A TALE OF TWO GENDER ROLES: THE EFFECTS OF IMPLICIT BIAS ON THE PERCEPTION OF OTHERS

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Abstract

Implicit activation of gender role stereotypes is under-investigated in the research literature. The current study fills this gap by examining the implicit activation of gender role stereotypes in a hypothetical hiring decision. Two studies were conducted to examine if the implicit activation of gender role stereotypes influences perceptions of job candidates. In the first study, participants (N = 306) evaluated short resume excerpts that included words designed to activate gender role stereotypes without mentioning the sex of the applicant. Results showed that these simple statements were not effective at producing a consistent assumption of an applicant's sex, nor did these statements produce differences in how the applicants were rated on work-related skills. There were significant effects indicating that female participants and those participants holding more egalitarian gender role beliefs tended to rate applicants more favorably on work-related skills. A second study required participants (N = 282) to complete one of three different priming tasks designed to activate gender role stereotypes: stereotype-congruent, stereotype-incongruent, and a no-stereotype control. Results showed that individuals who completed the stereotype-incongruent prime rated the job applicants more favorably than those in the control priming condition. In addition, in accordance with Study 1, female participants tended to rate applicants more favorably than men. These studies do not show strong evidence indicating that the activation of gender role stereotypes plays a role in hiring decisions. However, given that both studies suggest that an evaluator's own sex and gender role stereotype traditionalism play an important role when making judgments about others in a hiring situation, future research needs to be focused on investigating factors that contribute to this effect.

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Contents

List of Tables

List of Figures

List of Appendices

Introduction

Gender role stereotypes have a long standing and persistent history. Even today, expectations are that men and women should behave in a manner consistent with traditional gender role stereotypes. Stereotypes are typically formed through learning an association between a construct and a group or category, then this association is applied to multiple settings that differ from the initial one (Aronson, 2008). Gender role stereotypes stem from learning an association between men and women and their commonly held roles within society, and subsequently applying those attributes to all men and women regardless of their actual societal role (Eagly & Steffen, 1984). Historically, women have been viewed as caretakers and men have been viewed as providers which laid the foundation for the original formation of these traditional gender role stereotypes. As time has progressed, women continue to hold lower status positions both in the workplace (e.g., secretary, nurse) and in the home (e.g., homemaker) which leads to less leverage, status, and power within society than their male counterparts. Men continue to hold higher status positions (e.g., CEO, engineer) at work and often retain the title of head of the household, further perpetuating these traditional gender role stereotypes (Eagly & Steffen, 1984). With these gender role stereotypes remaining firm over time, it is likely they will influence an individual's perception of events and others.

What do we mean by "sex" and "gender?" When discussing gender related research, it is first important to make the distinction between sex and gender. Sex pertains to whether an individual is biologically male or female; whereas gender tends to encompass whether an individual identifies himself or herself as masculine or feminine (Lips, 2008). Traditionally, men

are expected to behave in a more assertive, aggressive, and dominant manner, known as agency. Women are expected to behave in a more socially-oriented, warm, and friendly manner, known as communion (Eagly & Steffen, 1984). While not all gender stereotyped characteristics fall under the labels of agency and communion, many of these ideas that we associate with being "masculine" and "feminine" are encompassed by these labels. Consequently, agency and communion have become nearly synonymous with masculine and feminine, respectively.

Gender role stereotypes in society today. Stereotypical gender roles date back to when women were needed primarily as caretakers, a task that requires more feminine qualities, and men were needed for provider or protector roles making masculine traits more necessary for survival (Glick & Fiske, 1999). However, even as society has moved past these basic survival needs, the social expectation for women to be nurturing has remained and traditional gender role stereotypes still persist to produce a potent belief that women need to be more warm and nurturing than men. Thus, gender role stereotypes are not only descriptive of the behaviors expected from men and women (descriptive norms); but are also prescriptive (injunctive norms) in that, people are expected to behave in accordance with these stereotypes (Cialdini & Trost, 1998; Eagly & Karau, 2002; Heliman, 2001; Rudman & Glick, 2001). Stereotypical gender roles show little cultural variation, meaning that many cultures define masculine and feminine roles similarly. With stereotypical gender roles firmly in place, they could contribute to harmful real-world biases like hiring discrimination.

Previous research has shown that gender role stereotypes can be automatically activated leaving open the potential that they could unknowingly influence decision-making (Banaji & Hardin, 1996; Blair & Banaji, 1996; Greenwald, et al., 2002; Rudman & Goodwin, 2004; Rudman, Greenwald, & McGhee, 2001). This research has generally focused on how the

activation of gender role stereotypes can influence how an individual feels about his or her own position in society and what career paths are chosen (Blair & Banaji, 1996; Rudman & Phelan, 2010). The current research extends this literature by examining how the activation of gender role stereotypes affects the perception of others. Below, a more detailed theoretical and empirical foundation is provided for this study. First, an examination of prominent gender role theories will lead to a discussion of the activation of stereotypes, and then, a detailed review of previous research examining implicit beliefs of gender role stereotypes, which are ingrained ideas about gender role stereotypes that are often subconscious. Finally, questions that arise from these previous studies will build the foundation for the current study.

Theoretical Approaches to Gender Role Stereotypes

Heavily debated theoretical questions consider how gender role stereotypes were originally formed and why these stereotypes are so persistent in society. Social Role Theory (Eagly, 1987) developed from the ideas researchers had about sex, and the connection with common social roles. Social roles are defined as expectations assigned to an individual according to his or her status within society. Typically, men and women perform different functional roles within society and different societal roles have become associated with a particular sex as a result. The masculine gender role stereotype tends to correlate more with high status roles while the feminine gender role stereotypes is associated with low status roles (Conway, Pizzamiglio, & Mount, 1996; Eagly & Steffen, 1984). These descriptive constructs are then used when making decisions about individuals in a variety of real-world settings, including the workplace.

In a series of studies designed to evaluate Social Role Theory, Eagly and Steffen (1984) asked participants to rate male and female homemakers and employees on a series of masculine

and feminine traits. Participants were presented a description of the "average man" or "average woman" and were led to believe this person was either employed, a homemaker, or no occupational cue was provided. Participants were then asked to indicate their beliefs that this person held gender stereotypical characteristics, the likelihood this individual was currently employed (no occupation cue condition only), and if so, what type of salary this person might earn. Participants consistently rated employed persons higher on masculine traits and homemakers higher on feminine traits regardless of the sex of the person being rated. In addition, when no occupation cue was given, the participants rated the "average man" as more masculine and the "average woman" as more feminine. Interestingly, those individuals described as having higher status jobs were rated as more masculine than those in lower status jobs, but there were no differences in ratings on feminine traits based on the status level of the job. As predicted, women and those in lower status positions were judged by participants to have lower salaries than men and those in higher status positions. This series of studies shows a clear connection between social roles, gender role stereotypes, and biological sex. According to Social Role Theory, the prominent division of labor and status hierarchy between the sexes fuels the persistence of gender role stereotypes (Eagly, 1987, 1997). Since men are more often associated with masculine traits, they are also assumed to hold higher status occupations continuing the status disparity between men and women (Eagly, Wood, & Diekman, 2000).

Similar to Social Role Theory, Role Congruity Theory (Eagly & Karau, 2002) builds on the idea of social roles creating gendered expectations by considering the consequences that might occur from breaking the stereotypical gender roles. For example, previous research has shown that when women take on a more leadership or dominant role that is incongruent with the traditional feminine gender role stereotype, they often experience negative reactions (e.g.,

perceived as less likeable and socially-skilled) for behaving counter to the traditional gender role stereotype (Eagly & Karau, 2002). Not only does Role Congruity Theory build upon Social Role Theory, this theory allows for more testable hypotheses regarding gendered expectations and possible ramifications for breaking those expectations.

In several studies examining hypotheses consistent with Role Congruity Theory, Diekman and Goodfriend (2008) had participants evaluate how women's roles matched traditional gender role stereotypes fifty years ago, present day, and fifty years into the future. The researchers were able to provide support for Role Congruity Theory because in the present day, there was some negativity toward breaking traditional gender role stereotypes. The researchers also discovered that participants reported more accommodation of women shifting to a more masculine role fifty years into the future, but the perceived social role for men stayed relatively stable over time. An interesting question arises from this study: If people reported a willingness to accommodate women breaking traditional gender role stereotypes in the future, why are these stereotypes still so obstinate today? Even though individuals may be willing to accommodate those breaking traditional gender role stereotypes when questioned explicitly; there is still some reason why this accommodation is not actually happening in society today.

Women Breaking Stereotypes

Consistent with Role Congruity Theory, research has shown that people tend to respond negatively to women acting counter to the traditional feminine gender role stereotype (Carli, 1990, 2001; Foschi, 2001). Women in higher status occupations are often viewed as showing more masculine traits, thus breaking the traditional feminine gender role stereotype (Diekman & Eagly, 2000; Spence & Buckner, 2000). Rudman and Glick (2001) showed that when female job applicants were presented as more masculine, they were more likely to suffer hiring

discrimination than when female job applicants were presented as androgynous. Female job applicants presented as more masculine were also rated as less likeable and less socially-skilled than identically presented men applying for the same managerial position. This creates a predicament for women pursuing higher status careers because these careers require traditionally masculine traits (e.g., leadership ability) but the more traditional view of a feminine woman remains in society today.

The "backlash" effect is used to describe the relatively negative evaluations assigned to women who break the traditional feminine gender role stereotype compared to men displaying the exact same traits (Heliman & Okimoto, 2007; Heliman, Wallen, Fuchs, & Tamkins, 2004; Moss-Racusin & Heliman, 2006; Rudman & Glick, 1999, 2001). Phelan, Moss-Racusin, and Rudman and Phelan (2008) investigated the "backlash" effect to gain a greater understanding of what might be driving this type of negative behavior toward more masculine women. The researchers revealed that when women were presented in a more masculine manner, they were viewed as highly competent, but lacking social skills. Heliman, et al. (2004) found that even women portrayed as successful in the workplace were seen as interpersonally hostile and therefore, less likeable. This evaluation had a lasting effect extending all the way to promotion and hiring decisions in this line of research. It is important to note that the mere association of a woman with success seemed to produce the same result as witnessing a woman acting in a counter-stereotypical manner. This lends support to the idea that the activation of stereotypical ideas can lead to an implicit bias, an unconscious awareness that a bias can affect the judgments we make of another.

Implicit and Explicit Processing

Explicit beliefs are consciously held, and these are concepts that people directly access and report on opinion surveys and questionnaires. In contrast, implicit beliefs are those that are held and activated subconsciously, without awareness, limiting how accurately people can report these ideas (Kellogg, 2003; Moskowitz, 2005). Some have hypothesized that implicit beliefs are more strongly associated with an individual's actual behaviors (Fazio & Olson, 2003).

One reason that researchers are interested in the automatic activation of stereotypes is because it is possible that when questioned about beliefs explicitly, especially in cases where an individual's beliefs may be controversial as is usually the case when examining stereotypes, people may alter how they report their beliefs in order to appear socially desirable or to acquiesce to an experimental demand. This issue becomes less of a problem if research participants are unaware of the concept that is actually being measured, as is the case with implicit tasks. Implicit tasks do not have to be completely subconscious in presentation; they generally yield the desired result as long as the participant is not aware that they should avoid the influence of the materials that are intended to activate a particular belief system (Blair & Banaji, 1996). In a typical study examining implicit processing, a participant is either unaware of the stimuli or is not consciously attending to the stimuli that are intended to activate these beliefs. Therefore the participant behaves not knowing that his or her implicit beliefs played a role in later behavior (Fazio & Olson, 2003).

With the rise in implicit measurement and automatic activation research, several measurement approaches have been developed. Most implicit measures use a response latency measurement model relying on participants associating stereotype-congruent items (e.g., woman – homemaker) more strongly or quickly than stereotype-incongruent items (e.g., woman –

leader). The difference in reaction time between the associations of the stereotype-congruent versus stereotype-incongruent items produces a measure of the strength of the stereotype associations (Rudman, Phelan, & Heppen, 2007). Two of the more common approaches to examining automatic activation or measuring implicit beliefs are the Implicit Association Test (IAT) and priming manipulations.

Implicit Association Test (IAT). The IAT was developed by Greenwald, et al. (1998), and is one of the more well-known measures of implicit beliefs. This measure was first used to assess implicit racial stereotypes, but has since been used to assess implicit beliefs on everything from gender to age bias. In a typical race IAT, the participant is asked to associate pictures of black and white individuals with the concepts of good or bad. Due to implicit stereotypical beliefs about race, it is expected that people will find it more difficult and take a longer amount of time to associate the black faces with the concept of good compared to associating the white faces with the concept of good. The IAT uses the response latency model common in implicit research. Associating incongruent concepts often takes a longer amount of time, and thus, reveals an implicit bias.

For example, Rudman, Phelan and Heppen (2007) were interested in studying implicit beliefs about smoking behavior. The researchers used an IAT measure designed to examine smoking beliefs along with some explicit measures of smoking attitudes for comparison. Participants were asked to associate stimuli related to smoking (e.g., pictures of smoking behaviors) with either positive or negative feeling words. The researchers found that when measuring smoking beliefs explicitly, most participants viewed smoking as negative behavior. However, when measuring smoking beliefs using the IAT, participants who had early exposure

to smoking because they grew up with a parent who smoked, showed little negative implicit bias toward smoking.

Though some studies provide compelling evidence for the IAT, the IAT had been a somewhat controversial measure because it has shown low predictive validity (Fazio & Olson, 2003). Previous research using the IAT has typically not separated the measurement of the IAT instrument and measurement of the behavior or explicit beliefs. When using implicit measures, it is theoretically important to initially obtain a measure of the participant's explicit beliefs in order to compare this measure with the measure of implicit beliefs and the behavior observed. However, having participants report their explicit beliefs first, could also influence the later performance of the participant on an IAT which hinders the predictive validity of the IAT in these cases (Fazio & Olson, 2003). For example, Rudman and Goodwin (2004) asked participants to complete an IAT concerning in-group bias in women and then an explicit measure counterpart, as is often the case when the IAT is used as an implicit measure. In several experiments, the researchers found that women showed more in-group bias than men on both implicit and explicit measures. In these studies, the IAT preceded the explicit measures and could have been activating certain ideas in these situations so the later measures of explicit beliefs (or behavior) may not be valid.

In addition, the IAT has shown somewhat mixed results with some studies finding it be an excellent implicit measure, and other studies not finding the expected results when using the IAT. Rudman and Glick (2001) measured gender role stereotypes using both explicit measures and an IAT. After correlating the explicit measures with the IAT measure, the researchers found that some measures correlated with the IAT while others did not, particularly for the male participants, indicating that there could be reliability issues with the gender IAT for men in

particular. Karpinski and Hilton (2001) also examined the relationship between explicit measures and the IAT and across three studies, they found that the IAT was unreliable in predicting later behavior. These unexpected results speak to the lack of predictive validity which could create potential issues when using an IAT measure.

Priming. Priming is another popular approach to studying implicit beliefs and activation of those beliefs. With priming, participants must complete a task designed to activate a particular concept in their memory. After priming has occurred, participants should respond to questions examining their attitudes and beliefs without conscious awareness that the earlier priming task affected their judgments. For example, a popular priming task involves memorizing a list of words that are related to a single concept, such as a gender stereotype, and then later completing a word fragment task to verify that the prime was effective. Participants will generally complete the task using words or concepts similar to those that were presented in the memorization list (e.g., Sinclair & Kunda, 1999). The main differences between priming and the IAT is that priming is typically used as an experimental manipulation designed to activate beliefs that may cause an implicit bias rather than dependent measure of implicit beliefs. Priming is also not typically used an individual difference measure, in contrast to the IAT, which is often used to assess differences among participants on some belief. The priming approach merely *activates* implicit beliefs rather than measures them.

Before the IAT gained popularity in implicit beliefs research, Blair and Banaji (1996) used a priming manipulation that is very similar to the IAT. The researchers presented participants with personality traits or neutral words and then flashed a male or female name on the screen. Participants were asked to judge whether the name was male or female. They found that when participants saw traits consistent with the male stereotype preceding a male name, they

were quicker at responding compared to when a female name was paired with masculine stereotypic traits. Due to the greater ease of administration and the benefits of predictive validity, priming will be employed as the activation measure in the current study.

Implicit and Explicit Processing of Gender Role Stereotypes

Research examining explicit gender role stereotypes has confirmed an association between men and women and certain societal roles (See Appendix A for a summary of relevant research; Blair & Banaji, 1996; Blair & Hardin, 1996; Davies, Spencer, & Steele, 2005; Devos, Blanco, Rico, & Dunn, 2008; Rudman & Goodwin, 2004; Rudman, Greenwald, & McGhee, 2001; Rudman & Phelan, 2010). Previous research has hypothesized that these associations are believed to cause people to form gendered expectations of themselves that could affect their social roles, abilities, and personality traits (Devos, et al., 2008; Nosek, Banaji, & Greenwald, 2002; Rudman, Greenwald, & McGhee, 2001).

In an early study designed to examine if gender role stereotypes could be subject to priming manipulations, Banaji and Hardin (1996) primed participants with either gendered or gender-neutral words and then had participants associate gendered (e.g., she), neutral (e.g., it), or non-gendered (e.g., all) pronouns with the concept male and female. The researchers found that participants were much faster when associating gender-congruent items over gender-incongruent items when participants were primed with the gendered words rather than the gender-neutral words. Their results were among the first to indicate that gender role stereotypes can be activated and are subject to priming effects. Since then, research has examined implicit activation of gender considering how much people identify with parenting and educational goals, leadership traits, and occupational interests (Dasgupta & Asgari, 2004; Davies, et al., 2005; Devos, et al., 2008; Rudman & Phelan, 2010).

In a more recent study, Devos, et al. (2008) found that consistent with gender role stereotypes, women were faster when associating themselves with the concept "parenthood" and men were faster associating themselves with the concept "college education" when these ideas were measured implicitly. Interestingly, when the researchers measured these concepts explicitly, both men and women expressed equal levels of commitment to educational goals. Though these researchers did not activate gender role stereotypes through priming, the study showed that implicit gender role stereotypes beliefs can affect how we view ourselves.

Similar studies have also shown that priming stereotypical or non-stereotypical gender roles can influence how women view themselves in terms of their potential success in masculine roles. Davies, et al. (2005) found that showing women a simple prime of an advertisement depicting traditional gender role stereotypes was related to women reducing their desire for a leadership role. In contrast, other researchers have found that if women are primed with pictures of female leaders, then their association of the traditional masculine stereotype with the concept of leader drops (Dasgupta & Asgari, 2004).

Similarly, another study primed female participants with traditional ("male-doctor" or "female-nurse") or non-traditional ("male-nurse" or "female-doctor") occupation gender stereotypes and then examined participant interest in masculine occupations. The traditional gender role stereotype prime resulted in women manifesting lower interest in masculine occupations and reporting feeling decreased leadership ability when compared to women who completed the non-traditional prime (Rudman & Phelan, 2010). The researchers also performed a mediation analysis examining the automatic activation of traditional gender role stereotypes and the effect of the priming manipulation on occupational interest, and this analysis also

showed that the priming increased the automatic activation of traditional gender role stereotypes and thus affected occupation interest.

Together, these studies lend support to the idea that gender role stereotypes and expectations can be activated and once activated, affect a person's judgments about his or her self. Female participants, in particular, report different beliefs about themselves and different interests when traditional gender role stereotypes have been activated compared to when non-traditional gender role stereotypes have been activated. In addition, activating any gender role stereotype information, either traditional or non-traditional, seems to adversely affect how women view themselves in a professional context.

Limitations to the Previous Research

The bulk of the literature on the activation of stereotypes and potential implicit biases tends to focus more on racial stereotyping than gender role stereotyping. In addition, the small amount of literature available examining gender role stereotypes is largely concerned with how individuals view themselves after activation of gender role stereotypes (e.g., Davies, et al., 2005; Rudman & Phelan, 2010). Yet, both Social Role Theory and Role Congruity Theory hypothesize that gender role stereotypes influence judgments of others. However, there is little research examining this side of these theories. There is a very clear need for continued research examining gender role stereotypes and subsequent outcomes, especially research seeking to understand how stereotype activation can affect the perception of others with respect to practical outcomes such as hiring, promotion, or salary decisions.

Practical Importance of Understanding the Effects of Activating Gender Role Stereotypes

The effects of activating gender role stereotypes could be important in real-world decisions such as hiring decisions. Males account for the majority of the total workforce in the

United States (53% of all jobs are held by men; U.S. Department of Labor, 2010) and males continue to dominate higher status employment positions. In addition, there are specific occupations that are heavily monopolized by men that women tend to actively avoid. For example, science, technology, engineering, and math (STEM) fields continue to command male attention and women account for a mere 24% of the employees in these fields (Beede et al., 2011).

Research by Moss-Racusin, Dovidio, Brescoll, Graham, and Handelsman (2012) indicates that there is a gender bias even when hiring at the student level. When identical applicants (one male and one female) applied for a student research assistant position in the sciences, the male student was more often selected for the position and rated as more competent than the female student. In addition, they found a subtle bias toward male students such that these students received more career training and more support than female students.

It is important to note that in many fields, the number of women obtaining graduate degrees is comparable to the number of degrees that men obtain. However, the majority of these jobs in these same fields are held primarily by men. A 2013 report appearing in *Nature* indicated that barely 20% of these STEM jobs are held by women (Nature.com editorial, March 7, 2013). Even concerted efforts to correct the hiring bias can fail. For example, Yale University began an initiative to hire more women and minorities in STEM professions, citing subconscious hiring biases as an issue that this initiative was designed to correct (Yale Daily News, February, 25, 2013). Unfortunately, nearly half of the new hires left within one year.

Thus, there is a gender role stereotype bias issue at multiple levels of hiring. The skewed distribution of women in the workforce contributes to the persistent nature of traditional gender role stereotypes and reduces the ability for these stereotypes to be altered. The potential real-

world ramifications involving occupation interest and attainability provides an imperative to understand how implicit gender role stereotype biases play a role in occupational decisions. These real-world considerations, combined with the scant research exploring the activation of gender role stereotypes, reveal an area where additional research is theoretically and practically important.

The Current Research

The current research examined the role of activating gender role stereotypes and implicit bias in hiring decisions. Two studies were conducted to assess these ideas and when considered together, help clarify how the activation of gender role stereotypes can affect the perception of others.

Study 1

Previous research (e.g., Marchal, 2013) has suggested that removing an applicant's sex from their credentials may reduce implicit hiring biases. Even though removing a name may diminish overt applicant gender information, an applicant may include traditionally masculine and feminine cues to describe themselves and their work performance and this information could also signal applicant gender information. The first study was designed to examine if gendered characteristics implicitly activate stereotypes and lead to the assumption that someone is male or female. This study presented participants with statements that appear to be pulled from an individual's resume, and these statements were embedded with either masculine (e.g., leadership ability) or feminine (e.g., works well with others) characteristics. To assess whether the minimal cues provided in these statements activated gender expectations, participants were asked what sex they believed the applicant to be. In addition to predicting the applicant's sex, participants rated the applicants on masculine and feminine work-related skills to further investigate whether these minimal cues activated gender role stereotypes.

Hypotheses Study 1. It was predicted that job applicants would be viewed as female when feminine cues were given and male when masculine cues were provided. Similarly, participants were also expected to rate applicants higher on work-related traits that were in line with the presented gender role stereotype cues. For example, when the statement contained feminine cues, the applicant should be rated more highly on feminine work-related skills (e.g., works well with others) and when the statement presented was masculine, the applicant should be rated more highly on masculine work-related skills (e.g., is a strong leader).

Supplemental hypotheses: Study 1. It is possible that the parental occupation and the region of the United States of the childhood home could influence participants' gender role stereotypes, and consequently, how participants view the applicant presentations. An individual growing up with a working mother is likely to view women in society today differently than an individual growing up with a stay-at-home mother. This is similar to Rudman, Phelan and Heppen's (2007) smoking study, which showed that early childhood experiences with smoking influenced later implicit beliefs about smoking. For the current research, it was hypothesized that participants who grew up with a working mother would be more likely to view working women as normative, and may be more likely to assume the applicant was female, when compared to a participant who grew up with a stay-at-home mother (Dorius & Alwin, 2010). In addition, it is likely that the region where a participant grew up could affect whether the applicant is predicted to be male or female. It was hypothesized that those growing up in the Southern United States would be more traditional in their gender role stereotype views than those growing up in other regions of the United States (Maxwell, Ford-Dowe, Jimeno, & Shields, 2012), and thus might be more strongly influenced by the gender cues than those from other parts of the country.

Study 2

Previous research has shown it is possible to automatically activate gender role stereotypes and have this activation change self-perceptions (e.g., Dasgupta & Asgari, 2004; Devos, et al., 2008; Rudman & Phelan, 2010). The second study was designed to examine whether activating gender role stereotypes would have an effect on how people view others in a hiring situation. This study used a more intense method for activating stereotypes and sought to activate stereotypes in specific ways using priming. Participants completed a priming manipulation that activated gender stereotype-congruent, gender stereotype-incongruent or no gender stereotypical beliefs. After this, participants read two applicant statements for a job, one male and one female. The job applicants had very gender-specific names (e.g., Sarah, Michael) so that participants had an indication of the applicant's sex. These names were paired with statements similar to Study 1, but the statements contained no gendered characteristics so that they did not interfere with the priming. Participants then rated job applicants and decided which applicants to hire in masculine and feminine stereotyped positions.

Hypotheses: Study 2. This study was designed to examine the effect of activating different gender role stereotypes through priming on a hypothetical hiring decision. There were three types of gender priming in the current study: stereotype-congruent, stereotype-incongruent, and no-stereotype (control condition). It was expected that when participants completed the control priming, that they would respond in ways consistent with the prevailing traditional gender role stereotypes. For example, male applicants should be selected more often for masculine positions and female applicants should be selected more often for feminine positions. In addition, female applicants should be rated more highly on feminine work-related skills and male applicants should be rated more highly on masculine work-related skills.

When participants completed the stereotype-congruent priming, the above effects were expected to be amplified. For example, male applicants were predicted to be "hired" more often in masculine positions and rated positively on masculine work-related skills than in the control priming condition. Two alternative results were predicted for when stereotype-incongruent gender roles were primed. It is possible that the stereotype-incongruent priming would lessen the effect of stereotypical assumptions. For example, participants could show less differentiated ratings for male and female applicants on both masculine and feminine work-related traits. In addition, participants could show less of a propensity to favor hiring applicants of a particular sex for the masculine and feminine positions. However, Rudman and Phelan's (2010) research suggests that regardless of whether participants experience stereotype-congruent or stereotype-incongruent priming, participants would be more aware of gender role stereotypes and thus might respond similarly across the two priming conditions.

Supplemental hypotheses. Previous research has shown that women tend to be more favorable in their ratings than men (Rice, Barth, & Talbert, 2014; Rice, Roberts, & Hart, 2013). Female participants were expected to give more positive evaluations than male participants. Also, participants who identify with traditional gender role stereotypes were expected to evaluate applicants in line with their own beliefs about gender roles. For example, those participants who identify strongly with traditional gender role stereotypes were expected to rate male applicants highly on work-related skills and pair these applicants with masculine positions. These same participants were expected to rate female applicants lower on work-related skills and pair these applicants with feminine positions. More egalitarian (less traditional) participants were expected to rate male and female applicants similarly and be just as likely to hire males and females in all positions.

Study 1 Methods

Participants

Participants were recruited from an Introductory Psychology Subject Pool. This was an online study and when participants signed up for the study, they were given a link to the survey web address and one week to complete the survey. Upon completion, participants were awarded partial credit for fulfillment of the research requirement. The initial sample was 340 individuals, but 31 participants failed to finish the survey and were excluded from data analysis. Also, three participants completed the survey twice, and only the first responses from these individuals were included in the analysis.

Final sample. The final sample consisted of 306 participants. There were 150 males and 156 females and all participants were between the ages of 18-26 (M = 19 years). Of this sample, 301 participants provided ethnicity information. Eighty-six percent of the participants identified themselves as Caucasian/White, 8.5% as African-American/Black, and 5.2% as another ethnicity.

Design

The study was a 2 (sex of the participant; between subjects) x 2 (applicant statement type: masculine or feminine; within subjects) mixed design. In some analyses, a participant's own gender role traditionalism was used a continuous between subjects variable.

Procedure

Pre-screening. All Introductory Psychology students were offered the opportunity to participate in the Psychology Subject Pool pre-screening questionnaire over the course of the

semester. This pre-screening questionnaire was an online survey comprised of various measures and was completed outside any particular study. The *Dimensions of Gender Stereotypes* (Diekman & Eagly, 2000), which measures a participant's conformity to gender stereotypes, was presented to participants in this pre-screening so that their responses did not influence behavior during the experimental session and vice versa.

Experimental session. The experimental session was completed online using Qualtrics survey software. Participants accessed the survey through the Subject Pool Portal by clicking on a link. Upon clicking on this link, they were first asked for their email address and campus identification number so they could be awarded credit for the study. Then, participants were presented the study information sheet detailing their rights as a participant. Participants had the option of selecting to participate in the study or decline participation. If the participant declined, they were thanked for their time and the study went no further. If the participant opted to participate, the study continued.

Next, participants were informed that they would be evaluating individuals who applied for an open professor position. Participants viewed 14 "applicant statements" consisting of 1-2 sentences containing either masculine or feminine trait words that were derived from established gender role questionnaires (Diekman & Eagly, 2000) and previous research on automatic activation of gender role stereotypes (Blair & Banaji, 1996). For example, participants might have seen the following masculine statement: "I *initiated* an innovative curriculum which *demands* that undergraduates build a *strong* foundation of core knowledge and challenges students to adopt an *analytical* approach in their studies" or the following feminine statement, "I *collaborated with my colleagues* to develop an innovative curriculum which *supports*

undergraduates as they build a foundation of core knowledge and challenges students to adopt a *creative* approach in their studies."

The participants viewed the statements one-at-a-time and the order was randomized for each participant. After viewing each statement, participants were asked to respond to four items asking about the physical characteristics of the applicant (e.g., What color hair might this person have?). The last of these questions asked participants to indicate the sex they believed this applicant to be. After the physical characteristic items were completed, participants responded to ten items asking how they thought the individual would perform on a variety of work-related skills. Once participants finished these ratings, they completed two questionnaires that served as measures of explicit gender role traditionalism. Finally, participants completed a short demographics measure and read a debriefing statement before exiting the survey.

Measures

Assumption of applicant sex (Appendix B). For each of the 14 applicants, participants were asked to indicate how likely the person making the statement was male or female. This was measured on an 8-point scale from definitely male (1) to definitely female (8) with middle values indicating the participant is more uncertain of the sex of the applicant.

Work-related skills ratings (Appendix B). Participants rated each applicant on ten different work-related skills. These items were derived from common employee evaluation measures along with items that are typically found on student opinion of instruction surveys at many colleges. In addition, these attributes were chosen due to the presence of similar characteristics on the *Dimensions of Gender Role Stereotypes* measure and the presence of similar items in other gender role stereotype research. Some of the items included common masculine traits (e.g., How well will this person perform as a leader?) and some included more

feminine traits (e.g., Will this person work well with others?). Participants were instructed to read each statement carefully and imagine they were serving on a hiring committee seeking to evaluate applicants for an open professor position. Then, they were asked to give their overall impression of the applicant by responding to several questions and rating how they believed the applicant would perform on those skills. The ratings were given on a 7-point scale from not very well (1) to very well (7). It was expected that there would be two scales derived from these ratings, one for masculine items and one for feminine items. The psychometric qualities of this measure are discussed further in the results section.

Demographics (Appendix B). At the end of the study, participants completed a simple demographics measure assessing: age, year in school, major, sex, and ethnicity. Participants also indicated the place where they spent most of their childhood and this was recoded into nine different regions of the United States consistent with the regions used by the United States Census Bureau (United States Census Bureau, 2010). In addition, participants indicated their mother and father's occupations and these were recoded to reflect traditionally masculine (e.g., engineer, surgeon), traditionally feminine (e.g., stay at home mother, teacher), or ambiguous occupations (e.g., worked at a bank, sales). Participants identified 39 unique occupation themes and a random subset of 50 responses (~15% of the sample, 25 unique occupations) from the larger dataset was examined for rater agreement. An inter-rater reliability analysis showed that the raters had 62% agreement and the Kappa statistic showed moderate levels of agreement, $Kappa = .44$, $p < .01$. For the occupations, raters disagreed on only five of the occupations, and had the most discordance on items that were not specific (e.g., worked at a bank) or listed only a company name (e.g., Boeing). In these instances, the items were labeled as ambiguous since

there was not enough information available to determine the masculinity or femininity of these occupations.

Pre-screening gender role traditionalism measure (Appendix C). Included in the Introductory Psychology pre-screening questionnaire was a modified version of the *Dimensions of Gender Role Stereotypes* (Diekman & Eagly, 2000). This is a measure of self-reported masculinity or femininity. The original measure includes personality, cognitive, and physical characteristic items, but the version used in the current study did not include physical characteristics since these items were less related to the purpose of the study.

The *Dimensions of Gender Role Stereotypes* asked participants to rate the degree to which 42 different characteristics described their own personality using a 7-point scale from strongly disagree (1) to strongly agree (7). Two examples of items are "Competitive" (masculine) and "Affectionate" (feminine). This measure yielded six scales: masculine/feminine cognitive, masculine/feminine personality, and a broad masculinity and femininity scale, which combines the other two scores. Seventy-five percent of participants completed this measure, and for those participants, both masculinity ($\alpha = .88$) and femininity ($\alpha = .79$) scales proved reliable.

Explicit gender role traditionalism measures given during the experimental session (Appendix C). All participants completed the *Egalitarian Sex Roles Inventory* (Suzuki, 1991) and *Ambivalent Sexism Inventory* (Glick & Fiske, 1996) to assess their own views about traditional gender roles. The *Egalitarian Sex Roles Inventory* included 13 items inquiring about participants' views of working women, for example: "Whether married or not, for purposes of independence, women should work." and "A working wife has more in common with her husband, so she is a better wife." Participants were instructed to rate how much they agreed with each statement on a 7-point scale from strongly disagree (1) to strongly agree (7). Higher scores

on this measure indicate more egalitarian views about men and women in society. A reliability analysis showed that this measure was reliable ($\alpha = .80$).

The Ambivalent Sexism Inventory included items designed to examine participants' views of what roles men and women should take within society, for example, "Women should be cherished and protected by men." and "Women seek to gain power by getting control over men." This questionnaire includes 21 items and participants were asked to rate how well each item explains the relationships between men and women in society on a 7-point scale from strongly disagree to strongly agree. Lower scores on this measure indicated more egalitarian views with higher scores indicating more gender role traditionalism. This measure yielded three scales: Hostile Sexism, Benevolent Sexism, and Total Sexism. The Hostile Sexism scale is designed to measure negative attitudes about women, and a reliability analysis of this scale showed it was reliable ($\alpha = .80$). The Benevolent Sexism scale is designed to measure beliefs about how men and women should be treated. A reliability analysis of this scale showed that it had acceptable reliability ($\alpha = .78$). Finally, a reliability of the Total Sexism scale showed the measure, as a whole, had high reliability ($\alpha = .83$).

These same explicit gender role measures were also included in Study 2, where comparable hypotheses were proposed. However, the *Dimensions of Gender Role Stereotypes*, included in the pre-screening for both studies, had a large number of missing cases for Study 2 (55%) making it untenable as a measure of traditionalism for that study. Consequently, the measure was not used in any of the Study 1 analyses so that the analyses for the first and second studies could be similar.

To create one measure of participant gender role traditionalism for the analyses, scores from the *Egalitarian Sex Roles Inventory* and *Ambivalent Sexism Inventory* were combined.

First, since the scales were scored in opposite directions with respect to the construct of traditionalism, the *Egalitarian Sex Roles Inventory* score was re-coded so that low scores indicated more egalitarian views and high scores indicated more gender role traditionalism. Z-scores were then obtained for each measure and then averaged together to create the gender role traditionalism measure for the current research. Higher scores on this variable indicated that the participant's views on gender roles aligned more with the traditional view of gender role stereotypes and lower scores indicated that a participant was more inclined to be egalitarian (Descriptive statistics for this measures are presented in Table 1).

Table 1

Means and Standard Deviations for the Gender Role Traditionalism Measure.

Participant Sex	N	*M*	*SD*
Male	150	.183	0.84
Female	156	-.171	0.75
Total	306	.002	0.81

Note. These scores are represented as Z-scores.

Study 1 Results

Preliminary Analyses

Data reduction. In the original hypotheses for this study, it was assumed that the ten items assessing work-related skills would actually be two separate measures: one for masculine skills and one for feminine skills. A Principle Component factor analysis with varimax rotation was conducted to verify this assumption, but identified only one factor explaining 80% of the variance (Table 2). Consequently, a single work-related skills score was created for each applicant by averaging the ratings across the ten items (possible range, 1 to 7). Higher scores indicated that the participant believed the applicant could perform the work-related skills well. A reliability analysis of this variable showed high reliability ($\alpha = .97$).

Table 2

Factor analysis for Work-Related Skills questions.

Item	Loading
Take Initiative	0.927
Cooperativeness	0.926
Dependability	0.921
Analytical Skills	0.914
Leadership Ability	0.904
Mentorship Ability	0.899
Advance University	0.896
Likeability	0.888
Take Direction	0.864
Competence	0.802
Eigenvalue	8.006
% of Variance Explained	80.06

Hypothesis 1: The gender role stereotype cues in the applicant statements will lead to an assumed sex for the applicant that is consistent with the gender cues.

It was hypothesized that the assumed sex of the applicant would be derived from the gender role cues provided in each applicant statement. For example, those statements containing masculine words (e.g., leader, assertive) would lead participants to believe the person was male,

and those statements containing feminine words (e.g., supportive, creative) would lead participants to assume the individual was a female. A repeated-measures analysis of variance (ANOVA) was conducted to examine whether the gender role cues in the applicant statements (two levels: masculine or feminine; within subjects) lead to different assumptions of the applicant's sex. The dependent variable was the applicant's sex as selected by participants on the 8-point scale in which lower scores (1-4) indicated the participant believed the applicant was more likely a male and higher scores (5-8) indicated that the participant believed the applicant was more likely female. The ANOVA was not significant, $F(1, 305) = 0.493$. The gender role cues given in the applicant statement did not affect whether the applicant was assumed to be male or female (masculine statements: $M = 4.41$, $SE = .05$; feminine statements: $M = 4.36$, $SE = .04$).

Hypothesis 2: Gender role cues in the applicant statement will lead to applicants being rated highly on work-related characteristics that align with gender cues provided in the statement.

Since a factor analysis revealed one factor for the work-related skills instead of two gendered scales (masculine and feminine), an analysis was conducted to examine if the work-related skills ratings were different, in general, based on the cues given in the applicant statement. Previous research suggests that males should be rated more highly on workplace skills given that traditionally, working outside the home is a masculine responsibility (Eagly & Steffen, 1984). A repeated-measures ANOVA was conducted examining whether the gender role stereotype cues in the applicant statement (two levels; within subjects) led to a difference in how the applicant was rated on work-related skills. The dependent variable was the work-related skills ratings reported on a 7-point scale with higher scores indicating better ratings. No

significant effects were revealed, indicating that the gender role stereotype cues given in the applicant statements did not affect ratings on work-related skills, $F(1, 304) = .532$ (masculine statements $M = 5.29$, $SE = .04$; feminine statements $M = 5.27$, $SE = .04$).

Supplemental Analyses

Previous research has indicated that the sex of the participant and participant gender role traditionalism may have an effect when evaluating others (Rice, Barth, & Talbert, 2014; Rice, Roberts, & Hart, 2013). It was expected that women would provide higher ratings on work-related skills. In addition, it was expected that those participants who held more traditional gender role beliefs would be more likely to align the applicant sex with the gender role stereotype cues given in the applicant statement. Finally, those participants who held more traditional gender role beliefs were also expected to provide more favorable work-related skills ratings when masculine cues were presented since to these individuals, men would be more suited for the working role. These hypotheses are investigated below.

The following analyses were conducted using an ANOVA (for participant sex effects only) and analysis of covariance (ANCOVA) approach (for analyses including gender role traditionalism).

Analyses including participant sex. The previous two analyses examining the predicted sex of the applicant and work-related skills were repeated with the addition of participant sex as a factor. For assumed sex of the applicant, a 2 (applicant statement type; within subjects) x 2 (participant sex; between subjects) mixed ANOVA was conducted. There was a significant main effect for participant sex, $F(1, 304) = 11.85$, $p < .001$, $\eta_p^2 = .04$. Women, when compared to men, had higher average scores for the assumption of applicant sex variable ($M = 4.49$, $SE = .04$ for females; $M = 4.28$, $SE = .04$ for males), suggesting they were more inclined to believe the

applicant was female when compared to men. Meanwhile, men had lower average scores for this variable. Overall, this indicated a tendency for participants to assume the applicant's sex matched their own sex, regardless of whether the applicant statement was masculine or feminine. Similar to the analysis for Hypothesis 1, no significant effects were found for applicant statement type, $F(1, 304) = .52$, indicating that the cues provided in the applicant statements did not affect the participants' assumption of applicant sex. Finally, there was no significant interaction between applicant statement type and participant sex, $F(1, 304) = 1.04$, indicating that men and women responded to the different applicant statements similarly (Table 3).

A 2 (applicant statement type; within subjects) x 2 (participant sex; between subjects) mixed ANOVA was conducted using work-related skills ratings as the dependent variable. As expected, there was a significant main effect for participant sex, $F(1, 304) = 38.00$, $p < .001$, $\eta_p^2 = .11$. Women gave more favorable ratings ($M = 5.50$, $SE = .05$) than men ($M = 5.04$, $SE = .05$; Table 3), regardless of applicant statement type. Similar to the analysis for Hypothesis 1, there was no significant main effect for applicant statement type, $F(1, 304) = .52$, indicating that the gender role cues provided in the applicant statements did not affect how an applicant was rated on work-related skills. In addition, there was no significant interaction between applicant statement type and participant sex, $F(1, 304) = .20$, indicating that men and women responded to the different applicant statements similarly.

Table 3

Assumed Applicant Sex and Work-Related Skills by Applicant Statement Type and Participant Sex.

Dependent Variable	Statement Type	Male Participant (N = 150)		Female Participant (N = 156)		Total (N = 306)	
		M	*SE*	*M*	*SE*	*M*	*SE*
Assumed Sex	Masculine	4.38	.08	4.48	.08	4.41	.05
	Feminine	4.22	.06	4.50	.06	4.36	.04
Work-Related Skills	Masculine	5.05	.05	5.52	.05	5.29	.04
	Feminine	5.03	.06	5.49	.05	5.27	.04

Note. For Assumed Sex the rating was on an 8-point scale, 1 = definitely male, 8 = definitely female. For Work-Related Skills the rating was on a 7-point scale, 1 = strongly disagree, 7 = strongly agree.

Analyses including gender role traditionalism. Participant gender role traditionalism was used as a continuous predictor variable in the following analyses. A repeated-measures ANCOVA was conducted to accommodate the continuous predictor. Through the repeated-measures ANOVA menu in IBM SPSS Statistics version 20 (IBM SPSS, New York, USA), it is possible to specify a continuous predictor (participant gender role traditionalism) as a covariate,

then build a custom model examining all main effects and interactions. This analysis is appropriate for mixed designs with continuous predictors (Field, 2013; Heck, Thomas, & Tabata, 2011). It is important to note that there are differences between an ANCOVA approach and a regression approach concerning the test statistics and the validity of main effects of the repeated-measures factor and the covariate factor (Delaney & Maxwell, 1981). The repeated-measures design of the current study limited the ability of regression analyses to address the research hypothesis. However, a systematic approach was taken during data analysis to minimize this issue when using ANCOVA to assess the effects of gender role traditionalism, the continuous predictor, in conjunction with the applicant statement, the repeated-measures fact. First, the applicant statement and participant sex were analyzed separately (previous analyses) to confirm significant effects, and then an ANCOVA model was constructed to examine the addition of the continuous predictor (gender role traditionalism). By confirming the presence of main effects before the introduction of gender role traditionalism in the ANCOVA interpretation, questions have been minimized.

The first ANCOVA examined the effects of applicant statement type (two levels; within subjects) and participant gender role traditionalism (continuous predictor; between subjects) on the assumed sex of the applicant. There were no significant main effects, indicating that participant gender role traditionalism, $F(1, 304) = .38$, and the applicant statement type, $F(1, 304) = .49$, did not play a role in whether the applicant was assumed to be male or female. There was also no significant interaction between the applicant statement type and participant gender role traditionalism, $F(1, 304) = .09$, indicating that regardless of a participant's level of gender role traditionalism, participants responded to the different applicant statements similarly.

The same analysis was repeated to examine whether applicant statement type and participant gender role traditionalism had an effect on how the applicant was rated on work-related skills. There was a significant main effect for participant gender role traditionalism, $F(1, 304) = 10.83$, $p < .001$, $\eta_p^2 = .03$. In order to understand this main effect, a median split was conducted on the continuous variable. Examining the means for this variable revealed that participants who held more traditional gender role beliefs ($M = 5.20$, , $SE = .05$) gave lower ratings to applicants on work-related skills than those holding more egalitarian beliefs ($M = 5.37$, $SE = .05$). Similar to the above analyses, the main effect for applicant statement type was not significant, $F(1, 304) = .54$, indicating that the gender role cues provided in the applicant statement did not affect how the applicants were rated on work-related skills. In addition, there was no significant interaction between applicant statement type and participant gender role traditionalism, $F(1, 304) = 3.13$, indicating that a participant's level of gender role traditionalism and the gender role cues in the applicant statement did not affect the ratings of the applicants on work-related skills.

The combined effect of participant sex and gender role traditionalism. It seems likely that participant sex and participant gender role traditionalism may be related and it is possible that the effects for participant sex may be due to differences in participant gender role traditionalism. Previous research has shown that men tend to identify with traditional gender role stereotypes more highly than women, so it was expected that men would be more traditional in their predictions for applicant sex and work-related skills ratings (Maxwell, Ford-Dowe, Jimeno, & Shields, 2012). Therefore, two analyses examining the combined effect of these variables were conducted. A repeated-measures ANCOVA was conducted to accommodate the

continuous predictor variable. As indicated above, this analysis is appropriate for mixed designs with continuous predictors and examines all main effects and interactions.

The first repeated-measures ANCOVA examined if the assumed sex of the applicant (dependent variable) was different based on applicant statement type (two levels; within subjects), participant sex (two levels; between subjects), and participant gender role traditionalism (continuous predictor; between subjects). Similar to the analyses reported above, there was a significant main effect for participant sex, $F(1, 302) = 11.13$, $p < .001$, $\eta_p^2 = .04$. Women gave higher scores for assumed sex than men which indicates they were more likely to think the applicant was female regardless of applicant statement type. Also similar to the above analyses, there was no significant main effect for applicant statement type, $F(1, 304) = .08$, or for participant gender role traditionalism, $F(1, 304) = .02$.

In line with what was reported above, the interaction between applicant statement type and participant gender role traditionalism was not significant, $F(1, 302) = .01$, nor was the interaction between applicant statement type and participant sex, $F(1, 302) = 1.01$. The interaction between participant sex and participant gender role traditionalism was not significant, $F(1, 302) = .00$. However, there was a marginally significant three-way interaction between applicant statement type, participant sex and, gender role traditionalism, $F(1, 302) = 3.61$, $p = .06$, $\eta_p^2 = .01$. To understand and visualize this interaction, a median split was conducted on the gender role traditionalism score to create high and low gender role traditionalism groups. Using these groups, the interaction was graphed (Figure 1). This graph suggests that highly traditional women seemed to be more susceptible to the statement effects when compared to women lower on gender role traditionalism in that highly traditional women were more likely to think the feminine statements were made by a woman and the masculine statements were made by a man.

In contrast, men did not show much of an effect in response to the applicant statements, although highly traditional men seemed to show a slight difference in an unexpected direction.

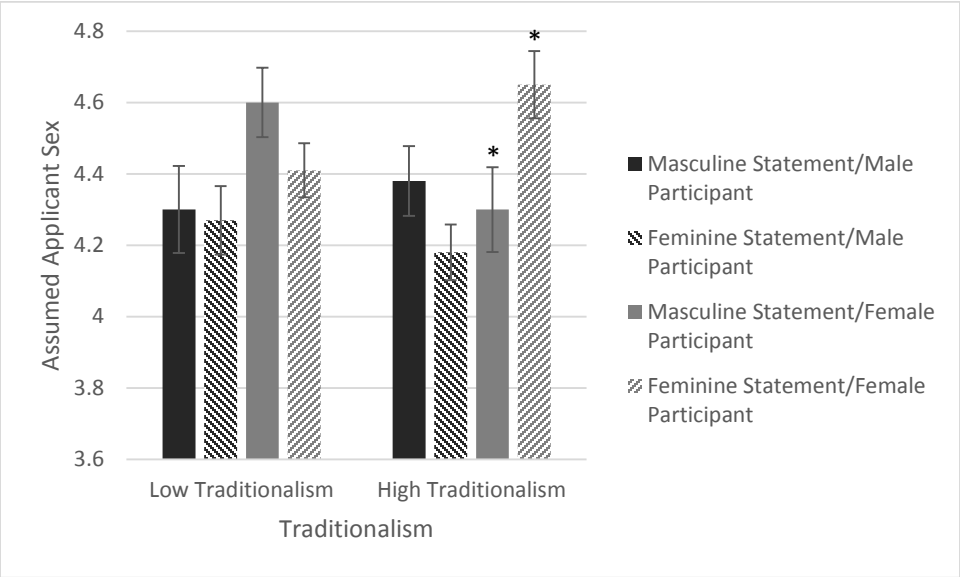

Figure 1: Three-way interaction between gender role traditionalism, applicant statement type, and, participant sex. The y-axis is scaled from definitely male (1) to definitely female (8). A median split was conducted on gender role traditionalism to better visualize the interaction effect. * $p < .05$

A second repeated-measures ANCOVA was conducted examining the effect of applicant statement type (two levels; within subjects), participant sex (two levels; between subjects), and participant gender role traditionalism (continuous predictor; between subjects) on the work-related skills ratings. Similar to the above analyses there was a significant main effect for participant sex, $F(1, 302) = 34.80$, $p < .001$, $\eta_p^2 = .10$. Women ($M = 5.49$, $SE = .05$) were more positive with their ratings than men ($M = 5.06$, $SE = .05$; estimated marginal means are reported). In addition, there was a significant effect for participant gender role traditionalism, $F(1, 302) =$

4.06, p =.04, η_p^2 =.01. In order to understand this main effect, a median split was conducted on the gender role traditionalism variable. Participants who were less traditional in their gender role beliefs were more positive in their ratings (M = 5.37, SE = .05) than those participants who were more traditional in their beliefs (M = 5.20, SE = .05). Considering these results are identical to the ones reported above, when participant sex and participant gender role traditionalism were analyzed separately, this suggests that these effects are independent. In addition, the fact that these effects are found consistently throughout these analyses, further shows that even though there may be some validity issues when conducting analyses using ANCOVA, this issue has been minimized using this systematic approach to these analyses. Consistent with this interpretation, there was no significant interaction between participant sex and participant gender role traditionalism, F(1, 302) = .38. Also in line with the analyses reported above, there was not a significant main effect for applicant statement type, F(1, 302) = 1.03, and none of the interactions were significant (p > .05): applicant statement type x participant sex, F(1, 302) = .06; applicant statement type x participant gender role traditionalism, F(1, 302) = 2.48; applicant statement type x participant sex x participant gender role traditionalism, F(1, 302) = 1.86.

Analyses examining participant childhood home and parental occupation. It was hypothesized that a participant's hometown or parental occupation could affect how they viewed the job applicants. It seemed likely that those participants growing up in regions of the country thought to hold more traditional gender role stereotype beliefs (e.g., Southern United States) or more traditional households (e.g., mother stayed at home) would be more traditional in their assumptions of applicant sex and work-related skills ratings. Two repeated-measures ANOVAs, similar to those above were conducted including region of childhood home and how this affected assumed sex of the applicant and ratings on work-related skills. It is important to note that the

vast majority of this sample (71.5%) indicated they resided in the Southeast United States during childhood. For assumed sex of the applicant, there was no main effect for region of the childhood home, $F(1, 297) = .90$, and no significant interaction between region of the childhood home and applicant statement type, $F(8, 297) = 1.10$. Similar to the previous analyses, there was no significant main effect for applicant statement type, $F(1, 297) = .68$, on the assumed sex of the applicant. Analyses considering participant ratings of work-related skills revealed no significant effects for region of the childhood home, $F(1, 297) = .86$, and no significant interaction between region of the childhood home and applicant statement type, $F(2, 297) = .90$. Similar to the previous analyses, the main effect for applicant statement type was not significant, $F(1, 297) = .02$. Taken together, these results indicate that the location of childhood home had little effect on whether the participant assumed the applicant was male or female.

Another set of analyses were conducted using mother's occupation to examine possible effects on assumed sex of the applicant and ratings on work-related skills. For assumed sex of the applicant, there was not a significant main effect for mother's occupation, $F(1, 303) = .12$, nor was there a significant interaction between applicant statement type and mother's occupation, $F(2, 303) = .88$. Consistent with the analyses above, there was not a significant main effect for applicant statement type, $F(1, 303) = .004$, on the assumed sex of the applicant. When considering ratings on work-related skills, there was not a significant main effect for mother's occupation, $F(1, 303) = .41$, nor was there a significant interaction between mother's occupation and applicant statement type, $F(2, 303) = .52$. Similar to the previous analysis, there was not a significant main effect for applicant statement type, $F(1, 303) = .77$, on the work-related skills ratings. These analyses indicate that participants' mothers' occupation had little effect on whether the applicant was assumed to be male or female or how they were ultimately rated on

work-related skills. The hypotheses regarding the region of the country where a participant was raised and mother's occupation during childhood were not supported.

Study 1 Discussion

Study 1 was designed to investigate whether gendered cues would activate gender role stereotypes and influence how participants perceived an applicant's sex and work-related skills. It was hypothesized that gender role stereotype cues (e.g., aggressive, nurturing) contained in short job applicant statements would be enough to produce a reliable prediction of the applicant's sex (See Table 4 on page 43 for a synopsis of the results). Specifically, it was expected that when masculine cues were presented in the statement, participants would assume the applicant was a male, and when feminine cues were presented, participants would believe the applicant was a female. This specific hypothesis was not supported. Interestingly, when examining participant sex alone, it was found that participants were more inclined to indicate the applicant's sex matched their own sex. This could suggest that removing names and other identifying information from job applications, a commonly suggested method of removing bias, might lead evaluators to assume the applicant is their own sex.

It was also hypothesized that the gender role stereotype cues in the applicant statements would lead to gender stereotyped ratings on work-related traits. Male applicants should have been rated more highly on masculine work-related traits (e.g. leadership) while women should have been rated more highly on feminine work-related traits (e.g., works well with others). This hypothesis could not be tested because a factor analysis of the work-related skills items revealed that these ten items were all part of one factor rather than two separate factors.

Broad differences in how the applicants were rated based on gender role stereotype cues included in the applicant statements were tested and no differences were found. However, when

participant sex was included in the analysis it was revealed that women tended to give higher ratings than men regardless of applicant statement type. This is consistent with previous research (Rice, Barth, & Talbert, 2014; Rice, Roberts, & Hart, 2013) also indicating that female participants are more generous with their ratings. Considering that women are expected to be more caring and communal than men (Eagly & Steffen, 1984), it makes sense that women would be inclined to give higher ratings.

Examining participant gender role traditionalism showed that those participants who were more egalitarian with their gender role beliefs were more inclined to give the applicants higher ratings on work-related skills, regardless of applicant statement type, but by itself, gender role traditionalism had no effect on the assumption of applicant sex. When participant sex and participant gender role traditionalism were examined as predictors in the same model, the results were not consistent with theoretical expectations. It was expected that those participants who were more traditional in their gender role stereotype beliefs would also be more traditional in their assumptions of applicant sex. For example, if masculine cues were presented, we would expect these participants to assume the applicant was male, particularly for male participants, since men tend to identify more highly with gender role stereotypes (Maxwell, Ford-Dowe, Jimeno, & Shields, 2012). Looking at the current data, highly traditional women seemed to be more affected by the statements than women lower on gender role traditionalism since these highly traditional women were more likely to assume the applicant was female after a feminine statement and male after a masculine statement. Traditionalism did not seem to have as much of an effect on men, except highly traditional men, who were more inclined to indicate the applicant was female when they saw a masculine statement. This result for traditional men is not easily

explained based on prior theory and will need further exploration in future research to examine if this is a robust phenomenon.

Finally, participant's childhood home and maternal occupations were predicted to influence responses in terms of what sex they predicted the applicant to be and the ratings on work-related skills. Neither childhood home nor mother's occupation proved to be a significant factor influencing participant responses. It had also been hypothesized that participants growing up with a mother who stayed at home may be more traditional (Dorius & Alwin, 2010), but again these data do not reflect that idea.

Study 1 provided little evidence that subtle gender role stereotype cues contained in resume statements were enough to activate gender role stereotypes. Examination of the data revealed that many of the scores for predicted sex hovered between four and five, indicating that generally, participants were ambivalent about the applicant's sex. Given that many of these scores are concentrated in the middle of the distribution, even when there are significant results, those are not necessarily meaningful differences that would lead to the prediction of strong gender biases in hiring decisions. The second study used a more intensive priming manipulation to activate gender role stereotypes. It is hypothesized that activating traditional gender role stereotypes would intensify the gender biases in a hiring situation while activating stereotype-incongruent gender role ideas would lessen this effect.

Table 4

Synopsis of Study 1 Results.

Analysis	Factor	DV	Significant Effects
1. ANOVA	Gender Role Cues[1]	Applicant Sex	Participant sex
		Work Skills	Participant sex
2. ANOVA	Gender Role Cues[1] Participant Sex	Applicant Sex	Participant sex
		Work Skills	Participant sex
3. ANCOVA	Gender Role Cues[1] Participant Traditionalism	Applicant Sex	NS
		Work Skills	Traditionalism
4. ANCOVA	Gender Role Cues[1] Participant Sex Participant Traditionalism	Applicant Sex	Participant Sex Applicant Statement Three-Way Interaction
		Work Skills	Participant Sex Traditionalism

[1]Denotes a repeated-measures factor.

Note. Unless otherwise stated, significant effects are main effects.

Study 2 Methods

Participants

Participants were recruited from the Introductory Psychology Subject Pool and upon completion of the study, were awarded partial credit for fulfillment of the research requirement. The initial sample was 339 individuals, however, complete data were not available for 17 participants due to technical difficulties during the study. Full data were obtained for 322 participants and the initial sample was composed of 168 females and 154 males.

Two participants (both male) were excluded because they indicated they did not read the directions before completing the priming task. Six participants (4 female and 2 male) were excluded because their reaction times while evaluating the applicants were more than three standard deviations below the mean, indicating an unusually fast response latency, and suggesting that they were not reading the prompts before giving a response. This exclusion criterion is consistent with that used by Blair and Banaji (1996). Finally, 32 participants were excluded due to insufficient data, and this will be explained below.

Final sample. The final sample consisted of 282 participants. There were 132 males and 150 females between the ages 17-22 (M = 20.75). Of this sample, 266 participants provided ethnicity information. Seventy-nine percent of the participants identified themselves as Caucasian/White, 9% of participants identified themselves as African-American/Black, and the remaining participants indicated they were Asian, Hispanic, or other (12%).

Design

The design of the study was a 2 (sex of the participant; between subjects) x 2 (gender of the profession: masculine or feminine; within subjects) x 2 (sex of the applicant; within subjects) x 3 (priming condition: stereotype-congruent, stereotype-incongruent; or control; between subjects) mixed design. To test some hypotheses, participants' self-reported gender role traditionalism was used as a continuous between subjects variable.

Apparatus

This study was programmed using Eprime Studio v.2.0. Three computers were equipped with 22 inch LCD monitors and one computer was equipped with a 19 inch LCD monitor. Participants viewed white text on a dark grey background for the duration of the study, and all instructions and stimuli were presented on the screen for the entire study.

Procedure

Pre-screening. All Introductory Psychology students were offered the opportunity to participate in the Psychology Subject Pool pre-screening questionnaire during the course of the semester. This pre-screening questionnaire is an online survey composed of a variety of measures and is completed outside of any particular study. The *Dimensions of Gender Stereotypes* (Diekman & Eagly, 2000) was presented to participants in this pre-screening so that their responses on this measure would not influence responses during the experimental session and vice versa.

Experimental session. When participants arrived for the study, they were randomly assigned to one of three priming conditions: stereotype-congruent, stereotype-incongruent, or control. Participants were seated in a private room containing a desk and a computer. First, participants read over the participant information sheet, which informed them of their rights as

participants in a research study. Once they indicated they were ready to begin, the experimenter showed them which keys they should use on the computer during the priming portion of the study and closed the door. Next, participants completed the priming task. Afterward, participants responded to 14 job applicant trials and completed a series of questionnaires, all on the same computer. Then, participants were debriefed and dismissed.

Priming (Appendix D). Across all priming conditions, participants were required to complete a reaction-time task in which they compared two words using a specific rule, pressing the "yes" key (left control key marked with a green dot) when two items matched the rule, and the "no" key (right-most enter key marked with a red dot) when two items did not match. The following directions were those given to the participants to explain the rule.

> *"Please take a few minutes to complete this brief computer task. You will be presented with two words. Select the "yes" key if the first word can be used to describe the second word. Select the "no" key if the first word could not describe the second word. For example, if you see the word "Glass" followed by the word "Window", you would press the "yes" key, but if you were to see the word "Glass" followed by the word "Mary", you would press the "no" key. Please work as quickly as you can while being as accurate as possible."*

Initially, a blank screen was presented for 300 milliseconds. This was followed by the trait word presentation lasting 150 milliseconds followed by another blank screen for 200 milliseconds. Finally, a noun (either a name or object depending on priming condition) was presented until the participant responded by pressing the "yes" or "no" key. Participants were given visual feedback consisting of a green check mark for a response matching the rule, and a red 'x' for a response that did not match the rule. This was provided to incentivize the participants to find the correct response. Each participant saw 128 priming trials, and 88 of these trials the items were consistent with the rule and 40 trials were not consistent with the rule. All stimuli were centrally presented.

***Stereotype-congruent prime*.** For the stereotype-congruent priming condition, participants were presented with two words, a descriptive trait word followed by either a masculine or feminine name. There were two types of descriptive trait terms. The first set were human characteristics derived from previous gender role stereotype research and were stereotypically masculine or feminine such as competitive or nurturing (Diekman & Eagly, 2000). The second set were non-human characteristics consisting of adjectives typically used to describe objects, such as wood. All the names used in the priming conditions were gender-salient names like Mike or Sara, and each was limited to one or two syllables so that they required a similar level of mental processing. The names were obtained from lists of the most common male and female baby names in the United States for the past several years (Social Security Administration, 2013) to ensure these names would be distinctly familiar as masculine or feminine names to most people.

Participants were instructed to press the "yes" key if the descriptive trait word could be used to describe the person, and to press the "no" key if the descriptive trait word could not be used to describe the person. Thus, correct matches in this condition only occurred when participants saw human characteristics paired with the human names. To be consistent with traditional gender role stereotypes, pairings between descriptive traits and names were manipulated such that feminine traits were only matched with female names and masculine traits were only matched with male names. See Appendix D for examples of items.

Previous research has shown that this type of task is effective as a gender role stereotype activation manipulation (Blair & Banaji, 1996; Blair & Hardin, 1996). Blair and Banaji (1996) and Blair and Hardin (1996) examined response latency and showed that participants were faster when responding to stereotype-congruent word pairs than stereotype-incongruent word pairs.

***Stereotype-incongruent prime*.** The stereotype-incongruent prime was identical to the stereotype-congruent prime, except the masculine traits were paired with female names and feminine traits were paired with male names. See Appendix D for examples of items.

***Control prime*.** In the control condition, participants viewed only non-human objects paired with non-human descriptive words. A correct match in this condition occurred when a word such as "Glass" was presented before the word "Window." Since, glass is a descriptive word that could describe window, this would be considered a match. However, if the word "Juicy" was presented before "Window" this would not be a match. These descriptive words were the same non-human characteristics presented in the other two priming conditions. See Appendix D for examples of items.

Review of Job Applicants. After completing the priming task, participants completed 14 job applicant trials. In each, they were presented with statements from two applicants consisting of 1-2 sentences that could be found on a resume, each paired with either a masculine or feminine name (See Appendix D for examples of items). Each applicant statement was void of words that may trigger gender role stereotypes so that only the name paired with the applicant statement conveyed applicant gender information. After each applicant, participants rated that applicant on 10 different work-related skills such as competence or dependability. After rating each applicant separately on the work-related skills, participants were presented a job description for an open professor position. These positions were in a typically masculine field (e.g., engineering) or a typically feminine field (e.g., nursing; See Appendix D for a complete list). Pilot testing using 60 undergraduate students, second-year students and above, confirmed that the chosen fields used in the current study were commonly viewed as either masculine or feminine. Finally, participants selected the candidate they would most likely hire using an 8-point scale (1 = definitely first applicant, 8 = definitely second applicant).

Eight of the 14 trials (57% of all trials) were target trials consisting of one male and one female applicant. For four of these trials, the female applicant appeared first and for the other four, the male applicant appeared first. In addition to these target trials, some filler trials were included to keep participants from inferring the true purpose of the study. For the six filler trials,

participants were presented with either two male or two female candidates. During the study, each participant saw three pairings of two male applicants and three pairings of two female candidates. The target and filler trials were presented in a true random order.

One issue arose due to the random order presentation of the two types of professor positions (masculine or feminine) that caused the loss of 32 participants. It was intended that each participant would rate four target trials for masculine positions and four target trials for feminine positions. Since the professor positions were paired in a random fashion with the 14 applicant trials (8 target mixed sex pairs and 6 filler same-sex pairs), it was possible that the target trials were not paired evenly with masculine and feminine positions. In 32 cases participants saw two or fewer target applicant trials paired with one of the professor positions types (masculine or feminine). Thus, these participants did not rate and hire in a sufficient number of the target trials (2 or fewer) to get a reliable score for either the masculine or feminine professor positions, and their ratings on these cases might not necessarily be representative of their behavior. Therefore, these 32 instances were excluded from data analysis. The remaining participants had a minimum of three target trials paired with each position type.

After completing the 14 hiring trials, participants were asked to indicate what factors they thought influenced their hiring decision and completed a series of explicit gender role stereotype questionnaires. Lastly, participants completed a demographics measure and then were verbally debriefed and dismissed.

Measures

Work-related skills ratings (Appendix D). Participants rated each applicant on ten different work-related skills. This was the same measure used in Study 1. An average score for work-related skills was created, and higher scores indicated better ability in work-related skills.

Similar to Study 1, even though both masculine and feminine work-related skills were presented, a factor analysis revealed that these items loaded to just one factor (See Table 4). A reliability analysis showed that this scale was highly reliable ($\alpha = .97$).

Table 5

Factor Analysis for Work-Related Skills Questions.

Item	Loading
Take Initiative	0.916
Leadership Skills	0.913
Dependability	0.906
Analytical Skills	0.895
Mentorship Ability	0.890
Cooperative	0.889
Likeability	0.887
Advance University	0.860
Take Direction	0.833
Competence	0.819
Eigenvalue	7.77
% of Variance Explained	77.68

Hiring decision (Appendix D). Participants indicated which applicant they would hire using an 8-point scale (1 = definitely first applicant, 8 = definitely second applicant). Responses were

recoded to reflect the following scale: 1-4 indicated a preference for hiring the male applicant, with 1 indicating definitely the male applicant, and 5-8 indicated a preference for hiring the female applicant, with 8 indicating definitely the female applicant. Since the extreme scores (1 and 8) indicate a stronger belief that the applicant is male or female, the middle values in this scale (4 and 5) indicate less confidence that the applicant is male or female, respectively. These hiring decision ratings were then averaged within position type to create a score for the hiring decision when a feminine job was presented and an average score for the hiring decision when a masculine job was presented. Higher scores indicate a preference for hiring the female applicant and lower scores indicate a preference for hiring the male applicant.

Pre-screening traditionalism measure (Appendix C). Similar to Study 1, the *Dimensions of Gender Role Stereotypes* (Diekman & Eagly, 2000) was included in the Introductory Psychology pre-screening. This measure was given outside the experimental session so that it would not affect participant responses during the study or reveal the true purpose of the study. For the participants who completed this measure, both masculinity (α = .86) and femininity (α = .77) proved reliable. However, only 45% of participants elected to complete this measure so this measure was not used in the subsequent data analyses.

Explicit gender role traditionalism measures given during the experimental session (Appendix C). Similar to Study 1, all participants completed the *Egalitarian Sex Roles Inventory* (Suzuki, 1991) and *Ambivalent Sexism Inventory* (Glick & Fiske, 1996). The *Egalitarian Sex Roles Inventory* was scored on a 7-point scale and higher scores indicated beliefs in accordance with more egalitarian views. A reliability analysis showed that this measure was reliable (α = .81). The *Ambivalent Sexism Inventory* was also scored on a 7-point scale but higher scores on this measure indicated a greater tendency to agree with more traditional gender

role stereotype beliefs. The *Ambivalent Sexism Inventory* showed moderate reliability for all three scales: Hostile Sexism ($\alpha = .78$), Benevolent Sexism ($\alpha = .67$), and Total Sexism ($\alpha = .79$). Similar to Study 1, the *Egalitarian Sex Roles Inventory* and *Ambivalent Sexism Inventory* were converted to z-scores and then averaged to create one measure of participant gender role traditionalism. Participants also completed the *Parental Responsibilities Scale* (McBride & Miller, 1993) in which they indicated whether mothers or fathers were more likely to perform child care tasks. This measure was included in order to compare data with other studies conducted in the lab and was not included in the subsequent data analyses because it is conceptually less related to how participants view gender in the workplace.

Study 2 Results

Preliminary Analyses

Differences in priming conditions. For the priming manipulation, participants responded to 128 trials and the first 20 trials for every participant were excluded as buffer or learning trials consistent with similar research (Blair & Banaji, 1996). Previous research has shown that items congruent with traditional gender role stereotypes are typically faster to associate than items incongruent with traditional gender role stereotypes (Blair & Banaji, 1996). In addition, participants should have been faster when responding to matching trials rather than non-matching trials. Two analyses examined these predictions.

A repeated-measures ANOVA was conducted examining priming condition (three levels; between subjects) and type of trial (two levels; matching or non-matching; within subjects) on reaction time (See Table 5 for means). There was a significant main effect for priming condition such that participants were faster in the stereotype-congruent condition compared to the control condition, $F(2, 280) = 3.86$, $p = .02$, $\eta_p^2 = .03$, which only partially supports the predictions. There was also a significant main effect for trial type (matching or non-matching) such that participants were significantly faster when responding to matching items rather than non-matching items, $F(2, 280) = 6.94$, $p = .009$, $\eta_p^2 = .02$, which supports the predicted direction of this effect. Finally, there was also a significant interaction between trial type and priming condition, $F(2, 280) = 5.52$, $p = .004$, $\eta_p^2 = .04$. Participants took significantly longer matching items in the control priming condition in general, however, there was an even greater reaction time difference during the non-matching trials in which the participants were even slower.

Table 6

Mean Reaction Time (in milliseconds) for each Priming Manipulation.

Priming Condition	Matching Trials		Non-Matching		Total	
	M	*SE*	*M*	*SE*	*M*	*SE*
Stereotype-Congruent	772.71	43.73	832.14	34.43	802.42	34.73
Stereotype-Incongruent	857.80	44.43	825.34	34.98	841.57	35.28
Control	863.69	43.50	1006.18	34.25	934.94	34.55
Total	831.40	25.34	887.89	19.95	934.94	34.55

Correlations between work-related skills ratings and hiring decisions. Preliminary analyses were conducted to ensure that the work-related skills ratings were related to the hiring decision in the current study. The work-related skills ratings were on a 7-point scale with higher values indicating more favorable ratings while the hiring decision was on an 8-point scale with lower values indicating preference for the male candidate and higher values indicating preference for the female candidate. Consequently, a positive correlation between work-related skills and hiring decision was expected for the female applicants, but a negative correlation between work-related skills and hiring decision was expected for the male applicants. Correlations between how the female applicants were rated on work-related skill and whether they were hired in a masculine, $r(281) = .21$, $p < .001$, or feminine, $r(281) = .28$, $p < .001$, position were significant.

Interestingly, how a male applicant was rated on work-related skills was unrelated the being hired in either a masculine, r (281) = -.01, *ns*, or feminine position, r (281) = -.03, *ns*.

Hypothesis 1: Control priming will lead to stereotypical responses.

Without additional information, culturally held gender role stereotypes should have influenced participant responses. Therefore, in the control priming condition, participants should have been more likely to hire applicants in a position matching the applicant's sex and also rate those applicants higher on work-related skills matching their sex (e.g., masculine attributes would lead to higher ratings for males).

To address the hiring decision question, a repeated-measures ANOVA was conducted on the hiring rating (dependent variable) with gender role stereotype of the position (two levels: masculine or feminine; within subjects) as the single independent factor. No significant effects were found, $F(1, 95) = .65$, indicating that male and female applicants were equally likely to be chosen for either type of position. Thus, the hypothesis for hiring decision was not supported.

In the original hypothesis, it was proposed that male applicants should have been rated more highly on masculine work-related skills and feminine applicants rated more highly on feminine work-related skills. This hypothesis could not be validly tested due to the fact that all work-related skills items loaded on one factor in the factor analysis. However, a second repeated-measures ANOVA was conducted to examine if the applicants were rated differently on work-related skills overall based on applicant sex (two levels; within subjects) for the control condition only. This analysis also revealed no significant effects, $F(1, 95) = 2.93$, indicating that participants in the control priming condition gave similar ratings to both male and female applicants.

Hypothesis 2: Stereotype-congruent priming should increase the degree to which participants respond in accordance with gender role stereotypes, and stereotype-incongruent priming should lessen the degree to which participant responses are consistent with gender role stereotypes.

It was hypothesized that when stereotype-congruent priming occurred, when compared to the control and stereotype-incongruent prime, participants would be more stereotypical in their hiring decisions and ratings of the job applicants. Also, under stereotype-incongruent priming conditions, when compared to the control and stereotype-congruent prime, it was expected that participants would be less stereotypical in their hiring decisions and ratings of the applicants. A repeated-measures ANOVA was conducted to see if priming condition (three levels: stereotype-congruent, stereotype-incongruent, or control; between subjects) and type of position (two levels; within subjects) had an effect on the decision of which applicant to hire (Table 6). There was a significant main effect for type of position, $F(1, 280) = 4.22$, $p = .04$, $\eta_p^2 = .02$. In general, participants were more likely to hire a female in the feminine positions, $M = 4.59$, $SE = .07$, than in the masculine positions, $M = 4.40$, $SE = .07$, since higher scores indicate a greater tendency to hire a woman. There was no significant effect for priming condition, $F(2, 280) = .39$, indicating that the type of prime did not affect which applicant was ultimately chosen for the position. In addition, the interaction between priming condition and type of positions was not significant, $F(2, 280) = .39$.

A second repeated-measures ANOVA was conducted to examine whether priming condition (three levels; between subjects) and applicant sex (two levels; between subjects) had an effect on how applicants were rated on work-related skills. There was a significant main effect for priming condition, $F(2, 280) = 3.73$, $p = .03$, $\eta_p^2 = .03$ (See Table 6 for means). Post

hoc testing using a Bonferroni correction revealed a significant difference ($p < .05$) in how applicants were rated on work-related skills in the stereotype-incongruent and control priming conditions. Applicants were rated significantly higher after participants had completed the stereotype-incongruent priming, $M = 5.31$, $SE = .06$, than participants who completed the control priming, $M = 5.09$, $SE = .06$. Similar to the analyses for Hypothesis 1, there was no significant main effect for applicant sex, $F(1, 280) = 2.91$, indicating that the male and female applicants were rated similarly on work-related skills. There was also no significant interaction between priming condition and applicant sex, $F(2, 280) = 1.00$.

Table 7

Table of Means for Hypothesis 2

		Priming Condition					
		Stereotype-Congruent (N = 96)		Stereotype-Incongruent (N = 92)		Control (N = 95)	
Dependent Variable		*M*	*SE*	*M*	*SE*	*M*	*SE*
Hiring Decision	Masculine Position	4.41	.12	4.41	.12	4.38	.12
	Feminine Position	4.69	.12	4.59	.12	4.51	.12
Work-Related Skills	Male Applicant	5.21	.06	5.31	.06	5.13	.06
	Female Applicant	4.14	.06	5.32	.06	5.06	.06

Note. Hiring Decision was made on an 8-point scale: 1 = definitely the male applicant, 8 = definitely the female applicant with middle values indicating more uncertainty. Work-Related Skills were rated on a 7-point scale: 1 = strongly disagree, 7 = strongly agree.

Supplemental Analyses

Analyses examining participant sex. Previous research has shown that men identify more strongly with traditional gender role stereotypes, so it was expected that male participants would be more traditional in their hiring decisions, typically selecting a male for a masculine position and a female for a feminine position. Two analyses were conducted, one for hiring decisions and one for work-related skills.

A repeated-measures ANOVA examined whether participant sex (two levels; between subjects), priming condition (three levels; between subjects) and position type (two levels; within subjects) had an effect on the hiring decisions made by the participants (Table 7). A significant main effect for participant sex was revealed, $F(1,277) = 5.98$, $p = .02$, $\eta_p^2 = .02$. Male participants ($M = 4.37$, $SE = .07$) had lower scores for hiring (indicating a greater preference for the male applicant) than female participants ($M = 4.61$, $SE = .07$). Similar to the analyses above, there was a significant main effect for position type, $F(1,277) = 4.47$, $p = .04$, $\eta_p^2 = .02$. Higher scores were given for the feminine job ($M = 4.59$, $SE = .07$) when compared to the masculine job ($M = 4.39$, $SE = .07$) indicating a slight preference for hiring a woman for feminine occupations and hiring a man for masculine positions. There was no significant main effect for priming condition, $F(1, 277) = .32$. There were also no significant interactions ($p > .05$) between position type x participant sex, $F(1, 277) = .98$; position type x priming condition, $F(2, 277) = .20$; priming condition x participant sex, $F(2, 277) = .59$; and position type x priming condition x participant sex, $F(2, 277) = .91$.

Table 8

Means for Hiring Decision Based on Participant Sex, Position Type and Priming Condition

		Priming Condition					
		Stereotype-Congruent (N = 96)		Stereotype-Incongruent (N = 92)		Control (N = 95)	
Position Type		*M*	*SE*	*M*	*SE*	*M*	*SE*
Masculine	Male Participant	4.19	.17	4.15	.18	4.31	.17
	Female Participant	4.60	.16	4.64	.16	4.43	.16
Feminine	Male Participant	4.49	.18	4.62	.18	4.44	.18
	Female Participant	4.86	.16	4.56	.17	4.58	.17

A repeated-measures ANOVA was conducted examining work-related skills ratings based on priming condition (three levels; between subjects), participant sex (two levels; between subjects), and applicant sex (two levels; within subjects; Table 8). The analysis revealed a significant main effect for participant sex, $F(1, 277) = 13.49$, $p < .001$, $\eta_p^2 = .05$. Consistent with previous research, female participants ($M = 5.31$, $SE = .04$) tended to be more favorable in their ratings of the job applicants than male participants ($M = 5.07$, $SE = .05$). In addition, there was a significant main effect for priming condition, $F(2, 276) = 3.82$, $p = .02$, $\eta_p^2 = .03$. As indicated in the earlier analyses, post hoc testing using a Bonferroni correction revealed that those

participants completing the stereotype-incongruent priming (M = 5.30, SE = .06) gave more favorable ratings than those individuals in the control priming condition (M = 5.09, SE = .06). There was no significant main effect for applicant sex, $F(1, 277) = 3.10$, $p = .08$, $\eta_p^2 = .01$. There were also no significant interactions ($p > .05$) revealed in this analysis: applicant sex x priming condition, $F(2, 277) = .89$; applicant sex x participant sex, $F(1, 277) = .91$; participant sex x priming condition, $F(2, 277) = .39$; and participant sex x applicant sex x priming condition, $F(2, 277) = .80$.

Table 9

Means for Work-Related Skills Based on Participant Sex, Position Type and Priming Condition

		Priming Condition					
		Stereotype-Congruent (N = 96)		Stereotype-Incongruent (N = 92)		Control (N = 95)	
Position Type		*M*	*SE*	*M*	*SE*	*M*	*SE*
Masculine	Male Participant	5.07	.09	5.19	.09	5.05	.08
	Female Participant	5.33	.08	5.41	.08	5.21	.08
Feminine	Male Participant	5.01	.09	5.12	.09	4.97	.09
	Female Participant	5.26	.08	5.49	.09	5.13	.09

Analyses examining participant gender role traditionalism. It was likely that gender role traditionalism may affect the ratings of the male and female applicants such that participants

who were more inclined to identify themselves as more traditional in terms of gender role stereotypes, would also be more traditional in their hiring and evaluation of job applicants. For example, participants holding very traditional beliefs might be more likely to hire the male applicant for a masculine position and be more likely to hire a female candidate for the feminine position. In addition, it is also possible that those holding more traditional beliefs might rate the male applicant higher on work-related skills, since traditionally men are thought to be more competent in work domains. Two analyses were conducted to examine these hypotheses.

First, a repeated-measures ANCOVA was conducted examining the effect of priming condition (three levels; between subjects), type of position (two levels; within subjects), and participant traditionalism (continuous predictor variable; between subjects) had an effect on the hiring decision made by participants. Similar to the analyses for Study 1, a systematic approach using ANOVA and analysis of covariance (ANCOVA) was used in the following analyses to address concerns reporting main effects of repeated-measures factors and covariate factors. By conducting sequential analyses examining each factor alone before the larger ANCOVA was conducted confirmed the validity of the reported main effects.

Following the procedure for the analyses for Study 1, participant gender role traditionalism was used as a covariate and then a custom model was created that allowed for the examination of main effects and interactions. Consistent with the analyses above, there was a significant main effect for position type, $F(1,277) = 4.38$, $p = .04$, $\eta_p^2 = .02$. When the position was masculine ($M = 4.40$, $SE = .07$), participants tended to select lower values for the hiring decision indicating a preference for male applicants) than when the position was feminine ($M = 4.59$, $SE = .07$. No other significant effects were revealed from this analysis ($p > .05$): main effect for priming condition, $F(2, 277) = .41$; main effect for participant gender role

traditionalism, $F(1, 277) = 1.37$; position type x participant gender role traditionalism, $F(1, 277) = 1.22$; position type x priming condition, $F(2, 277) = .16$; gender role traditionalism x priming condition, $F(2, 277) = .32$; and position type x priming condition x participant gender role traditionalism, $F(2, 277) = 1.18$.

A second analysis similar to the one above was conducted on work-related skills. This analysis examined the effect of priming condition (three levels; between subjects), applicant sex (two levels; within subjects), and participant traditionalism (continuous measure; between subjects) had an effect on the work-related skills ratings. Similar to comparable analyses without traditionalism, there was a significant main effect for priming condition, $F(1,277) = 3.68$, $p = .03$, $\eta_p^2 = .03$. Those participants who completed the stereotype-incongruent prime gave higher ratings on work related skills ($M = 5.31$, $SE = .06$) than those participants who completed the no-stereotype control priming ($M = 5.10$, $SE = .06$). There was a significant interaction between applicant gender and participant gender role traditionalism, $F(1,277) = 4.01$, $p = .04$, $\eta_p^2 = .02$. To examine this interaction, a median split on gender role traditionalism was used to divide participants into high and low traditionalism groups, and the mean scores on work-related skills for the male and female applicants were graphed for each group to help visualize the finding (Figure 2). Figure 2 reveals that male applicants were rated higher than female applicants on work-related skills by those individuals who were more traditional in their gender role beliefs. Less traditional participants showed equivalent ratings on work-related skills for female applicants and male applicants. No other significant effects were found ($p > .05$): main effects for position type, $F(1, 277) = 2.82$; main effect for participant gender role traditionalism, $F(1, 277) = .01$; position type x priming condition, $F(2, 277) = 1.07$; participant gender role

traditionalism x priming condition, $F(2, 277) = 1.15$; and position type x priming condition x participant gender role traditionalism, $F(2, 277) = .38$.

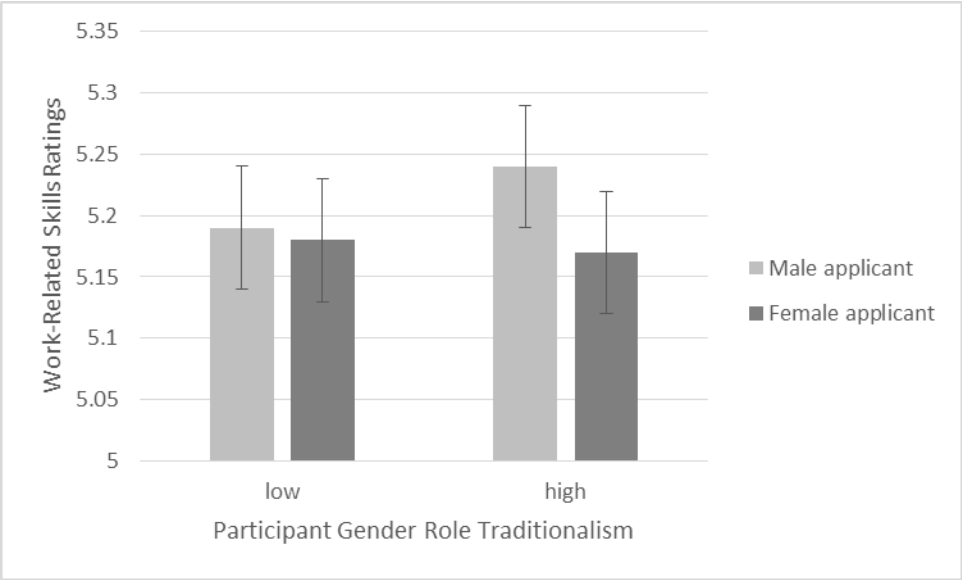

Figure 2: Interaction between statement type and participant gender role traditionalism. A median split was conducted on gender role traditionalism to better visualize the interaction effect.

Combined effect of participant sex and participant gender role traditionalism.

Although no significant effects were revealed from gender role traditionalism alone, it is likely that gender role traditionalism and participant sex are related. To examine the combined effect of participant sex and gender role stereotype traditionalism on overall hiring decision, a repeated-measures ANOVA using priming condition (three levels; between subjects), type of position (two levels; within subjects), participant sex (two levels; between subjects), and participant traditionalism (continuous predictor; between subjects) was conducted. There was a significant main effect for position type, $F(1,271) = 4.87$, $p = .03$, $\eta_p^2 = .02$. Similar to the above analyses,

examination of the marginal means indicated that the masculine position (M = 4.39, SE = .07) were more often given lower scores for the hiring decision while feminine positions (M = 4.60, SE = .07) were given higher scores indicating a preference for selecting males and females for these positions, respectively. In addition, similar to the above analyses, there was a significant main effect for participant sex, $F(1,271) = 5.05$, $p = .03$, $\eta_p^2 = .02$. Male participants were more likely to prefer the male applicant for either position (M = 4.38, SE = .07) and female participants were more likely to prefer the female applicant (M = 4.61, SE = .07). There were no other significant effects for this analysis ($p > .05$): main effect for priming condition, $F(2,271) = .30$; main effect for participant gender role traditionalism, $F(1,271) = .42$; priming condition x participant sex, $F(2,271) = .53$; priming condition x participant gender role traditionalism, $F(2,271) = .27$; position type x priming condition, $F(2,271) = .16$; position type x participant sex, $F(1,271) = 1.11$; position type x participant gender role traditionalism, $F(1,271) = .54$; position type x priming condition x participant sex, $F(2,271) = 1.37$; position type x priming condition x participant gender role traditionalism, $F(2,271) = 1.70$; priming condition x participant sex x participant gender role traditionalism, $F(3,271) = .95$; and position type x priming condition x participant sex x participant gender role traditionalism, $F(3,271) = .17$.

A second repeated-measures ANOVA examining differences for work-related skills was conducted using priming condition (three levels; between subjects), applicant sex (two levels; within subjects), participant sex (two levels; between subjects); and participant traditionalism (continuous predictor; between subjects). Similar to the analyses above, there was a main effect for participant sex, $F(1,271) = 12.77$, $p < .01$, $\eta_p^2 = .05$. Examination of the marginal means show that women were more positive with their work-related skills ratings (M = 5.31, SE = .05) than men (M = 5.08, SE = .05). There was also a main effect for priming condition, $F(1,271) =$

3.91, $p = .02$, $\eta_p^2 = .03$. Similar to the results above, those participants who completed the stereotype-incongruent priming gave higher ratings ($M = 5.32$, $SE = .06$) than those participants completing the no-stereotype control priming ($M = 5.09$, $SE = .06$). No other significant effects were found ($p > .05$): main effect for applicant sex, $F(1,271) = 2.42$; main effect for participant gender role traditionalism, $F(1,271) = .42$; priming condition x participant sex, $F(2,271) = .27$; priming condition x participant gender role traditionalism, $F(2,271) = .27$; applicant sex x priming condition, $F(2,271) = 1.18$; applicant sex x participant sex, $F(1,271) = .36$; applicant sex x participant gender role traditionalism, $F(1,271) = 2.98$; applicant sex x priming condition x participant sex, $F(2,271) = .45$; applicant sex x priming condition x participant gender role traditionalism, $F(2,271) = .14$; priming condition x participant sex x participant gender role traditionalism, $F(3,271) = .45$; and applicant sex x priming condition x participant sex x participant gender role traditionalism, $F(3,271) = .23$.

Study 2 Discussion

This study used stereotype-congruent, stereotype-incongruent, and no-stereotype control priming to manipulate the level that gender role stereotypes were activated before participants completed several hiring trials. Before discussing the main findings, it is important to consider the characteristics of the priming manipulation. Previous research (Blair & Banaji, 1996) has shown that people are typically faster when associating stereotype-congruent terms rather than stereotype-incongruent terms, and the current research found similar trends, although the differences were not significant. Analyses of the priming manipulation revealed that participants were faster in their responses in the stereotype-congruent and stereotype-incongruent conditions in comparison with the no-stereotype control priming condition. One possible interpretation of this result could be due to the nature of the matching task participants were asked to complete. In the two stereotype priming conditions (stereotype-congruent and stereotype-incongruent), participants were asked to match human names with human characteristics or traits but in the control priming condition, participants were asked to match inanimate objects with descriptive traits. It seems likely that matching human names and characteristics would be an easier task than the one required in the control priming condition. The critical issue, however, is if the three priming conditions activated the expected attitudes and beliefs related to gender.

It was hypothesized that individuals in the no-stereotype control priming condition would respond in accordance with gender role stereotypes since without additional information, culturally held gender role stereotype norms should influence behavior. Therefore, it was expected that those participants in the no-stereotype priming condition would be more likely to

hire a male applicant in a masculine position and a female applicant in a feminine position. This hypothesis was not supported. Participants were equally likely to hire a male and female applicant in either position.

Along with the hypotheses regarding the hiring decision, it was also hypothesized that participants in the no-stereotype control condition would also rate applicants consistent with the common gender role stereotype norms on work-related skills. Similar to Study 1, this hypothesis could not be tested. A factor analysis revealed that the work-related skills items created one factor and thus, differences in participant response regarding this one factor were examined. This analysis also revealed no significant effects. In the no-stereotype control priming condition, participants rated the male and female applicants similarly on work-related skills.

It was originally hypothesized that the stereotype-congruent priming condition would intensify the degree to which participants responded in accordance with traditional gender role stereotypes. In addition, those participants in the stereotype-incongruent priming condition should have been less likely to respond in accordance with traditional gender role stereotypes. When examining participants' hiring decisions, it was revealed that participants were only slightly more inclined to hire a female in feminine positions and a male in the masculine positions, regardless of the priming condition.

It is important to note that the gender stereotypes for the field of study for the professor positions were pilot tested and the expected trends were shown in the piloting. Considering that a college student sample composed of mainly first-year students was used for the current research, it is possible that this sample may not hold the same stereotypical associations for college disciplines as the slightly older students used in the exploratory evaluation. In addition, this sample may have been inexperienced with the task of hiring someone for a professor

position and this could have affected their responses. No significant effects were found for priming condition when considering the hiring decision. However, the priming condition did affect how participants rated the applicants on work-related skills. Those participants completing the stereotype-incongruent condition, where gender role stereotypes were activated in a non-traditional way, were more favorable in their judgments of work-related skills, regardless of the applicant sex.

The same analyses were conducted examining participant sex, participant gender role traditionalism, and the combination of the two (See Table 10 on page 71 for a synopsis of the supplemental hypothesis results). As predicted and seen in Study 1, women gave higher ratings on work-related skills, regardless of an applicant's sex. Also, men showed a slight preference for hiring the male applicant compared to women who showed a slight preference for hiring the female applicant. When examining participant gender role traditionalism, a significant interaction between applicant sex and participant gender role traditionalism was revealed for the work-related skills ratings. Results showed that compared to female applicants, male applicants were endorsed more highly on work-related skills by individuals who were more traditional in their gender role beliefs. This makes sense because traditional gender roles dictate that men should be the provider for the home (Eagly & Steffen, 1984), so those holding beliefs aligned with these traditional gender role stereotypes might also believe that men are more skilled for work-related tasks.

However, when considering that similar results were shown for the separate analyses using participant sex and participant gender role traditionalism as when these two variables were examined together, suggesting that the effects of participant sex and participant gender role traditionalism on hiring decisions are not highly related. This is interesting because it suggests a

few possibilities. First, since more consistent effects were found for participant sex across the analyses, participant sex rather than participant gender role traditionalism may be a more important factor. It seemed likely that participant gender role stereotype beliefs would play a large role in how job applicants were evaluated since it was thought that workplace evaluations would be tied heavily to traditional gender role stereotypes. In addition, it may be that the measures used in the current research were not capturing those factors related to workplace decisions. There could be some other factor related to gender role stereotype beliefs that could better predict how participants are making workplace evaluations.

Table 10

Synopsis of Hypotheses Results for Study 2.

Analysis	Factors	DV	Result
1. ANOVA	Priming Condition	Hiring	NS
	Position Type[1]	Decision	
	Applicant Sex[1]	Work Skills	Priming
2. ANOVA	Priming Condition	Hiring	Participant Sex
	Participant Sex	Decision	Position Type
	Position Type[1]	Work Skills	Priming
	Applicant Sex[1]		Participant Sex
3. ANCOVA	Priming Condition	Hiring	Position Type
	Traditionalism	Decision	
	Position Type[1]	Work Skills	Priming
	Applicant Sex[1]		Applicant Sex x Participant Sex
4. ANCOVA	Priming Condition	Hiring	Participant Sex
	Participant Sex	Decision	Position Type
	Traditionalism	Work Skills	Priming
	Position Type[1]		Participant Sex
	Applicant Sex[1]		

1 Denotes a repeated-measures factor.

Note. Unless otherwise stated, significant effects are main effects.

General Discussion

The current research was grounded within two prominent gender role theories: Social Role Theory (Eagly, 1987) and Role Congruity Theory (Eagly & Karau, 2002). Previous research has shown support for these two theories when considering self-judgments, so the next logical extension of these theories was to examine how implicit processing may affect our judgments of others. The current study provided some evidence of a gender bias in hiring decisions and the work-related skills ratings, however, the effects of automatically activated gender stereotypes remains inconclusive. In the first study, gender role beliefs were expected to be activated through gender cues contained in short statements, though given the results, it seems that this was not a powerful enough manipulation to produce this activation. A second study utilized priming to activate associations between gender and stereotypical gendered characteristics. The stereotype-incongruent priming did affect some responses indicating that the activation of beliefs about gender may influence judgments of others. Some methodological issues in the current study might have played a role in these results and can be refined in future research. Other issues considering gender role stereotypes still need investigation and these are discussed below.

It was proposed that activating gender role stereotype beliefs, either through gendered characteristics contained in short statements or through priming, would affect how participants viewed job applicants. Specifically, it was predicted that this activation would lead to either more or less stereotypical responses depending on how gender role stereotypes were activated. However, the current studies found only mixed support for this broad hypothesis. It is clear that

in Study 1, the minimal cues provided to participants were not enough to lead to a consistent assumption of applicant sex. Since the participants did not have a good idea of the applicant's sex, without much else differentiating the applicants, it follows that there was also little difference in how the applicants were rated on work-related skills. In Study 2, the priming manipulation did not have the expected effect. Those participants experiencing stereotype-congruent priming were expected to respond even more in accordance with traditional gender role stereotypes and this was not shown.

Interestingly, participants who completed the stereotype-incongruent priming were actually more favorable with their ratings of work-related skills which is somewhat consistent with the predicted findings. It was originally hypothesized that stereotype-incongruent priming would allow for the activation of multiple aspects of gender role stereotypes, specifically those inconsistent with traditional gender role stereotypes; and the more favorable ratings given by those participants who completed the stereotype-incongruent priming condition are consistent with this idea. This priming may have caused an enhanced view of both male and female applicants, by activating non-traditional stereotyped characteristics in addition to the traditional stereotyped characteristics generally regarded for men and women, resulting in the higher overall ratings. By activating both traditional and non-traditional gender role stereotypes, participants may have had a more well-rounded view of the capabilities of men and women in the workplace and this may be reflected in their ratings of these individuals on work-related skills.

Adding participant sex and participant gender role traditionalism into the analyses for both studies uncovered some additional effects. In both studies, female participants tended to give higher ratings on work-related skills and this is consistent with previous research (Rice, Barth, & Talbert, 2014; Rice, Roberts, & Hart, 2013). When considering participant gender role

traditionalism, it was shown that those participants who were more egalitarian in their beliefs tended to also give higher ratings on work-related skills but only in Study 1. This suggests that this measure of gender role traditionalism does not produce a robust effect. However, higher ratings were given after stereotype-incongruent priming in Study 2, which is consistent with the effect from Study 1, since this priming was designed to activate more egalitarian gender role beliefs. Also, male applicants were rated higher on work-related skills by participants who were highly traditional in their gender role stereotype beliefs when compared to ratings given to female applicants. This makes sense considering work-related skills are often akin to traits that are more typically stereotyped as masculine. Though some of the effects found in this research were small, in a real-world situation, their accumulative effect over the hiring process could become a larger issue. Real-world hiring decisions can encompass several levels of management before a hiring decision is made, so even very small biases at each level can add up to a larger gender bias once the final decision is made.

These findings are consistent with what would be expected given knowledge of traditional gender role stereotypes. It seems likely that individuals who are highly traditional would prefer a male applicant in the workplace since according to traditional gender role stereotypes, men are more suited to perform skills required in the workplace (Eagly, 1986). However, when considering the assumed applicant sex in Study 1, and hiring decision in Study 2, effects for participant gender role traditionalism were not present. While masculine cues in the form of the applicant statement in Study 1 or the name of the applicant in Study 2, garnered higher ratings on work-related skills from highly traditional people, these ratings were not enough to produce differences in assumed sex or hiring decisions. The findings for participant sex and participant gender role traditionalism in the current research lend support to the idea that

the characteristics of an evaluator matter more in workplace decisions than previously considered.

Priming was used in Study 2 as a more direct method of activating gender role stereotypes and manipulating how these stereotypes were considered by participants. Previous research has shown that similar tasks are effective at activating gender role stereotypes (Banaji & Hardin, 1996; Blair & Banaji, 1996). The current research found that stereotype-incongruent priming had an effect on the work-related skills ratings when compared to participants who completed the control priming. This result was consistent with the hypotheses, but the overall expected findings for the priming manipulation were disappointing. It was expected that the stereotype-congruent priming would intensify stereotyped responses, but the current research did not show this effect. It is worth noting that the priming task for the current research was slightly different from those used in Blair and Banaji (1996). Blair and Banaji (1996) used physical attributes of men and women in their priming manipulation. Physical attributes are often more definitely categorized as masculine or feminine (e.g., skirt is usually feminine while a tie is usually masculine) than personality attributes, and other research has alluded that personality attributes are largely inferred from these physical traits (Deaux & Kite, 1985).

However, previous research has shown that priming tasks similar to the one used in the current study can affect participants' self-concepts (e.g., Rudman & Phelan, 2010), so it logically follows that this effect should have been found for evaluating others. The priming used in some of this self-concept literature was more similar to that used in the current research in that more personality attributes were used during priming (e.g., Rudman & Phelan, 2010). Given that these types of primes have been able to alter self-concepts, it seems that these should have also had an effect on how people evaluate others. One possible explanation for these differences could be

that people are more candid when evaluating themselves and more aware of potential biases when evaluating others. In addition, some people may believe that it is okay for others to break traditional gender role stereotypes but be uncomfortable with the idea of breaking gender role stereotypes in their own behavior. It seems possible that people would try to be more careful when their decisions could affect others.

The context in which participants are making judgments may play a role in how pronounced the priming effect may be. For example, people might be more comfortable evaluating themselves over evaluating others because the ratings directly pertain to them. However, hiring situations may be less relevant to a college student sample and could have affected the comfort level of participants when performing these evaluations. The current sample may not be very accustomed to all the duties required for a professor position. Originally, it was expected that hiring a university professor would be of more interest to students because this is a situation that would potentially affect their lives. It is possible that if a more relevant task, such as evaluating someone as a student ambassador or student government representative, were used, then gender role stereotype priming would be a more effective manipulation.

On a related note, there may be some developmental issues concerning the association between gender role stereotypes and the workplace. It is likely that among the undergraduate student sample used in the current research, many of them may have little work experience and this could affect their views of gender in a workplace context. Since we know that stereotypes are formed by understanding associations (Aronson, 2008), it is possible that many undergraduate students have not yet learned the association between traditional gender role stereotypes and the workplace. In addition, these undergraduate students have grown up in a

time where female leaders are more prominent and it seems that this may also affect their views of women in the workplace. If these ideas are true, then these students would not judge others in workplace situations according to gender role stereotypes to the same degree as those individuals that have more workplace experience and have already learned these stereotypical associations.

Though priming has been shown to be an effective manipulation in previous research, this technique has gathered some criticism since the effects are typically hard to replicate (Yong, 2012). One explanation for this is the fact that priming effects tend to be subtle and require very specific conditions to be observed. In addition, priming is often harder to replicate than other manipulations, because priming requires that the task be disguised or insignificant enough that participants do not detect the purpose of the prime; yet primes must also be powerful enough to produce an effect, and this balance can be hard to achieve (Young, 2012). The intricacies involved in priming may explain some of the replication issues with priming research and may partially explain why the current study did not find effects consistent with previous research.

Limitations

There are several methodological reasons that could have affected the findings of the current research. First, the sample for the current study consisted of university undergraduate students which may limit the generalizability of the research findings. As noted above, it is unlikely that many university undergraduate students would have ever been in a situation that required them to actually hire or evaluate someone in the workplace. Therefore, this sample may not be representative of individuals who are actually making hiring and evaluation decisions in the workplace.

In addition, in a controlled lab setting, it is hard to mimic circumstances that would translate to the real-world. In reality, individuals are not asked to judge job applicants on a few

short sentences or even on a computer. Typically, more information is available about the applicant, and hiring decisions are usually a collaborative decision among a group of individuals designated with the responsibility of hiring a new employee. Having multiple people conduct evaluations for hiring is beneficial because there are multiple viewpoints considering the strengths and weaknesses of the potential employees. The lack of information given about the applicants and the sterile hiring situation may have contributed to the lack of support for the hypotheses in this research.

The work-related skills measure used in the current study included a mix of traditionally masculine and traditionally feminine items. However, a factor analysis revealed that these items encompassed one scale. It is documented that biases in skills attributed to men and women in the workplace occur in the real-world but this bias was not mimicked in the lab study. It is possible that the feminine characteristics used (e.g., dependable, works well with others) were positive characteristics and the reason real-world biases occur may be based on negative characteristics attributed to a particular gender. For example, women are stereotypically viewed as more emotional and worrisome and these characteristics could actually affect how they are rated in actual workplace situations. It seems likely that a promotion or hire could be denied even if the employee/applicant held all the positive qualities necessary to perform the job but some negative stereotyped characteristics factored into the overall judgment of a candidate's suitability. Future research may want to present a better-rounded picture of an applicant or consider ratings on these negative characteristics to examine how these characteristics might affect the resulting workplace decision.

Finally, the repeated-measures design of this study may have also been a limiting factor. It is possible that during the 14 applicant statements in Study 1 or 14 hiring trials in Study 2, that

participants ascertained the purpose of the study. If participants knew the purpose of the current research was to examine gender role stereotypes, they might have become more aware of gender role stereotypes, in general, and the impact of those stereotypes in certain situations, like the workplace. Also, as with all repeated-measures designs, participant fatigue is always a concern (Shaughnessy, Zechmeister, & Zechmeister, 2011). Each of the studies took about an hour to complete and participants were rating multiple applicants, so it seems possible that participant fatigue could have been an issue in this research.

Future Directions

Though the current research showed mixed support for the idea that gender role stereotype activation could affect judgments and perceptions of others, continuing research examining gender role stereotypes in the workplace is necessary. Considering there are still very prominent gender issues in hiring and retention in some fields, like STEM, it is important to try and pinpoint some reasons why this is happening (e.g., U.S. Department of Labor, 2010; Yale Daily News, February 25, 2013). It is also important to continue to study gender role stereotypes so we can examine how these stereotypes might evolve over time as women's roles in society change.

Future research could consider a few different paths. First, considering that the priming manipulation did not produce the expected effects in the current research, additional research could clarify and refine this priming manipulation. Priming effects have been known to be difficult to reproduce (Yong, 2012), so it is imperative to understand why the current research failed to show strong effects. The question from here becomes, in what situations or contexts is this an effective task for activating gender role stereotypes? Other priming research investigating whether priming could be used to activate gender role stereotypes (e.g., Blair &

Banaji, 1996) and research concerning self-concepts (e.g., Rudman & Phelan, 2010) does show the expected effects. It could be possible that this is an effective manipulation for self-judgments, but not for evaluating others, and if so, further research is necessary to understand why this would be the case. As previously mentioned, the context of the decision could play a large role in the effectiveness of a priming manipulation so future research could explore priming effects on judgments using contexts more familiar to college students. For example, it could be very interesting to examine how students might respond if they were selecting a classmate for a leadership position or a course work group. This situation would be more familiar to an undergraduate sample and thus might yield more of an effect.

Secondly, when examining gender role stereotypes in the workplace, it would advantageous to have participants with previous experience in the workplace or leadership positions. These individuals would have likely been in a situation where they were required to hire or evaluate an employee and thus, would be a more suitable sample for the current research. If individuals were already accustomed to making quick judgments about others from specified amounts of information, like a resume, then they would be better equipped to make the type of judgments required for the current research. In addition, participants with some leadership or work experience may also be more familiar with gender role stereotype issues that are present in the workplace and therefore, be more susceptible to showing gender biases. For example, someone who has been working primarily in a STEM discipline may be more used to working with a group of men and consequently, be more in tune with gender dynamics in the workplace. It would be interesting to conduct research considering how applicants are perceived by prospective employers in both male and female dominated work environments.

Finally, previous research has given little attention to characteristics of the evaluator/participant, even though it is likely that a person's own gender and gender role stereotype beliefs would play a role in how they are evaluating others. The current studies and some of my previous research have found some interesting effects for participant sex. There are clear differences in the way that men and women respond to job applicants based on the little information they received about these applicants such as the differences shown in the work-related skills ratings. In addition, the current research found some support for the idea that participants were extrapolating their own characteristics onto the job applicants when there was ambiguous information (i.e., a lack of applicant sex information). This is interesting because both of these effects suggest that the characteristics of the evaluator are more important than previously considered in these decisions. Future research needs to consider exactly what ways and to what degree the gender role stereotype beliefs of the evaluator can play a role in the perceptions of others in workplace settings.

In conclusion, although the current research did not provide strong evidence supporting the automatic activation of gender role stereotypes during hiring decisions, there is still some strong justification for continued research in this area and a particular need to understand priming manipulations in gender role stereotype research. Also considering there is still a discrepancy in the hiring and promotion of women in the workplace (Beede, et al., 2010; Valian, 1999), this research is warranted in order to understand why these biases exist and how to change them.

References

Aronson, E. (2008). *The Social Animal*. New York, NY: Worth Publishers.

Banaji, M.R. & Hardin, C.D. (1996). Automatic stereotyping. *Psychological Science, 7*, 136-141.

Blair, I. V., & Banaji, M. R. (1996). Automatic and controlled processes in stereotype priming. *Journal of Personality and Social Psychology, 70*(6), 1142.

Beede, D., Julian, T., Langdon, D., McKittrick, G., Khan, B., & Doms, M. (2011). Women in STEM: A gender gap to innovation. Retrieved January 14, 2013 from http://www.esa.doc.gov/sites/default/files/reports/documents/womeninstemagaptoinnovation8311.pdf.

Carli, L.L. (1990). Gender, language and influence. *Journal of Personality and Social Psychology, 59*, 941-951.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance.

Conway, M., Pizzamiglio, M.T., & Mount, L. (1996). Status, communality, and agency: Implications for stereotypes of gender and other groups. *Journal of Personality and Social Psychology, 71*(1), 25.

Dasgupta, N., & Asgari, S. (2004). Seeing in believing: Exposure to counterstereotypic women leaders and its effect on the malleability of automatic gender stereotyping. *Journal of Experimental Social Psychology, 40*(5), 642-658.

Davies, P.G., Spencer, S.J, & Steele, C.M. (2005). Clearing the air: identity safety moderates the effects of stereotype threat on women's leadership aspirations. *Journal of Personality and Social Psychology, 88*(2), 276.

Deaux, K., & Kite, M. E. (1985). Gender stereotypes: Some thoughts on the cognitive organization of gender-related information. *Academic Psychology Bulletin*.

Delaney, H.D. & Maxwell, S.E. (1981). On using analysis of covariance for repeated-measures designs. *Multivariate Behavioral Research, 16*(1), 105-123.

Devos, T., Blanco, K., Rico, F. & Dunn, R. (2008). The role of parenthood and college education in the self-concept of college students: Explicit and implicit assessments of gendered aspirations. *Sex Roles, 59*, 214-228.

Diekman, A.B. & Eagly, A.H. (2000). Stereotypes as dynamic constructs: Women and men of the past, present and future. *Personality and Social Psychology Bulletin, 26*, 1171-1188.

Diekman, A.B. & Goodfriend, W. (2006). Rolling with the changes: A role congruity perspective on gender norms. *Psychology of Women Quarterly, 30*, 369-383.

Dorius, S. F., & Alwin, D. F. (2010). The Global Development of Egalitarian Beliefs–A Decomposition of Trends in the Nature and Structure of Gender Ideology. *Ann Arbor: Population Studies Centre Research Report, University of Michigan, Institute for Social Research*.

Dovidio, J. F., Kawakami, K., Johnson, C., Johnson, B., & Howard, A. (1997). On the nature of prejudice: Automatic and controlled processes. *Journal of Experimental Social Psychology, 33*, 510–540.

Eagly, A.H. (1987). *Sex differences in social behavior: A social-role interpretation.* Hillsdale, NJ: Lawrence Erlbaum Associates.

Eagly, A.H. (1997). Sex differences in social behavior: Comparing social role theory and evolutionary psychology. *American Psychologist, 52,* 1380-1383.

Eagly, A. H., & Steffen, V. J. (1984). Gender stereotypes stem from the distribution of women and men into social roles. *Journal of Personality and Social Psychology, 46*, 735–754.

Eagly, A. H., & Steffen, V. J. (1986). Gender and aggressive behavior: a meta-analytic review of the social psychological literature. *Psychological Bulletin*, *100*(3), 309.

Eagly, A. H., & Steffen, V. J. (1988). A note on assessing stereotypes. *Personality and Social Psychology Bulletin*, *14*(4), 676-680.

Eagly, A. H., Wood, W., & Diekman, A. B. (2000). Social role theory of sex differences and similarities: A current appraisal. *The developmental social psychology of gender*, 123-174.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review, 109,* 573–598.

Fazio, R. H., & Olson, M. A. (2003). Implicit measures in social cognition research: Their meaning and use. *Annual review of psychology*, *54*(1), 297-327.

Field, A. (2013). *Discovering Statistics Using IBM SPSS Statistics.* London: Sage.

Foschi, M. (2000). Double standards for competence: Theory and research. *Annual Review of Sociology, 26*, 21-42.

Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology*, *70*(3), 491.

Glick, P. & Fiske, S.T. (1999). Sexism and other "isms": Interdependence, status, and the ambivalent content of stereotypes. In W.B. Swann, J.H. Langiois & L.A. Gilbert (Eds.), *Sexism and stereotypes in modern society: The gender science of James Taylor Spence* (pp. 193-211). Washington, DC: American Psychological Association.

Greenwald, A.G., Banaji, M.R., Rudman, L.A., Farnham, S.D., Nosek, B.A., & Mellott, D.S. (2002). A unified theory of implicit attitudes, stereotypes, self-esteem, and self-concept. *Psychological Review, 109*, 3-25.

Greenwald, A. G., McGhee, D. E., & Schwartz, J. L. K. (1998). Measuring individual differences in implicit cognition: The Implicit Association Test. *Journal of Personality and Social Psychology*, *74*(6), 1464–1480.

Heck, R.H., Thomas, S.L., & Tabata, L.N. (2011). *Multilevel and Longitudinal Modeling with IBM SPSS*. NY: Routledge.

Heilman, M.E. (2001). Description and prescription: How gender stereotypes prevent women's assent up the organizational ladder. *Journal of Social Issues, 57*, 657-674.

Heilman, M. E., Wallen, A. S., Fuchs, D., & Tamkins, M. M. (2004). Penalties for success: Reactions to women who succeed at male gender-typed tasks. *Journal of Applied Psychology, 89*, 416–427.

Heilman, M. E., & Okimoto, T. G. (2007).Why are women penalized for success at male tasks?: The implied communality deficit. *Journal of Applied Psychology*, *92*, 81–92.

Karpinski, A., & Hilton, J. L. (2001). Attitudes and the Implicit Association Test. *Journal of personality and social psychology*, *81*(5), 774.

Kellogg, R.T. (2003). *Cognitive Psychology: Second Edition*. Thousand Oaks, CA: Sage Publications, Inc.

Lips, H. (2008). *Sex and Gender: An Introduction.* Boston, MA: McGraw-Hill.

Marchal, E. (2013). Uncertainties Regarding Applicant Quality: The Anonymous Résumé Put to the Test. *Constructing Quality: The Classification of Goods in Markets*, 103.

Maxwell, A., Ford-Dixon, P., Jimeno, R., & Shields, T. (2012). *Is there a war on women? Attitudes about women in the workplace and politics*. Retrieved from http://blaircenterclintonschoolpoll.uark.edu/6759.php.

McBride, B.A., & Mills, G. (1993). A comparison of mother and father involvement with their preschool children. *Early Childhood Research Quarterly, 8*, 457-477.

Moskowitz, G.B. (2005). *Social Cognition: Understanding Self and Others*. New York, NY: Guilford Press.

Moss-Racusin, C.A., Dovidio, J.F., Brescoll, V.L., Graham, M.J., & Handelsman, J. (2012). Science faculty's subtle gender biases favor male students. *Proceedings of the National Academy of Sciences of the United States, 109*, 16474-16479.

Moss-Racusin, C., & Heilman, M. (2006). *Failure to be feminine: Interpersonal penalties for failure behavior on sex consistent domains*. Paper presented at the 7th Annual Meeting of the Society for Personality and Social Psychology, January 27, Palm Springs, CA.

Nature.com Editorials. (2013). Science for all. Retrieved from: http://www.nature.com/polopoly_fs/1.12535!/menu/main/topColumns/topLeftColumn/pdf/495005a.pdf

Nosek, B.A., Banaji, M.R., & Greenwald, A.G. (2002). Math = male, me = female, therefore math ≠ me. *Journal of Personality and Social Psychology, 83*, 44-59.

Phelan, J. E., Moss-Racusin, C. A., & Rudman, L. A. (2008). Competent yet out in the cold: Shifting hiring criteria reflects backlash toward agentic women. *Psychology of Women Quarterly, 32*, 406–413.

Rice, L., Barth, J.M., & Talbert, B.H. (2014). *Hiring Decisions: The effect of implicit activation of gender role stereotypes.* Society for Personality and Social Psychology Annual Conference, Austin, TX.

Rice, L., Roberts, L., & Hart, W. (2013). *Automatic processing of gender role stereotypes and the effect on hiring decisions.* Society for Personality and Social Psychology Annual Conference, New Orleans, LA

Rudman, L. A., & Phelan, J. E. (2010). The effect of priming gender roles on women's implicit gender beliefs and career aspirations. *Social Psychology*, *41*(3), 192-202.

Rudman, L. A., & Phelan, J. E. (2008). Backlash effects for disconfirming gender stereotypes in organizations. *Research in organizational behavior*, *28*, 61-79.

Rudman, L.A., Phelan, J.E., & Heppen, J.B. (2007). Developmental sources of implicit attitudes. *Personality and Social Psychology Bulletin, 33* (12), 1700-1713.

Rudman, L.A. & Goodwin, S.A. (2004). Gender differences in automatic in group bias: Why do women like women more than men like men? *Journal of Personality and Social Psychology, 87,* 494-509.

Rudman, L.A. Greenwald, A.G. & McGhee, D.E. (2001). Implicit self-concept and evaluative implicit gender stereotypes: Self and in group share desirable traits. *Personality and Social Psychology Bulletin, 27,* 1164-1178.

Rudman, L. A., & Glick, P. (2001). Prescriptive gender stereotypes and backlash toward agentic women. Journal of Social Issues, 57, 743–762.

Rudman, L. A., & Glick, P. (1999). Feminized management and backlash toward agentic women: The hidden costs to women of a kinder, gentler image of middle managers. *Journal of Personality and Social Psychology, 77*, 1004–1010.

Shaughnessy, J. J., Zechmeister, E.B., & Zechmeister, J.S. (2011). *Research Methods in Psychology, 9th Edition*. McGraw-Hill Higher Education.

Sinclair, L. & Kunda, Z. (1999). Reactions to a black professional: Motivated inhibition and activation of conflicting stereotype. *Journal of Personality and Social Psychology, 77*(5), 885-904.

Spence, J.T. & Buckner, C.E. (2000). Instrumental and expressive traits, trait stereotypes, and sexist attitudes. *Psychology of Women Quarterly, 2*, 993-1007.

Social Security Administration (2013). Beyond the top 1000 names. Retrieved March 20, 2014 from the official Social Security Administration webpage: http://www.ssa.gov/OACT/babynames/limits.html

Suzuki, A. (1991). Egalitarian sex role attitudes: Scale development and comparison of American and Japanese women. *Sex Roles, 24*, 245-259.

U.S. Department of Labor (1999). Labor force statistics from the current population survey. Retrieved September, 9, 2012 from Bureau of Labor Statistics database (series IDs LFU600001 and LFU600002), on World Wide Web: http://146.142.4.24/cgi-bin/srgate

United States Census Bureau (2010). Census regions and divisions of the United States. Retrieved March 21, 2014 from the official Census Bureau webpage: http://www.census.gov/geo/maps-data/maps/pdfs/reference/us_regdiv.pdf

Valian, V. (1998). *Why so slow? The Advancement of women.* Cambridge, MA: The MIT Press.

Yale Daily News (2013). News view: A long-term approach to faculty diversity. Retrieved from: http://yaledailynews.com/blog/2013/02/25/news-view-a-long-term-approach-to-faculty-diversity/

Yong, E. (2012). Replication studies: Bad copy. Retrieved March 10, 2014 from: http://www.nature.com/news/replication-studies-bad-copy-1.10634

Appendix A
Summary Table of Previous Implicit Gender Role Research

Authors	Purpose	Methods	Results
Blair & Banaji (1996)	Examine automatic processing and stereotyping. Examine cognitive components moderating this response.	Study 1 - Participants were presented prime attributes that were either a trait word or non-trait word. These words were also masculine, feminine or neutral. Immediately following they were presented a male or female name and asked to determine whether the name was male or female. Study 2 was a replication of this study.	Participants were faster to respond to the name judgments when the word and the name followed the stereotype rather than counter the stereotype. The researchers concluded that trait words did influence judgments of the name. These studies were conducted under strict and short time presentations so it is unlikely the participants were aware the word and the name were associated lending support to the automatic processing of the words.
Banaji & Hardin (1996)	Examine if beliefs about gender operate automatically	Study 1 - participants made judgments about gender after being presented with male and female names paired with gendered, non-gendered or neutral pronouns. Study 2 - participants made judgments about whether they saw a pronoun or not after being presented with male and female names paired with gendered, non-gendered and neutral pronouns.	In both studies, judgments were faster when the name and the pronoun gendered matched rather than mismatched or was neutral.

Davies, Spencer, & Steele (2002)	Susceptibility to stereotype threat involves the activation of stereotypes	Presented participants with commercials depicting gender stereotypes or counter-stereotypes as a priming manipulation. Participants also completed a lexical decision task to assess their stereotype activation and then took a math test. A second and third study used the same manipulation but gave students verbal and math tests.	Women that were shown commercials depicting gender stereotypes performed worse on the math test. In addition, women seeing stereotypic commercials chose verbal items over math items to work on in Study 2 and women viewing these commercials also indicated less educational interest in quantitative studies.
Devos, Blanco, Rico, & Dunn (2008)	Examined the implicit and explicit measurement of how much parenthood and college education are in the self-concept.	Participants took three IATs: self-concept, gender role stereotypes and gender identity along with explicit measures of self-concept and comparative statement task involving college and parenting.	Explicit measures revealed no difference between the male and female participants on how much they identify with parenthood and college education. Implicit measures revealed that women identify more with parenthood than men and men identify more with college education than women.
Rudman & Goodwin (2004)	Examined sex differences in implicit attitudes. Why do women have more in-group bias than men?	In five different studies, the researchers gave participants different combinations of IATs examine reasons why women have more in-group bias than men including: implicit power attitudes, parental attitudes and sexual attitudes.	The researchers found evidence for sex differences concerning in-group bias. Women show more implicit in-group bias than men on several different measures.

Rudman, Greenwald & McGhee (2001)	Examined sex differences in evaluative gender stereotypes using implicit measures	Participants took several IAT measures including the gender-potency and gender-warmth IATs to examine implicit attitudes in addition to completing explicit measures.	Study 1 found that men were associated with potency and women were associated with warm. Study 2 found that when potency was viewed as a neutral valence term, sex differences were reduced. Study 3 found that participants linked themselves to the positive traits in addition to linking their own gender to that trait.
Rudman & Phelan (2010)	Examined if priming women with traditional/nontraditional gender roles has an effect on their implicit self-concept.	Pictures of men and women were presented with biographical information that conveyed traditional/nontraditional stereotypes. Afterwards the gender stereotype IAT and self-concept IAT were administered along with a self-report of job preferences.	Priming gender role stereotypes influenced women's self-concepts and job preferences. Traditional primes caused an increase in gender stereotypes and non-traditional primes caused lower self-leader associations. Both types of prime caused lower interest in masculine occupations.

Appendix B
Stimuli from Study 1

Full List of Statements and Instructions – Study 1

Instructions: Please imagine that you are on a committee for a local university that wants to hire a new professor. You have been asked to review the applicants that have applied for the position. The new professor position requires that the individual do some teaching as well as research in addition to service for the University. Below is a statement each applicant has made about themselves in their application. Please read the statement carefully and consider each person as if you were going to hire them for a job. Try to imagine a real person saying this statement to you. After each person, you will be asked to give your overall impressions of the candidate using several rating scales.

Masculine	Feminine
I initiated an innovative curriculum which demands that undergraduates build a strong foundation of core knowledge and challenges students to adopt an analytical approach in their studies.	I collaborated with my colleagues to develop an innovative curriculum which supports undergraduates as they build a foundation of core knowledge and challenges students to adopt a creative approach.
I demand classroom participation and organize lectures clearly so students are more likely to understand material from the class. I ask questions that require students to use analytical skills and apply course material to the real world.	I encourage classroom participation and organize lectures clearly so students are more likely to understand material from class. I ask questions that require students to share their knowledge and apply course material to the real world.
I would describe my research as being some of the most competitive in the field. I can stand up to the pressure of my colleagues and am aggressive in meeting my supervisor's requests.	I would describe my research as being some of the most imaginative in the field. I seek the support of my colleagues and follow my supervisor's requests quickly.

Masculine	Feminine
Effective teaching is based in being a strong leader. I like to lead students to use analytical reasoning skills and force students to think for themselves.	Effective teaching is based on fostering a relationship with students. I like to have supportive interactions with students and encourage students to think creatively.
I would identify one of my strengths as being a good problem solver. My chief weakness is that I can be somewhat dominant in my working style.	I would identify one of my strengths as being very helpful to others. My chief weakness is that I can sometimes put other's needs ahead of my own.
I am interested in leading students through the research process. I have been aggressive in challenging students in the classroom so they can reach their fullest potential.	I am interested in mentoring students through the research process I have fostered supportive relationships with students in the classroom so they can reach their fullest potential.
I plan on managing graduate and undergraduate students in the research lab so they can become competitive contributors to the field and learn skills necessary to move forward in their careers.	I plan on collaborating with graduate and undergraduate students in the research lab so they can become team players within the field and learn skills necessary to move forward in their careers.

Ratings Scales - Study 1

1. How would you describe the person that made the above statement?
2. How tall are they?
Very short Somewhat short Average Somewhat tall Very Tall
3. How much do they weigh?
Very skinny Somewhat skinny Average Somewhat heavy Very heavy
4. Is this person:
1 2 3 4 5 6 7 8 *Definitely Male* *Definitely Female*

Is this applicant…?
1 2 3 4 5 6 7 *Not at all* *Average* *Very much*
1. Competent
2. Likeable
3. Cooperative
4. A strong leader
5. Dependable
How well can this applicant…?
1 2 3 4 5 6 7 *Not very well* *Average* *Very well*
1. Serve as a mentor to others
2. Take initiative
3. Analyze problems and think logically
4. Take direction
5. Advance the University

Study 1 – Demographics

Please tell us a little bit about yourself.

1. Age _____

2. Sex: _____ Male _____ Female

3. Ethnicity

_____ Caucasian/White

_____ African American/Black

_____ Hispanic/Latino

_____ Asian

_____ More than one ethnicity

_____ Other (Specify:_____)

_____ Prefer not to say

5. Major:_____

6. Where did you live most of your childhood? If there are multiple places, list the one that you spent the most time as a child.

State:_____City:_____

7. Mother's occupation during childhood: _____

8. Father's occupation during childhood: _____

Appendix C
Explicit Gender Role Traditionalism Measures

Dimensions of Gender Stereotypes; Diekman & Eagly, 2000 – Included in the Introductory Psychology Pre-Screening for Study 1 & Study 2.

Instructions: We are interested in how different personality characteristics are related to job preferences. ***Please rate the degree to which each of the characteristics describes you personally.***

Not at all like me						Very much like me
1	2	3	4	5	6	7

1. Competitiveness	15. Cynical	29. Whiny
2. Good with numbers	16. Gentle	30. Dominant
3. Egotistical	17. Artistic	31. Mathematical
4. Affectionate	18. Submissive	32. Greedy
5. Imaginative	19.Aggressive	33. Kind
6. Spineless	20. Quantitatively skilled	34. Tasteful
7. Daring	21. Arrogant	35. Complaining
8. Analytical	22. Creative	36. Unexcitable
9. Hostile	23. Subordinates self to others	37. Dictatorial
10. Sympathetic	24. Courageous	38. Nurturing
11. Intuitive	25. Good at reasoning	39. Nagging
12. Gullible	26. Boastful	40. Stands up under pressure
13. Adventurous	27. Supportive	41. Unprincipled
14. Good at problem solving	28. Expressive	42. Warm
		43. Fussy

Egalitarian Sex Roles Scale; Suzuki, 1991 – Given at the end of Study 1 & Study 2

<u>Marriage and family life:</u> Pleas rate how much you agree with each of these statements.

Strongly disagree						Strongly agree
1	2	3	4	5	6	7

1. Domestic chores should be shared between husband and wife.
2. A woman should have and raise one or more child(ren).
3. Bringing up children is the most important job for a woman.
4. A working wife has more in common with her husband, so she is a better wife.
5. Boys and girls should play with the same toys.
6. Women should work even if they are not in need economically.
7. Whether married or not, for purposes of independence, women should work.
8. The differences of capabilities between individuals are more numerous than those between men and women.
9. There will be much social progress and development when more women work.
10. In order to be equal with men, women should aim to better their position through independence.
11. Women should try to better themselves as human beings and to pursue self-realization through working.
12. Working women put a strain on the family.
13. A mother who stays at home and raises children is NOT the only ideal type of mother.

Ambivalent Sexism Inventory; Glick & Fiske, 1996 – Given at the end of Study 1 & Study 2

Below is a series of statements concerning men and women and their relationships in contemporary society. Rate the following statements on a scale of 1 (strongly disagree) to 7 (strongly agree).

Strongly disagree						Strongly agree
1	2	3	4	5	6	7

1. No matter how accomplished he is, a man is not truly complete as a person unless he has the love of a woman.
2. Many women are actually seeking special favors, such as hiring policies that favor them over men, under the guise of asking for "equality."
3. In a disaster, women should not necessarily be rescued before men.
4. Most women interpret innocent remarks or acts as being sexist.
5. Women are too easily offended.
6. People are often truly happy in life without being romantically involved with a member of the other sex.
7. Feminists are not seeking for women to have more power than men.
8. Many women have a quality of purity that few men possess.
9. Women should be cherished and protected by men.
10. Most women fail to appreciate fully all that men do for them.
11. Women seek to gain power by getting control over men.
12. Every man ought to have a woman whom he adores.
13. Men are complete without women.
14. Woman exaggerate problems they have at work.
15. Once a woman gets a man to commit to her, she usually tries to put him on a tight leash.

16. When women lose to men in a fair competition, they typically complain about being discriminated against.

17. A good woman should be set on a pedestal by her man.

18. There are actually very few women who get a kick out of teasing men by seeming sexually available and then refusing male advances.

19. Women, compared to men, tend to have superior moral sensibility.

20. Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives.

21. Feminists are making entirely reasonable demands of men.

Parental Responsibility Scale; McBride & Miller, 1993 – Given at the end of Study 2

Directions: Picture yourself as a parent. You and your spouse take care of your child by participating in various tasks. Who do you think will have the primary responsibility for each task?

Father Almost Always		Equally		Mother Almost Always
1	2	3	4	5

1. Take child to a birthday party.
2. Take child to a doctor/dentist.
3. Go to teacher conference.
4. Supervise child's morning routine.
5. Clean up child's room.
6. Spend time with child at bedtime.
7. Take child to or from school.
8. Buy child's clothes.
9. Take child to museum, park, etc.
10. Give bath to child. (Supervise child's personal hygiene)
11. Prepare child's meal.
12. Do child's laundry.
13. Play with child.
14. Supervise child's school work.
15. Take child to sports/games.
16. Discipline child.

Appendix D
Priming Stimuli from Study 2

Sample Priming Pairs

Stereotype-Congruent	Stereotype-Incongruent	Control
Richard – self-reliant	Eric - helpful	Table – wood
Andrew – independent	Thomas – shy	Couch – comfortable
Joseph – amazed	Michael – content	House – brick
Greg – assertive	William – bright	Pillow – soft
Robert – conscientious	Philip – reliable	Chair – juicy
Michael – free	David – affectionate	Mug – ceramic
John – forceful	Bryan – certain	Shirt – cotton
Steven – analytical	Michael – cheerful	Notebook – paper
Mark – satisfied	Andrew – sympathetic	Bottle – glass
Patrick – leader	Richard – energetic	Lawn – grass
David – receptive	John – warm	Soap – clean
Thomas – risk-taking	Mark - gentle	Desk – dirty
Jessica – gullible	Emily – neutral	Jeans – blue
Sarah – amazed	Mary – decisive	Sandpaper – rough
Becky – comforting	Katherine – conceited	Box – cardboard
Megan – tactful	Julia – tired	Cookie – dessert

Stereotype-Congruent	Stereotype-Incongruent	Control
Anna – conventional	Lauren – dominant	Asparagus – fun
Emily – certain	Allison – aggressive	Salad – lettuce
Nicole – sincere	Elizabeth – competitive	Tomato – red
Katherine – friendly	Anna – content	Knife – sharp
Julia – cheerful	Megan – ambitious	Weight – heavy
Mary – content	Becky – relaxed	Candle – wet
Laura – soft-spoken	Sarah – moody	Disc – round
Leslie - content	Jennifer - athletic	lamp - cover
Non-matching items examples		
David – lettuce	David – lettuce	Sandpaper – lettuce
Thomas – cover	Thomas – cover	House – cover
Maria – cardboard	Jeff – cardboard	Asparagus – cardboard
Sarah – juicy	Sarah – juicy	Soap – juicy
Becky - grass	Becky – grass	Cookie - grass

Study 2 – Example of how Applicants are presented

Instructions: You will be presented with excerpts from the cover letters of people applying for a professor position. You will read two excerpts at a time, rating each person individually. When you read each excerpt try to imagine what the candidate's personality would be like and the skills that this applicant would bring to the job. We will ask you to rate each applicant on several characteristics. After you completed the ratings, we will ask you to select one candidate to fill a specific professor position.

Candidate: Bob

I facilitate classroom participation and organize lectures clearly so students are more likely to understand material from the class. I ask questions that require students to use problem-solving skills and apply course material to the real world. [*Followed by ratings*]

Candidate: Sarah

Effective teaching is based on fostering a relationship with students. I like to have supportive interactions with students and encourage students to think creatively. [*Followed by ratings*]

How competent is this applicant?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
How likeable is this applicant?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
To what degree does this applicant show a positive, cooperative attitude?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*

How dependable is this applicant?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
How well can this applicant take initiative?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
How well will this applicant effectively analyze problems and think logically?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
Does this applicant show strong leadership skills?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
How well will this applicant serve as a role model and mentor to students?						
1	2	3	4	5	6	7
Not at all			*Neutral*			*Completely*
How well can this person take direction?						
1	2	3	4	5	6	7
Not at all			*Average*			*Completely*
How well can this person advance the University?						
1	2	3	4	5	6	7
Not at all			*Average*			*Completely*

Study 2 – Example list of Applicant Descriptions

- I facilitate classroom participation and organize lectures clearly so students are more likely to understand material from the class.
- Effective teaching is based on engaging students. I like to encourage students to be actively involved in lecture.
- I like to balance my time between research and teaching.
- Research methods skills are the foundation for many career fields. This is an important skill I pass along to my students.
- I am an energetic instructor that thrives in front of my classroom.
- I ask students to use problem-solving skills and apply course material to the real world.
- I set high standards for myself and my students while trying to have fun along the way.
- A curriculum is a framework for effective teaching. Students can benefit from a clear understanding of course requirements.
- I strive to create assessment styles that require students to grasp the material in and out of the classroom.
- I provide stimulating lectures that motivate students to reach their full potential.
- Student success is my success. I enjoy seeing students do well.
- Concepts are best presented through examples and I try and incorporate demonstrations in my lectures.
- There is no right or wrong answer. Students are encouraged to formulate alternate conclusions to presented material.

- Knowledge is an important foundation. Each class should pass along knowledge that can be used throughout life.
- I encourage students to always ask questions. This allows for more class interaction and interest in the material.
- Balance is important in the classroom. Material needs to be presented as both factual and how the concept can be applied to real life.
- Incorporating multimedia into lectures can make course material more interesting and therefore, more memorable.
- A successful class requires a structured lecture, clear examples and activities to engage students.
- I seek out examples that students can understand and apply to the course material.
- A textbook provides the material framework but it is up to the instructor to bring that material to life in the classroom.
- Punctuating lectures with activities allows me to view student progress and adjust lectures accordingly.
- My classes are challenging and interactive, encouraging students to formulate ideas of their own.
- A student's bold thinking is a measure of my teaching effectiveness.
- Students in my class are members of an active team of young professionals.
- I keep students motivated by maintaining transparency in the classroom through clear expectations and examples.
- I prefer to start each class with a discussion based off the previous readings.
- I present material dynamically in order to address students' different learning styles.

- I treat my students as equals while passing along my knowledge of my field of study.
- I use current events to illustrate how concepts are pressing in everyday life.
- In my teaching I use a variety of methods to entice students to study on their own.
- I try to stimulate interest in the material and incorporate classroom discussions.
- One main goal of my teaching to get students to criticize the material they are presented.
- I pay attention to classroom dynamics to try and create a good learning environment.
- I use classroom projects to get students out of their comfort zones.
- I offer feedback mechanisms for students to provide qualitative evaluations.
- I incorporate lessons about the past to make sure students learn the bigger picture.
- I make every effort to connect the chapters, reading and lectures together.
- I try to get students to focus on learning rather than the grades they earn.
- I try and let students write and think critically throughout the semester to enhance their understanding.
- I structure classes around a combination of introspection and practical application.
- Critical thinking is a valuable skill set for every student to learn.

Study 2 – Example Job Descriptions

Instructions: Below is an available faculty position at your University. Please read the guidelines for the position and then select one candidate for the position. We really value your input on these candidates so please consider your choice carefully.

Position #1

Engineering: The Engineering Department seeks a full tenure track faculty member. Responsibilities include teaching at the undergraduate and graduate level as well as retaining a full program of research, regularly publishing in scholarly journals. Applicants should have knowledge of the following: chemical process design, chemical reactor design, and introduction to biomedical engineering. Applicants must hold a PhD in chemical or biomedical engineering or closely related field by the position start date.

Which applicant would you hire for the position?							
1	2	3	4	5	6	7	8
Definitely Bob		Slightly Bob		Slightly Sara		Definitely Sara	

Position #2

Education: The Education Department seeks a full tenure track faculty member. Applicants will teach undergraduate and graduate courses in education, coordinate clinical lab experiences as well as maintain a full research program, obtaining outside funding and publishing. Candidates should have knowledge of classroom diversity and organization and

educational research methods. Applicants must have obtained their PhD in education by the position start date.

Which applicant would you hire for the position?							
1	2	3	4	5	6	7	8
Definitely Bob		Slightly Bob		Slightly Sara		Definitely Sara	

Study 2 – Job Fields

Masculine	Feminine
Engineering	Performing Arts
Chemistry	Interior Design
Mathematics	Child Development
Finance	Nursing
Economics	Art History
Computer Programming	Retail Management
Statistics	Education

Study 2 – Final Questions

Instructions: We would like to ask you some questions about how you made your decisions about who to hire.

How often do you think the statement from their application influenced your hiring decision?						
1	2	3	4	5	6	7
not very often			neutral			very often
How often do you think your responses on the rating scale led to your hiring decision?						
1	2	3	4	5	6	7
not very often			neutral			very often
How often do you think the applicant's sex influenced your hiring decision?						
1	2	3	4	5	6	7
not very often			neutral			very often
How often did cues in the job description lead to your hiring decision?						
1	2	3	4	5	6	7
not very often			neutral			very often

Study 2 – Demographics

Please tell us a little bit about yourself.

1. Age _____

2. Sex: _____ Male _____ Female

3. Ethnicity

_____ Caucasian/White

_____ African American/Black

_____ Hispanic/Latino

_____ Asian

_____ More than one ethnicity

_____ Other (Specify:_____)

_____ Prefer not to say

5. Major:_____

6. Where did you live most of your childhood? If there are multiple places, list the one that you spent the most time as a child.

State:_____City:_____

7. Mother's occupation during childhood: _____

8. Father's occupation during childhood: _____

Appendix F
IRB Approval for Study 1

Office for Research

Institutional Review Board for the Protection of Human Subjects

THE UNIVERSITY OF ALABAMA RESEARCH

September 9, 2013

Lindsay Rice
Dept. of Psychology
College of Arts and Sciences
Box 870216

Re: IRB # 13-OR-287, "Preparing the Perfect Resume"

Dear Ms. Rice:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. You have also been granted the requested waiver of informed consent. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on September 8, 2014. If your research will continue beyond this date, please complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpanato T. Myles, MSM, CIM
Director & Research Compliance Officer
Office for Research Compliance
The University of Alabama

358 Rose Administration Building
Box 870127
Tuscaloosa, Alabama 35487-0127
(205) 348-8461
FAX (205) 348-7189
TOLL FREE (877) 820-3066

Appendix E
IRB Approval for Study 2

July 18, 2013

Office for Research

Institutional Review Board for the Protection of Human Subjects

THE UNIVERSITY OF ALABAMA RESEARCH

Lindsay Rice
Department of Psychology
College of Arts and Sciences
Box 870216

Re: IRB # 13-OR-248, "Hire Me!"

Dear Ms. Rice:

The University of Alabama Institutional Review Board has granted approval for your proposed research.

Your application has been given expedited approval according to 45 CFR part 46. You have also been granted the requested waiver of informed consent. Approval has been given under expedited review category 7 as outlined below:

(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.

Your application will expire on July 17, 2014. If your research will continue beyond this date, please complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, please complete the Modification of an Approved Protocol form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, please complete the Request for Study Closure form.

Please provide participants with a copy of the IRB approved stamped participant information sheet.

Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,

Carpantato T. Myles, MSM, CIM
Director & Research Compliance Officer
Office for Research Compliance
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