures, men perceive themselves as more agentic, less relational and less insecure (i.e., less fearful and anxious) while women perceive themselves as less agentic, more relational and more insecure (Guimond et al., 2007). These perceptions are synonymous with

traits men and women report as being characteristic of their own gender group.

In terms of the conditions that shift self-stereotyping, research has shown that perceived discrimination (Dion & Earn, 1975, Verkuyten & Nekuee, 1999), subliminally activated stereotypes (Levy, 1996), intergroup social comparisons (Guimond et al., 2006), assignment to a high status minority group (Simon & Hamilton, 1994), affiliative motivation (Sinclair et al., 2005) and identity salience (Sinclair, Hardin, & Lowery, 2006) can increase self-stereotyping in members of social groups such as Jewish-Americans, older Americans, strongly in-group identifying Iranians, Asian-Americans, women, African-Americans, and individuals who are part of a fictional minority group. Other research has shown that making intra-group comparisons reduces gender self-stereotyping when compared to control group while making inter-group comparisons increases gender self-stereotyping compared to a control group (Guimond et al., 2007). Together, this body of research has given us some insight into group differences in self-stereotyping and the contextual effects that lead to the malleability of self-stereotyping.

Gender Self-Stereotyping as a Moderator of the Relation between Achievement Motivation and Performance

The study of cultural stereotypes and their relation to the self has focused across a wide variety of social group categories, but one such category that appears to be of special interest to social psychologists is gender. This may in part be the case because gender stereotypes are generally accepted as prescriptive for gender-appropriate behavior, so they may be particularly influential on the behavior of men and women (Fiske et al., 1991; Fiske & Stevens, 1993; Rudman & Glick, 2001). Although gender stereotypes may have a downstream effect on behavioral outcomes, this relation is partly determined by psychological motivations (e.g., Dasgupta & Rivera, 2006). This is in accordance with group attitude theories, which propose that stereotyped attitudes about others can direct both psychological motivations and behaviors (e.g., the Motivation and Opportunity as Determinants model, Fazio, 2007). Indeed, Dasgupta and Rivera (2006) showed that, among individuals who were not motivated to be egalitarian as it relates to their beliefs about gender and unable to control their nonverbal discrimination actions, strong implicit prejudice against homosexuals was associated with biased behavior against an ostensibly gay

male student. However, among individuals who were highly motivated to be egalitarian, the relation among implicit prejudice, controllability over nonverbal discrimination actions, and behavioral bias was eliminated.

We extend past theory and research by arguing that men who possess gender self-stereotyped attitudes may not benefit from the role of achievement motivation in performance-related behavior. This idea is in line with research that suggests that gender stereotypes influence the expectancy and value components of achievement motivation at an early age among boys and girls. In this research, boys believe that they are more competent in sport and mathematic domains than girls do, while girls believe that they are more competent in reading and music domains than boys do (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield et al., 1997). Moreover, when measuring task value, boys value sports more than girls and girls value reading and music more than boys (Eccles et al., 1993). Such stereotype consistent gender differences in expected competence and task value of academic domains have been shown with both elementary school-aged and adolescent children (Eccles et al., 1983; Eccles, Wigfield, Harold, & Blumenfeld, 1993; Wigfield et al., 1997).

The moderating role of gender self-stereotyping in the relation between motivation to achieve and performance is also supported by gender stereotyping research with adult samples. This work demonstrates that the male gender stereotype endorses men as agentic and as individuals who are "innately" and "naturally" better able to achieve than women (Deaux & LaFrance, 1998; Eagly & Mladinic, 1989; Grabill et al., 2005; Guimond et al., 2007; Ruble & Martin, 1998, Rudman & Glick, 2001). The implication of this stereotype is that men do not necessarily need to put high effort or work into performance or particular tasks in order to succeed. This is evidenced by a study by Grabill and colleagues (2005) on effort and perceived academic performance. They found that college students were more likely to associate a low-effort, high achieving target that received a good grade with being a man and a high-effort, high achieving target that received a good grade with being a woman. These findings suggest that, in line with the agentic male stereotype, men's academic success is seen as a function of social group membership, while women must show high effort for academic success. Men who absorb this stereotype into their self-concept may place a different emphasis on valuing academic tasks such as studying, completing homework, and participating in

class because (a) they may perceive their evaluated performance on course-related tasks as related to their innate ability rather than effort on these tasks, and (b) they may view high academic participation and effort as more likely of female students.

Moreover, men who endorse such perceptions may be afraid of disconfirming the masculine aspects of their gender self-concept. Put differently, men who absorb gender stereotypes about their group into their self-concept may believe that to value academic performance and related tasks is normative for women but not for men because they endorse the belief that "getting high grades is for girls." Interestingly, the trivialization men place on academics is also supported by recent college achievement reports documenting that men are less engaged in their studies, have lower grades and grade point averages, and graduate from undergraduate programs at lower rates than women (U.S. Department of Education, 2004).

In conclusion, we argue that both men and women can possess high achievement motivation and are consequently capable of performing well on related tasks, but that those who absorb gender stereotypes that implicate the value placed on tasks such as those related to academic

performance may not benefit from achievement motivation. Since such gender stereotypes are more likely to be absorbed by men than women, our main hypothesis is that men who tend to self-stereotype will not benefit from the motivation to achieve.

Outline of Studies and Main Hypotheses

Two studies examined the moderating role of gender self-stereotyping on the relation between achievement motivation and performance across two contexts: a social context that made men's gender identity salient and measured their performance on an anagram task in the laboratory (Study 1) and an academic context that compared men's versus women's college performance (Study 2). Across both studies, we hypothesized that male participants who are in contexts that have implications for their gender -- gender identity salience and academic contexts -- those who tend to gender self-stereotype would not benefit from achievement motivation and, as such, motivation would not influence their performance. However, among those who do not tend to gender self-stereotype, we expected that they would reap the benefits of achievement motivation -- that is, the motivation to achieve would be associated with stronger performance.

In general, we expected that the hypotheses listed above would be supported when self-stereotyping is assessed with an implicit attitudes measure. Self-stereotyping typically implicates either traditional attributes that members of stereotyped groups may not consciously endorse because such attributes are not socially desirable in today's progressive society or negative attributes that individuals do not wish to consciously associate with their self-concept (Banaji & Prentice, 1994; Taylor & Brown, 1988). To demonstrate this effect in the case of traditional gender stereotyping, Greenwald and Farnham (2000) showed that while people explicitly endorsed the stereotype that associates men with instrumentality and women with expressiveness, this effect was significantly stronger when measured implicitly. Since indirect measures of attitudes typically bypass these concerns because such measures do not rely on deliberation and awareness, we expected that our hypothesized relations among gender self-stereotyping, achievement motivation, and performance behavior would operate as an implicit social cognitive process (Greenwald & Banaji, 1995).

In Study 1, an additional goal was to theoretically and empirically differentiate the proposed

self-stereotyping effects from stereotype threat processes. The stereotype that men are agentic and innately good at tasks such as academic performance tasks (e.g. tests) can have detrimental implications for achievement motivation. One might expect that if men are aware of this stereotype of their group, then this may cause them to be anxious about their performance on relevant tasks and lead to poor performance outcomes. This argument is in line with stereotype threat theory, which occurs when members of stigmatized groups are in situations that make them aware of the negative attributes associated with their group membership and subsequently perform in accordance with those stereotypes rather than their ability (Spencer, Steele, & Quinn, 1999; Steele & Aronson, 1995; Steele, Spencer, & Aronson, 2002). For example, women who are aware of the negative stereotype associating women with poor math performance, under-perform on math tasks (Spencer, Steele, & Quinn, 1999).

As it relates to the current research, one could argue that, given men's relatively poor college performance, that men may be aware of the negative view of their group's performance efforts. Therefore, when gender is made salient for men, as we propose to manipulate in

Study 1, such negative stereotypes may have been cognitively primed and in turn activate stereotype threat processes. If so, male participants should show evidence of stereotype threat based concerns (Marx & Stapel, 2006). As Marx and Stapel (2006) demonstrated, when a negative stereotype associated with a particular social group is made salient, members of that social group experience decreased performance and increased concern associated with confirming the stereotype. In line with their research, we asked participants in Study 1 to complete a measure of threat-based concerns about their performance on the anagram task.

CHAPTER TWO

STUDY ONE

Study 1 was a laboratory experiment in which we tested if a situation that made gender identity salient was one condition under which gender self-stereotyping would moderate the relation between achievement motivation and performance on an academically related task. In this study we manipulated gender identity salience by asking participants in the experimental condition to indicate their gender as part of a brief demographic questionnaire before completing the measure of self-stereotyping and again when completing the performance task. By comparison, participants in the control condition were not asked to indicate their gender. All participants completed an indirect measure of gender self-stereotyping using an Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998), which is a computerized task that measures the relative strength with which two target groups (e.g., self vs. other) are associated with two opposing evaluations (e.g., power vs. warmth) using response latency to operationalize attitude strength.

Next, all participants completed the performance task which was to solve a series of anagrams. We chose to

measure performance on an anagram task because they are instrumental in demonstrating the relation between achievement motivation and performance (Hom & Murphy, 1985). In addition, the task was left open ended because persistence towards completion of a task has been shown to be related to achievement motivation (Patten & White, 1977). Furthermore, this particular anagram task was conceptualized as an adequate analog to the type of effort place on academic study tasks, so it ought to be influenced by achievement motivation. Finally, all participants completed the measure of threat based concerns.

Method

Participants

Seventy male undergraduate students at California State University, San Bernardino, participated in the study in exchange for extra course credit or a \$10 cash payment. Participants' age ranged from 18 to 55 years ($M = 24.28$ years). Of the participants, 37% were Hispanic or Latino, 29% were White, 16% were Black, 8% were Asian or Pacific Islander, 7% were multi-racial, and 3% did not identify their ethnic-racial group. In terms of sexual identification, none of the participants identified

exclusively as gay; the sample mean was 10.55 ($SD = 1.4$) on an 11-point scale where 11 was labeled "I identify as heterosexual exclusively." Of the 70 participants, three were dropped for committing too many errors on the latency task¹, three were missing data on the latency task, two were data outliers², and two did not complete the laboratory procedure. The final sample consisted of 60 participants.

Materials

Implicit Association Test (IAT; Greenwald, McGhee, & Schwartz, 1998). An IAT was adopted to measure implicit gender self-stereotyping (Gender IAT). The IAT is a computerized task that measures the relative strength with which two target groups (e.g., the self vs. others) are associated with two opposing evaluations (e.g., power-related attributes vs. warmth-related attributes) using response latency to operationalize attitude strength. A plethora of research has used the IAT to measure people's implicit attitudes toward women, homosexuals, and African-Americans (see Dasgupta, 2004,

¹ Following Greenwald, Nosek, and Banaji (2003), any participants committing more than 20% errors on any block of the IAT was dropped. In addition, any latencies slower than 10,000 ms or faster than 300 ms were dropped.

² Outliers were in the control group and the results were similar when these participants were included.

for a review). Additionally, Rudman, Greenwald, and McGhee (2001) used the IAT to measure the extent to which individuals automatically associate the self-concept with gender stereotypical traits (i.e., gender self-stereotype).

In the Gender IAT in the current study, participants saw 4 types of stimuli presented one at a time on a computer screen. Two types of stimuli consisted of first person pronouns (e.g., "me") and third person pronouns (e.g., "they"). The other two types of stimuli consisted of words related to "power," a stereotypical masculine attribute (e.g., "powerful", "confident"), and words related to "warmth," a stereotypical feminine attribute (e.g., "warm", "caring"; see Appendix A for all IAT stimuli). In an IAT, participants' task is to categorize the 4 types of stimuli using 2 designated response keys on the keyboard. In the case of the Gender IAT, for half of the task, participants were instructed to categorize first person pronouns and words associated with power using the same key ("me+power") and simultaneously to categorize third person pronouns and words associated with warmth using the other key ("they+warm"). For the remaining half of the task, the key assignment was reversed (e.g.,

"me+warm," "they+power"). The order of the two tasks was counterbalanced between participants.

The underlying rationale of the IAT is that when highly associated words share the same response key, participants typically classify them quickly and easily; however, when weakly associated words share the same response key, participants tend to classify them more slowly and with greater difficulty. (The logic of this computerized task is easier to understand if readers take an IAT. Several IATs assessing implicit attitudes toward various groups can be self-administered anonymously at <https://implicit.harvard.edu/implicit/>). In the Gender IAT, we expected that male participants would perform the classification task relatively fast when first-person-related and power-related words shared the same response key while third-person-related and warmth-related words shared the other response key.

Reliability and Validity of the IAT. A meta analysis of the IAT by Hofman, Gawronski, Gschwender, Le, and Schmitt (2005) revealed an average internal reliability of .79. While studies of convergent validity between the IAT and other measures have revealed mixed results, it has shown reliable discriminant validity (see Lane, Banaji, Nosek, & Greenwald, 2007, for a review). Most importantly,

in a meta-analysis of 122 studies, the IAT has been shown to predict behavior, social judgments and physiological responses, average $r = .27$ (Greenwald, Poehlman, Uhlmann, & Banaji, 2008).

Measure of Motivation to Achieve (Steele & Aronson 1995). Three items that measured motivation were adopted from Steele and Aronson (1995) and modified to refer to the anagram task. They were: "How would you rate your overall ability on this task?" (*not good at all* [1] to *very good* [7]), "How much did you value this task?" (*not very much* [1] to *very much* [7]), and "How important was this task to you?" (*not very important* [1] to *very important* [7]). Higher mean scores indicated stronger motivation to achieve on the anagram task.

Anagram Task (Shah, Higgins, & Friedman, 1998). In this computerized anagram task, participants were presented with six individual series of letters for which they were asked to create as many three or more letter words as possible (see Appendix C for all letter strings and solutions). Each anagram had at least ten possible words that could be created. As part of the task instructions, participants were presented with a sample anagram.

Threat Based Concerns (Marx & Stapel, 2006). This three item measure of threat-based concerns was modified to refer to the anagram task: "I worry that my ability to perform well this task is affected by my gender" (*strongly disagree* [1] to *strongly agree* [7]); "I worry that if I perform poorly on this task, the experimenter will attribute my poor performance to my gender" (*strongly disagree* [1] to *strongly agree* [7]); "I worry that, because I know the negative stereotype about men and academics, my anxiety about confirming that stereotype will negatively influence how I perform on this task." (*strongly disagree* [1] to *strongly agree* [7]). Higher mean scores indicated stronger threat-based concerns.

Procedure

Upon arriving to the laboratory, participants were informed that they would be completing two separate studies. The "first study" was presented as a study on people's beliefs and opinions about themselves. A female experimenter led the participants to a private room where they first completed the Gender IAT. Participants who were randomly assigned to the experimental condition completed a procedure that made their gender salient - they were asked to complete a brief demographics section in which they indicated their gender and age at the start of the

Gender IAT. Midway through the IAT instructions they were asked to verify their gender and age. Participants in the control condition were not asked to complete the brief demographics section (see Sinclair et al., 2006, for a similar procedure that made participants' gender salient).

After completing the Gender IAT, the "second study" was presented as a "cognitive task" in which they completed the anagram task. Here, the experimenter instructed participants to complete as much of the anagram task as possible. For participants in the gender salience experimental condition, they were asked to indicate their gender and age in a brief demographic section at the beginning of the task. This information was then displayed at the top of each anagram screen. Participants in the control condition were not asked to complete the brief demographics section. After the anagram task, all participants completed the measures of motivation and threat-based concerns, as well as a thorough demographics questionnaire. After all measures were completed, participants were probed about the purpose of the research, completely debriefed, and remunerated for their participation.

Results and Discussion

Scoring the Gender Implicit Association Test and Anagram Task

Following Greenwald, Nosek, and Banaji (2003), we calculated a Gender IAT score for each participant using modified effect sizes such that larger positive IAT effect sizes (abbreviated as IAT D) indicate stronger associations between the self and power-related words than associations between the self and warmth-related words. Implicit gender self-stereotyping did not vary by condition (IAT $D_{control} = -.11$; IAT $D_{experimental} = -.19$), $F(1, 59) = .40$, *ns*. Figure 1 shows the IAT effect across conditions, again demonstrating that the difference in latencies between the self + power and others + warmth blocks (IAT effect = 127.46 ms) were not different from the difference in latencies between the self + warmth and others + power block (IAT effect = 169.76 ms). A score for the anagram task was calculated for each participant by summing the number of correct English words created. The number of correct anagrams did not vary by condition ($M_{control} = 31.31$; $M_{experimental} = 36.74$), $F(1, 59) = 2.2$, *ns*. Finally, according to Table 1, there were no significant correlations among the measures across the control and experimental conditions.

Gender Self-Stereotyping as a Moderator of the Relation between Motivation to Achieve and Anagram Task Performance

To test the predicted moderating effect of gender self-stereotyping on the relation between achievement motivation and anagram task performance when gender identity was made salient, a hierarchical regression was conducted in which number of correct anagrams created was used as the outcome variable. In the first step, experimental condition (coded 0 = control and 1 = experimental), gender self-stereotyping, and achievement motivation were entered as predictor variables. In the second step, the two-way interactions among the predictor variables were entered, followed by three-way interaction in the third step. The regression analyses indicated that the three-way Condition X Gender Self-Stereotyping X Motivation interaction was significant, $\Delta F(7, 59) = 4.65$, $R^2 = .16$, $\beta = -.40$, $p = .04$. To disaggregate this interaction, we examined the data for the experimental and control conditions separately. In the experimental condition, the two-way Gender Self-Stereotyping X Motivation interaction was significant, $\Delta F(3, 33) = 5.12$, $R^2 = .20$, $\beta = -.39$, $p = .03$. To further examine these interaction effects, simple slope analyses were conducted (Aiken & West, 1991).

As shown in Figure 2, among men who did not self-stereotype, the stronger their achievement motivation, the more they created correct words, $\beta = .37$, $p = .08$. In contrast, among men who self-stereotype, motivation was not associated with correct words created, $\beta = -.38$, *ns*. Furthermore, among highly motivated participants, the more they gender self-stereotyped, the fewer correct words they created, $\beta = -.69$, $p = .02$. In the control condition, the two way Gender IAT X Achievement Motivation was not significant, $F(3, 25) = .32$, *ns*. Together, these results suggest that when men are in situations that make their gender identity salient, achievement motivation can be detrimental at the "downstream end" of performance among men who highly gender self-stereotype.

To test that stereotype threat processes did not play a role in relation between achievement motivation and anagram task performance, similar analyses were conducted using the threat based concerns measure. These analyses indicated that none of the measured variables -- self-stereotyping, achievement motivation, and performance -- had a main or interaction effect on threat-based concerns, all $F_s < 1.50$.

CHAPTER THREE

STUDY TWO

Study 1 demonstrated that when men's gender identity is made salient, gender self-stereotyping moderates the relation between motivation to achieve on an anagram task and the actual performance on the task itself. As noted earlier, an anagram task was chosen because the task provides a behavioral proxy for the amount of effort one is willing to invest on an intellectually-related task. That is, it captures the type of psychological motivation that underlies men's academic performance such as class and test preparation. Indeed, past research suggests that increased time and effort invested in studying leads to better academic performance (Fenollar, Roman, & Cuestas, 2007; Rau & Durand, 2000). Therefore, if our hypotheses are valid, in an academic setting male college students who engage in gender self-stereotyping should not reap the benefits of achievement motivation. However, men who do not gender self-stereotype should benefit from achievement motivation - that is, the motivation to achieve in academics should translate into a relatively strong college performance.

Study 2 included a sample of women as a referent group to strengthen the predicted moderating role of masculine gender self-stereotyping in achievement motivation among men. As reviewed earlier, since there is no stereotype linking women to study effort, we expected that, similar to men who do not gender self-stereotype, the motivation to achieve in academics would translate into a relatively strong college performance among all women. Lastly, given the college performance gap between men and women and that our argument is that this phenomenon is partly due to gender self-stereotyping, we tested the hypothesis that women, on average, would have higher GPA than men, and that gender self-stereotyping would mediate the relation between gender and GPA.

To address our objectives, male and female participants completed two ostensibly unrelated studies. The "first study" was presented as a study on beliefs and opinions about the self, during which participants completed measures of explicit and implicit gender self-stereotyping. In the "second study", which was presented as a study on peoples' college experience and performance, participants completed the measures of achievement motivation and college performance. One particular positive feature of this study is that we

obtained permission from student participants to access their college transcripts. GPA directly obtained from school records has been used as a measure of academic performance and is particularly advantageous because it provides an objective measure of performance (Hall, 2001; Olds & Shaver, 1980).

Method

Participants

One-hundred twelve student participants (44% men) who completed at least one full-time term at California State University, San Bernardino, participated in this study in exchange for extra course credit. Participants' age ranged from 18 to 67 years ($M = 25.65$ years). Of the participants, 40% were Hispanic or Latino, 25% were White, 14% were Black, 8% were Asian or Pacific Islander, 5% were multi-racial, 1% was American Indian or Alaskan Native, and 7% did not identify their ethnic-racial group. In terms of sexual identification, none of the participants identified exclusively as gay or lesbian; their mean was 10.53 ($SD = 1.62$) on an 11-point scale where 11 was labeled "I identify as heterosexual exclusively." Of the 112 participants, ten were dropped for committing too many

errors on the latency task, four were IAT outliers³, and five declined to give permission to access their college transcript. The final sample consisted of 93 participants (43% men).

Materials

Implicit Association Test (IAT: Greenwald, McGhee, & Schwartz, 1998). The Gender IAT reported in Study 1 was used to assess gender self-stereotyping. See the Study 1 "Materials" section for a full description of this measure and its procedure.

Measure of Explicit Self-Stereotyping. Explicit self-stereotyping was measured with a self-report measure that consisted of the 12 stimuli words used in the Gender IAT described above (e.g., "strong," "warm"; see Appendix A for a complete list). Participants were instructed to indicate how much they identified themselves with each adjective on a 6-point scale from *not at all* [1] to *very much* [6].

Measure of Motivation to Achieve (Steele & Aronson, 1995). The same measure that was modified to measure achievement motivation regarding the anagram task in study one was used in its original form to measure achievement

³ Results were similar when these participants were included.

motivation regarding overall academics in study 2. The measure contains three items: "How would you rate your overall academic ability?" (*not good at all* [1] to *very good* [7]), "How much do you value academics?" (*not very much* [1] to *very much* [7]), and "How important are academics to you?" (*not very important* [1] to *very important* [7]). Higher mean scores indicate stronger achievement motivation.

Academic Performance. Academic performance was measured by obtaining participants' cumulative GPA directly from their academic transcript.

Procedure

Participants were informed that they would participate in two separate studies. The "first study" was presented as a study on people's beliefs and opinions about themselves. Participants completed the Gender IAT followed by the explicit measure of gender self-stereotyping. Then, the "second study" was presented as a study of participants' college experience and performance. Here, participants completed the measure of motivation, a demographics questionnaire (e.g., ethnicity, age), and granted permission (or not) to access their college transcript. After all measures were completed, participants were debriefed in three steps: (a) probed

about the purpose and relation of the two studies,
(b) informed of the purpose of the study and the reasons for obtaining permission to access their transcripts, and
(c) asked if they had any questions. Finally, they were given the researcher's contact information and remunerated for their participation.

Results and Discussion

Gender Self-Stereotyping as a Moderator of the Relation between Academic Motivation and Grade Point Averages for Men (but not Women)

To test the moderating effects of gender self-stereotyping on the relation between motivation and academic performance, a hierarchical regression was conducted in which GPA was used as the outcome variable. In the first step the number of credits completed was controlled because high numbers of cumulative credits is typically associated with lower GPAs (e.g., Olds & Shaver, 1980), which is also the case in the current data, $r(93) = -.20, p = .04$. In the second step gender (predictor variable; coded 0 = women and 1 = men), gender self-stereotyping, and achievement motivation were entered as predictor variables. In the third step the two-way interactions among the predictor variables were entered, followed by three-way interaction in the fourth step.

Unfortunately, the three-way Gender X Gender Self-Stereotyping X Motivation interaction was not significant, $\beta = -.18$, $p = .26$. However, when we separate the analysis by gender of participants, among men, there was a significant two-way Gender Self-Stereotyping X Motivation interaction, $\Delta F(4, 39) = 4.89$, $R^2 = .26$, $\beta = -.35$, $p = .05$. As shown in Figure 3, among men who did not self-stereotype, strong motivation to achieve was associated with a higher GPA, $\beta = .52$, $p = .01$. In contrast, among self-stereotyping men, achievement motivation scores did not predict GPA, $\beta = -.09$, *ns*. Among highly motivated men, the more they gender self-stereotyped, the fewer correct words they created, $\beta = -.75$, $p < .01$. Conceptually, these results replicate those of Study 1 – that is, unlike men who do not tend to gender self-stereotype, men who tend to gender self-stereotype do not reap the benefits of achievement motivation.

Next, we expected that among all female participants, regardless of gender self-stereotyping, the more they are motivated to achieve, the higher their GPA. Using the female participants only, we conducted similar regressions to the ones reported above. The results revealed that, as predicted, stronger achievement motivation was associated

with a higher GPA, $\Delta F(3, 51) = 14.90$, $R^2 = .42$, $\beta = .62$, $p = .01$. Moreover and central to our prediction, the two way Gender Self-Stereotyping X Motivation was not significant, $\beta = -.06$, *ns*.

Finally, we tested if explicit gender self-stereotyping moderated the relation between achievement motivation and college GPA. To make the self-report measure analogous to the IAT (following Hugenberg & Bodenhausen, 2004), individual explicit gender self-stereotyping scores were calculated by subtracting mean warmth scores from mean power scores such that high positive scores indicate a stronger identification with masculine traits than with feminine traits. Analyses using explicit self-stereotyping scores revealed no significant effects, all F s < 1.29 . These results imply that implicit, rather than explicit, gender self-stereotyping moderates the relation between achievement motivation and academic performance. As argued earlier, this may be the case because members of stereotyped groups may not consciously endorse attributes that they perceive to be socially undesirable or negative, and indirect measures of attitudes can bypass these concerns (Banaji & Prentice, 1994; Taylor & Brown, 1988). In addition, implicit attitude measures tend to be a more powerful measure of

gender self-stereotyping than explicit attitude measures (Greenwald & Farnham, 2000).

Gender Self-Stereotyping as a Mediator between the Relation of Gender of Participant and Grade Point Averages

To test if implicit gender self-stereotyping mediates the relation between the gender of participants and college GPA, we conducted a series of four regressions (see Figure 4) following Baron and Kenny (1986). As in the previous analyses, in all regressions in which GPA was the outcome variable, the number of credits completed was controlled in the first step. In the first regression, we tested the relation between gender of participant (predictor variable; coded 0 = women and 1 = men) and GPA (outcome variable). As expected, male participants tend to have lower GPAs than female participants, $F(2, 92) = 4.19$, $\beta = -.21$, $p = .04$. Second, we tested the relation between gender of participant (predictor variable) and implicit gender self-stereotyping (mediator variable). Results showed that male participants were more likely to gender self-stereotype than female participants, $F(1, 92) = 6.87$, $\beta = .27$, $p = .01$.

Third, we tested the relation between gender self-stereotyping (mediator variable) and GPA (outcome variable). Results showed that higher levels of implicit

gender self-stereotyping were associated with lower GPAs, $F(3, 92) = 3.91, \beta = -.18, p = .07$. In the fourth and final regression we tested the relation between gender of participant (predictor variable) and GPA (outcome variable) after controlling for implicit gender self-stereotyping (mediator). The results now indicate that the effect of gender of participant on GPA was no longer significant $F(3, 92) = 3.91, \beta = -.16, p = .13$. Since a Sobel test revealed a test statistic of $z = -1.47, p(\text{two-tailed}) = .14$, the mediation analyses suggest that gender self-stereotyping partially explains the relation between gender of participant and college GPA.

Next, we tested if explicit gender self-stereotyping mediated the relation between gender of participants and college GPA. We conducted similar analyses using explicit gender self-stereotyping as the mediator of the relation between gender of participant and GPA. Although male participants were more likely than female participants to explicitly gender self-stereotype, $F(1, 92) = 6.96, \beta = .62, p = .01$, gender self-stereotyping did not significantly predict GPA, $F(1, 92) = 3.30, \beta = -.05, p = .07$, so we could not continue with mediation analyses.

Descriptives and Correlations

According to Table 2, there was a significant gender of participants difference in implicit self-stereotyping ($IAT D_{women} = -.44$; $IAT D_{men} = -.23$), $F(1, 92) = 6.87$, $p = .01$. Figure 5 shows the IAT effect across gender, demonstrating that the difference in latencies between the self + power and others + warmth blocks ($IAT\ effect = 66.63\ ms$) were not different from the difference in latencies between the self + warmth and others + power block ($IAT\ effect = 31.97\ ms$). Furthermore, a t test comparing the average IAT D to zero revealed that for both men and women, the association between the self and concepts related to warmth was stronger than the association between the self and concepts related to power, $t(39)_{men} = -3.87$, $p = .01$, $t(52)_{women} = -8.64$, $p = .01$. Together, these results suggest that, while both men and women are more likely to implicitly associate the self with concepts of warmth, the association is stronger, on average, for women than for men. Also, we should note that these results replicate the findings of Rudman et al. (2001) showing that both men and women, on average, implicitly associate themselves with concepts of warmth over concepts of power. This effect may be due to the trend that warmth-related attributes are preferred over

power-related attributes, as is shown on explicit measures (Rudman & Goodwin, 2004), and the well-established phenomenon that people have a tendency to generally associate the self with positive concepts (Banaji & Prentice, 1994; Taylor & Brown, 1988).

According to Table 3, there was a significant negative correlation between implicit gender self-stereotyping and GPA for men, $r(40) = -.30$, $p = .05$, such that the more men self-stereotyped, the lower their GPA. However, there was no relation between self-stereotyping and GPA for women $r = -.14$, *ns*. This partially supports the argument that, for men, gender self-stereotyping can harm their academic performance. In addition, there was no relation between achievement motivation and cumulative GPA for men $r(40) = .13$, *ns.*, but this relation was significant for women, $r(40) = .56$, $p < .01$, such that the more women were motivated to achieve, the higher their GPA.

CHAPTER FOUR

GENERAL DISCUSSION

The current research sought to examine the moderating role of gender self-stereotyping in the relation between achievement motivation and academic performance of men. As predicted, Study 1 showed that when male participants' gender identity is made salient, gender self-stereotyping moderated the relation between achievement motivation and performance on an anagram task. Specifically, those who tended to gender self-stereotype did not benefit from their achievement motivation on an anagram task on subsequent task performance. However, among those who do not tend to implicitly self-stereotype, a strong motivation to achieve on the task was associated with better task performance. These results suggest that when contextual effects make men aware of their gender identity, those who gender self-stereotype may not benefit from achievement motivation. /

The purpose of Study 2 was to extend and replicate Study 1's findings in a few important ways. First, for men who chronically self-stereotype, their collegé performance does not benefit from achievement motivation. Second, for men who do not chronically self-stereotype and for women,

high achievement motivation would be associated with a strong college performance. Third, gender self-stereotyping mediated the relation between participants' gender and GPA. As predicted, we found that in an academic context, the relation between achievement motivation and GPA was nonexistent among men who self-stereotype. In contrast, among men who do not engage in gender self-stereotyping and for women in general, higher achievement motivation in academics was associated with a higher GPA as obtained from student participant transcripts. In addition to these main results, we found that men, on average, had a lower college GPA than women and that gender self-stereotyping partially mediated this effect.

In concert, the results of these studies suggest that the benefits of achievement motivation may be determined by an individual's gender self-concept. Specifically, when the gender self-concept is infused by group-based stereotypes, then it can influence the academic performance of men such that they place lower value on effort related to study tasks and thus they do not benefit from achievement motivation. When men do not gender self-stereotype or when the group stereotype does not influence the amount of value placed on effort towards

academic tasks (e.g. for women), higher achievement motivation is related to higher academic performance. To the extent that social groups are associated with stereotypes that implicate achievement motivation, we would expect similar relations to emerge. For example, African Americans who self-stereotype as unintelligent may trivialize academic effort and, in turn, not the benefit from the role of achievement motivation in academic performance.

Alternative Theoretical Explanation

Since the stereotype that men do not put high effort into academic tasks could be construed as a negative stereotype, one might conclude that any lack of benefit from achievement motivation is an effect of stereotype threat. As previously mentioned, stereotype threat occurs when members of stigmatized groups are made aware of negative attributes associated with their group membership and subsequently perform in accordance with those stereotypes rather than their ability. To support the proposition that the phenomenon under study was driven by self-stereotyping rather than stereotype threat, we measured and analyzed stereotype threat based concerns. Results show that stereotype threat based concerns did not

vary as a function of achievement motivation or performance, which suggest that the social cognitive processes supported in these studies are based on self-stereotyping.

Implications

On a practical level, the current research suggests that gender self-stereotyping plays a detrimental role in men's academic performance when compared with women. Men's under-performance and under-representation in college relative to women has been documented as an increasing academic achievement gap (U.S. Department of Education, 2004). In light of this social phenomenon, the current research suggests that universities and colleges may wish to develop interventions that target masculine stereotypes that (a) men do not need to exert high effort in order to achieve, and (b) that showing high effort in study, class preparation and class participation confirms a less than masculine social identity (e.g. a "nerd", or "geek"). By doing so, they stand to improve the academic engagement and performance of enrolled men by eliminating the hindering effects of gender self-stereotyping. In the long term, they might even decrease the academic achievement gap.

Limitations and Future Research

The current research demonstrated that gender self-stereotyping moderated the relation between achievement motivation and performance in an academic context. We do not expect that this moderation effect would generalize to all contexts involving performance. For instance, in contexts where masculine agency is associated with high task effort and persistence (e.g. competitive athletics), gender self-stereotyping may have no effect, or even alter the relation between achievement motivation and performance.

Future research should identify the conditions that lead to the moderating effects of gender self-stereotyping in achievement motivation and performance. Identifying such conditions will lead to a broader understanding of gender self-stereotyping processes as well as assist researchers with designing interventions that decrease gender self-stereotyping and its negative impact on achievement motivation. For instance, encouraging collaborative study in and outside of college classrooms may facilitate men's effort in study tasks by diffusing the perceived utility of the agentic stereotype.

APPENDIX A

TABLES

Table 1. Correlations among all Measures by Experimental Conditions (Study 1)

	1	2	3
Experimental (n = 34)			
1. Gender IAT <i>D</i>	---	-.13	-.22
2. Achievement Motivation	-.003	---	.12
3. Correct Anagrams Created	-.12	-.004	---
Control (n = 26)			

Table 2. Descriptive Statistics by Gender of Participant (Study 2)

	Men (n = 40)	Women (n = 53)
	<i>M (SD)</i>	<i>M (SD)</i>
Gender IAT <i>D</i>	-.24 (.38)	-.44 (.37)*
Explicit Self-Stereotyping	-.38 (.91)	-.99 (1.26)
Academic Motivation	6.05 (.67)	6.42 (.54)*
GPA	2.87 (.43)	3.04 (.47)*

* $p < .05$.

Table 3. Correlations among all Measures by Gender of Participant (Study 2)

	1	2	3	4
		Men (n = 40)		
1. Gender IAT <i>D</i>	---	.15	.17	-.30*
2. Explicit Gender Self-Stereotyping	.14	---	.18	.08
3. Academic Investment	.27	.09	---	.13
4. GPA	-.14	-.18	.56**	---
		Women (n = 53)		

*p = .05, **p < .01.

APPENDIX B

FIGURES

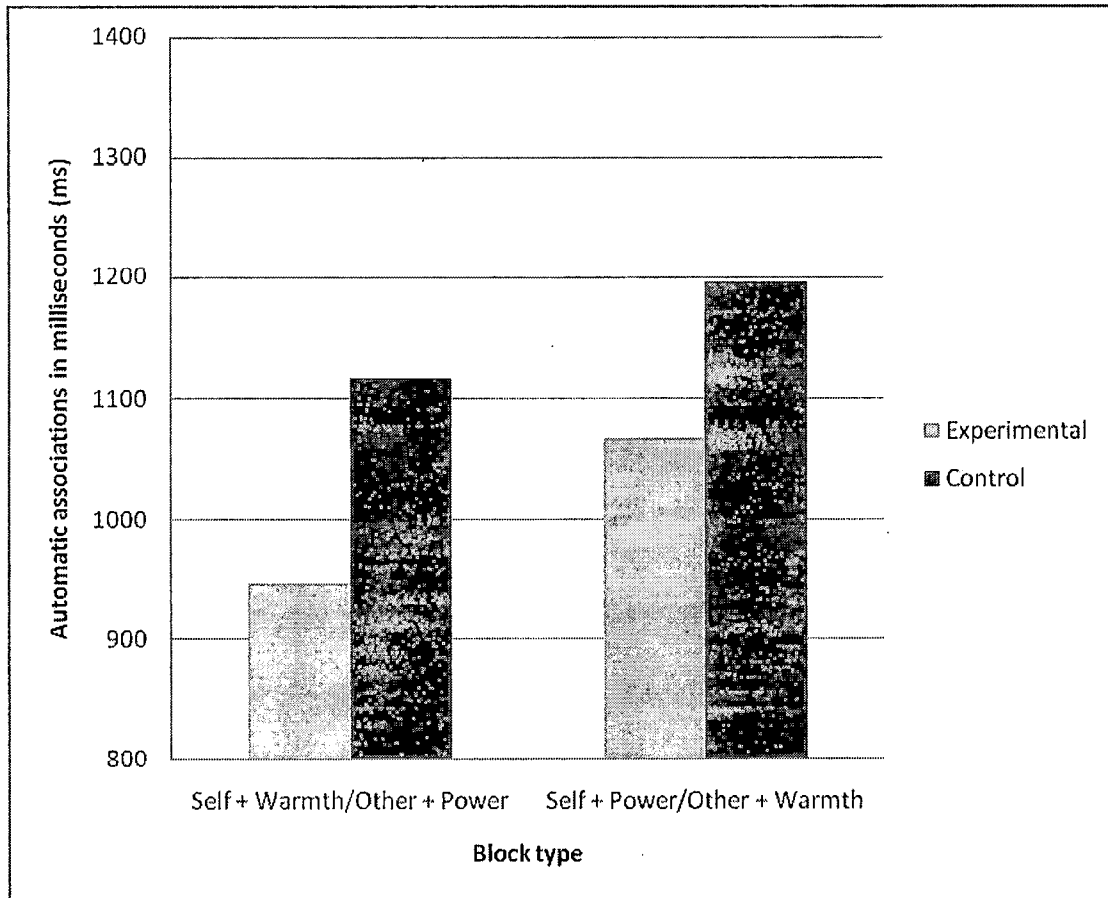


Figure 1. Mean Response Latencies to Stimuli Combinations for Experimental and Control Groups.

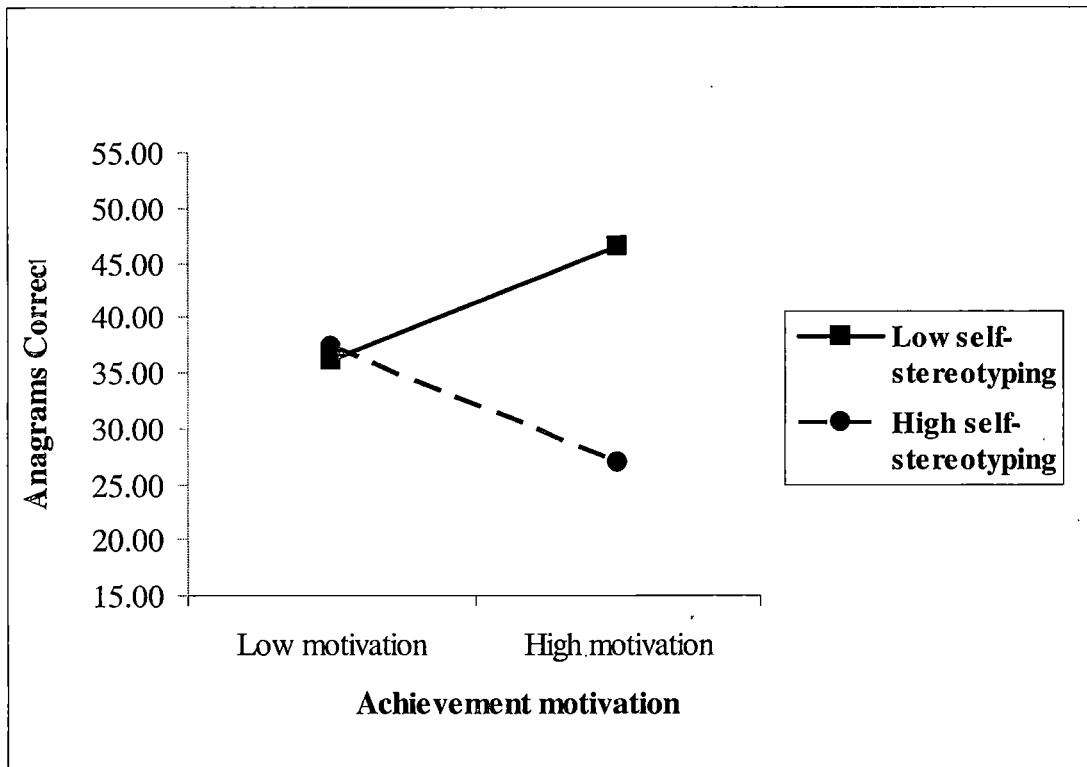


Figure 2. Experimental Condition Only: Relation between Achievement Motivation and GPA as a Function of Gender Self-Stereotyping.

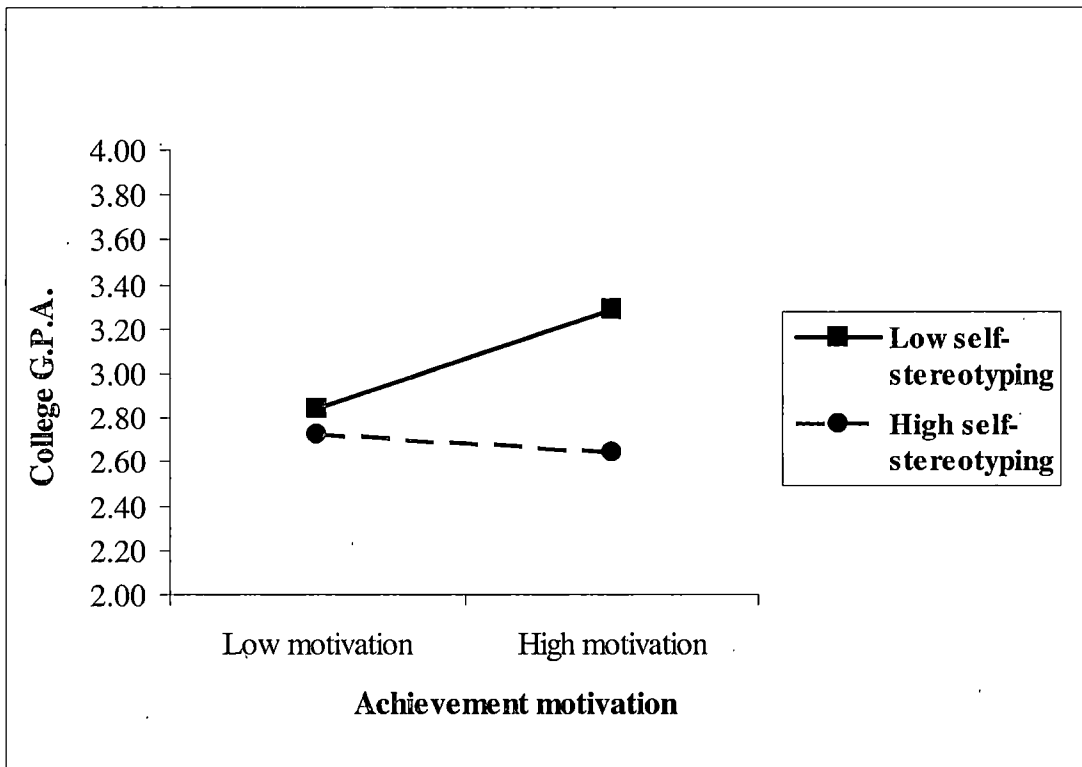


Figure 3. Men Only: Relation between Achievement Motivation and GPA as a Function of Gender Self-Stereotyping.

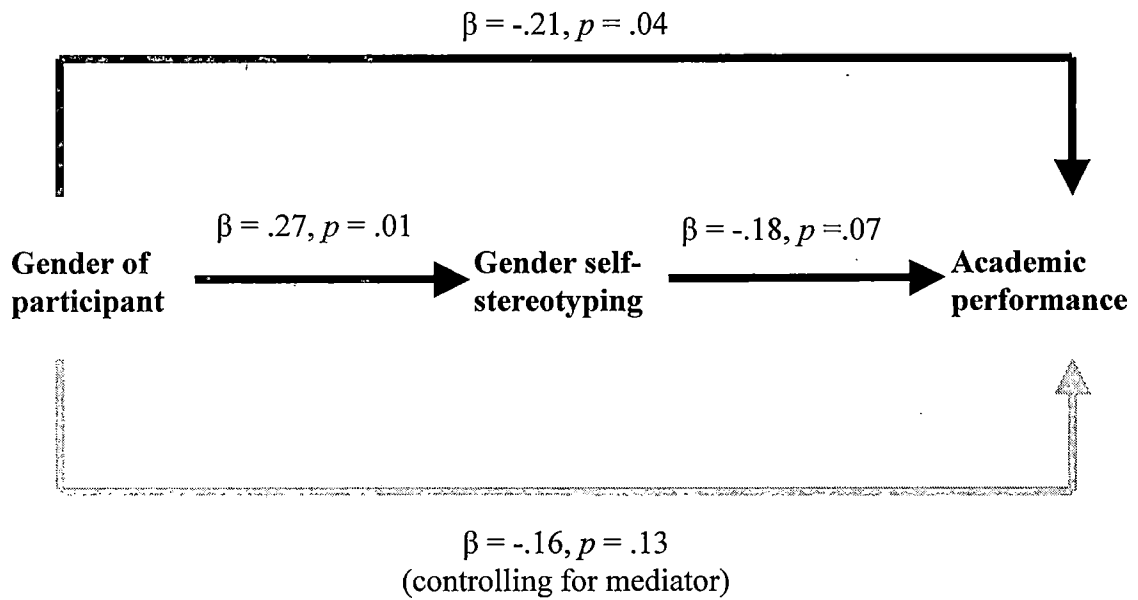


Figure 4. Level of implicit masculine self-stereotyping mediates the relationship between sex and academic performance.

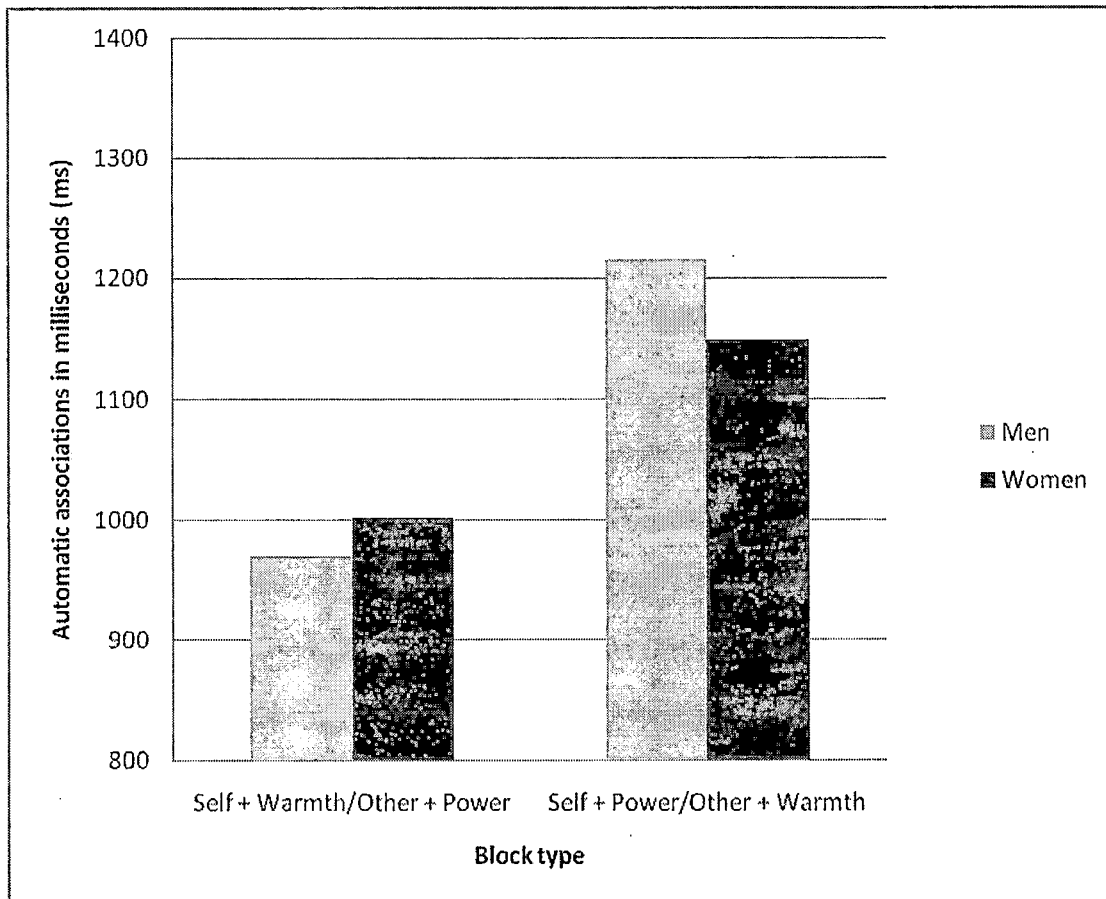


Figure 5. Mean Response Latencies to Stimuli Combinations for Men and Women.

APPENDIX C
IMPLICIT ASSOCIATION TEST STIMULI

IAT Stimuli

Me: I, me, my, mine, myself

Not me: they, them, their, theirs, others

Warmth: warm, caring, kind, gentle, sensitive, nurture

Power: strong, confident, assertive, power, dominant, potent

APPENDIX D

GENDER SELF-STEREOTYPING QUESTIONNAIRE

Gender Self-Stereotyping Questionnaire

Instructions: There are many traits that may characterize you. Using the scale below, please indicate the extent to which you believe that each of the following words describes a quality you possess by selecting a rating. There is no right or wrong answer. We are only interested in your description of yourself. Indicate your response by circling the appropriate number.

	Not at all Characteristic of Me	Extremely Characteristic of Me
1. Strong	0 1 2 3 4 5 6	
2. Warm	0 1 2 3 4 5 6	
3. Confident	0 1 2 3 4 5 6	
4. Caring	0 1 2 3 4 5 6	
5. Assertive	0 1 2 3 4 5 6	
6. Kind	0 1 2 3 4 5 6	
7. Power	0 1 2 3 4 5 6	
8. Gentle	0 1 2 3 4 5 6	
9. Dominant	0 1 2 3 4 5 6	
10. Sensitive	0 1 2 3 4 5 6	
11. Potent	0 1 2 3 4 5 6	
12. Nurture	0 1 2 3 4 5 6	

APPENDIX E

ANAGRAM LETTER STRINGS AND POSSIBLE SOLUTIONS

Anagram Letter Strings and Possible Solutions (Shah, Higgins & Friedman, 1998).

1. OLSPO: SPOOL, POOLS, POLOS, LOOPS, SLOOP, SLOP, LOPS, POOL, POLS, SOLO, POLO, OOPS, LOOP, POL, SOP, LOP, SOL, OPS
2. RSTEDE: DESERT, RESTED, DETERS, DREST, DETER, TREES, DEERS, STEER, STEED, TERSE, RESET, REEDS, ESTER, TREED, SERE, REST, DEER, SEED, SEER, REED, REDS, TEES, TEED, ERST, TREE, RES, EDS, SET, RED, ERE, TEE, SEE
3. ILSME: SMILE, SLIME, MILES, LIMES, LIME, MILS, SLIM, MILE, ISLE, SEMI, LEIS, LIES, ELMS, MIS, LEI, ISM, MIL, EMS, LIE, ELM
4. ATNEML: LAMENT, MANTEL, MENTAL, MANTLE, METAL, LEANT, MEANT, TEAL, ANTE, TAME, NAME, ELAN, TEAM, MALE, AMEN, LANE, MELT, MEAT, TALE, MEAN, MEAL, MATE, LAME, LENT, NEAT, MANE, LATE, MALT, LEAN, LET, TEA, TAN, MET, LEA, NAE, MEN, TEN, MAT, LAM, ETA, ELM, TAM, EAT, ATE, NET, ANT, MAN, ALE
5. IDFEL: FILED, FLIED, FIELD, DELI, FILE, LIED, FLED, IDLE, LIEF, LIFE, LED, LID, LEI, FIE, FED, ELF, DIE, LIE, DEF
6. LCETES: SELECT, ELECTS, STEEL, SLEET, ELECT, TEES, ELSE, SECT, LEST, LETS, EELS, LEES, SEC, LEE, SET, TEE, SEE, LET, EEL

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