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# Understanding differences in leadership interest and confidence

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Understanding differences in leadership interest and confidence

Dustin Forrest Baker

A thesis submitted to the graduate faculty  
in partial fulfillment of the requirements for the degree of  
MASTER OF SCIENCE

Major: Psychology

Program of Study Committee:  
Lisa M. Larson, Major Professor  
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Ames, Iowa

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## Chapter One: Overview

In the last century, women have become an increasing presence in the work force, representing nearly half of all workers and account for over half of individuals earning bachelor degrees (Equal Opportunity Commission Employment Statistics, 2010). Within these areas, however, women remain underrepresented in leadership positions. For instance, only 37% of individuals within management specific job titles identify as women (U.S. Bureau of Labor Statistics), and represent only 2.6% of *Fortune 1000*'s chief executive officers (CEO) that are in charge of company operations (*Catalyst*, 2010). Furthermore, only 92 of the 541 members of the 111<sup>th</sup> U.S. Congress are women, and only 10% of medical school deans in 2006 were women (Marchant, Bhattacharya, & Carnes, 2007).

It has been proposed by some that this is due to evolution of gender roles, suggesting that the development of gender impedes women's ability for successful leadership, as well as their desire to hold positions of power (Buss, 1999). Furthermore, the stereotypic belief that men are better adapted to a position that has traditionally required the masculine characteristics like assertiveness, risk-taking, and the desire for power perpetuates barriers that are present for women to obtain these positions.

The research on leadership interest and self-confidence, tells a different story. Within vocational psychology, interest and confidence have been recognized as essential to the choice of any career or activity that an individual may pursue (e.g., Betz & Borgen, 2000; Borgen, 1999; Rottinghaus, Larson, & Borgen, 2003). Contrary to the stereotype that women lack the interest or confidence in pursuing leadership, multiple studies show that men and women are equal in this respect (Betz, Borgen, & Harmon, 2005; Donnay, Morris, Schaubhut, & Thompson, 2005). In terms of stable characteristics related to leadership,

personality traits that have been identified as an important determinant in pursuing leadership positions has also been shown to not be significantly different between genders (Tellegen & Waller, 1992).

Despite these findings, few women obtain these leadership positions with the ease that men are able to. Women who show the masculine characteristics that are stereotypically believed to be necessary for successful leadership are found to be less socially skilled, whereas women who may lead in a non-stereotypic way are found to be weak and incapable of leadership (Heilman, Wallen, Fuchs, & Tamkins, 2004). This double-standard becomes the factor that other theorists use to explain the underrepresentation, believing that females who occupy male positions are evaluated more harshly, experience more resistance, and are given less opportunity for success than males (Eagly & Carli, 2007; Eagly & Karau, 2002).

Other evidence that suggests this double standard includes the negative peer evaluation of female military cadets, despite having objectively equal ability (Boldry, Wood, & Kashy, 2001), or the consistently lowered evaluation of female managers by subordinates in both subjective and objective standards of rating throughout a number of studies (Eagly, Makhijani, & Klonsky, 1992). Even in a retrospective analysis of postdoctoral candidates accepted in biomedical programs, data showed that women who were objectively equal to men were awarded fellowships at lower rates (Wenneras & Wold, 1997).

Recent studies, however, have suggested a slow change of beliefs towards women holding leader roles, as well as what makes a leader successful (Deal & Stevenson, 1998; Duehr & Bono, 2006). The approach towards leading is changing from an autocratic approach, towards a democratic and relational approach within the business world, for instance (Eagly & Carli, 2007; Eagly & Johnson, 1990). This change, in turn, creates a less

dissonant view of female leaders, allowing for the feminine stereotypes of caring and relating to others to be viewed as a strength within certain leader roles (Prime et al., 2009). Because these changes are slow, views among pre-workforce individuals (such as college students) may not be as impacted by the beliefs, thus perpetuating the traditional stereotypes towards women and leadership (Rudman & Glick, 1999; 2001). This, in turn, creates the cycle of discriminative barriers that may cause women to avoid leadership opportunities and become less interested in leadership roles they could have excelled in.

Thus, the importance of understanding how the stereotypes that are held by the pre-working population affect women's views towards leadership may provide for effective interventions. As shown by research on Claude Steele's theory of stereotype threat (Steele, 1997; Steele & Aronson, 1995; 2002), stigmatized groups will consistently underperform on tasks that they are stereotypically thought to be weak in. One example is that African-American students receive lower scores on math tests when reminded of negative stereotypes about minority individuals and math performance, but will show higher performance in the absence of the stereotype.

Steele's theory also discusses how stereotypes can impact an individual within a stigmatized group in terms of interest towards activities proposing that individuals will decrease their interest in these activities to protect their group identity (Davies, Spencer, & Steele, 2005; Steele, 1997). Protecting their identity within the group by avoiding the possible interest creates comfort of not proving or disproving the stereotype, thus eliminating the distress that is involved with being a "token" minority (Steele, 1997). Despite the importance of this idea, only one study to date has investigated the interest portion of stereotype threat. In this study, the researchers found that women who were exposed to



stereotypes against women were less likely to report interest in obtaining a leadership role (Davies et al., 2005). Thus, preliminary research suggests the possibility that early exposure to a stereotype may act as a deterrent towards the development of women's interest and confidence in leadership.

It is the purpose of the present study to further investigate the effects that stereotype threat has on women's interest in leadership. Because this area has remained virtually unexplored, further research would provide a better understanding of stereotype's effects beyond performance, and create possibilities of interventions to circumvent said effects. If it was found that stereotype threat's effect on the interest of women in leadership, a prospective approach towards training and education could be developed, not only within the realm of leadership, but within other areas of group stigmatization.

## **Chapter Two: Literature Review**

### **Leaders and Leadership**

Within a review of literature on leadership, interchangeable terms are referenced to describe what a “leader” is across various settings. Within business, a leader may be a manager or supervisor. In government settings, senators and presidents are considered leaders. In academia, the term leader applies to individuals who serve as department chairs or college deans.

Though the title may vary, it is clear that a leader is a person “who exercises authority over other people” (Eagly & Carli, 2007, p. 8). “Leadership” is more clearly defined as the process of motivating, organizing, and coordinating the work of others to achieve a common goal (Eagly & Carli, 2007, p. 8). The responsibilities and descriptions of the position of leader will vary with the setting. Manager, supervisor, and leader are used interchangeably within much of the literature, and will be used as such in this review. The purpose of this review is not to define the difference between leaders and managers, but rather to explain the underrepresentation of women within positions that exert authority over others in order to gain a common goal.

### **Personality Research on Leadership Disposition**

Within the literature, individuals who seek leadership are often found to have a certain set of characteristics that create a disposition for being a leader. These traits, which are also thought of as consistent patterns of thoughts, feelings, and behaviors, are often referred to as personality (Carver & Scheier, 2008). Though multiple theories exist for personality, it is often believed that these personality variables are stable throughout life and

direct individuals towards various areas. Two personality variables have been shown to be related to leadership activities.

Using the deductive approach through factor analysis, Auke Tellegen developed the Multidimensional Personality Questionnaire (MPQ; 1982; 2000) to identify how many and what personality factors existed (Tellegen & Waller, 1992). Through the development of this measure, Tellegen found three higher order dimensions and 11 traits represented under the three overarching dimensions. One higher order dimension, positive emotionality, and one trait under that dimension, social potency, are most related to leadership.

When identifying personal predispositions to seeking leadership positions, it was found that “Positive Emotionality” (PEM) was a significant predictor and highly correlated with leadership source. Positive Emotionality is defined as “the tendency to experience positive emotions, desire for effectance motivation and mastery, and the tendency to be involved in communal transactions” (Tellegen & Waller, 1992).

Within the higher order dimension of PEM, the tendency to effect change and be a part of communal transactions was identified through social potency primary scale. According to Tellegen and Waller (1992), this scale’s content conveyed broad interpersonal effectiveness and a desire to make an impact. This type of interpersonal power was found to have moderate correlation with participation in leadership activities ( $r = .45$ ; Kamp, 1986). These findings are the same between genders, with no statistical mean difference being reported.

Because the results suggest that scores on the social potency primary scale is moderately correlated with leadership participation (Kamp, 1986), it is argued that leaders may, in fact, be born and not made. This disposition, however, does not differ between

genders, suggesting that need for power is not a uniquely male characteristic that some have proposed. Similar statistics on research within the Strong Interest Inventory's personal style scales further solidify the seemingly innate drive towards obtaining a leader role.

### **Research on Leadership Style**

Preference for leadership within various careers has been one measure that has helped direct an individual to the place of best fit within their chosen field. Expanding the belief that individuals have a personality component that drives individuals towards leadership, the most recent version of the Strong Interest Inventory (SII; Donnay, Thompson, Morris, & Schaubhut, 2005) includes a leadership personal style scales. These scales are designed to measure specific preferences for various activities within the work, including the preference for leadership. The Leadership Style scale “measures a preference for meeting, directing, persuading, and leading other people (SII Manual; Donnay et al., 2005),” showing that those who have preferences for leadership activities are placed closer to the “Directs Others” pole, as opposed to “Leads by Example” pole that reflects discomfort in taking charge of others. Separate from interest, this scale measures the individual's orientation towards leadership related activities within her/his particular career setting. Using this scale to help identify potential directions to pursue within a career, such as obtaining a leadership position, no difference has been found between the genders on the leadership style personal style scale (SII Manual 2005; Donnay et al., 2005).

Thus, it would appear that men and women desire to take leading and following roles at equal rates. These statistics support the personality research done through the MPQ, showing no differences between genders in predisposition towards leadership (Tellegen & Waller, 1992). These results would suggest that men and women should occupy positions of

leadership at equal rates because of equal interest, but there is not equality of gender among leadership positions. This lack of mean differences across of personality traits related to leadership and the leadership style scale is also reflected in studies of interest.

### **Leadership Interest**

In vocational psychology, the importance of interest is integral in the pursuit and development of a career for an individual (Betz & Borgen, 2000; Borgen, 1999). Using John Holland's vocational model, which is identified through six types of interests called realistic, investigative, artistic, social, enterprising, and conventional (RIASEC), modern vocational psychology has shown that there are six basic vocational interest types that help direct an individual towards careers and activities that reflect their similar interest types. Of these six types, the "E" of the RIASEC model represents enterprising. Enterprising is considered the theme that relates to a person's desire to seek "positions of leadership, power, and status," and has been shown to most highly relate to leadership interests (Donnay et al., 2005, p. 35).

The Strong Interest Inventory has been recognized as a prominent instrument within vocational interest studies, and has had excellent estimates of reliability and validity (Rottinghaus, Larson, & Borgen, 2003). Focusing on the enterprising General Occupational Theme (GOT), the SII has shown to be an extremely reliable instrument in identifying those involved or interested in careers that require and focus on the leading and persuading of others. Individuals that have higher scores in "E" are more interested in leadership roles and activities, which is reflected in through a higher report of interest in vocational activities like politics or management (Donnay et al., 2005). These reliabilities and validities are based on a number of studies, as reported in the SII Manual (Donnay et al., 2005). Enterprising interests

have been shown to strongly correlate with the leadership personal styles scales ( $r = .69$  for women and  $r = .71$  men).

No gender difference has been found within the enterprising general occupational theme within the normative studies. Reported means within the enterprising theme are 49.61 for women and 50.39 for men (Donnay et al., 2005). This lack of gender difference within the enterprising general occupational theme is also supported in other vocational interest measures, such as the leadership subscales in the Oregon Vocational Interest Scales (ORVIS; Pozzebon, Visser, Ashton, Lee & Goldberg, 2010), which reported no difference between genders.

### **Interest and Confidence**

Despite the recognized importance of vocational interests, researchers have also shown the importance of self-efficacy within career choice as well. In meta-analyses of the relation between interests and self-efficacy (Rottinghaus, et al., 2003), a statistically strong relation of self-efficacy and interest was found ( $r = .59$ ,  $k = 53$ ). A study that supports these results looked at the power of interest and self-efficacy, both individually and as a single construct. This discriminate analysis revealed that self-efficacy among 1,105 employed women and men explained 82% of the variance in their successful career choice (Donnay & Borgen, 1999). Interest alone, also showed significant explanation of variance (79%). When both self-efficacy and interest were used, however, 90% of the variance for career choice was explained. A consistent message appears throughout all of these studies; though interest or self-efficacy are powerful predictors of career choice used alone, they become more powerful when used together.

## Leadership Confidence

As determined by the 2003 meta-analysis by Rottinghaus, Larson, and Borgen, there is a moderate statistical relation to interest in predicting career choice. More specifically, however, the relation between interest and confidence within the enterprising theme showed no gender differences for the relation between the two constructs, with a mean correlation of  $r = .42$ . This finding is supported by research done through the use of confidence inventories, including the Skills Confidence Inventory (SCI; Betz, Borgen, & Harmon, 2005) and the Expanded Skills Confidence Inventory (ESCI; Betz, Borgen, & Harmon, 2002).

The SCI was developed to measure self-efficacy parallel to Holland's RIASEC model (1997). Correlations for the SCI and the 1994 Strong Interest Inventory (Harmon, Hansen, Borgen, & Hammer, 1994) showed a moderate relation for enterprising interests and confidence in college students ( $r = .44$ ; Betz, et al., 2005). However, correlations increased when compared to the 2005 Strong Interest Inventory (Betz et al., 2005), with  $r = .64$  and  $r = .69$  for college women and men, respectively.

A significant difference was found for mean scores in the enterprising general confidence scale between men and women. Reported means for female college students were lower than for male college students, showing a small effect for score difference of 3.1 to 3.3 respectively ( $d = .29$ ,  $p < .001$ ; Betz, et al., 2005). It was also seen that the combination of low confidence/high interest were displayed at higher rates for women (33%) compared to men (28%).

However, when leadership is looked at more closely through the leadership basic confidence scale of the ESCI (Betz et al., 2002), there was no gender difference for reported confidence in leadership activities. Supporting these findings, men and women have been

shown to have no significant difference of ratings of leadership effectiveness and ability (Boldry, Wood, & Kashy, 2001; Eagly, Karau, & Makhijani, 1995). Using objective measures, no significant difference by gender has been found in leadership style (Donnay et al., 2005) or personality traits that are related to leadership (Tellegen & Waller, 1992). However, an underrepresentation of women in leadership roles is apparent in society, which is in contrast to the research presented.

### **Women in Leadership**

Women are underrepresented in leadership positions. Only 37% of individuals within management specific job titles identify as women (U.S. Bureau of Labor Statistics), and represent only 2.6% of *Fortune 1000*'s chief executive officers (CEO) that are in charge of company operations (Catlyst, 2010). Only 92 of the 541 members of the 111<sup>th</sup> U.S. Congress are women. Beyond business and politics, this underrepresentation is present within academia. For instance, even though one-third of medical students were women in 1985, only 17% of current tenured medical school faculty and 10% of medical school deans are female (Marchant, Bhattacharya, & Carnes, 2007).

### **Theories of Why**

There are many different interpretations as to why there is such an underrepresentation of female leaders within higher levels of businesses and governments. Some explanations have been focused on an evolutionary approach, stating that women have not developed the same traits as men, which has thus created an ability gap which is responsible for the disparity (Buss, 1999). However, due to research that will be discussed later in this review, the evidence is stacked against this theory.



Theories based on societal interaction with the individual, in contrast to evolutionary theory, explain this phenomenon as a result of institutionalized gender discrimination and stereotypes. Multiple theories exist within this tradition, including Madeline Heilman's lack-of-fit model (Heilman, 1985), as well as Alice Eagly and Steven Karau's role congruency theory (Eagly & Karau, 2002).

The lack-of-fit model (Heilman, 1985) suggests that the women in traditional male roles experience both blatant and unintentional forms of discrimination. These acts, in turn, affect the women's ability to perform the job successfully. In turn, women have lower evaluations, and do not obtain the same opportunities for promotion as male counterparts who do not have to overcome the obstacles.

Role congruence theory (Eagly & Karau, 2002) suggests a similar idea. However, instead of the barriers women would encounter in a traditional male role causing her to do more poorly in a job, Eagly and Karau state the inconsistency between stereotypic gender roles and female occupancy of these roles create a no-win situation for the individual. It is due to the inconsistency that women in these roles are rated more harshly, treated more hostile, and are held to a higher standard than men who are objectively as effective as the man (Eagly & Karau, 2002; Eagly, Karau, & Makhijani, 1995).

Across theories of societal interaction with the individual, there is one consistent theme throughout. Within all of the theories on leaders and leadership, the roles and responsibilities are stereotypically described in agentic, male terms. These agentic characteristics can be described as aggressive, assertive, and motivated to control their environment (Eagly & Johnson, 1990). Because of this, women are stereotyped to have the opposite abilities, which have been traditionally identified as communal characteristics.

Communal characteristics that describe characteristics that involve relating, caretaking, and other stereotypic feminine qualities (Eagly & Johnson, 1990). In turn, the presence of communal characteristics have traditionally been thought to exclude the possibility of having the agentic traits that are stereotypically believed to be necessary for leadership. Thus, understanding what stereotypes are held about leaders and women in general, as well as the effects of their interaction, becomes necessary to understand any of the above theories.

### **Gender Stereotypes of Leadership**

Leadership has been traditionally thought of as a masculine domain, needing qualities that males were naturally believed to possess (Heilman, Block, & Martell, 1995; Loden, 1985). These masculine, or “agentic,” traits have become synonymous with beliefs about what a good leader is and needs to be, such as assertive, a risk taker, and decisive (Martell, Parker, & Crawford, 1998). Even characteristics that may be associated with negative aspects of masculinity are desired within the area of leadership, such as being aggressive and cut-throat (Rudman, 1998; Steffens, Schult, Ebert, 2009).

Women, on the other hand, have traditionally been stereotyped and socialized to exhibit the opposite characteristics than those that are desired for effective leadership. Females are believed to be more predisposed to communal characteristics, which include warmth, ability to relate, kindness, and caring (Prime, Carter, & Welbourne, 2009). This difference has been proposed to be a key factor in the theories citing the incongruence of stereotypic schemas for jobs and gender (See Eagly & Karau, 2002; Heilman, 1985).

Though it can be argued that women can possess the same characteristics as men to become successful, research indicates that a “double-bind” problem exists for women. The

“double-bind,” as defined by Carli (2001) is the act by women of obtaining a balance of both agentic and communal traits while occupying a traditionally male role. Because the stereotypic societal role of a female is counter to the stereotypic societal role of a leader, women experience a unique challenge of fulfilling both roles so that they avoid penalty. When the balance is not met, she is punished in terms of performance evaluations and other’s confidence in her competence (Rojahn & Willemsen, 1994; Rudman, 1998; Steffens, Schult, Ebert, 2009).

### **Empirical Evidence for the Double-Bind**

Other studies show that women are actually punished through lower evaluations and lower subordinate ratings when they do not achieve the ideal balance. In a 2001 study by Rudman and Glick, women who were presented as being boastful and assertive were rated less socially able than men who were presented in an identical manner (mean  $r = -.37$  and  $.08$  for female and male ratings of social ability when displaying masculine behaviors), which supported previous findings in a 1999 study by Rudman and Glick. Furthering this point, a significantly higher correlation of preference for males displaying agentic traits ( $r = .48$ ) as opposed to females displaying the same traits ( $r = -.18$ ) was also shown. However, no statistical difference for preference was found for men when agentic or communal traits were displayed in either the 1999 or 2001 study, providing evidence that men are not held to the same double standard as women.

For those women who are willing to try to achieve that balance between communal and agentic characteristics, studies show that women being successful in a leadership role may cause negative classifications of themselves by others, including being seen as more

deceitful, pushy, selfish, and abrasive compared to how male counterparts are viewed (Heilman, Wallen, Fuchs, & Tamkins, 2005).

### **Overcoming the Double-Bind is Not Enough**

Thus, for women to obtain a leader status, she must show that she has what it takes (Eagly & Carli, 2007, p. 111). Due to the leadership being valued in masculine terms, males already obtain preference due to their stereotyped traits. Women, however, must not only overcome the lack of stereotyped abilities due to their gender, but also must achieve a higher standard of achievement in a leadership position than men to show that she has overcome the fact that she is a woman (Shackelford, Wood, & Worchel, 1996).

However, due to laws and statutes that prevent blatant discrimination based on minority status (such as race, ethnicity, gender, etc.), it is rare that that these acts are obvious and straightforward (see the Civil Rights Act of 1991 for more information). Because of this, discrimination against women in the work place (and more specifically in leader roles), subtle stereotypes are more common and more effective at deterring women from achieving (Hoyt & Blascovich, 2007). These subtle actions may include less favorable evaluations for women compared to men, more attention being directed toward female managers mistakes, or not giving women as much credit for accomplishments (Eagly & Carli, 2007). Though much of the research finds only small effects of gender differences, it is consistent across setting, generation, and population make-up source.

### **Empirical Support for Existence of Leadership Stereotypes on Evaluation**

A 1992 meta-analysis by Eagly, Makhijani, and Klonsky of 61 studies revealed a significant difference in the evaluations of leadership activities by gender. The study showed men were rated significantly higher for overall leadership ability (based on satisfaction by

group members, obtaining goals, and outside observer ratings) than women overall ( $d = 0.56$ ,  $p < .05$ ); men were also rated significantly higher on leader competence and how satisfied subordinates were ( $d = .10$ ;  $p < .05$ ). However, when the approach a leader led with (transactional or transformational) was used as a specific measure to be rated by group members and/or outside observers, women were rated significantly more favorably of how they used their approach ( $d = 0.03$ ,  $p < .05$ ). Leadership approaches and consistent small effect sizes will be discussed later in this review.

Evaluations of female leaders were also dependent on the environment in which they were measured. As revealed by the above meta-analysis, when the leaders within an organization were primarily male (i.e., managers within a corporation), females were less favorably evaluated ( $d = 0.09$ ,  $p < .001$ ). However, when the work environment becomes balanced between genders, no significant differences of leadership evaluations occur.

For instance, a study of one male-dominated environment, the military training environment, showed that both female and male cadets evaluated males as being better overall leaders, despite having equally objective ratings in GPA and general ability performance (Boldry, Wood, & Kashy, 2001). As outlined by present studies, it is suggested that females are received less favorably the more masculine an environment becomes regardless of what gender is rating them.

An updated example for evaluation differences among gender comes from post-doctoral applications within the biomedical field. In Sweden, a retrospective study was conducted and found to have evaluation differences based on gender of applicant or rater (Wenneras & Wold, 1997). Within the findings, men were ranked higher due to their gender

identification and women were ranked lower, despite the women having similar, if not higher, research experiences and academic achievements.

### **Gender Differences in Leader Effectiveness**

In a meta-analysis of 96 studies by Eagly, Karau, and Makhijani (1995), they dealt with how a leader was rated by observers or subordinates of the leader. Results showed that there was no significant differences among males and females overall male and female leaders or among male and females in how they rated leaders in both laboratory and organizational settings.

However, when the gender of the raters was discussed, some significant effects were found. For instance, when a greater proportion of males were present among the raters for a female leader, a significant predictor of lower effectiveness was found to be significant ( $b = .0023$ ;  $\beta = .23$ ;  $p < .001$ ).

It should be noted, as gender became more equal among raters or among the employees, the differences of appraisal between genders became non-significant. This supports other findings that the beliefs about women in the workplace are changing on a conscious level. Thus, findings show that women who are especially confident in their leadership abilities will actually increase their effectiveness when challenged with blatant stereotypical beliefs (Hoyt & Blascovich, 2007), but will have no significant change when the stereotypes are subtle. As is such, it is the “below-the-surface” stereotypes that are far more difficult to identify and counteract (Eagly & Carli, 2007; p.94).

### **Small Consistent Effects In Meta-Analyses**

In several of the meta-analyses that have been discussed in this paper, the significant differences between gender may be considered too small for practical use. It is important to

address why these small effect sizes should be noted and discussed in this review. The difference in scores, though not of practical use on their own, becomes practical due to the consistent reliability and repetition of the same effect throughout many studies (Ableson, 1985).

Ableson (1985) explained this idea by relating small, consistent effects to the batting averages of baseball players. Using traditional statistical evaluations, the variance explained of predicting whether a player will have a successful at bat using only their batting average is only about 1%. If using traditional ideas of statistical practical effects, the batting average of .500 and .100 is of no use to anyone. However, the fact that skill is a consistent variable that reflects batting average, it would be unwise to disregard the player's batting average when predicting an outcome.

Ableson (1985) continues to explain that when significant effects are found a few times, traditional analysis and decisions should still be used, as there is no consistency or reliability within the phenomenon. Thus, it can be assumed that the variables that are not included within the analysis (such as skill in batting average), may actually indicate a practical effect when the finding is consistently found among studies. Therefore, small statistical effects in meta-analyses can still be considered practical despite being short of traditional effect sizes.

### **Leadership Approaches and Gender**

Another factor to consider is when discussing leader emergence is leadership approach. Based on Eagly, Johannesen-Schmidt, and van Engen's work in 2003, there has been a clear gender difference for preference and expression for approach. First emerging in 1978, Burns discussed different types of leadership approaches, as opposed to the commonly

held belief that only one existed. These discussions about the possibility of differences allowed for assessments of leadership approach to be developed through factor analysis (Avolio & Bass, 1999). Three distinct types of leadership approaches emerged, which included transactional, transformational, and laissez-faire. However, because laissez-faire has been described as a lack of leadership (Eagly, Johannesen-Schmidt, & van Engen, 2003; Maher, 1997), its use as an appropriate construct for leadership measurement is not valid.

Leadership has stereotypically been described as a transactional approach, which is a more assertive, autocratic form of leadership. Therefore, agentic traits are stereotypically associated with this approach (Eagly & Karau, 1991). Defined as leadership through “give-and-take” relationship with subordinates, this approach has been identified through three types of behaviors; contingent reward, active management by exception, and passive management by exception (Antonakis, Avolio, & Sivasubramaniam, 2003; Avolio & Bass, 2002; Eagly & Carli, 2007). The first behavior called contingent reward is defined as providing rewards for satisfactory performance by group member on a given task. Active management-by-exception is defined as a leader intervening and giving critiques on a group member’s mistakes as they happen, whereas the passive management-by-exception behavior is when a leader waits to intervene in a group member’s work until the problems become more severe (Eagly et al., 2003).

The transactional approach to leadership is in contrast to the transformational approach to leadership that has been described as social leadership, due to the communal characteristics that have been attributed to successful transformational leadership (Eagly & Karau, 1991). Defined as the process of “establishing oneself as a role model by gaining followers’ trust and confidence,” (Eagly & Carli, 2007, p. 128), the transformational



approach can be identified through five categories; idealized influence attribute and behavior, inspirational motivation, intellectual stimulation, and individualized consideration (Antonakis, et al., 2003; Avolio & Bass, 2002; Eagly & Carli, 2007.). The attribute of idealized influence has been described as leading by acting as a role model for followers, whereas the behavior aspect is the communication by the leader to the followers regarding the purpose and importance of the task at hand. Inspirational motivation is defined as the leader's own display of excitement and belief about the present and future tasks at hand. Intellectual stimulation is the leader's ability to think outside of the box and challenge their group members to do the same, whereas individualized consideration is the process of developing and providing support and attention to the needs of individual group members.

Despite the effectiveness of the transformational approach over transactional approach within leadership settings, beliefs remain stereotypic in regards to leadership being autocratic, transactional, and in general, a more masculine role (Heilman, 2001; Davies, Spencer, & Steele, 2005). It is this dissonance that creates the obstacles women must overcome, not only in the workplace, but also within themselves (Carli and Eagly, 2007; Heilman, 1985)

It is becoming increasingly accepted that the transformational approach is just as, if not more, effective in achieving goals in a changing world (Eagly et al., 2003; Judge & Piccoo, 2004; Lowe, Kroeck, & Sivasubramaniam, 1996; Ruggieri, 2009;). In the case of political leadership, evidence supports the idea of women being preferred over men to get goals done that are in line with transformational leadership such as domestic policy over foreign wars (Mueller, 2008).

### **Empirical Evidence for Gender Differences in Leadership Approaches**

In a meta-analysis of leadership approaches (Eagly, et al., 2003), gender differences were found to be statistically significant. It was found that women displayed a transformational leadership approach and the transactional leadership behavior of contingent reward behavior at a higher rate than men ( $d = .10, k = 44$ ;  $d = .16, k = 21$ , respectively). Men were more likely to display both active and passive leader managements by exception ( $d = .12, k = 12$ ;  $d = .27, k = 18$ , respectively), which are both considered transactional methods.

Despite these findings, however, recent studies continue to reveal that the transactional form of leadership is considered the prototype for leaders by many employed individuals (Eagly & Carli, 2003). In a review of international descriptions of leadership positions and how genders compare, it was consistently found that the descriptions remained more oriented to masculine stereotypes, and consistently rated males as being better able to fill the roles (Schein, 2001).

### **Gender Differences in Leader Emergence and Self-Nomination**

In Eagly and Karau's (1991) meta-analysis of leadership emergence ( $k = 58$ ), with emergence being defined as who took the leader role in an initially leaderless group by the group members, a significant difference was found in terms of emergence of a leader within a group. These studies rated leaders by asking group members to identify who was the leader of their group or through ratings of independent observers of various laboratory studies of leader emergence that were included in the meta-analysis.

It was found that men were rated as emerging as overall leaders within the group setting more often than women ( $d = 0.32, p < .001$ ), and even more when leadership was described as "task oriented" ( $d = 0.41, p < .001$ ). Women, however, showed a trend towards significant emergence over men when identified as the "social leader" of the group ( $d = .18$ ,

$p < .10$ ). It is important to note, however, that only 15 of the studies within the analyses rated “social leadership,” thus, the lack of power in response to the smaller  $n$  could be used to explain non-significant results. When these results are paired with the findings of Eagly and colleagues’ 2003 meta-analysis on leadership approaches showed being the “social leader“ is nearly identical to the transformational approach.

However, despite the findings that the transformational approach is found to be more effective (Ruggieri, 2009; Judge & Piccoo, 2004; Lowe. et al., 1996; Eagly et al., 2003), the stereotypic belief that a more assertive, autocratic form of leadership is pervasive. The results of the above studies support that ability of leadership is similar between genders when objectively measured in a gender-neutral environment. When the masculine leadership stereotype is active, it can be seen that this creates a challenge for women to be recognized as group leaders with the same ease as men. Therefore, it could be proposed that women are less likely to be nominated or seen as a leader in the group because of the interactions of the stereotypes held and the behaviors presented.

Though little evidence has been found through direct research on women’s self-nomination for leadership positions, all other research discussed earlier suggest a heavy penalty for such a thing. For instance, the 2001 study by Rudman and Glick showed students’ ratings of social ability of a job applicant was dependent the gender and how they were interpersonally presented. When the applicant was presented as a boastful female, the students rated the woman as less socially able (mean  $r = -.37$ ) compared to when the boastful applicant was presented as a male (mean  $r = .08$ ). Thus, the students rated the boastful woman less hireable than the boastful man for the same job. These findings supported earlier results of a similar 1999 study by Rudman and Glick.

As self-nomination requires a certain amount of boastfulness, it could be concluded that to do so would reflect poorly on the female candidate. Furthermore, in studies done in primarily masculine environments, women rank themselves significantly lower than male peers in leadership ability, despite having objectively similar ratings (Boldry, et al., 2001). These findings suggest that women may be more hesitant to self-nominate for higher leadership positions, and that if a woman was to self nominate, she would be punished for an abundance of agentic traits.

### **Leadership Summary**

Despite research that has shown leadership interest and preference are equal between genders, there remains a significant underrepresentation of women in leadership roles. Through the reviews of effectiveness, leadership approaches, and leader emergence, it is repeatedly shown that a bias exists against women occupying leadership roles. Objective and subjective ratings in various studies of females in leadership roles have shown that ability is no different than their male counterparts, yet studies that take stereotypic belief systems into effect show the existence of an unspoken double-bind women must adhere to in order to succeed.

This pressure to fulfill both gender and leader roles has been the focus various theories, but the effect of the pressure of the stereotypes about female leaders has on women's own interest in pursuing a career that is focused on leadership has had little attention. Though there are several theories that focus on the interaction of the socio-individual interaction of the incongruent roles, only one theory has proposed a mechanism that may effect before they even enter a leadership role. This theory, called "stereotype

threat,” provides a possible explanation of how the stereotypes can affect the stigmatized group.

### **Stereotype Threat Theory**

Stereotypes are commonly held beliefs within a society about specific groups of people, which could be positive or negative. Steele (1997) explained that these stereotypes exist within society, and can cause a barrier to success for stigmatized groups. Existing within society, individuals are exposed to and affected by these stereotypes, regardless of personal awareness (Bergeron, Block, & Echtenkamp, 2006).

This belief led to the theory of stereotype threat, which is the idea that individuals for whom a stereotype exists fear “proving” the stereotype true, causing anxieties that may interfere with their performance or aspirations in a given area (Steele, 1997; Steele & Aronson, 1995). A phenomenon first discussed by Claude Steele, stereotype threat is defined as “the event of a negative stereotype about a group to which one belongs becoming self-relevant, usually as a plausible interpretation for something one is doing, for an experience one is having, or for a situation one is in, that has relevance to one’s self-definition” (Steele, 1997, p. 616). This relevance interacts with the individual’s own self-concept, and may impede the performance and aspirations within stigmatized areas.

This idea has been used to explain deficits between groups for a variety of issues, including testing of African-American students within academic settings (Steele, Spencer, & Aronson, 2002), athletic performance of females (Chalebaev, Sarrazin, Stone, & Cury, 2008), and both leadership and quantitative performance of women (Davies, Spencer, & Steele, 2005; Steele & Spencer, 1998). This identification with a group, as well as the acknowledgement of a particular situation where the stereotype is being tested, causes an

overestimation of underperformance, which then leads to decreased performance. It is through this mechanism that stereotype threat is proposed to work through (Steele, 1997).

Though some have looked to stereotype threat as an explanation for the entire explanation for differences that exist in performance of stigmatized groups (Sackett, Hardison, & Cullen, 2004), Steele and Aronson (2004) caution individuals on this point. They reflect that it may be a partial explanation, but other influences such as societal constructs or environmental influences also have an impact. Steele (1997) addressed these issues by acknowledging their importance, but also recognizing the large impact stereotype threat itself does have on individuals among stereotyped groups.

Research has also suggested that individuals within the stigmatized groups who identify as having ability in given area (such as a woman who has confidence in math), may be more susceptible to the stereotype threat. Steele, Spencer, and Aronson (2002) describe studies where women who identify as having mathematical abilities appear to be more affected by the conditions of stereotype threat as opposed to women who do not identify as having confidence in their abilities (Aronson & Good, 2001; Brown & Steele, 2001; as cited in Steele, Spencer, and Aronson, 2002). This finding can be explained by the cognitive dissonance that is created by threatening one's personal identification with ability and the fear of succumbing to the stereotype, thus interfering with performance (Steele 1997; Steele & Spencer, 1999).

Thus, the stronger an individual identifies with their group membership, whether it is their gender or mathematical ability, the more stereotype effect seems to be present. To avoid the threat to one's identity, Steele (1997) suggested that individuals may disidentify with a

group, such as becoming academically oriented to mathematics. This disidentification leads to decreased effort and aspirations in an area.

To best understand the theory empirically, it is necessary to first examine the classic study that led to its' development, then examine the well documented effect on performance among minority individuals within academic settings, and provide further evidence that shows the effect stereotype has on women in multiple settings, including interest and leadership.

### **Academic Performance for Minority Groups: Classic Study**

In one of the first studies to test this theory, Steele and Aronson (1995) presented 40 undergraduate African American ( $N = 20$ ) and Caucasian ( $N = 20$ ) students with a set of verbal problems from the Graduate Records Exam (GRE), and asked them to complete it to the best of their ability. The participants were asked to provide their verbal scores from the Scholastic Aptitude Test (SAT), so that those scores could be used as a covariate. Participants were then placed in one of two conditions. The first condition explicitly stated to participants that the test was used to measure intellectual ability, whereas condition two informed participants that the test was looking at the process of how they answered the questions and had nothing to do with personal ability. These conditions were called “diagnostic” and “non-diagnostic,” respectively.

The results of the study showed a significant race by condition interaction ( $F(1, 35) = 8.07, p < .01$ ). Caucasians within the diagnostic condition had the highest percentage of questions correct ( $M = .485$ ), followed by African Americans in the non-diagnostic condition ( $M = .490$ ), followed by Caucasians in the diagnostic condition ( $M = .435$ ), with African Americans in the diagnostic condition having the lowest percent correct ( $M = .392$ ). This

showed that African Americans scored significantly lower in the diagnostic condition than the non-diagnostic condition ( $t(35) = 2.38, p < .02$ ), and that Caucasians were less affected by the diagnostic condition than African Americans ( $F(1, 35) = 4.18, p < .05$ ). No standard deviations were reported.

Because of these original findings, the power of stereotype threat was established as having an overall effect of race by condition. This study did not show the mitigation through stereotype threat between races within the non-diagnostic conditions, however. This unanswered question opened the door for more research to be done as to the exact method of which stereotype threat works, as well as what can eliminate the effect of underperformance due to stereotype threat (Steele & Aronson, 2002; Steele, 1997).

### **Empirical Evidence for Support of Stereotype Threat on Minority Populations and Academics.**

To support these findings, a meta-analysis of 39 independent studies that focused on the effect of stereotype threat on stigmatized groups versus non-stigmatized groups, spanning various races, ethnicities, and ages (Walton & Spencer, 1999). This analysis was specific to real world measures, such as a pre-study measure that was discovered prior to the study (i.e. scores on a college admission exam), attempting to show stereotype threat being present outside of experimental manipulation. The results showed a significant mean difference between diagnostic and non-diagnostic conditions in regards to pre and post manipulation ( $d = .18, k = 38, p = .002$ ). This effect was constant across ethnic, gender, and age throughout the analyzed studies.

A more recent article in 2003 showed the same underperformance for minority students and women in tests of mathematical ability in the presence of stereotype threat



(Cadinu, Maass, Frigerio, Impagliazzo, & Latinotti). In study one, women who strongly self-identified as having mathematic ability scored much lower in the presence of stereotype threat compared to two other conditions ( $F(2, 89) = 5.31$ ;  $p < 0.05$ ,  $\eta^2 = 0.11$ ), showing a mean of correct responses being 16.58 ( $SD = 7.37$ ), 13.46 ( $SD = 8.70$ ), and 5.23 ( $SD = 5.86$ ) for positive stereotype, control, and negative stereotype, respectively. For this study, the positive stereotype was activated in an informative statement at the beginning of the task by indicating women would normally outperform men in the given task. For the control condition, the statement was that scores would be equal, and the negative condition was created by stating men normally outperformed women in the task. This reflects the identity safe, gender neutral, and threat conditions as described by Steele and Aronson (1995).

In the same study (Cadinu et al., 2003), minority students were presented with the same three conditions above, and similar results were found. In an African American vs. Caucasian condition, a similar statement was used to separate positive and negative stereotypes for mathematical ability, as well as a control condition of American vs. Italian. For both of these conditions, the positive stereotype outperformed the negative stereotype condition. In other words, when the minority groups were separated and compared negatively to the majority in the experimental manipulation (African Americans scored lower than Caucasians, and Americans scored lower than Italians), the minority group's performance was statistically lower in the positive vs. negative stereotyped conditions ( $F(1, 96) = 15.1$ ,  $p < 0.001$ ,  $\eta^2 = 0.14$ ), with mean scores being 5.18 ( $SD = 1.18$ ) compared to 4.18 ( $SD = 1.39$ ), showing a  $d = .79$ , which suggests a moderate to large effect. These findings continue to support the results in the meta-analysis by Walton and Spencer (1999), as well as the original conclusions drawn by the Steele and Aronson's classic 1995 study. If a minority group is

stigmatized to do worse when compared to a majority group, they will consistently underperform when compared to the majority group.

These results are consistent across multiple studies of minority students in mathematics, reading, and other academic pursuits. It has been found that the diagnostic conditions of these various subjects have negative effects on the minority individual's ability to perform at the same level as the non-stigmatized group, showing that the performance was consistent across the minority group.

Though much more could be discussed about various populations' vulnerability to stereotype threat, it is not applicable to the current study at hand. Thus, turning our focus to women's vulnerability to various areas due to stereotype threat will become the current focus, ending with an overview of the effect stereotype threat has on women's interest in obtaining leadership positions.

### **Women and Academics**

As reflected by the meta-analysis by Walton and Spencer (1999), activated stereotype threat showed a significant difference between diagnostic and non-diagnostic conditions in regards to pre and post manipulation ( $d = .18$ ,  $k = 38$ ,  $p = .002$ ). This effect was constant across ethnic, gender, and age populations in the studies. Though not specifically separated from other stigmatized groups, women were one of the groups that were reflected in this meta-analysis.

A recent example of the stereotype threat effect showed that college-aged women consistently underperformed compared to male participants ( $t(50) = 3.01$ ,  $p < .01$ ) in a mathematic problem solving task when being presented with word problems (Quinn & Spencer, 2001), but did not perform significantly different when presented with numerical

problems. The authors suggest that the activation of a “problem-solving strategy” activated stereotype threat for women during the word problems, but did not during the numerical problems because they required only knowledge rather than implied ability. These results were supported by a follow-up study in the same article, showing among individuals who were identified as having high-mathematical ability through performance on a college admission exam, women underperformed ( $M = 4.64$ ) on a given math task compared to men ( $M = 8.17$ ) during a stereotype threat active condition ( $t(32) = 2.0, p = .05$ ). Though no standard deviation was reported for the groups, the highest possible score was 9, thus showing a difference of 3.53 between genders. There were no significant differences on scores when stereotype threat was not activated, however.

The results by Quinn and Spencer (2001) are similar to the study by Cadinu and colleagues (2003) previously described. In this study, women who strongly self-identified as having mathematical ability underperformed significantly more in the presence of stereotype threat ( $F(2, 89) = 5.31; p < 0.05, \eta^2 = 0.11$ ), showing a mean of correct responses being 16.58 ( $SD = 7.37$ ), 13.46 ( $SD = 8.70$ ), and 5.23 ( $SD = 5.86$ ) for positive stereotype, control, and negative stereotype, respectively. Due to the reliable effects of stereotype threat in academic performance, other areas related to performance have been looked at for women, including athletics and job performance.

### **Women and Athletics**

Despite the increase in women’s involvement in athletics in recent years, this has remained a stereotypically masculine domain (Fredricks & Eccles, 2005). Branching off of stereotype threat, researchers hypothesized that females would underperform in basic soccer tasks when stereotype threat was active (Chalabaev, Sarrazin, Stone, & Cury, 2008). Using

club soccer players, participants were asked to rate the perceived masculinity of soccer, showing that it was seen as a very masculine activity. Through this reasoning, the researchers suggested that an implicit stereotype of decreased female ability and technical skill for soccer was already present.

To further exaggerate the effects, however, females in these threat conditions were informed that males normally did better on the given task. The safety condition was consistent with previous stereotype threat safety conditions, stating that the task was not a measure related to gender differences. Using a soccer-dribbling task, females exposed to the threat conditions performed at a significantly slower speed than those in the safety condition ( $F(2, 46) = 4.43, p = .01$ ), showing drill completion having a mean of 16.84 ( $SD = 4.05$ ) seconds to 14.28 ( $SD = 3.95$ ) seconds, respectively.

Other studies have shown similar effects of blatant stereotype activation among females for various athletic tasks, including a study that showed a significant increase of golf strokes in a given task for women when a stereotype was activated in a similar way as the study described above (e.g., Stone & McWhinnie, 2008). Besides showing that stereotype threat can be activated in other areas other than academics, these studies show that stereotype threat can be measured in various measures of performance. Using this idea, other measures of performance can be used to understand the stereotypes that are held about women in the workplace, and the effect the threat has on their appraisals.

### **Women and Management Activities**

In a review of the literature, only one study was found on the stereotype threat effect on specific managerial tasks for women. In this study, 115 organizational psychology graduate students participated in a performance task that simulated a managerial decision-

making activity that required the participant to sort through a number of various tasks such as recommendation requests for a promotion, sexual harassment accusations, and requests for leaves of absences in a 45-minute period (Bergeron, Block, & Echtenkamp, 2006). The participants were judged by outside observers on the number of memos the participants were able to respond to in the 45-minute period.

When presented with the task, the researchers manipulated the presence of stereotype threat by introducing the task as masculine or feminine. By giving a description of the participant's predecessor as a successful leader, the task was presented as masculine by identifying the predecessor as a male who used a transactional approach. To present the task as feminine, the predecessor was identified as a female who used a transformational approach. It was proposed that stereotype threat would be activated in the masculine description in women due to the implied need for masculine approaches to leadership. In contrast to previous studies, no explicit message of gender differences was given to activate stereotype threat.

The results showed that stereotype threat was present in women at a significantly higher amount than men, with women reporting mean scores of 26.19 ( $SD = 7.68$ ) on a stereotype threat presence measure as compared to a mean score of 22.41 ( $SD = 7.22$ ) when the masculine description of the leadership role was presented ( $F(1, 115) = 18.12, p < .001$ ). Furthermore, women responded to fewer memos ( $M = 14.54, SD = 4.40$ ) in the managerial decision-making task compared to men ( $M = 16.76, SD = 3.98$ ) in the task overall ( $F(1, 114) = 5.77, p < .05$ ). Women also showed differences of how many memos were responded to between masculine ( $M = 14.54, SD = 4.40$ ) and feminine conditions ( $M = 17.02, SD = 2.94$ ),

showing that women had lower performance in the masculine role compared to the feminine role ( $t(68) = -2.73, p < .05$ ).

This study, as opposed to previous studies presented, did not explicitly state the stereotypic message of gender difference, stating that implicit stereotypes were present and could be activated without an explicit message (Bergeron et al., 2006). Though alternate explanations of how the message may have been activated might be proposed, this study further supports the existence of the stereotypes within stigmatized individuals and activation by a situational context in the real world, as shown by the significant underperformance of women within the managerial role of Bergeron and colleagues' study, which was further exacerbated by a masculine role description of said position.

As can be seen by the various ways stereotype threat has been shown to affect women in various areas like academics, athletics, and career, it is not a stretch to see how it could have an effect on the interest of a woman within any of these areas. As Steele has discussed the possibility of an individual's disidentification with a particular subject to protect them from the possible failure, it becomes necessary to identify how stereotype threat can work through non-performance measures. To date, only one article could be found on a non-performance measure of stereotype threat.

### **Interest and Stereotype Threat**

In the original presentation of the theory of stereotype threat, a two-pronged effect was presented (Steele, 1997; Steele, et al., 2002). The first effect of stereotype threat was that the presence of stereotype threat effect would cause an individual that identified as a member of a given group and as a person who was talented in the stigmatized area (i.e. African

American students and math) to underperform when presented with a task. As discussed above, this portion of the theory is shown to be consistent throughout stigmatized groups.

However, Steele (1997) also discussed that stereotype threat may also negatively affect the interest of an individual within the stigmatized group towards various activities. It was proposed that through the process of disidentification, individuals would move away from developing interest in different areas due to their identification with their minority group as a way to protect them from encountering the stereotype. Within the search for this literature review, only one article specifically focused on stereotype threat's effect on aspirations or interests. The findings, in turn, supported the belief that aspirations to become more identified with an area could be decreased as a result of stereotype threat (Davies, et al., 2005).

In the Davies, Spencer, and Steele's article, two separate studies were completed. In study one, 61 undergraduate students were exposed to six different commercials that were either negatively stereotyped against women or were gender neutral. After exposure to the commercials, participants were then asked if they would rather be a "leader" or a general group member (which was called "problem-solver" to avoid any confounds that may be related to the word "follower") for a group task that would be presented to them at a future time. Participants were instructed to mark their level of interest on a likert-scale from 1 (no interest) to 7 (strong interest) for each role. Women who had been presented with the stereotypic showed a significantly stronger preference for the "problem-solver" role and a significantly lower preference for "leader" role ( $F(1, 57) = 4.70, p < .05$ ). There was no statistical difference between men for either condition, as well as no difference between men and women in the non-stereotype threat condition.

In study two, 116 undergraduate students were assigned to one of three conditions; stereotype threat active, gender-neutral, and an identity safety condition. The stereotype threat active condition was similar to that of study one, in that participants were shown six different commercials that were either negatively stereotyped against women. The gender-neutral condition was also similar to study one, in which participants in this condition were shown six commercials that were gender neutral.

The third condition of identity safety was when participants were exposed to the same six gender stereotyped commercials as the stereotype activation condition, but were presented with a statement which informed the participant that no gender difference was present for the given task that was about to be presented. This resembled the non-diagnosis condition in past stereotype threat research, and had been shown to mitigate the stereotype threat effect by eliminating the cognitive awareness of the stereotype.

Showing similar results as study one, men showed no difference between the stereotype threat conditions, whereas women showed significant differences between the three stereotype threat conditions of the gender neutral condition (GN), the stereotype threat active condition (SA), and the identity safety condition (IS;  $F(1, 110) = 7.47, p < .01$ ). Mean scores of reported interest among these groups were interest being reported as 5.05(NS), 4.00(SA), and 4.95 (IS). Though no standard deviations were reported, it can be seen that scores for leadership interest were almost an entire point less on a six-point Likert scale in the SA condition than the IS condition specifically, showing a significant difference of reported interest between these two conditions ( $F(1, 110) = 10.66, p < .01$ ). However, there was no significant difference between the means of the NS condition and IS condition.



Though this study suggests the use of interest as a different measure the effects of stereotype threat, there remains a lack of research in this area. Due to the lack of current research that exists to support these findings, there is great deal of support when performance-related research is taken into account. Thus, using the findings of Davies, Spencer, and Steele (2005) allows one to question how interest and confidence can be affected by the interaction of stereotype threat and how leadership opportunities are presented to women. As is such, it becomes important to understand the process of interest and self-efficacy development.

To date, no other experimental study has been identified to address the issue of interest and stereotype threat. This leads to a wide gap within past and current research as to the effects that stereotype threat may have on an individual's choice to pursue a leadership role. As being a leader within any setting or organization is considered to be a type of career in itself, it would be pertinent to understand relevant issues within the career choice areas of vocational psychology.

The ramifications for the effect of stereotype threat on women's interest in leadership exists for methods of education and preparing women to obtain leadership positions, as well as training that already exists for leadership development already. It has been seen that subtle stereotypes that are cued through the description of a job can impact performance for women (Bergeron et al., 2006), and may also have an effect on the promotion and tenure of women within academia, the government, and the business world (Marchant et al., 2007). If interest is affected in the way Davies and colleagues propose, then steps can be taken to educate women about the possible effect the subtle cues can take, as well as creating changes in the way the positions are presented to everyone.

**Purpose**

The purpose of this review has been to discuss the underrepresentation of women in leader positions, as well as propose a novel explanation of this phenomenon. Because leadership can be thought of as a career unto itself, the use of interest and confidence are two constructs that should be discussed when theories attempting to explain why there are fewer women in leadership roles. It is through the use of commonly used measures of interest and confidence that a more in-depth study can be conducted to see the extent of stereotype threat's affect on female's interest in leadership.

As previous research has suggested that men and women have similar levels of personality traits and vocational interests related to leadership (e.g., sources already described), there remains the question of why are there fewer women in leadership roles. Multiple theories have been proposed, ranging from evolutionary ideas of gender ability (Buss, 1999), to incongruent gender and occupational roles leading to invisible barriers (Eagly & Karau, 2002). Though evidence appears to support more socio-individual explanations, no explanation is enough on its own (Eagly & Carli, 2007).

It is proposed that stereotype threat (Steele, 1997) may help to explain at least one piece of this puzzle. By activating a stereotype, various minority populations have shown consistent underperformance on tasks involving academics and athletics, as well as various career-related tasks. Steele also proposed that stereotype threat might have an effect on interests as well, leading to avoidance of the activity where the stereotype is present.

Because there has been only one study to date that has tested this aspect of stereotype threat (Davies et al., 2005), more research is needed to verify this aspect of stereotype threat. The proposed study looks to provide support to the findings of Davies and colleagues, using

more extensive measures of both interest and confidence. If supported, the impact of training, education, and career exploration may be changed in ways to create awareness of the subtle stereotypes that exist, and the effect they may have.

Thus, it believed that women will report less interest and confidence in the presence of subtle cues of stereotype threat when no statement of gender equality is present. Through the use of the transactional approach of leadership, it is believed that stereotype threat will be most present in statements that reflect said approach.

### **Chapter Three: Methods**

The following sections will describe the study design and participant selection, as well as the materials used for the study. The independent variables will also be discussed, as well as how it will vary between conditions. To measure the effect of the independent variables, the manipulation check, covariate, and dependent will be defined. Finally, the procedure, hypotheses, and analysis will be explained.

#### **Design**

The study was a randomized experimental between group design. The independent variable was stereotype threat with two levels (the stereotype threat condition was present [activation] versus absent [identity safe condition]). The dependent variables were leadership interest and leadership confidence. The two operational definitions of leadership interest were the participants' responses on the leadership scale from the Oregon Vocational Interest Survey (ORVIS; Pozzebon, Visser, Ashton, Lee, & Goldberg, 2009) and the author-developed Transactional Leadership Interest Scale (TLIS). Self-reports of confidence were also measured using the basic confidence scale of leadership from the Expanded Skill Confidence Inventory (ESCI; Betz, Borgen, & Harmon, 2002) and the author-developed Transactional Leadership Confidence Scale (TLCS).

To reduce individual differences based on the personality trait of social potency, the social potency primary scale from the Multidimensional Personality Questionnaire (MPQ; Tellegan, 1985, 2000) was used as a covariate. To ensure the successful manipulation of the stereotype threat, a behavioral measure involving intentions to pursue leadership-related activities was collected at the conclusion of the study. Individual item means were used for analysis.

## Participants

Data for this study was collected from women at a large upper Midwestern University. Students were screened and recruited from introductory psychology courses during the fall semester of 2011 through use of the Psychology Department's Mass Testing. Participants that participated in Mass Testing were asked to complete demographic information and self-report measures that were used by researchers to identify potential participants. A total of 964 students completed the Mass Testing measures in fall semester of 2011.

For the present study, participants were screened based on their gender and completion of both social potency primary scale from the Multidimensional Personality Questionnaire (Tellegen, 1982) and a self-report of leadership identity. As the study focused on stereotype threat's effect on women, men were not invited to participate in the study. Furthermore, it was necessary that participants complete the measures so that responses could be used to identify individuals' pre-study leadership identification for use as a covariate. Using Cohen's table (Cohen, 1988; 1992), 64 women per group (128 total) were needed for a medium effect at  $p < .05$ . After removing duplicate participants and men, a total of 512 women were screened and invited to participate in the present study. In all, 152 participants completed the surveys (29.7%). However, responses from 25 participants were eliminated due to incomplete or duplicate responses. Responses from an additional three participants were eliminated due to failing the manipulation checks. The final sample was 124 participants, with 65 participants in the stereotype threat activation group and 59 participants in the identity safety group. The participants had an average age of 19.09 ( $SD = 1.56$ ), and were 87.1% Caucasian, 1.6% African American, 2.4% Latino/a American, 2.4%

Asian American/Pacific Islander, and 3.2% identified as an International Student. Three participants (3.2%) identified as multiracial, and one participant (0.8%) chose not to indicate their race/ethnicity. All participants were college students, consisting of 50% first year students, 30.6 % second year students, 12.1% third year students, 6.5% fourth year students, and 0.8% were students who have had five or more years of college education.

### **Materials**

The study was based online through the SONA research system at Iowa State University. Participants were allowed to sign up and complete the requirements on the computer of their choice. The survey was designed through SurveyMonkey.com

### **Independent Variable**

**Stereotype threat.** As discussed by Davies, Spencer, and Steele (2005), the manipulation of stereotype threat activation versus identity safety can either enhance or eliminate the presence of stereotype threat. This idea of identity safety is described as the ambiguous purpose of the test versus the non-safety version which the participants are informed that the test has been shown to have differences between groups. Though performance effects of stereotype threat are traditionally measured in these studies, the 2005 Davies and colleagues study showed that the use of these conditions have similar effects on the interest for leadership among females.

To increase the activation of negative female stereotypes in the stereotype activation condition, participants were asked to complete a brief questionnaire that included items stereotyped against female agency. At the end of the questionnaire, participants received feedback that indicated they held a traditional view of gender roles (see Appendix A). Participants in the identity safety condition were also asked to complete a questionnaire

without gender stereotyped items, and were told that the questionnaire was measuring student behaviors.

After collecting initial demographic information, participants were exposed to a statement within the instructions of the leadership measures to create identity safe and stereotype threat conditions. In the safety condition of non-activation (IS), the phrase “There is a great deal of controversy in psychology surrounding the issue of gender-based differences in leadership; however, our research has revealed absolutely no gender differences in either ability on this particular task” was presented to participants. Within the stereotype activation condition (SA), a variation of the above phrase was used to activate the stereotype threat. This phrase was “Despite our research that has shown a difference between men and women’s ratings of interest and confidence within areas of leadership, we recognize the great amount of controversy within the issue of gender-based differences.”

### **Manipulation Check**

**Behavioral intentions.** The behavioral intentions measure was designed to reflect performance-based responses, similar to the behavioral measure in the 2005 study by Davies and colleagues. Participants were asked to indicate the likelihood of participation in five leadership related behaviors, including (a) request more information about leadership from the researcher, (b) attend a leadership workshop, (c) apply for a leadership role on their own, (d) apply for a leadership role if they were notified about it, and (e) accept a leadership role if it were offered to them (see Appendix B). Responses were collected using a six-point likert scale, with higher mean scores for each item indicated greater likelihood of participating in the given behavior.

Because stereotype threat has been traditionally measured through objective performance measures (i.e. mathematics tests, athletic drills, etc.), the behavioral intentions measure was meant to be a basic manipulation check to ensure stereotype threat was present in the activation conditions, and absent in the safety conditions. The behavioral intentions presented were designed to vary in how much effort would be needed to complete a given activity, and were meant to be analyzed both individually and through the summed mean score called the combined behavioral intentions (CBI). A moderate to strong correlation between the five items was found in the present sample, with  $r$ 's that range from .46 to .85 as seen in Table 1. The Cronbach's alpha was found to be .91.

### **Covariate**

**Social potency primary scale.** The social potency (SP) primary scale (see Appendix B) from the Multidimensional Personality Questionnaire (MPQ; Tellegan, 1985, 2000) was used to assess the participant's stable personality trait that may predispose them towards or away from leadership positions. The scale has 25 true/false statements that were developed through the factor analysis of the MPQ, and conveyed "broad interpersonal effectiveness and a desire to make an impact on others (Tellegan & Waller, 1992)." Shown to have a .45 correlation with leadership activities of college students (Kamp, 1986), the internal consistency has been reported as having an alpha of .87 within samples of 800 college students (Tellegan, 1982; as cited in Larson & Borgen, 2006).

The SP primary scale has also been found to correlate .59 to .66 with enterprising self-efficacy across four college student samples (Larson & Borgen, 2006). Meta-analyses by Staggs, Larson and Borgen (2007) examining the convergence of the Strong Interest Inventory (Harmon, Hansen, Borgen, & Hammer, 1994) with the MPQ revealed moderate



correlations of social potency and enterprising interest, ranging from .29 to .49 across four studies and a median of .36. These numbers suggest moderate convergent validity with highly established assessments, of which the validity and reliability coefficients can be found in the SII Manual (Donnay et al., 2005). The Cronbach's alpha was found to be .85 for the present sample.

**Leadership efficacy scale.** The leadership efficacy scale (LES; See Appendix D) is a six-point likert scale derived by the author that contained five questions representing the participant's belief in global leadership ability. The items were designed to reflect broad definitions of leadership tasks and goals of leadership. The LES had an alpha of .92 when given to the participants prior to the study, and .86 when given at the end of the study. Though this scale had been untested prior to the study, it was shown to have a medium correlation of  $r=.52$  with participant's scores of the SP primary scale. Furthermore, four week test-retest reliability was ( $r=.72$ ) in this sample. The range between administrations ranged from two weeks to six weeks for participants.

### **Dependent Measure: Leadership Interests**

Leadership interest was measured in two ways; the leadership scale from the Oregon Vocational Interest Survey (ORVIS; Pozzebon, Visser, Ashton, Lee, & Goldberg, 2010) and an author-developed business leadership scale derived from the Multifactor Leadership Questionnaire, Form 5X (MLQ-5X, Avolio & Bass, 2002; as cited in Eagly, et al., 2003),

**Leadership scale from the (ORVIS). (see Appendix E).** The leadership scale from the ORVIS was used to measure the self-reported interest in various leadership activities. The ORVIS was developed as a public domain measure through the International Personality Item pool, which was intended to reflect the same vocational interests as Holland's 1973

RIASEC model of vocational interest. Items that are most closely related to enterprising within the Holland hexagon are reflected in the leadership scale. The scale has 12 five-point likert type items that describe various leader-related activities, with higher scores indicating more interest in the activity.

Using community ( $N = 665$ ) and college sample ( $N = 346$ ), high internal-consistency of .86 for the items was established (Pozzebon, et al., 2010) This validation study by Pozzebon and colleagues also found that the ORVIS leadership scale had a moderate estimated convergent validity with the influencing factor on the Campbell Interest and Skill Survey (CISS; Campbell, Hyne, & Nilsen, 1992), showing a correlation of .75 between them. As the influencing factor has been shown to correlate moderately with the enterprising theme within the Holland model (Rottinghaus et al., 2003; Pozzebon et al., 2010), it is proposed that these themes represent the same idea of interest for leading others. Due to the large convergent validity between the ORVIS and CISS for the leadership factors, similar prediction ability is proposed for the ORVIS leadership subscale (Pozzebon et al., 2010). The alpha for the present sample was .87.

**Transactional leadership interest scale (TLIS; see Appendix F).** The TLIS is a six-point likert scale derived by the author that contains 16 questions representing the transactional leadership approach. The item content was adapted by the author from the transactional leadership subscale of the Multifactor Leadership Questionnaire, Form 5X (MLQ-5X, Avolio & Bass, 2002; as cited in Eagly, et al., 2003). The MLQ-5X was designed to measure leadership approaches and is used in business settings. The author of the current study wanted to capture the content of that transactional leadership subscale and adapt the content to interest and confidence.

For example, item content on the MLQ-5X may state “Contingent Reward” has been reworked to state “Providing bonuses to individuals for a job well done to raise performance.” Identified through a factor-analysis approach in the development of the Multifactor Leadership Questionnaire, Form 5X (MLQ-5X, Avolio & Bass, 2002; as cited in Eagly, et al., 2003), three components encompassed the definition of the transactional leadership approach; contingent reward, active management by exception, and passive management by exception (Antonakis, Avolio, & Sivasubramaniam, 2003; Avolio & Bass, 2002; Eagly & Carli, 2007). Contingent reward is defined as providing rewards for satisfactory performance by a group member on a given task. Active management-by-exception is defined as a leader intervening and giving critiques on a group member’s mistakes as they happen. The passive management-by-exception behavior is when a leader waits to intervene in a group member’s work until the problems become more severe (Eagly et al., 2003).

Of the 16 items in the TLIS, four items match item content for the contingent reward (e.g., how interested are you in providing bonuses to individuals for a job well done to raise performance.”), six items match item content for active management –by exception (e.g., how interested are you in intervening with a group member’s work as problems arise), and five items comprise the item content for passive management-by-exception (e.g., how interested you are in intervening with a group member’s work only when it is clear that they will not succeed). Finally, one item that is defined as an overarching construct for interest in judging the quality of member’s work is included to represent the content of ability for critical feedback and reward eligibility, which is necessary for all of the above items.

To establish convergent validity and internal reliability coefficients of the TLIS, a pilot study was conducted at Drake University. In the pilot study, there were only seven transactional items that were presented to participants (two items for each of the components identified by Avolio & Bass, 2004, and one reflecting the overarching construct of judging the quality of a member's work). Using results from 84 participants, the Cronbach's alpha of the TLIS transactional items was .66. Further analysis of the individual constructs revealed alphas of .74, .57, and .47 for contingent reward, active management by-exception, and passive management by-exception, respectively.

Using these results, additional items were added to each construct to increase the overall and individual construct reliability. Two items were added for contingent reward, increasing alpha to .79 for the four total items. Four items were added for the active management by-exception factor, increasing the alpha to .85 for the six total items. Three additional items were included for the passive management by-exception factor, which increased alpha to .68. The overall alpha of the transactional items in the TLIS increased to .83. These results suggest that both the overall and individual construct reliability are acceptable.

However, analysis of the convergent validity to the ORVIS leadership scale did not suggest significant correlation of the two scales. Upon further review, the lack of correlation between the two scales was deemed to be the results of difference of what the scales measured. Whereas the ORVIS leadership scale measured the participant's interest in specific leadership activities, the TLIS appears to measure the general tasks of leaders within the activities themselves, therefore accounting for the lack of convergent validity between the TLIS and ORVIS leadership scale.

**Dependent Measure: Leadership Confidence**

Leadership confidence was measured in two ways; basic leadership confidence scale from the Expanded Skills Confidence Inventory (ESCI; Betz, Borgen, & Harmon, 2002), and an author-developed business leadership scale derived from the MLQ-5X, which is called the Transactional Leadership Confidence Scale (TLCS).

**Basic confidence scale of leadership (BCS of leadership) from the (ESCI; see Appendix G).** The BCS of leadership from the ESCI was used to assess the participant's self-efficacy in various activities related to leadership. This scale has 10 five-point likert-scale items, with higher scores indicating more confidence in the activity. The leadership BCS has shown to have a coefficient alpha of .88 in one sample of 715 college students (Rottinghaus, Betz, & Borgen, 2003). It has also been shown to correlate ( $r = .75$ ) with the General Confidence Theme (GCT) of enterprising, showing concurrent validity that theme of the Skills Confidence Inventory (SCI; Betz, Borgen, et al., 1996), which has been shown to have high predictive and incremental validity for major choice. The correlations of the ESCI range from  $r = .29$  to  $r = .75$  on the six general confidence scales within the SCI. However, because the "enterprising" theme has been shown to have the highest correlations ( $r = .69$  for women) for leadership preference (Donnay et al., 2005), it should be noted that the ESCI leadership subscale is correlated with the SCI's enterprising theme at  $r = .75$  (Rottinghaus, et al., 2003). Test-retest reliability of the leadership BCS was .89 in a study of college students over a 3-week period (Robinson & Betz, 2004). The alpha for the current sample was .89, indicating high scale reliability.

**Transactional leadership confidence scale (TLCS; see Appendix H).** The TLCS is a six-point likert scale derived by the author that contains seven questions representing the

transactional leadership approach, as well as 11 filler items that address transformational approach. The item content was adapted by the author from the transactional leadership subscale of the MLQ-5X (Avolio & Bass, 2002; as cited in Eagly, et al., 2003).

Of the seven items in the TLCS, two items match item content for the contingent reward (e.g., how confident are you in providing bonuses to individuals for a job well done to raise performance.”), two items match item content for active management –by exception (e.g., how confident are you in intervening with a group member’s work as problems arise), and two items comprise the item content for passive management-by-exception (e.g., how confident you are in intervening with a group member’s work only when it is clear that they will not succeed. Finally, one item that is defined as an overarching construct for confidence in judging the quality of member’s work is included to represent the content of ability for critical feedback and reward eligibility, which is necessary for all of the above items.

To establish convergent validity and internal reliability for the TLCS, the same procedures for the pilot study at Drake University were followed. In the pilot study, there were only seven transactional items that were presented to participants (two items for each of the components identified by Avolio & Bass, 2004, and one reflecting the overarching construct of judging the quality of a member’s work). Using results from 84 participants, the Cronbach’s alpha of the TLCS transactional items was .68. Further analysis of the individual constructs revealed alphas of .82, .63, and .61 for contingent reward, active management by-exception, and passive management by-exception, respectively.

Using the results from the 124 participant responses collected for the present study results, additional items were added to each construct to increase the overall and individual construct reliability. Two items were added for contingent reward, increasing alpha to .86 for

the four total items. Four items were added for active management by-exception, increasing alpha to .92 for the six total items. Three additional items were included for items passive management by-exception, which increased alpha to .85. The overall alpha of the transactional items in the TLIS increased to .93. These results suggest that both the overall and individual construct reliability were acceptable.

However, analysis of the convergent validity to the ESCI leadership scale did not suggest significant correlation of the two scales. As discussed in the TLIS description, the TLCS appears to be measuring confidence of general leadership tasks throughout leadership activities.

### **Procedure**

Prior to any data collection of this study, all procedures and methods were approved by the Institutional Review Board to ensure that this study adheres to the highest ethical and moral standards as defined by the American Psychological Association. After approval, recruitment and data collection began.

Participants were selected by using the mass testing of introductory psychology students at Iowa State University, with IRB approval. The participants who met the necessary criteria of gender (i.e., women), completion of the social potency primary scale in the online mass testing, and adult status (i.e., 18 years and older) received an email that informed them that they had been selected to participate in the present study on the basis of their responses through mass testing. This initial invitation was followed by another email at three and six weeks to remind the individuals of the opportunity. All emails contained information about the study, the link to the study, and contact information for the researcher, should the potential participant have had any questions prior to participation.

Within the mass-testing protocol, eligible participants will have completed the social potency primary scale from the MPQ (Tellegan, 1985: 2000) and the leadership efficacy scale. Individuals were randomly assigned to one of two conditions; stereotype threat active (SA) or the identity-safe condition (IS). The participants had no knowledge of what group they are in, or that a different condition existed.

Prior to their participation in the study, individuals were presented and agreed to an informed consent statement that contained a brief description of the study's purpose, study procedures, and their choice to discontinue the study at any time. Individuals indicated their willingness to agree to the informed consent by selecting "Yes" in order for them to continue.

The participants then began the survey by indicating demographic survey, including as age, race, and gender (see Appendix I) that were used for descriptive purposes. Participants were also asked to report how many leadership roles they have had, as well as how much they identified as being considered a "leader." The self-report identification of being a leader was completed through a six-point likert-scale, with higher scores reflecting higher self-identification of being a leader.

After completing the initial demographic portion, participants were given directions as described by the following statement:

The following survey is called the Leadership Assessment Instrument (LAI). It is designed to assess personal views on leadership activities. Please be honest in your responses, and do your best to answer all of the questions provided. If you feel uncomfortable answering any of the questions, you may skip the question and continue on with no penalty.

After this initial instruction statement, the participants were randomly presented with the stereotype threat statement (SA) or the identity safety statement (IS) before beginning the survey.



The participants proceeded to complete the survey of 58 items, using the likert-scale measures that are described for the ESCI leadership BCS, ORVIS leadership scale, TLIS, TLCS, and the LES scale. After survey completion, participants were presented the behavioral intention measures described above.

At the end of the study, the participant was given a full debriefing of the study purpose. The researcher's contact information will be given if the participants have any questions or concerns. Finally, information on campus and community resources for career choice and leadership will be given if more information is desired.

### **Hypotheses**

**Hypothesis 1.** After variation due to the social potency primary scale has been accounted for, mean level of interest scores on the leadership scale of the ORVIS and the TLIS, will be significantly lower in the stereotype threat activation group compared to the identity-safe group.

**Hypothesis 2.** After variation due to the social potency primary scale has been accounted for, mean level of interest scores on the leadership BCS from the ESCI and the TLCS will be significantly lower in the stereotype threat activation group compared to the identity-safe group.

Table 1  
*Correlations between Behavioral Intentions*

Variable	Request info	Attend workshop	Apply on own	Apply if notified	Apply if nominated
Attend workshop	.61**				
Apply on own	.73**	.62**			
Apply if notified	.70**	.60**	.85**		
Apply if nominated	.63**	.48**	.69**	.77**	
Accept position	.58**	.46**	.56**	.62**	.82**

Note: An \* indicates significance at  $p < .05$ ; An \*\* indicates significance at  $p < .001$ ; Request Info = "Request more information about available leadership positions relevant to you?"; Attend workshop = "Attend a leadership development workshop?"; Apply on own = "Apply for a leadership position on your own?"; Apply if notified = "Apply for a leadership position if you were notified about it?"; Apply if nominated = "Apply for a leadership position if specifically nominated?"; Accept position = "Accept a leadership position that was offered to you?"

## Chapter Four: Results

In this section, results of the study will be discussed. Descriptive statistics and preliminary analyses will be discussed first to provide a more accurate description of the data. This will be followed by the analyses of the hypotheses described above, and concluded with the results of additional analyses conducted.

### Descriptive Statistics and Preliminary Analysis

The sample consisted of 124 undergraduate college women. Means and standard deviations for the eight measured variables (SP primary scale, pre-study LES, TLIS, ORVIS, TLCS, ESCI, post-study LES, and behavioral intention measures) are reported in Table 2 for the all participants, the stereotype threat condition, and the control condition. Means and standard deviations of SP primary scale and the Pre-LES scores were compared to verify random assignment of the participants to the two conditions. Participants reported having a median of 3-4 leadership experiences prior to college as a whole.

Additionally, scores obtained within this sample were compared to studies using participants with similar population characteristics for the SP primary scale, ORVIS, and ESCI in Table 3. That is, all participants in the comparative studies were female college students at large universities. No significant mean difference was found between the present study and the results reported in literature.

Correlations between the variables measured were also examined, with the results reported in Table 4. Consistent with the results found in the literature (i.e. Rottinghaus et al., 2003), correlations for the interest measure from the ORVIS and the self-efficacy measure from ESCI were strong ( $r = .54$ ). Furthermore, the social potency measure had a strong correlation with the ORVIS and ESCI measures ( $r = .60$  and  $.54$ , respectively), supporting

the use of the social potency score as a covariate. Social potency was also found to have a moderate correlation with the mean sum score for CBI ( $r = .36$ ). Individual behavioral intention correlations with the other variables can be found in Table 5.

The mean scores for the six behavioral intention measures at the end of the survey were also analyzed using a One Way Multivariate Analysis of Covariance (MANCOVA) to determine if the condition (Stereotype Activation versus Identity Safety) had a significant effect on the items' mean responses. Scores from the social potency primary scale were used as the covariate. No significant differences due to stereotype activation level were found for the overall behavioral intentions MANCOVA model (*Overall F* [5,122] = .847,  $p = .536$ ). Social potency, however, was found to be significant covariate for the combined behavioral intentions (*Overall F* [1,123] = 70.514,  $p = .005$ ). The results for each individual behavioral intention can be found in Table 6.

Further investigation of the effect of condition on each individual behavioral intention was conducted using an Analysis of Covariance (ANCOVA), using social potency as the covariate. Condition was found to have no significant effect on each individual behavioral intention as well (Request info :  $F$  [1,123] = .042,  $p = .838$ ; Attend workshop:  $F$  [1,122] = 1.387,  $p = .241$ ; Apply on own:  $F$  [1,123] = .031,  $p = .862$ ; Apply if notified:  $F$  [1,122] = .390,  $p = .533$ ; Apply if nominated:  $F$  [1,122] = .002,  $p = .963$ ; Accept position:  $F$  [1,122] = .391,  $p = .533$ ). Social potency, however, was found to be a significant covariate for each of the behavioral intentions, with  $F$  values ranging from 11.47 to 24.95 and all  $p$ 's < .05.

The lack of effect of the presence of stereotype threat on the behavioral intentions will be discussed within the Discussion. However, because this finding suggests the manipulation did not work when contrasted with the reported results by Davies and

colleagues (2005), caution is warranted when discussing significant findings in the following sections.

### **Hypotheses**

Each hypothesis was analyzed with a series of ANCOVAs, using the scores from the social potency primary scale from the MPQ as the covariate. The independent variable for all analyses used was the stereotype threat level (stereotype threat activation versus identity-safety). The dependent variables were the interest levels from the ORVIS leadership scale and the TLIS, as well as the confidence levels of the ESCI leadership BCS and the TLCS. Four ANCOVAs were conducted for each dependent variable.

For Hypothesis 1 to be supported, mean scores of the leadership scale from the ORVIS and TLIS would need to be significantly lower in the SA condition compared to the IS condition. After accounting for scores on the social potency primary scale, no significant differences were found between the SA and IS conditions for the ORVIS ( $F [1,123] = 1.828, p = .179$ ) or the TLIS ( $F [1,123] = 1.487, p = .225$ ). That is, there was no effect of the stereotype activation on the participant's self-efficacy in leadership. Social potency, however, was found to be significant covariate for both the ORVIS ( $F [1,123] = 70.514, p < .001$ ) and TLIS ( $F [1,123] = 24.170, p < .001$ ).

For Hypothesis 2 to be supported, mean scores of the leadership scale from the ESCI and TLCS would need to be significantly lower in the SA condition compared to the IS condition. After accounting for scores on the social potency primary scale, no significant differences were found between the SA and IS conditions for the ESCI ( $F [1,123] = .002, p = .967$ ) or the TLCS ( $F [1,123] = .388, p = .534$ ). That is, there was no effect of the stereotype activation on the participant's self-efficacy in leadership. This finding is supported by the

similarity of mean sums between conditions, as reported in Table 1. Social potency, however, was found to be significant covariate for both the ESCI ( $F [1,123] = 48.760, p < .001$ ) and TLCS ( $F [1,123] = 20.624, p < .001$ ).

### **Additional Analysis One**

The mean sum scores on the Pre and Post LES measures were analyzed to determine if any significant effects were present within each or either of the stereotype threat levels. As discussed in the Methods section, the identical LES was administered to participants both pre and post study. The between-group factors were stereotype activation level. The within-group factor was time (Pre versus Post LES scores), a two-by-two mixed Analysis of Variance (ANOVA) was conducted.

It was believed that accounting for the within-group variance of each stereotype threat level, a significant difference in Pre and Post LES scores would be identified in the stereotype activation condition, but not the identify safety condition. Contrary to expectations, no significant difference was found for the LES measures between stereotype threat level conditions ( $F [1, 122] = 2.631, p = .11$ ). Furthermore, there was no significant difference of Pre and Post LES mean sum scores overall ( $F [1, 122] = 3.321, p = .07$ ). No significant interaction between stereotype threat level and time for the LES measure was present ( $F [1, 122] = 2.924, p = .09$ ). These results are consistent with the initial analyses described earlier, suggesting that stereotype threat level has no effect on leadership self-efficacy.

### **Additional Analysis Two**

It has been suggested that individuals disidentify to avoid proving a stereotype correct for stigmatized behaviors, and thus could not be negatively affected because of their lack of

investment (Davies et al., 2005; Steele, 1997). Therefore, it was thought that leadership self-identification, as measured by their mean sum score on the Pre-LES, and leadership experience, as measured by the reported number of leadership roles held, may be a mediator for the stereotype threat effect on interest and efficacy.

To determine this, participants were placed in one of four possible groups depending on their mean score for the Pre-LES measure and the number of leadership positions they have held. Participants were assigned to the Low LES/ Low leadership experience group (Low/Low) if they had a mean sum score below the mean sum Pre-LES score (3.87), and reported having less than three previous leadership experiences. Participants were assigned to the Low LES/High leadership experience group (Low/High) if they had a mean sum score below the Pre-LES sum mean and reported holding three or more leadership positions. Participants that had a mean sum score greater or equal to the Pre-LES sum mean and reported less than three leadership experiences were assigned to the High LES/Low leadership experience group (High/Low). Participants were assigned to the High LES/High leadership experience group (High/High) if they had a mean sum score greater or equal to the Pre-LES sum mean and reported holding three or more leadership positions. The dependent variables used were the same in the initial analyses (ORVIS, TLIS, ESCI, TLCS, CBI). Descriptive information for these measures can be found in Table 7 in regards to each of the groups.

Five two (stereotype threat level) by four (leader identity group) ANCOVAs were conducted for the CBI, ORVIS, TLIS, ESCI, and TLCS, using the scores from the social potency primary scale from the MPQ as the covariate. It was believed that an interaction between stereotype threat level and the leader identity groups was present, and would

produce a significant difference of mean sum scores for the listed measures. If a significant interaction was identified, it was expected that differences would be present in the dissimilar leader identity groups (High/Low, Low/High).

After accounting for scores on the social potency primary scale, no significant interactions (stereotype activation level by leader identity group) were identified for the ORVIS ( $F [3,123] = .293, p = .831$ ), TLIS ( $F [3,123] = .663, p = .576$ ), ESCI ( $F [3,123] = .965, p = .412$ ) TLCS ( $F [3,123] = .162, p = .922$ ), or CBI ( $F [3,122] = 1.738, p = .163$ ). That is, stereotype threat level by leader identity group did not impact interest, confidence, or behavioral intentions of the participant.

Although the purpose of this analysis was to investigate a potential interaction effect between stereotype activation level and leader identity group, the main effects results can be found in Table 8. As expected, there were no significant effects for stereotype activation level on any of the dependent measures. There were also no significant main effects for leader identity group, except for an expected significant difference for the ESCI measure. Social potency, however, was still found to be a significant covariate for each of dependent variables ( $p < .05$ ).

### **Additional Analysis Three**

It was consistently found that the social potency measure was a significant covariate in all of the analyses conducted. Thus, additional analyses to determine the role of social potency in explaining behavioral intentions were conducted.

Using the CBI mean score as the dependent variable, the *z-scores* for social potency, ORVIS, TLIS, ESCI, and TLCS were entered together so that the significant predictors could be identified. Furthermore, it was decided to analyze the potential predictor variables



simultaneously. As shown in Table 9, the only variable that accounted for a significant amount of variance in predicting the behavioral intentions was the ESCI ( $t [4, 122] = 5.677, p < .01$ ).

Table 2

*Descriptive Statistics for Complete Sample*

Variable	N	Minimum	Maximum	Mean (SD)
<b>Age</b>				
<i>All Participants</i>	124	18.00	29.00	19.09 (1.56)
<i>Stereotype Threat Condition</i>	65	18.00	29.00	19.03 (1.71)
<i>Identity Safe Condition</i>	59	18.00	25.00	19.15 (1.38)
<b>Social Potency</b>				
<i>All Participants</i>	124	0.00	25.00	11.48 (5.47)
<i>Stereotype Threat Condition</i>	65	0.00	25.00	11.44 (6.03)
<i>Identity Safe Condition</i>	59	1.00	21.00	11.53 (4.83)
<b>ORVIS</b>				
<i>All Participants</i>	124	1.42	4.67	2.71 (.68)
<i>Stereotype Threat Condition</i>	65	1.45	4.25	2.65 (.76)
<i>Identity Safe Condition</i>	59	1.42	4.67	2.79 (.57)
<b>TLIS</b>				
<i>All Participants</i>	124	2.63	5.00	3.57 (.47)
<i>Stereotype Threat Condition</i>	65	2.63	5.00	3.61 (.49)
<i>Identity Safe Condition</i>	59	2.63	4.44	3.52 (.45)
<b>ESCI</b>				
<i>All Participants</i>	124	1.80	5.00	3.35 (.69)
<i>Stereotype Threat Condition</i>	65	1.80	4.90	3.35 (.68)
<i>Identity Safe Condition</i>	59	2.00	5.00	3.36 (.70)
<b>TLCS</b>				
<i>All Participants</i>	124	1.63	5.00	3.38 (.63)
<i>Stereotype Threat Condition</i>	65	2.19	5.00	3.41 (.63)
<i>Identity Safe Condition</i>	59	1.63	5.00	3.35 (.64)
<b>Pre-LES</b>				
<i>All Participants</i>	124	1.00	5.00	3.87 (.92)
<i>Stereotype Threat Condition</i>	65	1.00	5.00	4.02 (.87)
<i>Identity Safe Condition</i>	59	1.60	5.00	3.71 (.95)
<b>Post-LES</b>				
<i>All Participants</i>	124	1.40	5.00	3.97 (.70)
<i>Stereotype Threat Condition</i>	65	1.40	5.00	4.03 (.75)
<i>Identity Safe Condition</i>	59	2.00	5.00	3.91 (.63)

*Note:* N = 124, except for variables marked with a “a” which are N = 123 due to incomplete responses for the indicated measure; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; TLIS= Transactional Leadership Interest Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; TLCS = Transactional Leadership Confidence Scale; Pre-LES = Pre-manipulation Leadership Efficacy Survey; Post-LES = Post-manipulation Leadership Efficacy Survey; CBI = Combined Behavioral Intentions; Higher scores indicate greater construct report for each respective measure.

Table 2  
Continued

Variable	N	Minimum	Maximum	Mean (SD)
<b>CBI<sup>5</sup></b>				
<i>All Participants</i>	123	1.33	6.00	4.27 (.99)
<i>Stereotype Threat Condition</i>	64	1.33	6.00	4.25 (1.05)
<i>Identity Safe Condition</i>	59	2.00	6.00	4.29 (.94)
<b>Request Info</b>				
<i>All Participants</i>	124	1.00	6.00	3.85 (1.26)
<i>Stereotype Threat Condition</i>	65	1.00	6.00	3.83 (1.23)
<i>Identity Safe Condition</i>	59	1.00	6.00	3.88 (1.38)
<b>Attend workshop<sup>a</sup></b>				
<i>All Participants</i>	123	1.00	6.00	3.70 (1.25)
<i>Stereotype Threat Condition</i>	64	1.00	6.00	3.57 (1.33)
<i>Identity Safe Condition</i>	59	1.00	6.00	3.85 (1.14)
<b>Apply on own</b>				
<i>All Participants</i>	124	1.00	6.00	3.98 (1.33)
<i>Stereotype Threat Condition</i>	65	1.00	6.00	4.00 (1.37)
<i>Identity Safe Condition</i>	59	1.00	6.00	3.97 (1.29)
<b>Apply if notified<sup>a</sup></b>				
<i>All Participants</i>	123	1.00	6.00	4.16 (1.28)
<i>Stereotype Threat Condition</i>	64	1.00	6.00	4.22 (1.40)
<i>Identity Safe Condition</i>	59	1.00	6.00	4.10 (1.14)
<b>Apply if nominated<sup>a</sup></b>				
<i>All Participants</i>	123	2.00	6.00	4.92 (1.03)
<i>Stereotype Threat Condition</i>	64	2.00	6.00	4.91 (1.08)
<i>Identity Safe Condition</i>	59	2.00	6.00	4.93 (.98)
<b>Accept position<sup>a</sup></b>				
<i>All Participants</i>	123	2.00	6.00	4.95 (.99)
<i>Stereotype Threat Condition</i>	64	2.00	6.00	4.89 (1.04)
<i>Identity Safe Condition</i>	59	2.00	6.00	5.02 (.94)

Table 3  
*Comparative Sample descriptive statistics*

Variable	N	Mean Age (SD)	Mean Score (SD)
<b>Social Potency</b>			
<i>Present Study</i>	124	19.03 (1.71)	11.48 (5.47)
<i>McGue et al., 1993</i>	166	19.80 (3.40)	10.10 (6.10)
<b>ORVIS</b>			
<i>Present Study</i>	124	19.03 (1.71)	2.71 (.68)
<i>Pozzebon et al., 2010</i>	245	18.50 (1.70)	2.82 (.74)
<b>ESCI</b>			
<i>Present Study</i>	124	19.03 (1.71)	3.35 (.69)
<i>Betz et al., 2003</i>	567	18.53 (.65) <sup>b</sup>	3.70 (.72)

Note: "b" indicates an estimated mean age and standard deviation based on the reported results; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; Higher scores indicate greater construct report for each respective measure.

Table 4  
*Correlations among constructs*

Variable	Social Potency	ORVIS	TLIS	ESCI	TLCS	Pre-LES	Post-LES
ORVIS	.60**						
TLIS	.39**	.43**					
ESCI	.54**	.54**	.44**				
TLCS	.38**	.37**	.72**	.63**			
Pre-LES	.52**	.32**	.30**	.50**	.35**		
Post-LES	.54**	.34**	.38**	.61**	.50**	.72**	
CBI	.36**	.44**	.34**	.64**	.40**	.44**	.57**

Note: An \* indicates significance at  $p < .05$ ; An \*\* indicates significance at  $p < .001$ ; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; TLIS= Transactional Leadership Interest Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; TLCS = Transactional Leadership Confidence Scale; Pre-LES = Pre-manipulation Leadership Efficacy Survey; Post-LES = Post-manipulation Leadership Efficacy Survey; CBI = Combined behavioral intentions; Higher scores indicate greater construct report for each respective measures

Table 5  
*Correlations among behavioral intentions*

Variable	Social Potency	ORVIS	TLIS	ESCI	TLCS	Pre-LES	Post-LES	CBI
Request Info	.23**	.35**	.34**	.50**	.39**	.38**	.47**	.85**
Attend workshop	.28**	.47**	.25**	.47**	.26**	.31**	.32**	.76**
Apply on own	.28**	.42**	.30**	.56**	.33**	.34**	.41**	.89**
Apply if notified	.29**	.40**	.28**	.55**	.32**	.38**	.52**	.91**
Apply if nominated	.30**	.24**	.27**	.52**	.37**	.44**	.59**	.85**
Accept position	.31**	.25**	.23**	.48**	.30**	.37**	.52**	.78**

Note: An \* indicates significance at  $p < .05$ ; An \*\* indicates significance at  $p < .001$ ; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; TLIS= Transactional Leadership Interest Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; TLCS = Transactional Leadership Confidence Scale; Pre-LES = Pre-manipulation Leadership Efficacy Survey; Post-LES = Post-manipulation Leadership Efficacy Survey; CBI = Combined behavioral measure: Request Info = “Request more information about available leadership positions relevant to you?”; Attend workshop = “Attend a leadership development workshop?”; Apply on own = “Apply for a leadership position on your own?”; Apply if notified = “Apply for a leadership position if you were notified about it?”; Apply if nominated = “Apply for a leadership position if specifically nominated?”; Accept position = “Accept a leadership position that was offered to you?”; Higher scores indicate greater construct report for each respective measure.

Table 6  
*MANCOVA results for individual behavioral intentions by stereotype activation condition*

Variable	<i>F</i>	<i>p</i>
<i>Request Info</i>	.004	.948
<i>Attend workshop</i> <sup>a</sup>	1.387	.241
<i>Apply on own</i>	.229	.633
<i>Apply if notified</i> <sup>a</sup>	.390	.533
<i>Apply if nominated</i> <sup>a</sup>	.002	.963
<i>Accept position</i> <sup>a</sup>	.391	.533

Note: N = 124 unless denoted with an “a” which indicates an N = 123

Table 7

*Descriptive statistics for High/Low combination leadership role and pre LES groups*

	Variable	N	Minimum	Maximum	Mean (SD)
Low Leader Role x Low PreLES (Group 1)	ORVIS				
	<i>All Participants in Group 1</i>	33	1.67	3.50	2.49 (.56)
	<i>Stereotype Threat Condition</i>	13	1.67	3.50	2.31 (.57)
	<i>Identity Safe Condition</i>	20	1.67	3.42	2.61 (.54)
	TLIS				
	<i>All Participants in Group 1</i>	33	2.63	4.38	3.45 (.44)
	<i>Stereotype Threat Condition</i>	13	2.94	4.38	3.42 (.41)
	<i>Identity Safe Condition</i>	20	2.63	4.38	3.46 (.48)
	ESCI				
	<i>All Participants in Group 1</i>	33	2.00	3.90	2.84 (.48)
	<i>Stereotype Threat Condition</i>	13	2.30	3.60	2.69 (.40)
	<i>Identity Safe Condition</i>	20	2.00	3.90	2.94 (.70)
	TLCS				
	<i>All Participants in Group 1</i>	33	1.63	4.56	3.13 (.64)
	<i>Stereotype Threat Condition</i>	13	2.19	4.56	3.13 (.58)
<i>Identity Safe Condition</i>	20	1.63	4.13	3.14 (.69)	
CBI <sup>a</sup>					
<i>All Participants in Group 1</i>	33	1.33	5.83	3.68 (.99)	
<i>Stereotype Threat Condition</i>	13	1.33	5.33	3.64 (1.01)	
<i>Identity Safe Condition</i>	20	2.00	5.83	3.70 (1.00)	
High Leader Role x Low PreLES (Group 2)	ORVIS				
	<i>All Participants in Group 2</i>	21	1.42	4.17	2.54 (.77)
	<i>Stereotype Threat Condition</i>	13	1.42	4.17	2.40 (.84)
	<i>Identity Safe Condition</i>	8	1.42	3.42	2.77 (.63)
	TLIS				
	<i>All Participants in Group 2</i>	21	2.63	4.19	3.46 (.39)
	<i>Stereotype Threat Condition</i>	13	2.63	4.19	3.43 (.38)
	<i>Identity Safe Condition</i>	8	2.88	4.00	3.51 (.42)
	ESCI				
	<i>All Participants in Group 2</i>	21	2.20	4.90	3.35 (.76)
	<i>Stereotype Threat Condition</i>	13	2.20	4.90	3.26 (.87)
	<i>Identity Safe Condition</i>	8	3.10	4.80	3.50 (.54)
	TLCS				
	<i>All Participants in Group 2</i>	21	2.56	4.63	3.31 (.53)
	<i>Stereotype Threat Condition</i>	13	2.56	4.63	3.30 (.60)
<i>Identity Safe Condition</i>	8	2.63	4.00	3.33 (.43)	
CBI <sup>a</sup>					
<i>All Participants in Group 2</i>	20	2.17	5.67	4.28 (.92)	
<i>Stereotype Threat Condition</i>	12	2.17	5.50	3.89 (.95)	
<i>Identity Safe Condition</i>	8	4.00	5.67	4.85 (.51)	

Note: N = 124, except for variables marked with a "a" which are N = 123 due to incomplete responses for the indicated measure; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; TLIS= Transactional Leadership Interest Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; TLCS = Transactional Leadership Confidence Scale; Pre-LES = Pre-manipulation Leadership Efficacy Survey; Post-LES = Post-manipulation Leadership Efficacy Survey; CBI = Combined Behavioral Intentions; Higher scores indicate greater construct report for each respective measure.

Table 7  
Continued

	Variable	N	Minimum	Maximum	Mean (SD)
	<b>ORVIS</b>				
	<i>All Participants in Group 3</i>	23	1.75	4.17	2.72 (.55)
	<i>Stereotype Threat Condition</i>	14	1.75	4.17	2.72 (.61)
	<i>Identity Safe Condition</i>	9	2.08	3.33	2.71 (.47)
	<b>TLIS</b>				
	<i>All Participants in Group 3</i>	23	3.06	5.00	3.67 (.50)
	<i>Stereotype Threat Condition</i>	14	3.06	5.00	3.80 (.49)
	<i>Identity Safe Condition</i>	9	3.06	4.25	3.47 (.45)
	<b>ESCI</b>				
Low Leader Role x High PreLES (Group 3)	<i>All Participants in Group 3</i>	23	1.80	4.50	3.20 (.70)
	<i>Stereotype Threat Condition</i>	14	1.80	4.50	3.33 (.73)
	<i>Identity Safe Condition</i>	9	2.10	3.90	3.00 (.64)
	<b>TLCS</b>				
	<i>All Participants in Group 3</i>	23	2.44	5.00	3.39 (.56)
	<i>Stereotype Threat Condition</i>	14	2.75	5.00	3.49 (.58)
	<i>Identity Safe Condition</i>	9	2.44	4.00	3.24 (.53)
	<b>CBF<sup>a</sup></b>				
	<i>All Participants in Group 3</i>	23	2.00	6.00	3.97 (1.08)
	<i>Stereotype Threat Condition</i>	14	2.00	6.00	3.92 (1.22)
	<i>Identity Safe Condition</i>	9	3.00	6.00	4.06 (.89)
	<b>ORVIS</b>				
	<i>All Participants in Group 4</i>	47	1.75	4.67	2.95 (.70)
	<i>Stereotype Threat Condition</i>	25	1.75	4.25	2.92 (.80)
	<i>Identity Safe Condition</i>	22	2.17	4.67	2.98 (.60)
	<b>TLIS</b>				
	<i>All Participants in Group 4</i>	47	2.63	4.94	3.67 (.49)
	<i>Stereotype Threat Condition</i>	25	2.63	4.94	3.71 (.54)
	<i>Identity Safe Condition</i>	22	2.81	4.44	3.60 (.44)
	<b>ESCI</b>				
High Leader Role x High PreLES (Group 4)	<i>All Participants in Group 4</i>	47	2.60	5.00	3.78 (.48)
	<i>Stereotype Threat Condition</i>	25	3.10	4.30	3.74 (.31)
	<i>Identity Safe Condition</i>	22	2.60	5.00	3.83 (.62)
	<b>TLCS</b>				
	<i>All Participants in Group 4</i>	47	2.19	5.00	3.58 (.65)
	<i>Stereotype Threat Condition</i>	25	2.19	4.31	3.57 (.66)
	<i>Identity Safe Condition</i>	22	2.69	5.00	3.59 (.65)
	<b>CBF<sup>a</sup></b>				
	<i>All Participants in Group 4</i>	47	2.83	6.00	4.83 (.64)
	<i>Stereotype Threat Condition</i>	25	3.33	6.00	4.93 (.58)
	<i>Identity Safe Condition</i>	22	2.83	6.00	4.72 (.70)

Table 8  
 ANCOVA results for leader identity group, stereotype activation level, and their interaction on dependent variables

Variable	Leader Identity Group	Stereotype Activation Level	Group by Level Interaction
ORVIS	$F(3, 123) = .356$ $p = .785$	$F(1, 123) = 1.820$ $p = .180$	$F(3, 123) = .293$ $p = .831$
TLIS	$F(3, 123) = .043$ $p = .988$	$F(1, 123) = 1.27$ $p = .261$	$F(3, 123) = .66$ $p = .576$
ESCI	$F(3, 123) = 11.195$ $p < .01^{**}$	$F(1, 123) = .118$ $p = .732$	$F(3, 123) = .965$ $p = .412$
TLCS	$F(3, 123) = .861$ $p = .464$	$F(1, 123) = .340$ $p = .561$	$F(3, 123) = .162$ $p = .922$
CBI <sup>a</sup>	$F(3, 122) = 8.10$ $p < .01^{**}$	$F(1, 122) = 1.48$ $p = .226$	$F(3, 122) = .356$ $p = .163$

Note: An \* indicates significance at  $p < .05$ ; An \*\* indicates significance at  $p < .001$ ; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; TLIS= Transactional Leadership Interest Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; TLCS = Transactional Leadership Confidence Scale; CBI = Combined behavioral intentions

Table 9  
 One-step model regression results

Variable	Unstandardized Coefficients			95% Confidence interval for B			
	B	Std Error	$\beta$	$t$	$p$	Lower Bound	Upper Bound
Constant	4.280	.069		61.630	.001**	4.142	4.417
Social Potency	-.032	.094	-.031	-.339	.735	-.218	.154
ORVIS	.137	.095	.138	1.443	.152	-.051	.325
TLIS	.072	.106	.075	.678	.499	-.138	.281
ESCI	.589	.104	.586	5.677	.001**	.383	.794
TLCS	-.059	.117	-.059	-.504	.615	-.291	.173

Note: An \* indicates significance at  $p < .05$ ; An \*\* indicates significance at  $p < .001$ ; Social Potency = Social Potency Primary Scale; ORVIS= Oregon Vocational Interest Leadership Scale; TLIS= Transactional Leadership Interest Scale; ESCI = Expanded Skills Confidence Inventory leadership basic interest scale; TLCS = Transactional Leadership Confidence Scale; Pre-LES = Pre-manipulation Leadership Efficacy Survey; Post-LES = Post-manipulation Leadership Efficacy Survey; CBI = Combined behavioral intentions



## Chapter Five: Discussion

In this section, the results of the present study will be discussed, interpreted, and evaluated, in regards to each hypothesis and the study overall. The results of the initial analyses will also be discussed, including the impact of separating high and low leadership identities within the conditions. Study limitations and future recommendations will also be discussed, followed by the possible implications of the results of the present study on career choice.

Contrary to results found in the study by Davies and colleagues (2005) that showed decreased interest in pursuing leadership activities among female participants in the presence of a stereotype threat condition, the present study failed to show an effect of the stereotype threat condition on interest in leadership activities. Furthermore, there was no identified effect of stereotype threat condition when considering leadership self-efficacy. Thus, the hypotheses that participants would report decreased interest and self-efficacy in leadership activities under the stereotype threat condition were not supported.

When considering why there were no significant changes for leadership interest or self-efficacy, there are several possibilities for the lack of stereotype threat effect in the present study. First, lack of significant difference of the behavioral intentions between stereotype threat conditions suggest that the manipulation itself was not successful in creating a stereotype threat effect. Davies and colleagues (2005) showed that behavioral intentions were reflective of related performance measures related to leadership activities. Due to the consistent effects of stereotype threat on a multitude of performance measures (Cadinu et al., 2003; Walton & Spencer, 1999), the lack of significant stereotype threat effects in the present study might be due to an ineffective manipulation condition.

Another possibility for the lack of significant results may be the manipulations themselves. Although Davies and colleagues (2005) showed that stereotype threat could be created or nullified by a simple statement, the fact the study was based online may have decreased the potency of the stereotype threat statement. This is supported by research on the impact of the anonymity created by computerized assessments suggest that participants in web-based classes show a significantly higher display of assertive and direct feedback than students who attend the class (Lu & Bol, 2007). Furthermore, the primer in stereotype threat activation condition may have created participant reactance. Reactance is thought of as a motivational state that is meant to challenge a threatened loss of freedom or control (Silvia, 2006; Brehm & Brehm, 1981) and consistently produced in studies where participants are presented with explicit stereotypes (Hoyt & Blascovich, 2007; Kray, Thompson, & Galinsky, 2001). A study by Hoyt and Blascovich (2007) showed that women increase their effectiveness on leadership tasks when presented with explicit stereotypes, which supports the possibility of reactance in the present study.

The measures used to evaluate interest and self-efficacy may have also been an issue. The leadership scale from the ORVIS, for instance, may have been reflecting participant's varied interests about the specific activities instead of an overall leadership construct. When considering the multiple author-derived scales (LES, TLIS, TLCS, CBI), it is also possible that they did not capture the intended construct. Considering other explanations related to measures, the possibility exists that interest and self-efficacy related measures of a high-order construct (Armstrong & Vogel, 2009; Ludwikowski et al., 2009) also elicits the question if the appropriate construct was being measured in the first place.

Finally, several sample issues were present that may have contributed to a lack of results. Although there were enough participants to identify a medium effect, as described by Cohen (1992), researchers have suggested that the effect of stereotypes on women's interest and confidence in leadership is only a small effect that compounds over time to make a drastic difference (Eagly & Karau, 2002; Eagly et al., 1995; Ableson, 1985). Additionally, the use of randomized study invitation and sign-up allowed some participants to be exposed to both conditions. Despite eliminating their responses from the final data set, it is possible that they communicated the purpose of the study to others, leading to participant bias that might have masked any potential significance.

Finally, it is also possible that the proposition that an individual's identity is shaped through stereotype threat effect on interest (Davies et al., 2005; Steele and Aronson, 2002; Steele, 1997) is not true. The societal pressure that is placed on individuals to conform to given stereotypes has started to change for different populations in various activities (i.e. women in leadership positions; Eagly & Carli, 2007; Antonakis et al., 2003). Thus, it could be suggested that the power of stereotype threat to change a person's interest or identity is only as strong as the generational acceptance of the stereotype.

### **Limitations**

Several limitations exist within this study that should be noted. First, the population sample was overwhelmingly homogeneous, with 87% identifying as Caucasian, 89% being between the ages of 18 and 20, and the entire sample being taken from a large Midwestern university. Although it is widely accepted that stereotypes are instilled from an early age (Bergeron et al., 2006; Steele & Aronson, 1995), it is possible that exposure (or in this case, lack thereof) to real workplace experiences may impact the salience of stereotype threat

effect. Thus, having a limited sample demographic reduces generalizability of any of these results.

Additionally, traditional research on stereotype threat effect has included some sort of performance measure to investigate potential effects (Davies et al., 2005; Cadinu et al., 2003; Walton & Spencer, 1999). Despite including items that were designed to reflect participant's intended behavior, the lack of a performance measure reduces the ability to determine if there was or was not an effect of the stereotype threat level. In fact, the use of any of the self-report instruments (i.e. ORVIS, ESCI, TLIS, etc.) allows potential for inaccurate construct measurement or participant responses. Furthermore, the use of a computerized instrument eliminates the ability of evaluating participant investment in the study.

### **Implications and Future Research**

When considering the lack of significant effects of stereotype threat on interest or confidence, the practical implications are few and relate to the direction of future research. There were several distinct possibilities for why there was an absence of effect, and should be investigated to determine which, if any, were responsible for the results. One potential study might include adding two more conditions in which the primers were switched from stereotype activation to identity safe conditions, leaving the manipulation statement the same. This would allow researchers to determine if participants were displaying reactance to the primers, or if the manipulation were not potent enough.

Another possibility would be to incorporate some sort of performance measure to be used to verify the relation of the behavioral intention items to the actual behaviors they represent, such as contacting the participants to participate in a conference, leadership role,

etc. Additionally, use of different measures for personal leadership identity, interest, and confidence could provide insight to the mechanism by which stereotype threat operates.

After the alternative explanations are accounted for, future studies may look to increase participants for investigation of a small effect size. Expanding the demographic characteristics would also allow for greater generalizability of the results. If it was found that stereotype threat did have a significant effect on women's interest and self-efficacy in leadership roles, the potential for investigating other stigmatized groups and activities would be endless.

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## Appendix A: Stereotype Activation Level Primer

### Stereotype Threat Condition Primer

The following is a series of statements a person may use to describe his or her attitudes, opinions, interests, and personal characteristics. Your responses will be used to identify your preference for traditional gender roles, as well as how your responses compare with individuals with similar demographic characteristics (age, ethnicity, etc).

Respond by either answering "True" if the statement is accurate for you or "False" if the statement does not accurately describe you. Please read each statement carefully, and answer every statement even if you are unsure which answer is right for you.

### 1. Please read each statement carefully, and answer every statement even if you are unsure which answer is right for you.

	True	False
I enjoy reading books.	<input type="radio"/>	<input type="radio"/>
I like to go shopping for fun.	<input type="radio"/>	<input type="radio"/>
I do not like confrontation.	<input type="radio"/>	<input type="radio"/>
I like cats more than dogs.	<input type="radio"/>	<input type="radio"/>
I enjoy taking care of others.	<input type="radio"/>	<input type="radio"/>
I play video games at least once a week.	<input type="radio"/>	<input type="radio"/>
I like to sleep in when I do not have class or work.	<input type="radio"/>	<input type="radio"/>
I feel that I am more emotional than my friends.	<input type="radio"/>	<input type="radio"/>
I do not like to tell others what to do.	<input type="radio"/>	<input type="radio"/>
I would rather be a stay-at-home parent instead of having to work.	<input type="radio"/>	<input type="radio"/>
I like talking to friends on the phone.	<input type="radio"/>	<input type="radio"/>
I like to drink coffee.	<input type="radio"/>	<input type="radio"/>
I enjoy cooking and cleaning.	<input type="radio"/>	<input type="radio"/>
I like to draw.	<input type="radio"/>	<input type="radio"/>
I struggle in math and science.	<input type="radio"/>	<input type="radio"/>



### Identity Safe Condition Primer:

The following is a series of statements a person may use to describe his or her attitudes, opinions, interests, and other characteristics that will identify your personal student style for studying and participation in extracurricular activities. Using your responses, you will be given your activity preference, as well as how your responses compare with individuals with similar demographic characteristics (age, ethnicity, etc).

Respond by either answering "True" if the statement is accurate for you or "False" if the statement does not accurately describe you.

**Please read each statement carefully, and answer every statement even if you are unsure which answer is right for you.**

	True	False
I enjoy reading long novels.	<input type="radio"/>	<input type="radio"/>
I like to watch comedies.	<input type="radio"/>	<input type="radio"/>
I enjoy the smell of flowers.	<input type="radio"/>	<input type="radio"/>
I like cats more than dogs.	<input type="radio"/>	<input type="radio"/>
I will walk faster if I am late to class.	<input type="radio"/>	<input type="radio"/>
I do not like to sleep with the radio on.	<input type="radio"/>	<input type="radio"/>
I play video games.	<input type="radio"/>	<input type="radio"/>
I prefer the color orange over the color green.	<input type="radio"/>	<input type="radio"/>
I would like to have superpowers.	<input type="radio"/>	<input type="radio"/>
I like to drink coffee.	<input type="radio"/>	<input type="radio"/>
I dislike walking in the snow.	<input type="radio"/>	<input type="radio"/>
I enjoy art.	<input type="radio"/>	<input type="radio"/>
I have had a dream where I was flying.	<input type="radio"/>	<input type="radio"/>
I own a television.	<input type="radio"/>	<input type="radio"/>
I would like to live by the ocean.	<input type="radio"/>	<input type="radio"/>

## Appendix B: Behavioral Intention Items

### Behavioral Intention Definitions

Variable Name	Definition (How likely would you...)
Request Info	Request more information about available leadership positions relevant to you?
Attend workshop	Attend a leadership development workshop?
Apply on own	Apply for a leadership position on your own?
Apply if notified	Apply for a leadership position if you were notified about it?
Apply if nominated	Apply for a leadership position if specifically nominated
Accept position	Accept a leadership position that was offered to you?"

Note: Responses were collected on a six-point likert scale, where higher scores reflect greater intentions of completing the given task.

**Appendix C: Social Potency Sample Items**

Social Potency Primary Scale from the MPQ

(Tellegen, 1982; 2000)

The following is a series of statements that a person may use to describe his or her attitudes, opinions, interests, and other characteristics. Please determine whether or not the statement works for you. Respond by either answering “True” if the statement is accurate for you, or “False” if the statement does not accurately describe you.

Please read each statement carefully, and answer every statement even if you are unsure which answer is right for you.

Subscale 1: Forceful, persuasive

1. I am (or could be) a very good salesperson.

Subscale 2: *Seeks leadership*

1. When I work with others I like to take charge.

Subscale 3: *Enjoys visibility*

1. I enjoy being in the spotlight.

Remaining Item

1. I don't enjoy trying to convince people of something.

### Appendix D: Leadership Efficacy Scale Items

#### Leadership Efficacy Scale

Instructions to participants: For each item below indicate how true the statement is for you by writing the appropriate number in the space provided. Please answer all of the questions to the best of your ability

Use the following scale to indicate how well the following statements fit for you.

1	2	3	4	5
Not True For Me	A Little True for Me	Not True, Not Untrue For Me	Very True For Me	Completely True for me

1. I would make sure a group accomplishes a goal if I were in charge.
2. I would “take charge” in a group of people to successfully complete an assigned project.
3. I would assign and supervise group members on various tasks to make sure it gets done.
4. I would take the role of “leader” in a group.
5. I would be an effective leader in a group.

### Appendix E: ORVIS Leadership Scale Items

Oregon Vocational Interest Scales (ORVIS) Leadership Scale  
*(Pozzebon, Visser, Ashton, Lee, & Goldberg, 2010):*

Instructions: Please rate the degree to which you like to do the following activities using the following scale.

1	2	3	4	5
<b>Strongly dislike</b>	<b>Dislike</b>	<b>Neutral</b>	<b>Like</b>	<b>Strongly like</b>

#### I would like to...

1. Make important things happen
2. Lead other people
3. Be a sales or marketing director
4. Be the chief executive of a large company
5. Organize a political campaign
6. Be the master of ceremonies at a meeting
7. Plan an advertising campaign
8. Debate topics in a public meeting
9. Persuade others to change their views
10. Be a state governor or senator
11. Run for political office
12. Make decisions that affect a lot of people

## Appendix F: TLIS Sample Items

### Transactional Leadership Interest Scale (TLIS)

Instructions to participants: For each item below indicate how true the statement is for you by writing the appropriate number in the space provided. Please answer all of the questions to the best of your ability

Use the following scale to indicate how well the following statements fit for you.

1	2	3	4	5
Not True For Me	A Little True for Me	Not True, Not Untrue For Me	Very True For Me	Completely True for me

#### Transformational Approach Filler Items

1. I would want to get more experience with leading others by example.
2. I would be interested in making sure others feel comfortable sharing their ideas.
3. Helping others understand the importance of doing a task would be appealing to me.
4. I want to use my excitement for a task to motivate others.
5. Using my own confidence for achieving a goal to stimulate team members' confidence would be something that interests me.

#### Transactional Approach Items

1. I would want to get more experience with giving awards to individuals to boost their productivity.
2. I want to know how to provide incentives for a job well done.
3. Becoming directive in an employee's work only when I know they will be unable to accomplish a task is something I might enjoy.
4. I would enjoy using rewards as incentives to stimulate better work performance from group members.
5. I would like judging who deserves an award for a job well done and who does not.

6. I might enjoy becoming more "hands-on" in a group member's work as I see problems happen.
7. I want to wait before intervening before I became active in an employee's work until it is clear they cannot successfully complete a given task.
8. I would like to allow a group member to struggle with a project until it is clear that she/he will fail without my intervention.
9. I would like to keep my involvement to a minimum unless I know a team member will be unsuccessful without help.

### Appendix G: Leadership BCS Sample Items from ESCI

The Expanded Skills Confidence Inventory (ESCI) Leadership BCS  
(Betz, N., Borgen, F., Paulsen, A., Halper, C.R., & Harmon, L., 2003)

Instructions to participants: For each item below indicate your degree of confidence in your ability to accomplish each task or activity. Use the following scale to indicate your confidence:

1	2	3	4	5
No Confidence at all,	Very Little Confidence	Moderate Confidence	Much Confidence	Complete Confidence

1. Inspire others through your leadership.
2. Lead a scout or church group for kids.



## Appendix H: TLCS Sample Items

### Transactional Leadership Confidence Scale (TLCS)

Instructions to participants: For each item below indicate how true the statement is for you by writing the appropriate number in the space provided. Please answer all of the questions to the best of your ability

Use the following scale to indicate how well the following statements fit for you.

1	2	3	4	5
Not True For Me	A Little True for Me	Not True, Not Untrue For Me	Very True For Me	Completely True for me

#### Transformational Approach Filler Items

1. Leading others by my own example is something I feel I could do.
2. I am capable of fostering open communication between group members.
3. I would be effective at showing others why a job is important to do.
4. I have confidence in my ability to show my own enthusiasm to help inspire others.

#### Transactional Approach Items

1. I would be effective at using rewards to improve member performance.
2. Provide bonuses to individuals who do a job well as a means to raise performance is something I feel able to do.
3. I would be able to judge the quality of work done by group members.
4. I feel able to judge who deserves an award for a job well done and who does not.
5. I would be effective at becoming more "hands-on" in a group member's work as I see problems happen.
6. I believe I am able to provide feedback to the employee about how to improve when I see mistakes being made.
7. I am confident in assisting a team member with problems in their work as they happen.
8. Providing constructive feedback as I see an employee making mistakes on a task is something I would be able to do.

9. I would succeed in allowing a group member to struggle with a project until it is clear that she/he will fail without my intervention.
10. I am confident in my ability to keep my involvement to a minimum unless I know a team member will be unsuccessful without help.

## Appendix I: Demographic and Leadership Experience Items

### 1. Gender

- Female
- Male

### 2. Ethnicity

- Pacific Islander
- Caucasian/white
- Prefer Not to Indicate
- Asian-American
- African-American
- International Student
- Other (example: bi-racial)
- Latino(a)/Hispanic
- Native American

### 3. Age?

#### 1. How many times have you been in a leadership role within the last 4 years?

- 0
- 1-2
- 3-4
- 5-6
- 7+

#### 2. Please list what type of leadership position it was (i.e., Store Manager, Student Organization Executive Counsel Member, Religious Group leader, etc)