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## Leaders like me : exposure to counterstereotypic women and its effect on the malleability of self-stereotyping.

Nicole Gilbert Cote  
*University of Massachusetts Amherst*

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LEADERS LIKE ME: EXPOSURE TO COUNTERSTEREOTYPIC WOMEN AND  
ITS EFFECT ON THE MALLEABILITY OF SELF-STEREOTYPING

A Thesis Presented

by

NICOLE GILBERT COTE

Submitted to the Graduate School of the  
University of Massachusetts Amherst in partial fulfillment  
of the requirements for the degree of

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Social Psychology

LEADERS LIKE ME: EXPOSURE TO COUNTERSTEREOTYPIC WOMEN AND  
ITS EFFECT ON THE MALLEABILITY OF SELF-STEREOTYPING

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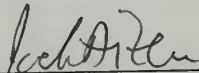
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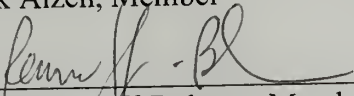
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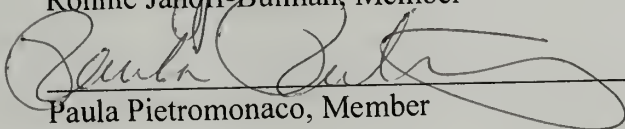
Nilanjana Dasgupta, Chair




Icek Aizen, Member



Ronnie Janoff-Bulman, Member



Paula Pietromonaco, Member



Melinda Novak, Department Head  
Department of Psychology

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# ABSTRACT

## LEADERS LIKE ME: EXPOSURE TO COUNTERSTEREOTYPIC WOMEN AND ITS EFFECT ON THE MALLEABILITY OF SELF-STEREOTYPING

SEPTEMBER 2006

NICOLE GILBERT COTE, B.A., MOUNT HOLYOKE COLLEGE

M.A., MOUNT HOLYOKE COLLEGE

M.S., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Nilanjana Dasgupta

Two studies examined whether exposure to women leaders would influence individuals' implicit and explicit beliefs about their own leadership qualities. Female participants were recruited from a women's college (Study 1) and a coeducational university (Study 2). In both studies, participants were either exposed to leaders from their institution or to the same women with no mention of their college affiliation. It was hypothesized that participants who were exposed to the women leaders from their own college and who personally identified with them would show weaker self-stereotypes compared to other participants who saw the same images of women leaders, but did not personally identify with them and did not know their school affiliation. Results supported the direction of our hypothesis but were not statistically significant.

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# CHAPTER I

## INTRODUCTION

In the time between 1970 and 2004, women's participation in the professional workforce increased from 43 to 59 percent; yet, women today continue to be underrepresented in positions of professional leadership as compared to men (U.S. Bureau of Labor Statistics, 2005). Professions in which men vastly outnumber women in leadership positions include business (women run fewer than 2% of Fortune 500 companies, USA TODAY.com), science and technology (women represent fewer than 20% of full professors in science and engineering, National Science Foundation, 2001), politics (only 14% of senators and 15% of congressional representatives are women, Center for the American Woman & Politics, 2006), and the military (only 2% of the top military positions are held by women, as cited in Eagly & Karau, 2002). And these are just a few examples.

While there may be multiple explanations for these sex differences, two potential sources stand out. First, some of these sex differences are likely the result of a glass ceiling; an invisible barrier caused by discrimination that prevents women from advancing to higher-level positions. Women are often less likely to be selected for powerful and high status leadership positions in the workplace than men because cultural representations of the ideal leader versus the ideal woman are often in conflict (Eagly & Karau, 2002; Prentice & Carranza, 2002). Such role incongruity is likely to result in discrimination (Heilman, 2001; Rudman & Glick, 2001). An additional explanation for these sex differences that is related to the glass ceiling but may not be as overt has to do with informal networking in professional settings.

Women may be less likely than their male coworkers to be informally mentored by a male superior which will limit their exposure to higher-level positions.

Consequently, women may be passed up for particular promotions because they have not been “groomed” for such a position or made important connections through informal networking within the workplace. Second, gender stereotypes prevalent in society and the relative dearth of women in high status leadership roles may affect how women perceive their own traits and professional aspirations. To the extent that cultural stereotypes become internalized they may make women less motivated to pursue leadership roles because they attribute fewer leadership qualities to themselves. The latter explanation lies at the heart of questions tested in the present research.

Specifically, the present research sought to examine the following questions. Does exposure to female professionals in leadership roles influence women’s perceptions of their own leadership capabilities at both explicit (i.e., conscious) and implicit (i.e., unconscious) levels? Is it necessary for female professionals in leadership roles to be similar to the perceivers in order to have an impact on their self-related beliefs? Do perceivers have to subjectively identify with women leaders or is mere exposure to such individuals sufficient to enhance women’s perceptions of their own leadership traits?

### Gender Stereotypes and Leadership

Women have made many strides toward equality over the past fifty years. Yet, they still face numerous social, political, and economic obstacles that litter the path toward complete equality. Some of these obstacles are particularly evident in the



workplace. On average, women's earnings are 20% less than men's for the same type of job and despite having the same qualifications (e.g., Kay & Hagan, 1995; McGuire & Reskin, 1993). Moreover, even though women comprise a significant proportion of the workforce, they are vastly underrepresented at the top level of organizations and other positions of power including those in the military, government and politics (U.S. Bureau of Labor Statistics, 2005; Center for the American Woman and Politics, 2006)

Women in leadership positions experience a unique challenge because stereotypes of the ideal woman versus the ideal leader are often in conflict (Eagly & Karau, 2002; Heilman, 2001, Prentice & Carranza, 2002). Women are stereotypically viewed as being nurturing and supportive because these qualities are reflected in the social roles in which women are typically observed—that is, professional roles in the service industry (e.g., nurses, social workers, school teachers, therapists, wait staff) and analogous nurturing roles at home (e.g., homemakers, primary caregivers of children and dependants; Eagly & Wood, 1999; Eagly, 1987a; Eagly & Steffen, 1984). In comparison, men are stereotypically viewed as being agentic and authoritative because these qualities are reflected in the roles in which men are typically observed—leadership roles in business, law, science and technology, government, etc., and analogous decision-making roles at home (e.g., as the primary financial decision-maker at home or the primary breadwinner; Bem, 1974; Eagly & Steffen, 2000). Because agentic traits are associated with good leadership (e.g., assertive, ambitious, dynamic), being a leader is seen as a man's profession more so than a woman's. Consequently, women who occupy leadership positions often

experience discrimination because they are in violation of stereotypic gender roles (Rudman, 1998; Rudman & Glick, 2001).

### Measuring Implicit Beliefs about Leadership

Much of the psychological literature examining perceptions of women and leadership has only examined people's explicit or conscious beliefs but studies have begun to examine people's implicit or unconscious beliefs about women (e.g., Blair & Banaji, 1996; Banaji & Hardin, 1996; Banaji, Hardin & Rothman, 1993; Dasgupta & Asgari, 2004; Rudman & Glick, 2001; Kawakami & Dovidio, 2001; Rudman & Kilianski, 2000). The terms implicit and unconscious are used interchangeably throughout this paper to describe mental associations between social groups and particular attributes that exist in the mind outside of individuals' awareness and that get expressed spontaneously in social judgments. An implicit attitude is defined as "introspectively unidentified (or inaccurately identified) traces of past experience that mediate favorable or unfavorable feeling, thought, or action toward social objects" (Greenwald & Banaji, 1995, p. 8). Implicit attitudes and beliefs are useful to measure for two reasons. First, because they are not dependent on one's conscious and personal endorsement, they are relatively immune to social desirability concerns and impression management motives (Nosek, Banaji, and Greenwald, 2002c). Second, aside from social desirability, culturally pervasive stereotypes may not be consciously endorsed but yet may be passively learned from the culture in which one is immersed simply by observing certain groups and social roles that co-occur repeatedly. Hence, implicit attitudes and beliefs may provide information about individuals' thoughts, decisions, choices, and behavior that they may not be willing or able to self-report.

Thus, studies exploring socially sensitive issues such as stereotypes are likely to benefit from the measurement of both explicit and implicit perceptions (for reviews see Blair, 2001; Dasgupta, 2004; Fiske, 1998; Rudman, 2004).

One way to measure implicit attitudes is through tasks that use reaction times. The underlying assumption with this type of data is that the time it takes to associate two concepts can be used as a measure of attitude strength. Faster reaction times indicate strongly associated concepts whereas slower reaction times indicate weakly associated concepts. One tool that uses reaction time data to measure implicit attitudes is the Implicit Association Test or IAT (Greenwald, McGhee & Schwartz, 1998; Greenwald & Nosek, 2001). The IAT measures the speed with which people automatically pair concepts with particular attributes that become associated through experience. For example, a gender-IAT may assess the extent to which participants automatically associate women and men with supportive qualities relative to leadership qualities. Participants who show an implicit gender bias would be faster at associating the stereotypic or norm-congruent pairings (i.e., male-leader, female-supporter) than the counterstereotypic or norm-incongruent pairings (i.e., male-supporter, female-leader).

The pervasiveness of stereotypic beliefs is reflected in studies measuring people's implicit beliefs in a variety of gender related domains including social roles (e.g., Dasgupta & Asgari, 2004; Richeson & Ambady, 2001a; Rudman & Kilianski 2000), academic preferences (e.g., Nosek et al., 2002c), and traits (e.g., Kawakami & Dovidio, 2001) people ascribe to women compared to men. For example, even though female participants tend to report less explicit prejudice toward female leaders

compared to their male peers (Eagly & Karau, 1991; Eagly, Makhijani & Klonsky, 1992; Rudman & Kilianski, 2000), both sexes exhibit strong implicit preference for women and men in traditional gender roles in the sense that they are faster at linking women with low-authority roles and men with high-authority roles (Rudman & Kilianski, 2000). A study assessing students' implicit attitudes toward math and science relative to the arts and languages found that students, especially women, were faster at associating math and science with men than with women (Nosek et al., 2002c). Surprisingly, even women who selected math-intensive majors had difficulty associating math with the self. Because men vastly outnumber women in these domains (e.g., leadership and math/science), these findings suggest that the societal segregation of women and men into different roles is reflected in people's implicit attitudes and identities even when their explicit attitudes suggest otherwise.

These studies emphasize two important things. First, they demonstrate the effectiveness of implicit measures in assessing the degree to which participants make norm-congruent associations when it comes to gender roles. Second, they suggest that using both implicit and explicit measures is important because our implicit and explicit attitudes may not always be in agreement. For example, Rudman and Kilianski (2000) found that female participants showed a preference for women in high-authority roles on explicit measures but exhibited a bias against women in high-authority roles on the IAT. Similarly, in the Nosek, Banaji & Greenwald (2002c) study, females with math-intensive majors were just as likely to associate math with male as females who did not select a math-intensive major.

### The Influence of Gender Stereotypes on Women's Self-perceptions



Given that societal norms about appropriate traits, roles and behaviors are ubiquitous, it is a fair assumption that they are difficult to ignore and have some sort of influence on people's self-concept. The term self-stereotype is used to describe the process of applying societal norms to the self-concept. Numerous studies from different literatures within social psychology provide information on the effect of stereotypes on the self and several of these studies are highlighted below.

Evidence of self-stereotyping is often exhibited by the traits women use to describe themselves, the roles they gravitate toward (e.g., Cross & Madson, 1997a; Wood, Christensen, Hebl & Rothgerber, 1997), the behaviors they elect to engage in (e.g., Nosek et al., 2002c), and their performance after receiving information about a stereotype that is relevant to their group (e.g., Sekaquaptewa & Thompson, 2003; Spencer, Steele & Quinn, 1999). Women who endorse more traditional beliefs about gender feel more positive about themselves after recalling a situation in which they behaved in a communal manner (i.e., stereotype congruent situation) rather than a dominant manner (i.e., stereotype incongruent situation; Wood et al., 1997). In an analogous fashion, women who strongly identify with their gender, exhibit more negative attitudes towards math and science and weaker identification with these disciplines than others who identify less with their gender (Nosek et al., 2002c). Finally, regardless of gender identity, women's performance on math tasks suffers when they are in male-dominated groups or are given information about how women underperform relative to men (a stereotype relevant condition) before completing the task (e.g., Inzlicht & Ben Zeev, 2000; Johns, Schmader & Martens, 2005; Sekaquaptewa & Thompson, 2003; Spencer et al., 1999).

Because gender stereotypes are so pervasive, it is not surprising that they influence women's attitudes and behaviors as demonstrated by the above mentioned findings. One way that stereotypes might affect women's self-perceptions is simply by highlighting the dearth of ingroup members in leadership roles (Diekmann & Eagly, 2000; Eagly & Steffen, 1984; Eagly & Wood, 1999). This in turn may make women distance themselves from leadership qualities and instead align themselves with communal qualities that ingroup members appear to possess abundantly and communal roles in which ingroup members appear to be successful. This process of distancing and aligning may be conscious or unconscious. Some individuals may consciously choose to avoid roles and self-descriptions that are too counternormative because of concerns about being socially isolated from similar others. Others may unconsciously align themselves with roles and self-descriptions that feel more "natural" and comfortable without conscious knowledge about why they feel that way.

### Influencing Implicit and Explicit Self-perceptions through Exposure to Role Models

Most of us can think of a successful individual who has inspired us in some way and perhaps affected the person we have become. It is harder to consider whether the absence of an admired individual in a particular domain potentially discouraged us from considering a similar path. Academic and professional engagement in science and mathematics is one domain where the absence of admired ingroup members is likely to impact attitudes (e.g., Nosek et al., 2002c) and performance (e.g., Sepaquiaptewa & Thompson, 2003; Spencer et al, 1999) and discourage women from selecting math-related careers. Not surprisingly, the

percentage of women who select math-related careers pales in comparison to that of men. For example, women represent only 38% of the nation's financial investors and just 27% of all engineers and architects (U.S. Bureau of Labor Statistics, 2005).

Thus, it is likely that the scarcity of role models in certain professions discourages other women from imagining themselves with similar careers.

Research on the influence of role models provides some encouraging evidence about the possibility of reversing stereotypic self-beliefs and behavior. Recent studies suggest that seeing successful women in stereotypically masculine domains inspires other women to perform well in these domains. McIntyre, Paulson and Lord (2003) have provided evidence showing that female participants who read about women who have succeeded in stereotypically masculine domains (e.g., architecture, law, medicine, and invention) before taking a difficult math task did significantly better than participants in a control group. Remarkably, participants in the "successful women condition" were made aware of the gender stereotype that men usually outperform women on math tasks and this did not have the negative impact on their performance as it did the comparison group. Similarly, Marx and Roman (2002) found that the presence of a female experimenter who was described as being competent in math buffered women's performance on a difficult math task whereas the presence of a male experimenter did not protect task performance. These findings suggest that highlighting the achievements of ingroup members can alleviate negative behavioral outcomes (i.e., poor test performance) evoked by particular stereotypes.

Increasing the visibility of successful women in counterstereotypic positions not only has an impact on women's performance but also on their perceptions of other

women, particularly those perceptions related to professional success. In a study by Dasgupta and Asgari (2004), female participants who read brief descriptions of the accomplishments of various women leaders (e.g., Madeline Albright, Gloria Steinem, Oprah Winfrey) were faster at associating leadership traits with women (i.e., a norm-incongruent association) than the control group on an implicit measure. However, despite being exposed to the role models, the experimental group did not differ from the control group in terms of their implicit beliefs about supportive traits for women.

Some research suggests that mere exposure to successful individuals who are ingroup members is not enough to inspire people to envision similar qualities in themselves. Rather, people must also perceive the successful others as similar to the self and they must perceive their success as personally attainable in order to inspire change in the self-concept. One study conducted by Lockwood and Kunda (1997, Experiment 1) showed that participants evaluated themselves more positively (i.e., as more skillful, bright, etc.) after reading about a “superstar” only if s/he excelled in a domain that was similar to their own intended profession but not if s/he excelled in a domain that was not similar. Lockwood and Kunda (1997, Experiments 2 & 3) were also interested in the perceived attainability of the superstar’s success and found that participants who felt they could achieve a similar level of future professional success (i.e., they had the time or intelligence to build this type of career) rated themselves more positively than participants who did not believe the superstar’s success was attainable. In summary, a role model whose professional domain is relevant and whose skills and successes are attainable are likely to have the most influence on people’s self-beliefs.



### Goals of the Present Research

While the research on influencing self-perceptions through exposure to role models is encouraging, several issues still remain unresolved. Thus far this literature has only considered changes in conscious or self-reported beliefs about the self. Such an analysis is incomplete because conscious reports may be influenced by people's desire to portray themselves in the best possible light both to others (impression management concerns) and to themselves (self-presentation bias). For example, after seeing successful professional role models, female participants may feel obligated or motivated to report that they too possess positive leadership attributes. However, these conscious self-descriptions may or may not influence women's professional behavior and decisions in the future. Moreover, these conscious self-descriptions may or may not be related to women's implicit self-beliefs. The goal of the present research was to address this unanswered issue by testing whether exposure to professional female role models in leadership positions has an effect on women's implicit and explicit beliefs about their own leadership qualities. Second, this research sought to test if mere exposure to successful ingroup members is sufficient by itself to evoke changes in women's beliefs or if perceivers must also subjectively identify and have a shared history with these women in order to yield any beneficial effects.

Two studies addressed these goals: Study 1 took place at a women's college with female participants representing various majors on campus. Participants were exposed to successful women in leadership positions who were either presented as graduates of the same college as the participants or not. Study 2 took place at a coeducational university where female participants were recruited from the business

school. As in Study 1, participants were exposed to female leaders who were either presented as graduates of the same school of management or not. Both studies measured participants' subjective identification with the women leaders and then measured their implicit and explicit beliefs about their own leadership qualities.

## CHAPTER II

### STUDY 1

Study 1, conducted at a women's college, investigated whether reading biographies of women leaders who are politicians, CEOs, college presidents, etc. who graduated from the same institution and identifying with these women can temporarily enhance the degree to which participants perceive themselves as possessing leadership qualities. One third of participants were told the women leaders they saw had attended the same college, another third did not receive any information about the women leaders' college affiliation, and the final third made up the control group and saw pictures and descriptions of trees. We then assessed participants' subjective reactions toward the women leaders or control stimuli. Finally, their implicit and explicit beliefs about their own leadership and supportive qualities were measured. We hypothesized that participants who were exposed to women leaders from their own college and who personally identified with these women would show the weakest implicit self-stereotypes compared to participants in all other conditions.

#### Method

##### Participants

One hundred thirty nine female students from Mount Holyoke College participated in this study in exchange for research participation credit or entry in a raffle. All participants were recruited through class announcements. Participants were either in their first or second year of college.

##### Materials

## Women Leader and Control Stimuli

Pictures of eight notable women who are graduates of Mount Holyoke College were selected from the Internet. All held various professional leadership positions that are typically less frequently occupied by women than men in politics, academia and journalism, etc. (e.g., Susan Longley, former Senator from Maine, Elaine Tuttle Hansen, President of Bates College, and Priscilla Painton, Executive Director of *TIME Magazine*). We created brief (approximately 200 word) descriptions of each individual's accomplishments using online resources.

Under the guise of a “general knowledge task” one third of the participants viewed pictures of these women leaders with accompanying information about their accomplishments and the fact that they had graduated from Mount Holyoke College. In other words, participants in this condition knew that they shared a similar academic background as these women (we call this the “shared history condition”). Another one third of the participants viewed the same pictures and descriptions except that the sentence about college affiliation was removed (we call this the “no shared history condition”). See Appendix A for sample descriptions from the two women leader conditions. Finally, participants in the control condition saw pictures of eight trees along with brief descriptions about the distinguishing characteristics of each tree. All pictures were converted into gray scale format and were a standard size. See Appendix B for a list of all exemplars.

## Measuring Perceptions of Women Leaders

For participants assigned to one of the two women leader conditions, a questionnaire measured: (a) how much they admired these women; (b) how much



they identified with these women; (c) how much they could imagine themselves achieving a similar level of success in their chosen profession; and (d) if they could imagine other women achieving a similar level of success in their own profession. These questions were answered using an 11-point scale with anchors labeled “not at all” (1) and “very much” (11). In addition, participants were asked to indicate why or why not these women’s level of success seemed attainable to them (see Appendix C). To keep the procedure in all conditions as similar as possible, participants who viewed the pictures and descriptions of trees also completed a questionnaire pertaining to the control stimuli they viewed.

### Measuring Implicit Beliefs about the Self

The Implicit Association Test or IAT is a computerized task that measures the strength with which an attitude object (e.g., the self) is associated with particular attributes (e.g., leadership or supportive qualities) using participants’ response latency as a measure of belief strength. Participants who automatically perceive themselves more in supportive roles than leadership roles should be faster at associating self-related words (e.g., I, me, mine) with supportive attributes (e.g., understanding, sympathetic, compassionate) than leader attributes (e.g., ambitious, assertive, dynamic). By comparison, participants who automatically perceive themselves more in leadership roles than supportive roles should be faster at associating self-related words with leadership attributes than supportive attributes.

Based on this logic, in the IAT, participants are asked to categorize 4 types of words using two response keys: first person pronouns, third person pronouns, leader attributes, and supporter attributes. For some blocks of the IAT, they are asked to

group together first person pronouns and leader attributes using the same response key (me + leader) and third person pronouns and supporter attributes using a different response key (not-me + supporter). For other blocks of the IAT, stimulus groupings are reversed (i.e., me + supporter, not-me + leader). The order of these blocks was counterbalanced between subjects. Each participant's IAT score was calculated by subtracting their average reaction time for the stereotypic trials (me + supporter, other + leader) from their average reaction time for the counterstereotypic trials (me + leader, other + supporter). Large positive difference scores indicate more stereotypic beliefs about the self and negative difference scores indicate less stereotypic beliefs. Please see Appendix D for the IAT stimulus material.

#### Measuring Explicit Beliefs about the Self

Explicit beliefs about the self were measured by presenting participants with the same leader and supporter traits used in the IAT and asking them to rate how well each word described them on a 7-point scale with anchors labeled “does not describe me at all” (1) and “describes me very well” (7). Please see Appendix E for this questionnaire.

#### Procedure

Participants were led to believe that they would complete several unrelated tasks. The “first task” was introduced as a “general knowledge task.” Participants saw eight pictures and brief descriptions of either (a) women leaders who were described as alumnae (shared history condition), or (b) the same women leaders but without being described as alumnae (no shared history condition), or (c) trees (control condition). After exposure to the pictures and descriptions, their reactions to the

female leaders or trees were assessed using a paper and pencil questionnaire. Next, their memory of the first task was tested. Specifically, each picture was presented onscreen twice at random accompanied by an abbreviated correct and incorrect description of the stimulus material placed side-by-side below the picture. Participants were asked to identify the correct description by pressing one of two response keys that corresponded to each answer. Incorrect responses were followed by the word “error” so participants knew they made a mistake. The purpose of this memory task was to ensure that they were paying attention during the first task and to strengthen the cover story.

Next, participants completed an IAT to assess the extent to which they automatically associated themselves with leadership versus supportive qualities. This was followed by a questionnaire that measured their explicit beliefs about their supporter and leader qualities. Participants then completed a demographic form and a post-experimental questionnaire to assess their prior knowledge of the women leaders and to determine whether they had guessed the hypotheses of the study (Appendix F). Finally, they were debriefed and given research credit for their time (if they were enrolled in a psychology course) or entered into a raffle.

## Results

Eleven participants in the no shared history condition were excluded because they recognized one or more of the women leaders as a Mount Holyoke graduate and one participant was excluded because she made too many errors (59%) in the IAT. In addition, sophomores were excluded from the sample ( $n = 20$ ) because these participants had spent almost two years on campus and thus had more exposure to

women in leadership positions than first-year students. The final usable sample was  $N = 107$ .

### Manipulation check

Participants in the shared history and no shared history conditions read identical biographical material about the women leaders (with the exception of the mention of college affiliation) and received the same questionnaire assessing their perceptions of the eight women. These two groups did not differ in how much they *identified* with the women leaders ( $M = 6.53$  and  $M = 6.00$ , respectively,  $F(1, 68) = 1.15, p = .29$ ); *admired* the women leaders ( $M = 9.12$  and  $M = 8.39$ , respectively,  $F(1, 68) = 1.73, p = .19$ ); or *felt they could achieve a similar level of success* in their own chosen profession ( $M = 8.29$  and  $M = 7.83$ , respectively,  $F(1, 68) = .75, p = .39$ ).

### The Influence of Exposure to Women Leaders and Self-Reported Identification on

#### Implicit Self-Beliefs

Each participant's implicit associations about the self relative to others was calculated by subtracting their average reaction time for the stereotypic trials (me + supporter, other + leader) from their average reaction time for the counterstereotypic trials (me + leader, other + supporter) so that large positive difference scores indicate more stereotypic beliefs about the self and negative difference scores indicate less stereotypic beliefs. The IAT difference scores were converted into effect sizes and served as the dependent variable in the following analysis (for more information on this analysis, please see Greenwald, Nosek, & Banaji, 2003).

A one-way ANOVA was conducted to test whether the type of exemplar by itself (shared history vs. no shared history vs. control) had an effect on participants'



implicit self-stereotypes. There was no effect of exemplar type on implicit self-stereotypes ( $F < 1, p > .05$ ).

We then conducted a linear regression to test whether the effect of seeing the women leaders on implicit self-beliefs was moderated by the degree to which the participants subjectively identified with the women leaders. In this regression, the predictor variables were Exemplar Type (women leaders with a shared history versus no shared history), Perceived Identification with the women leaders, and the interaction between Exemplar Type X Perceived Identification. Participants' implicit self-perceptions was the outcome variable. Participants' vision and the order of the IAT stimulus pairing (me + leader first or me + supporter first) were controlled in the first step of the regression equation. Results showed that the interaction effect of Exemplar type X Perceived identification was marginally significant ( $F(5, 63) = 1.97, p = .10; F_{\text{change}}(1, 63) = 4.19, p = .05; \beta = -.37, t = -2.05, R^2_{\text{change}} = .06, p = .05$ ). Follow-up tests conducted to understand the exact nature of the interaction revealed that among participants who subjectively identified with the women they saw, knowledge of a shared history made a big difference: those who believed they had a shared history with women leaders were less likely to self-stereotype (IAT effect = -58 ms;  $d_{\text{IAT effect}} = -.05$ ) than others who believed they did not have a shared history (IAT effect = 49 ms;  $d_{\text{IAT effect}} = .17; F(1, 28) = 3.04, p = .09$ ; see Figure 1). Participants who did not subjectively identify with the women leaders expressed similar self-beliefs regardless of the shared history (IAT effect = 28 ms;  $d_{\text{IAT effect}} = .18$ ) or no shared history condition (IAT effect = -5 ms;  $d_{\text{IAT effect}} = -.004; F(1, 33) = 1.62, p = .21$ ).



## Explicit Beliefs about the Self

Recall that participants had self-reported the extent to which they thought they possessed various leadership and supportive traits. Ratings for the 6 leadership traits were averaged together into one index ( $\alpha = .90$ ) and ratings for the 6 supportive traits were averaged together into another index ( $\alpha = .85$ ). An Exemplar type (control vs. shared history vs. no shared history) X Trait (leader vs. supporter) ANOVA revealed that participants, regardless of experimental condition, endorsed more supportive ( $M = 5.65$ ) than leadership traits for the self ( $M = 5.25$ ;  $F(1, 104) = 6.67, p = .01$ ). There was no interaction between experimental condition and trait endorsement ( $F < 1, p > .05$ ) indicating that simply seeing the women leaders did not have an effect on explicit self-beliefs.

### The Influence of Exposure to Women Leaders and Self-reported Identification on Explicit Self-Beliefs

A regression was conducted to examine whether the exemplar type and degree of identification with the women leaders influenced explicit self-beliefs. The dependent variable in this analysis was participants' ratings of their leadership qualities minus their ratings of their supportive qualities<sup>1</sup>. Consequently, participants with large difference scores judged themselves as having more leadership qualities whereas participants with negative difference scores judged themselves as having more supportive qualities. We tested whether the Exemplar Type (women leaders with a shared history versus no shared history), Perceived Identification with the women leaders and the interaction between Exemplar Type X Perceived

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<sup>1</sup> An additional regression was conducted with participants' ratings of their leadership qualities as the dependent variable rather than a difference score which resulted in a similar outcome as the reported regression.

Identification (predictor variables) influenced participants' explicit self-perceptions (outcome variable). A significant effect of Perceived Identification ( $F(2, 67) = 3.69, p = .03$ ) indicated that participants who identified with the women leaders ( $M = .13$ ) were more likely to endorse leadership traits for the self than those who did not identify with the women leaders ( $M = -.87; \beta = .32, t(69) = 2.71, p = .01$ ). The interaction effect of Exemplar Type X Perceived Identification was nonsignificant ( $F_{\text{change}}(1, 66) < 1, p > .05$ ), indicating that subjective identification with women leaders (with or without a shared history) did not differentially influence participants' explicit beliefs about themselves. Please see Figure 2 for an illustration of this finding.

### Discussion

Study 1 provided some equivocal evidence as to whether seeing professional women leaders with a shared history and subjectively identifying with them has an impact on women's implicit beliefs about their own leadership qualities. The predicted interaction effect for the implicit self-beliefs revealed the expected pattern of results but was only marginally significant. There are four possible explanations as to why our hypotheses were not supported. First, the women's college environment may have worked against our hypotheses. Women who attend women's colleges may already be highly aware of gender issues and more likely to be exposed to counterstereotypic women on a daily basis. Therefore, they may exhibit no implicit self-stereotypes (which is what our data showed) even in the control condition. As a result, using a women's college sample may have produced a floor effect in our study.

Second, the data from Study 1 showed that although participants in the “shared history” condition reported that they identified more with the women leaders than participants who were in the “no shared history” condition, this difference was not statistically significant. One possible explanation of this null finding may be that the similarity between the women leaders’ career paths and participants’ own career interests was not sufficient; this may have weakened our manipulation. We anticipate a better strategy would be to recruit participants majoring in one discipline who are exposed to professional women from the same domain.

A third issue involves the traits of a good leader. We described an ideal leader as a go-getter who is ambitious, dynamic, assertive, and determined. In contrast, we described a supporter as someone who is helpful, understanding, compassionate, sympathetic and sensitive. However, some might argue that a good leader must also be compassionate and understanding. Perhaps our participants did not agree with the list of leadership and supportive traits necessary for a strong leader and if so, their responses may have varied idiosyncratically producing large error variance in our data.

The final limitation to this study was that the comparison group in the IAT was vague. Rather than asking the participants to think of their own traits compared to those of their male peers, we simply told them to compare themselves to a generic group we called “other.” Participants may have thought of female peers in this “other” category, which was not our intention. A pilot study was designed to explore and resolve these issues before proceeding further.

## CHAPTER III

### PILOT STUDY

A pilot study was designed to address the limitations in Study 1 and also to prepare for a following study, which was to be conducted using business school students. First, in the Pilot Study, we recruited participants who all intended to major in the same discipline (business). Business majors were chosen because we had access to information about counterstereotypic alumnae who held positions that directly related to participants' majors (i.e., in management, marketing, finance). Additionally, all participants were attending a coeducational institution. In order to rule out the possibility that female business majors were unique from other majors and to avoid the possibility of another floor effect, we assessed if participants' implicit beliefs about their own leadership and supportive qualities were similar to those of participants from a more stereotypically feminine major (i.e., psychology). Second, we sought to determine whether participants agreed with the list of traits that defined a strong leader (e.g., ambitious, determined). Not agreeing with this assessment could result in large error variance in our data. Third, in the Pilot Study, we changed the comparison group in the IAT. Rather than telling participants to compare themselves to a vague group we called "other," participants were now asked to compare themselves to their male classmates. Finally, we test whether the business exemplars we had chosen were perceived as notable women leaders who held positions of power within their professions.

#### Method

#### Participants

A total of 38 women (19 business majors at the School of Management and 19 psychology majors) participated in this study. The business majors were recruited through an e-mail announcement and paid \$10 for their time. The psychology majors were recruited through campus flyers and compensated through research participation credit.

## Materials

### Control Stimuli

The stimuli used in the pilot study only consisted of the control exemplars (trees) used in the previous study.

### Implicit Beliefs about the Self

As with Study 1, an IAT was used to measure the strength with which an attitude object (e.g., the self) was associated with particular attributes (e.g., leadership or supportive qualities) using participants' response latency as a measure of belief strength. However, in the revised IAT, the self-concept (represented by first person pronouns) was contrasted with men (represented by third person male pronouns). Please see Appendix G for the updated IAT stimulus material.

### Explicit Beliefs about the Self

Participants were presented with the same leader and supporter traits used in the IAT and asked them to rate how well each word described them on a 7-point scale with anchors labeled “does not describe me at all” (1) and “describes me very well” (7). Specifically, participants were told to compare themselves to their average male classmates. Please see Appendix H for the updated questionnaire assessing explicit beliefs about the self.



### Qualities of the Ideal Leader

We asked participants to rate the extent to which they thought the supporter and leader traits described an excellent leader in a professional environment. For each trait, they circled a number that best represented how well that word described an excellent leader on a 7-point scale with anchors labeled “does not describe an excellent leader at all” (1) and “describes an excellent leader very well” (7). Please see Appendix I for this questionnaire.

### Pre-testing Judgments of Women Leaders who are School of Management Alumnae

Pictures of seven notable women leaders were selected from an on-line magazine published by the Isenberg School of Management at the University of Massachusetts, Amherst. All were Isenberg graduates and held counterstereotypic leadership positions in areas such as management, human resources and finance (e.g., Joanne O’Rourke Hindman, President and CEO of Roundtable Advisors, Inc.; Judith Streeter, Senior Vice President of Human Resources and Technology for Marriott International; Janet Kresge, Executive Director of the Dun & Bradstreet Corporation Foundation). We created brief (approximately 200 word) descriptions of each individual’s accomplishments using online resources. After reading each description of the women leaders, participants were asked to rate: (a) how much they admired her; (b) the degree to which they thought she was a leader in her profession; (c) the degree to which they thought she held a position of power in her professional role; and (d) if the position was common for a woman to have. Participants rated their response using an 11-point scale with anchors labeled “not at all” (1) and “very

much” (11). Please see Appendix J for a sample from this packet and the questions asked.

### Procedure

All participants were assigned to the control condition because the goal of this Pilot Study was to compare the implicit self-beliefs of the business majors versus the psychology majors rather than to test the effects of seeing women leaders.

Participants were exposed to the control stimuli (i.e., pictures and descriptions of trees) and then asked to answer a brief questionnaire about the trees. This was done to simulate the procedure from Study 1. Next, participants completed the self IAT, a questionnaire about their own leadership traits, and a questionnaire about the traits of an ideal leader. The order of the IAT and questionnaires was counterbalanced.

Afterwards, participants read through a packet describing the accomplishments of the female business leaders and rated them. Finally, they completed a demographic form and a post-experimental questionnaire (exactly like those in Study 1) and then were debriefed.

### Results and Discussion

#### Implicit Beliefs about the Self

One participant was not included in the analysis because she had too many errors (21%) on the IAT. Another participant experienced computer problems and her data were not recorded. A total of 19 psychology majors and 17 Business majors remained ( $N = 36$ ). Results of the pilot study showed that participants who were business and psychology majors responded similarly on the self IAT. They were equally fast at associating self-related pronouns with leader and supporter traits

( $M_{\text{psych}} = -3$  ms,  $d_{\text{IAT effect}} = -.01$ ;  $M_{\text{SOM}} = -14$  ms,  $d_{\text{IAT effect}} = -.05$ ;  $F(1, 34) = .26$ ,  $p = .61$ ). This suggests that in terms of their implicit self-concept, business majors were no different from psychology majors. That is, business majors did not exhibit more counterstereotypic self-conceptions than the Psychology majors, which made them an appropriate sample for Study 2.

### Beliefs about Ideal Leaders

The second goal of the pilot study was to assess perceptions of leadership and supportive qualities for the ideal leader. All participants, regardless of major, described an ideal leader in terms of more leadership traits ( $M = 6.56$ ) than supportive traits ( $M = 5.60$ ;  $F(1, 34) = 49.49$ ,  $p < .01$ ). Business majors and psychology majors rated ideal leaders similarly (leadership traits:  $M = 6.48$  and  $M = 6.67$ , respectively; supportive traits:  $M = 5.62$  and  $M = 5.58$ , respectively).

### Perceptions of Women Leaders

Participants were asked to rate the degree to which they thought each woman was a leader in her profession; the degree to which they thought she held a position of power in her professional role; if the position was common for a woman to have; and how much they admired her. There was no difference between the business and psychology majors on: (a) whether they perceived the group of women as leaders ( $M_{\text{SOM}} = 9.09$  and  $M_{\text{psych}} = 9.62$ ;  $F(1, 34) = 2.44$ ,  $p = .13$ ); (b) whether they perceived the women's positions as powerful ( $M_{\text{SOM}} = 9.04$  and  $M_{\text{psych}} = 9.37$ ;  $F(1, 34) = .77$ ,  $p = .39$ ); (c) whether they believed such positions were common for women to have ( $M_{\text{SOM}} = 6.06$  and  $M_{\text{psych}} = 6.25$ ;  $F(1, 34) = .12$ ,  $p = .74$ ); and (d) how much they admired the women ( $M_{\text{SOM}} = 8.50$  and  $M_{\text{psych}} = 8.92$ ;  $F(1, 34) = 1.00$ ,  $p = .33$ ).

In summary, the pilot study provides support for the changes we made as a result of Study 1. We found that business majors and psychology majors did not differ in their implicit beliefs about themselves. The business and psychology majors also did not differ in their assessment of an ideal leader; both groups perceived an ideal leader as having more leadership than supportive traits. Finally, participants perceived the women leaders in the way they were intended; they perceived them as powerful and as leaders in their professions.

## CHAPTER IV

### STUDY 2

The experimental procedure for Study 2 was nearly identical to that of Study 1. Participants were told they would be completing several unrelated tasks. The first task, described as a “general knowledge task,” involved exposure to one of three types of exemplars (women leaders who were described as alumnae of the School of Management, women leaders with no mention of college affiliation, or control stimuli). Please see Appendix K for sample descriptions from the two women leader conditions and Appendix L for a list of the exemplars used in this study. Participants’ memory for this information was then tested, after which their implicit and explicit beliefs about their own leadership and supportive qualities were measured (please see Appendix M and N for these materials). The order in which the IAT and the questionnaire were presented was counterbalanced between subjects. Next, participants answered a brief questionnaire about either the women leaders or the trees they had viewed. Specifically, in the two experimental conditions, we asked participants an open-ended question about the degree to which they identified with the women leaders (i.e., “In a few sentences, please describe why (or why not) you identified with the women you just read about. In other words, what aspects of the biographical descriptions made you identify with these women?”). Finally, they completed a demographic form and a post-experimental questionnaire.

This study differs from Study 1 in the following ways: (1) participants were recruited from a coeducational university rather than a women’s college; (2) they represented a select number of majors within the School of Management (e.g.,



accounting, marketing, finance); (3) the women leaders held positions that were directly related to the participants' majors (e.g., Chief Executive Officer, Vice President of Human Resources, Financial Consultant); (4) the comparison group on the IAT was "male peers" instead of "others"; and (5) the supportive traits were changed to include nurturing, considerate, selfless and kind.

While several details changed from Study 1 to Study 2, our predictions remained the same. We hypothesized that participants who were exposed to women leaders with a shared history and who personally identified with them would show weaker self-stereotypes compared to participants in all other groups.

### Method

#### Participants

Participants were recruited in two waves: 110 women were recruited in the first wave of data collection and 42 women were recruited in the second wave. All were first or second year majors within the school of management. They were recruited through flyers, class and e-mail announcements and were paid \$10 for their time (in Wave 1) or were given a gift certificate to a local coffee shop (in Wave 2). The total sample consisted of 152 women.

### Results and Discussion

Two participants in the "no shared history" condition were excluded because they recognized one or more of the women leaders as a School of Management graduate. In addition, 1 other participant was excluded because she made too many errors (20%) on the IAT and four others were excluded because they were identified as outliers. The final usable sample was  $N = 145$ .

### Manipulation check

Participants in the shared history and no shared history conditions read identical biographical material about the women leaders (with the exception of the mention of college affiliation) and received the same questionnaire assessing their perceptions of the seven women. There was a marginally significant difference between participants in the shared history vs. no shared history conditions in how much they *identified* with the women leaders ( $M = 7.50$  and  $M = 6.87$ , respectively,  $F(1, 95) = 3.46, p = .07$ ). Participants in the shared history and no shared history conditions did not differ in how much they *related to* the women leaders ( $M = 7.10$  and  $M = 6.75$ , respectively,  $F < 1$ ); *felt similar to* the women leaders ( $M = 6.88$  and  $M = 6.76$ , respectively,  $F < 1$ ); *felt they could achieve a similar level of success* in their own chosen profession ( $M = 9.77$  and  $M = 9.43$ , respectively,  $F(1, 98) = 1.59, p = .21$ ); *wanted to be as successful* as the women leaders ( $M = 10.24$  and  $M = 10.43$ , respectively,  $F < 1$ ); or *admired* the women leaders ( $M = 9.84$  and  $M = 10.17$ , respectively,  $F < 1$ ).

### The Influence of Exposure to Women Leaders and Perceived Identification on Implicit Self-Beliefs

As with Study 1, a one-way ANOVA was conducted to test whether the type of exemplar by itself (shared history vs. no shared history vs. control) had an effect on participants' implicit self-stereotypes. There was no effect of exemplar type on implicit self-stereotypes ( $F < 1, p > .05$ ).

Our main hypothesis was that participants who were exposed to women leaders with a shared history and who personally identified with these women would

show the weakest self-stereotypes compared to participants in all the remaining conditions. To test this, we conducted a linear regression to examine whether the effect of seeing the women leaders on implicit self-beliefs was moderated by the degree to which the participants identified with the women leaders. In this regression, Exemplar Type (women leaders with a shared history versus no shared history), Perceived Identification with the women leaders and the interaction between Exemplar Type X Perceived Identification served as predictor variables and the participants' self IAT score served as the outcome variable. The interaction effect of Exemplar Type X Perceived Identification was not significant,  $F_{\text{change}}(1, 93) < 1, p > .05$ , indicating that the level of identification with the types of exemplars did not differentially influence participants' implicit self-beliefs. No other effects were significant ( $F < 1, p > .05$ ). Please see Figure 3 for an illustration of this finding.

### Explicit Beliefs about the Self

Participants self-reported the extent to which they thought they possessed various leadership and supportive traits. Ratings for the 6 leadership traits were averaged together into one index ( $\alpha = .84$ ) and ratings for the 6 supportive traits were averaged together into another index ( $\alpha = .36$ ). Because one of the supportive traits was reducing the supporter scale reliability (selfless), it was removed and the new 5-item supporter scale reliability became  $\alpha = .80$ . An Exemplar Type (control vs. shared history vs. no shared history) X Trait (leader vs. supporter) ANOVA revealed that participants, regardless of experimental condition, endorsed more supportive ( $M = 5.94$ ) than leadership traits ( $M = 5.29$ ;  $F(1, 142) = 37.51, p < .01$ ). However, there

was no interaction between experimental condition and trait endorsement ( $F < 1, p > .05$ ).

Because participants in the control and no shared history conditions responded so similarly with regards to their endorsement of leadership and supportive traits, a second ANOVA was conducted to examine whether combining the control and no shared history conditions and comparing them to the shared history condition would result in a significant interaction between Exemplar Type and Trait Type. An Exemplar Type (control + no shared history vs. shared history) X Trait (leader vs. supporter) ANOVA confirmed that, overall, participants, regardless of experimental condition, endorsed more supportive ( $M = 5.94$ ) than leadership traits ( $M = 5.29$ ;  $F(1, 143) = 27.61, p < .01$ ). More importantly, the Exemplar Type X Trait Type interaction was marginally significant ( $F(1, 143) = 3.13, p = .08$ ), and follow-up *t*-tests showed that participants who saw the women leaders were more likely to think of themselves in terms of leadership traits if they shared a common history with the women leaders than if they did not share a common history ( $M_s = 5.52$  and  $5.16$ , respectively;  $t(143) = -2.00, p = .05$ ). But participants' self-ratings of their supportive traits did not vary as a function of exemplar type ( $t(143) = .29, p = .77$ ). Please see Figure 4 for an illustration of this finding.

#### The Influence of Exposure to Women Leaders and Self-reported Identification on Explicit Self-Beliefs

As with Study 1, we conducted a regression to test whether the Exemplar type, Perceived Identification with the women leaders, and the interaction effect influenced participants' explicit self-beliefs. The dependent variable in this analysis

was participants' ratings of their leadership qualities minus their ratings of their supportive qualities<sup>2</sup>. Consequently, participants with large difference scores judged themselves as having more leadership qualities. The regression showed that the interaction effect of Exemplar Type X Perceived Identification was marginally significant ( $F(3, 93) = 6.76$ ,  $F_{\text{change}}(1, 93) = 2.89$ ,  $p < .01$ ;  $\beta = .24$ ,  $t = 1.70$ ,  $R^2_{\text{change}} = .03$ ,  $p = .09$ ). Follow-up tests conducted to piece apart the interaction revealed that among participants who subjectively identified with the women they saw, knowledge of a shared history made a big difference: those who believed they had a shared history with women leaders were more likely to endorse leadership traits for the self ( $M = .18$ ) than others who believed they did not have a shared history ( $M = -.50$ ;  $F(1, 43) = 7.73$ ,  $p = .01$ ). Participants who did not subjectively identify with the women leaders expressed similar self-beliefs regardless of the shared history ( $M = -1.2$ ) or no shared history condition ( $M = -1.0$ ;  $F(1, 50) < 1$ ,  $p > .05$ ). There was also a significant main effect of perceived identification ( $F_{\text{change}}(2, 94) = 8.52$ ,  $p < .01$ ) such that the more participants identified with the women leaders the more they endorsed leadership traits for the self compared to those who did not identify with the women leaders ( $\beta = .29$ ,  $t = 3.81$ ,  $p < .01$ ). Please see Figure 5 for an illustration of these findings.

### Select Correlations

We conducted a series of correlations to examine whether the relationship between certain variables was different for the shared history and no shared history

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<sup>2</sup> As with Study 1, an additional regression was conducted with participants' ratings of their leadership qualities as the dependent variable rather than a difference score which resulted in a similar outcome as the reported regression.



groups. For the shared history group, the more participants endorsed leadership traits, the less they exhibited self-stereotyping on the IAT ( $r = -.30, p < .05$ ), whereas for the no shared history group, this relationship was in the same direction, but was not statistically significant ( $r = -.21, p > .05$ ). Additionally, participants in the shared history group who wanted the same level of success as the women leaders for their future career were less likely to exhibit self-stereotyping on the IAT ( $r = -.61, p = .03$ ) whereas for the no shared history group, this pattern was also similar, but not statistically significant ( $r = -.20, p > .05$ ). Fisher's Z tests were conducted to compare these varying correlations for the two groups but were not significant.

## CHAPTER V

### GENERAL DISCUSSION

The broad goal of this research was to test whether exposure to female professionals in leadership roles would influence women's implicit and explicit self-perceptions. Specifically, we examined the following questions. Does mere exposure to female professionals in leadership roles influence women's perceptions of their own leadership capabilities at both explicit and implicit levels? Or is it necessary for those female professionals to share a similar history with perceivers in order to impact on their self-related beliefs? Do perceivers have to subjectively identify with these individuals to have an impact on their self-concept or is mere exposure to such individuals sufficient to enhance women's perceptions of their own leadership traits? Two studies provided preliminary, albeit equivocal, evidence as to whether seeing professional women leaders with a shared history and subjectively identifying with them has an impact on women's beliefs about their own leadership qualities at both the implicit and explicit levels.

#### Implicit Beliefs about the Self

Study 1, conducted at a women's college, showed that women who subjectively identified with the female leaders they were shown and who believed they shared a similar background with these individuals were more likely to implicitly associate leadership qualities with themselves than others who believed they did not share a similar background. Participants who did not subjectively identify with the women leaders showed no changes in their implicit self-related beliefs regardless of

similarities in shared background. Unfortunately, Study 2 conducted at a business school, failed to replicate this effect.

There are several potential reasons why our implicit findings were not consistent between the two studies. First, participants in Study 2 may have had weaker ingroup membership because of limited exposure to the culture of this program. Business students do not become immersed in their school or major until after their general core requirements are completed, which is typically after their sophomore year. Conversely, participants from the women's college most likely had a stronger ingroup membership because their ingroup status was salient from the moment they stepped on campus. This immediate immersion in the campus culture most likely strengthened the effects of seeing the alumnae leaders at an implicit level for the women's college participants compared to their business school counterparts. Second, participants in Study 1 were in their first year at college whereas participants in Study 2 were in their first or second year in the business school. Ideally, we would have only included first-year participants in both studies, but a small sample size limited us from excluding sophomores from the data analysis for Study 2. Including older students may have worked against our hypothesis because their self-concept may be more solidified than younger students who had not lived on their own for two years and explored who they are. Consequently, participants in Study 2 may have had a more stable self view, so seeing women leaders in a brief experimental session may not have been enough to influence their implicit self-beliefs.

Another potential limitation of this study involves the words we used to capture the leader and supporter constructs. While the Pilot Study determined that

participants perceived an ideal leader as having more leadership than supportive traits, the results of Study 2 suggest that participants did not consider the word “selfless” to be as strongly associated with a supporter than the other supporter items we selected. Since this item reduced the supporter scale reliability, it was removed and a new scale was created for the explicit data analysis. This item was also part of the IAT stimuli but could not be removed from the implicit data analysis, which may have added error variance and weakened our implicit findings. Future studies using such traits should include extensive pre-testing to determine whether the items accurately and independently capture the leader and supporter constructs.

### Explicit Beliefs about the Self

In both of the present studies, on average women described themselves relatively stereotypically, using more supportive traits than leadership traits. More specifically, Study 2 provided some support for the hypothesis that seeing professional women leaders with a shared history and subjectively identifying with them has an impact on women’s explicit beliefs about their leadership qualities. Participants who were assigned to the shared history condition and identified with the women leaders were more likely to describe themselves as leaders than participants who were assigned to the no shared history condition but who identified with the women nonetheless. This suggests that the combined influence of seeing women leaders with a shared history and identifying with them may be more inspiring and beneficial than simply being exposed to superstars. However, this finding was not replicated in Study 1 where women’s explicit self-descriptions did not shift in response to reading about successful ingroup members.

There are several potential reasons why our hypothesis was not fully supported by the explicit data for both studies. One potential limitation was that the women leaders in Study 1 represented several professions (e.g., journalism, politics, and medicine) rather than one particular domain as they did in Study 2. Consequently, the women leaders' career paths did not match participants' own career interests exactly and this may have weakened our manipulation. We expected that exposing participants to women leaders who were working in a general domain would be enough, but an even better strategy is to recruit participants majoring in one discipline who are exposed to professional women from that same domain.

To the extent that the explicit findings from Study 2 are replicated, they provide support for Eagly's social-role theory which states that people learn gender stereotypes through their observation of the disproportion of men and women in various social roles (Eagly, 1987a; Eagly & Wood, 1999). Because women typically occupy more supportive roles in society and men typically occupy more authoritative roles in society, people are more likely to think of women as having caretaking qualities rather than leadership qualities. Consequently, women may not think of themselves as good leaders because the qualities of an ideal leader are in conflict with the qualities of an ideal woman. The present finding showing that overall women attributed more caretaking and supportive traits to themselves than leadership traits is consistent with social role theory.

Moreover, this research provides preliminary evidence for specific conditions under which individuals are most likely to reject societal stereotypes and envision counterstereotypic traits for the self. These findings suggest that participants must be



connected to the role model in some way, like through a shared history, and identify with their goals and achievements in order to be inspired by them. While previous research has shown that mere exposure to ingroup members influences people's perceptions of their ingroup, (Dasgupta & Asgari, 2004) self-beliefs appear more resistant to change. This could be because we have more information about ourselves compared to our ingroup. Additionally, because the ingroup is comprised of numerous individuals, there may be more flexibility in changing one's beliefs about the ingroup depending on the type of ingroup members who are salient in one's mental representation. In contrast, there may be less flexibility in defining the self.

#### Relation between Implicit and Explicit Self-related Beliefs

Correlational findings from the present data showed that when women were led to believe that they shared a history with other admired and counterstereotypic female professionals their implicit and explicit beliefs about the self became more closely aligned than when they were unaware of a shared history with counterstereotypic female professionals. Specifically, for the shared history group, the more participants endorsed leadership traits, the less implicit self-stereotypes they exhibited. Moreover, the more they wanted the same level of success as the women leaders for their future career the less implicit self-stereotypes they exhibited. For other participants in the no shared history group, these correlations were much weaker. These data raise the intriguing possibility that perhaps when implicit and explicit self-related beliefs become more strongly aligned after exposure to counterstereotypic ingroup members with a shared history, these beliefs may become better predictors of

women's future leadership decisions and behavior rather than when the implicit and explicit beliefs are weakly aligned.

### Future Directions

While these analyses go further than previous investigations by testing the influence of role models on both implicit and explicit self-perceptions of leadership, there are factors that need to be considered before a better understanding of this relationship is obtained. First, our measure of identification with the women leaders may be too closely related to participant's implicit self-beliefs of leadership. Future investigations would benefit from incorporating identification with the women leaders into the shared history manipulation. In addition, the shared history manipulation could be strengthened by adding information to the biographies that is more personally relevant to the participants than a shared college affiliation or academic interest.

## CHAPTER VI

### CONCLUSION

One implication of this research is that even small changes within the local environment over a brief period of time have the potential to activate changes in stereotypic beliefs about the self. There is a disparity in the proportion of men and women in certain professional domains and this may be caused by both structural reasons such as the glass ceiling and self-segregation elicited by internalization of gender stereotypes. The more women think of themselves as leaders, the more likely they may be to pursue leadership opportunities in their academic and professional life which may, in the long run, serve to diminish sex differences in the proportion of women versus men in high status leadership positions. While previous studies have demonstrated that stereotypes about women slowly change when people notice women occupying more counterstereotypic roles over time (Diekmann & Eagly, 2000; Eagly & Steffen, 1984), our studies suggest that in the presence of the appropriate counterstereotypic role models, this change may influence self-beliefs and can happen in a much shorter period of time.

Another implication is that exposure to role models affects self-beliefs at both the implicit (Study 1) and explicit (Study 2) levels but under different circumstances. Future research should examine when and under what circumstances changes in self-beliefs occur at the implicit and explicit levels and whether such changes have the potential to impact decisions related to our professional lives. Combating gender stereotypes and making the workplace more equitable may be linked to changing how one thinks about the self.

Figure 1. Effect of shared history and subjective identification on implicit self-beliefs  
(Study 1).

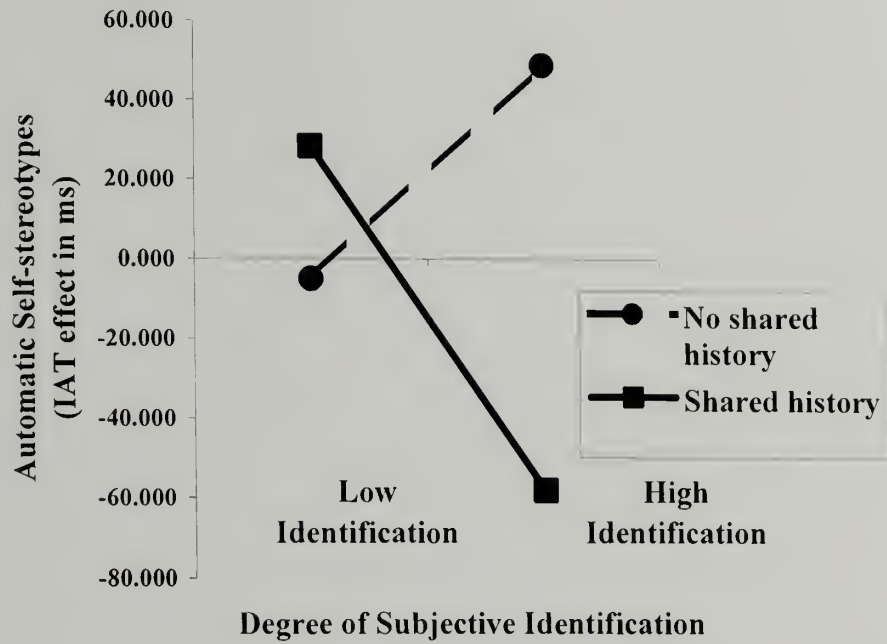


Figure 2. Effect of shared history and subjective identification on explicit self-beliefs  
(Study 1).

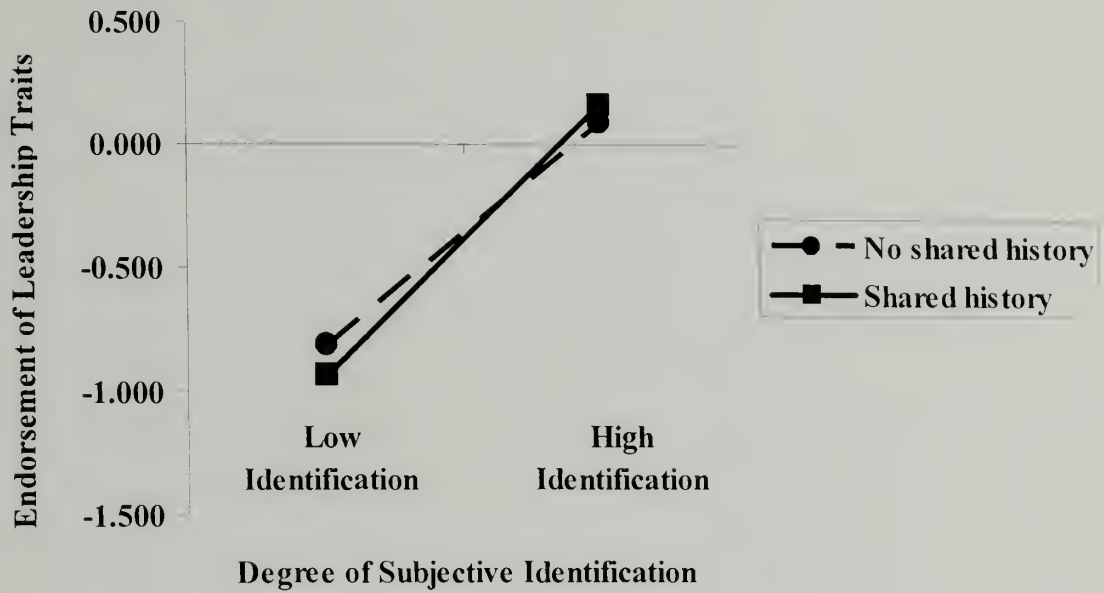




Figure 3. Effect of shared history and subjective identification on implicit self-beliefs  
(Study 2).

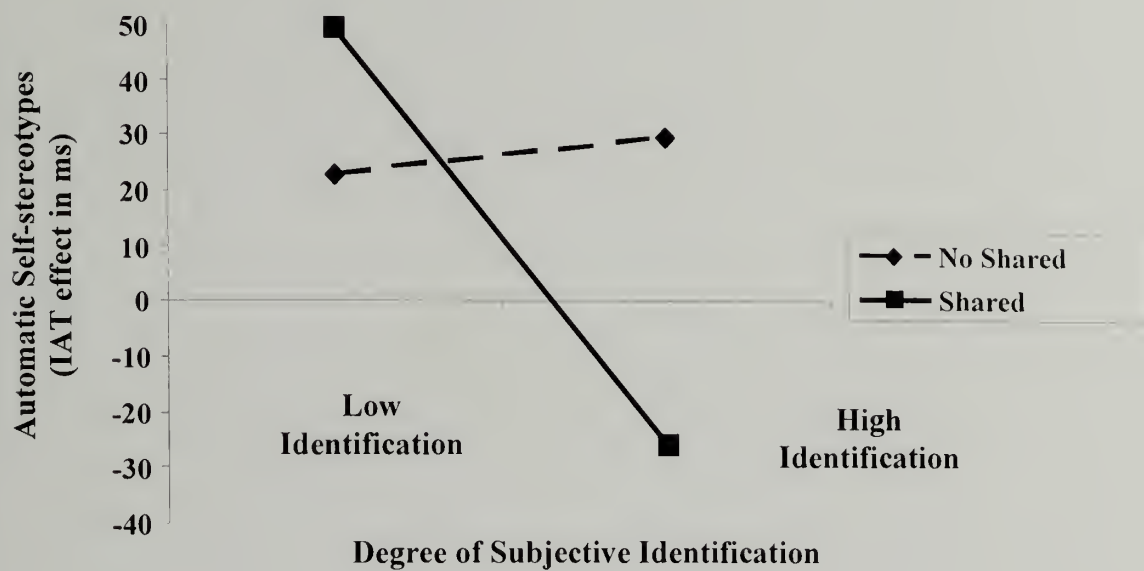


Figure 4. Effect of exemplar type on explicit self-beliefs (Study 2).

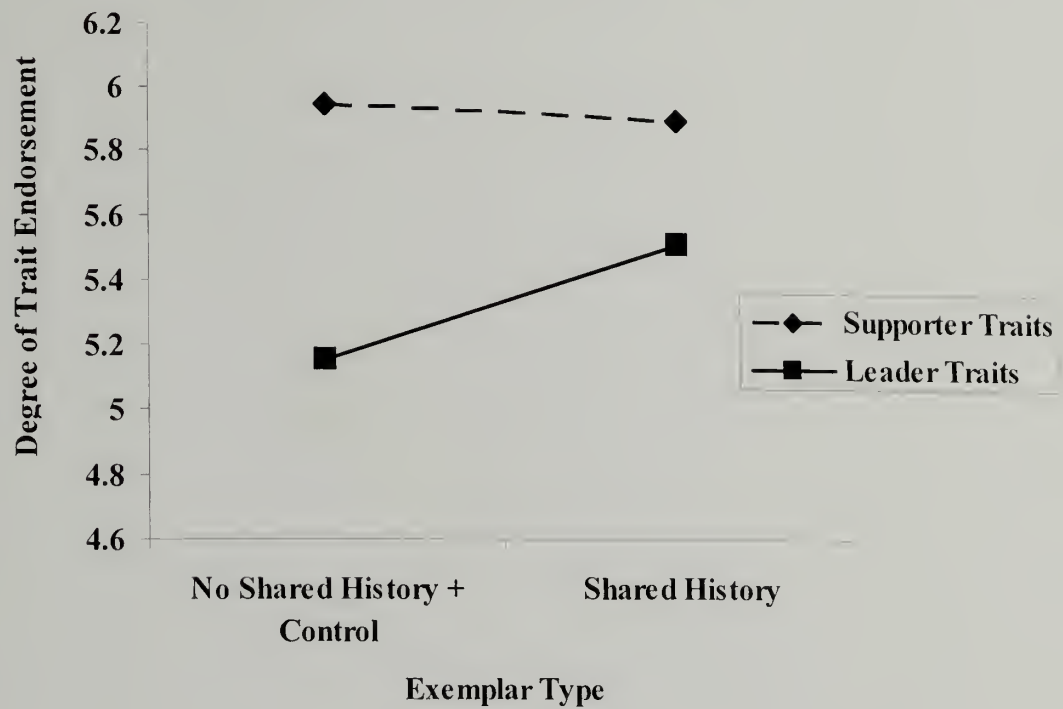
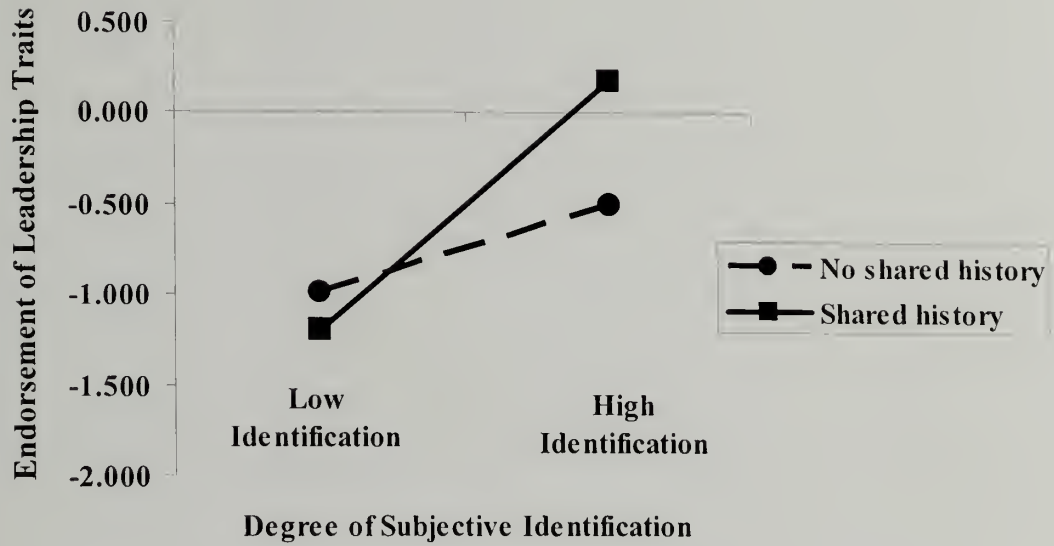


Figure 5. Effect of shared history and subjective identification on explicit self-beliefs  
(Study 2).



## APPENDIX A

### SAMPLE PROFILE FROM THE “GENERAL KNOWLEDGE TASK”



**Susan Longley**

#### Same College Condition

As a former State Senator from Maine, **Susan Longley** chaired the Judiciary Committee and was a member of the State and Local Government as well as the Health and Human Services Committees. Before establishing her own law practice in 1989, Longley was a Legislative Researcher for Senator George Mitchell (ME) and an International Refugee Worker in Kenya.

Susan Longley has received the Conservation Champion Award (1995, 1997) for her leadership on environmental issues and legislation; a State Leadership Award (1997) for her outreach to Maine high school students; and the Courage Award (1998) for impact on state policy through personal acts of courage and commitment to reproductive rights. She serves on the Boards of several children's education and mental health foundations. She is a member of the Mount Holyoke College Class of 1978. Susan Longley has been a strong and consistent political leader.

#### No College Condition

As a former State Senator from Maine, **Susan Longley** chaired the Judiciary Committee and was a member of the State and Local Government as well as Health and Human Services Committees. Before establishing her own law practice in 1989, Longley was a Legislative Researcher for Senator George Mitchell (ME) and an International Refugee Worker in Kenya.

Susan Longley has received the Conservation Champion Award (1995, 1997) for her leadership on environmental issues and legislation; a State Leadership Award (1997) for her outreach to Maine high school students; and the Courage Award (1998) for impact on state policy through personal acts of courage and commitment to reproductive rights. She serves on the Boards of several children's education and mental health foundations. Susan Longley has been a strong and consistent political leader.

APPENDIX B

LIST OF EXEMPLARS

Women Leader Exemplars

Suzan-Lori Parks	Award-winning playwright, screenwriter and novelist
Priscilla Painton	Executive Director of <i>TIME Magazine</i>
Mary Mazzio	Founder and CEO of a film production company
Susan Longley	Former State Senator from Maine
Elaine Tuttle Hansen	President of Bates College
Nancy Woodward Hendrie	Founder of The Sharing Foundation
Kavita Ramdas	President and CEO of the Global Fund for Women
Carol Higgins Clark	Author of several best-selling, critically acclaimed novels

Tree Exemplars (control condition)

Ash, cedar, chestnut, holly, snowberry, weeping willow, white cherry, wild pear



## APPENDIX C

### WOMEN LEADER QUESTIONNAIRE

Please take a few minutes to complete this questionnaire. We are interested in your opinion; there is no right or wrong answer, so please answer as honestly as you can.

1. How much do you *admire* the women you just read about?

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not at very much  
all

2. How much do you *identify* with the women you just read about?

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not at very much  
all

3. In the future, can you imagine *yourself* achieving a similar level of success *in your own chosen profession*? (Please keep in mind that although your own career interests may not be the same as the individuals in the biographies, we would like you to answer this question by drawing a parallel between these women's accomplishments and the accomplishments you anticipate achieving in your own future profession.)

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not at very much  
all

4. In a few sentences please describe why (or why not) these women's level of success seems attainable to you. In other words, what aspects of the biographical description made you think that you can (or can't) achieve a similar level of success in your own future profession.

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5. Can you imagine other women achieving a similar level of success in their own profession?

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not at very much  
all

## APPENDIX D

### IAT STIMULI

**Supporter words:** helpful, understanding, compassionate, sympathetic, sensitive, supporter

**Leader words:** ambitious, dynamic, assertive, go-getter, determined, leader

**Self-related pronouns:** I, me, my, mine, myself

**Other-related pronouns:** they, them, their, theirs, other

## APPENDIX E

### QUESTIONNAIRE MEASURING EXPLICIT SELF-BELIEFS

We are interested in the extent to which you think the words below describe **YOU**. For each word, circle a number that best represents how well that word describes you. There is no right or wrong answer; we are only interested in your own perceptions of your personality. Please try and answer as honestly as possible. Your responses are completely anonymous.

	Does not describe me at all	Describes me very well
Assertive	1.....2.....3.....4.....5.....6.....7	
Helpful	1.....2.....3.....4.....5.....6.....7	
Understanding	1.....2.....3.....4.....5.....6.....7	
Go-getter	1.....2.....3.....4.....5.....6.....7	
Determined	1.....2.....3.....4.....5.....6.....7	
Sensitive	1.....2.....3.....4.....5.....6.....7	
Leader	1.....2.....3.....4.....5.....6.....7	
Sympathetic	1.....2.....3.....4.....5.....6.....7	
Ambitious	1.....2.....3.....4.....5.....6.....7	
Compassionate	1.....2.....3.....4.....5.....6.....7	
Dynamic	1.....2.....3.....4.....5.....6.....7	
Supporter	1.....2.....3.....4.....5.....6.....7	

## APPENDIX F

### POST-EXPERIMENTAL QUESTIONNAIRE

1. What did you think the experiment was about? Please provide as much detail as you can in the space provided.

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2. In the general knowledge task, did you see images and descriptions of women?

\_\_\_\_\_ YES

\_\_\_\_\_ NO

If yes, did you recognize any of the women?

\_\_\_\_\_ YES

\_\_\_\_\_ NO

If yes, whom did you recognize? If you cannot remember names, please describe using other information

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Do you know what college they graduated from?

\_\_\_\_\_ YES

\_\_\_\_\_ NO

If so, please list the college they graduated from.

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## APPENDIX G

### IAT STIMULI

**Supporter words:** helpful, understanding, compassionate, sympathetic, sensitive, supporter

**Leader words:** ambitious, dynamic, assertive, go-getter, determined, leader

**Self-related pronouns:** me, my, mine, myself

**Other-related pronouns:** he, him, his, himself



## APPENDIX H

### QUESTIONNAIRE MEASURING EXPLICIT SELF-BELIEFS

We are interested in the extent to which you think the words below describe **YOU**. For each word, circle a number that best represents how well that word describes you. In doing this task, please compare yourself to your average **male classmates**. In other words, to what extent does each word describe you relative to your **male peers**? There is no right or wrong answer; we are only interested in your own perceptions of your personality compared to that of your **male peers**. Please try and answer as honestly as possible. Your responses are completely anonymous.

	Does not describe me at all	Describes me very well
Assertive	1.....2.....3.....4.....5.....6.....7	
Helpful	1.....2.....3.....4.....5.....6.....7	
Understanding	1.....2.....3.....4.....5.....6.....7	
Go-getter	1.....2.....3.....4.....5.....6.....7	
Determined	1.....2.....3.....4.....5.....6.....7	
Sensitive	1.....2.....3.....4.....5.....6.....7	
Leader	1.....2.....3.....4.....5.....6.....7	
Sympathetic	1.....2.....3.....4.....5.....6.....7	
Ambitious	1.....2.....3.....4.....5.....6.....7	
Compassionate	1.....2.....3.....4.....5.....6.....7	
Dynamic	1.....2.....3.....4.....5.....6.....7	
Supporter	1.....2.....3.....4.....5.....6.....7	

## APPENDIX I

### QUESTIONNAIRE MEASURING EXPLICIT BELIEFS ABOUT THE IDEAL LEADER

We are interested in the extent to which you think the words below describe an excellent **LEADER** in a professional environment. For each word, circle a number that best represents how well that word describes an excellent **leader**. There is no right or wrong answer; we are only interested in your own perceptions of an excellent **leader** in a professional domain. Please try and answer as honestly as possible. Your responses are completely anonymous.

	Does not describe an excellent leader at all	Describes an excellent leader very well
Assertive	1.....2.....3.....4.....5.....6.....7	
Helpful	1.....2.....3.....4.....5.....6.....7	
Understanding	1.....2.....3.....4.....5.....6.....7	
Go-getter	1.....2.....3.....4.....5.....6.....7	
Determined	1.....2.....3.....4.....5.....6.....7	
Sensitive	1.....2.....3.....4.....5.....6.....7	
Leader	1.....2.....3.....4.....5.....6.....7	
Sympathetic	1.....2.....3.....4.....5.....6.....7	
Ambitious	1.....2.....3.....4.....5.....6.....7	
Compassionate	1.....2.....3.....4.....5.....6.....7	
Dynamic	1.....2.....3.....4.....5.....6.....7	
Supporter	1.....2.....3.....4.....5.....6.....7	

## APPENDIX J

### SAMPLE FROM THE PACKET OF WOMEN LEADERS

#### Notable Women Leaders

This next task involves reading brief descriptions of notable women leaders. It is an impression formation task. Please read the descriptions carefully and answer the questions as honestly as you can. When you have finished this task, please put it in the envelope provided and let the experimenter know you are ready to move on.



**Joanne O'Rourke Hindman**

**Joanne O'Rourke Hindman** is the founder, president and CEO of Roundtable Advisors, Inc., a consulting firm that helps businesses become knowledgeable participants in the financial reporting process. The firm has seen incredible demand in the market since the Enron scandal. Hindman is an admired and respected leader who stresses the importance of business ethics. In a recent keynote address to members of the business community, Hindman said, "its one thing to do the right thing but another to do the right thing when nobody is looking. That's one aspect of leadership that we can't do without."

Hindman is a seasoned executive with an extensive skill set who has played a key role in the financial success of numerous public companies. Before founding Roundtable Advisors, Inc., Hindman served as the Executive Vice President of Operations for the American Red Cross. She also served as the Chief Financial Officer of Newsweek magazine and General Manager of the magazine's Internet start-up, Newsweek Interactive. Hindman graduated from college with a degree in accounting. She thanks her college faculty for teaching her that future CPAs and CFOs would need to know the difference between right and wrong. "Fortunately, for me, my mentor and my other accounting professors gave me an excellent foundation in accounting practice and ethics. I continue to take those lessons seriously. I owe it to my investors-and I owe it to myself."

**Do you think Joanne O’Rourke Hindman is a leader in her profession?**

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not Very  
at all much

**In your opinion, do you think Joanne O’Rourke Hindman holds a position of power in her professional role?**

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not Very  
at all much

**How common is it to see other women in this type of professional role?**

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not Very  
at all much

**How much do you admire Joanne O’Rourke Hindman?**

1.....2.....3.....4.....5.....6.....7.....8.....9.....10.....11  
Not Very  
at all much

## APPENDIX K

### SAMPLE PROFILE FROM THE “GENERAL KNOWLEDGE TASK”



C. Eva Thomson

#### Same College Condition

**C. Eva Thompson** is an alumna of the Isenberg School of Management and is also the Executive Vice President and a managing investor with Corporate Staffing Concepts. This highly successful and rapidly growing firm provides human resources outsourcing to small businesses. Before holding this position, Thompson was the Chief Financial Officer of MassVentures, a company that offers strategic planning to high-technology businesses. Before that she was the director of the Massachusetts Industrial Finance Agency.

Thompson has also created her own company. She is a risk-taker and says that throughout her career she has always been fascinated with risk taking. “Over the past twenty years I’ve taken lots of risks and worked with thousands of risk-takers. I’ve repeatedly tried to learn from these experiences.” She says that risk taking requires strategic thinking, balance in one’s life, and personal integrity. At an award banquet at UMass where Thompson was the keynote speaker, she urged SOM students to “become extraordinary risk-takers, and...use that talent along with your intellect and your spirit to make the world a better place.” Thompson is a true risk-taker who has had an extraordinary career by upholding her integrity, maintaining balance in her life and thinking strategically.

#### No College Condition

**C. Eva Thompson** is the Executive Vice President and a managing investor with Corporate Staffing Concepts. This highly successful and rapidly growing firm provides human resources outsourcing to small businesses. Before holding this position, Thompson was the Chief Financial Officer of MassVentures, a company that offers strategic planning to high-technology businesses. Before that she was the director of the Massachusetts Industrial Finance Agency.

Thompson has also created her own company. She is a risk-taker and says that throughout her career she has always been fascinated with risk taking. “Over the past twenty years I’ve taken lots of risks and worked with thousands of risk-takers. I’ve repeatedly tried to learn from these experiences.” She says that risk taking requires strategic thinking, balance in one’s life, and personal integrity. At an award banquet where Thompson was the keynote speaker, she urged students to “become extraordinary risk-takers, and...use that talent along with your intellect and your spirit to make the world a better place.” Thompson is a true risk-taker who has had an extraordinary career by upholding her integrity, maintaining balance in her life and thinking strategically.



## APPENDIX L

### LIST OF EXEMPLARS

Judith Streeter	Senior VP of Human Resources for Marriott International
Janet Kresge	Executive Director of Dun & Bradstreet Corporation
C. Eva Thompson	Executive VP of Corporate Staffing Concepts
Joanne O'Rourke Hindman	Founder, President and CEO of Roundtable Advisors, Inc.
Anne Schecrallah-Kandilis	Corporate consultant
Margery Piercey	Business owner/accountant with PricewaterhouseCoopers
Elizabeth Husted	Managing Director, Goldman Sachs

### Tree Exemplars (control condition)

Ash, cedar, chestnut, holly, snowberry, weeping willow, white cherry, wild pear

## APPENDIX M

### QUESTIONNAIRE MEASURING EXPLICIT SELF-BELIEFS

We are interested in the extent to which you think the words below describe **YOU**. For each word, circle a number that best represents how well that word describes you. In doing this task, please compare yourself to your average **male classmates**. In other words, to what extent does each word describe you relative to your **male peers**? There is no right or wrong answer; we are only interested in your own perceptions of your personality compared to that of your **male peers**. Please try and answer as honestly as possible. Your responses are completely anonymous.

	Does not describe me at all	Describes me very well
Assertive	1.....2.....3.....4.....5.....6.....7	
Nurturing	1.....2.....3.....4.....5.....6.....7	
Considerate	1.....2.....3.....4.....5.....6.....7	
Determined	1.....2.....3.....4.....5.....6.....7	
Selfless	1.....2.....3.....4.....5.....6.....7	
Leader	1.....2.....3.....4.....5.....6.....7	
Ambitious	1.....2.....3.....4.....5.....6.....7	
Sympathetic	1.....2.....3.....4.....5.....6.....7	
Dynamic	1.....2.....3.....4.....5.....6.....7	
Supporter	1.....2.....3.....4.....5.....6.....7	
Go-Getter	1.....2.....3.....4.....5.....6.....7	
Kind	1.....2.....3.....4.....5.....6.....7	

## APPENDIX N

### QUESTIONNAIRE MEASURING EXPLICIT BELIEFS ABOUT THE IDEAL LEADER

We are interested in the extent to which you think the words below describe an excellent **LEADER** in a professional environment. For each word, circle a number that best represents how well that word describes an excellent **leader**. There is no right or wrong answer; we are only interested in your own perceptions of an excellent **leader** in a professional domain. Please try and answer as honestly as possible. Your responses are completely anonymous.

	Does not describe an excellent leader at all	Describes an excellent leader very well
Assertive	1.....2.....3.....4.....5.....6.....7	
Nurturing	1.....2.....3.....4.....5.....6.....7	
Considerate	1.....2.....3.....4.....5.....6.....7	
Determined	1.....2.....3.....4.....5.....6.....7	
Selfless	1.....2.....3.....4.....5.....6.....7	
Leader	1.....2.....3.....4.....5.....6.....7	
Ambitious	1.....2.....3.....4.....5.....6.....7	
Sympathetic	1.....2.....3.....4.....5.....6.....7	
Dynamic	1.....2.....3.....4.....5.....6.....7	
Supporter	1.....2.....3.....4.....5.....6.....7	
Go-Getter	1.....2.....3.....4.....5.....6.....7	
Kind	1.....2.....3.....4.....5.....6.....7	

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