

2017

The Positive and Negative Valence of Gender in Traditional and Non-Traditional Career Choices

Megan Norene Callahan
Iowa State University

Follow this and additional works at: <http://lib.dr.iastate.edu/etd>

 Part of the [Counseling Psychology Commons](#)

Recommended Citation

Callahan, Megan Norene, "The Positive and Negative Valence of Gender in Traditional and Non-Traditional Career Choices" (2017).
Graduate Theses and Dissertations. 15496.
<http://lib.dr.iastate.edu/etd/15496>

This Dissertation is brought to you for free and open access by the Iowa State University Capstones, Theses and Dissertations at Iowa State University Digital Repository. It has been accepted for inclusion in Graduate Theses and Dissertations by an authorized administrator of Iowa State University Digital Repository. For more information, please contact digirep@iastate.edu.

The positive and negative valence of gender in traditional and non-traditional career choices

by

Megan Norene Callahan

A dissertation submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Major: Psychology (Counseling)

Program of Study Committee:
Patrick Armstrong, Major Professor
Shana Carpenter
Lisa Larson
Nathaniel Wade
Meifen Wei

Iowa State University

Ames, Iowa

2017

Copyright © Megan Norene Callahan, 2017. All rights reserved.

TABLE OF CONTENTS

LIST OF TABLES	iii
LIST OF FIGURES	iv
ABSTRACT	v
CHAPTER 1. INTRODUCTION	1
CHAPTER 2. LITERATURE REVIEW	4
CHAPTER 3. METHOD	53
CHAPTER 4. RESULTS	79
CHAPTER 5. DISCUSSION	103
REFERENCES	122
FIGURE	138
TABLES	139
APPENDIX A. DEMOGRAPHIC QUESTIONNAIRE	146
APPENDIX B. OCCUPATIONAL DESCRIPTIONS	147
APPENDIX C. FEMININITY AND MASCULINITY ITEMS	151
APPENDIX D. ALTERNATE FORMS PUBLIC DOMAIN RIASEC MARKERS	154
APPENDIX E. AMBIVALENT SEXISM INVENTORY AND MODERN SEXISM SCALE	156
APPENDIX F. REVISED RELIGIOUS FUNDAMENTALISM SCALE AND RIGHT-WING AUTHORITARIANISM SCALE	159
APPENDIX G: INFORMED CONSENT DOCUMENT	162
APPENDIX H: DEBRIEFING STATEMENT	165
APPENDIX I: INSTITUTIONAL REVIEW BOARD APPROVAL FORM	166
ACKNOWLEDGMENTS	167

LIST OF TABLES

Table 1. Experimental Conditions in the Present Study	138
Table 2. Means by Condition and Gender of Participants.	139
Table 3. Standard Deviations by Condition and Gender of Participants.	140
Table 4. Correlation Matrix.	141
Table 5. MANCOVA Results for Masculinity and Femininity of the RIASEC Types.	143
Table 6. MANCOVA Results for Attitudes Toward the RIASEC Types.	144

LIST OF FIGURES

Figure 1. Holland's (1959, 1997) RIASEC Model and Prediger's (1982) Bipolar Dimensions	138
--	-----

ABSTRACT

Women and men tend to be differentially represented in many careers, in spite of reductions in structural barriers to the advancement of women and in overt sexism. Women are often overrepresented in traditionally feminine careers. Careers populated mainly by women also tend to be lower in pay and prestige. The present study continued an exploration of various gender-related barriers to more equal representation of women and men in careers. Specifically, perceptions of the femininity and masculinity of the RIASEC types (Holland, 1959; 1997) and positive/negative ratings of the RIASEC types were examined. In addition, covariates representing sexism and conservatism (right-wing authoritarianism and religious fundamentalism) were included to determine their impact. Participants were 509 university students who completed questionnaires and a sorting activity in which they assigned feminine and masculine traits from the Bem Sex Role Inventory (Bem, 1981), the Personal Attributes Questionnaire (Spence & Helmreich, 1978), and the Positive-Negative Sex Role Inventory (Berger & Krahe, 2013) to occupational descriptions representing the RIASEC types. Participants also rated their attitudes to traits assigned to descriptions. MANOVA and MANCOVA were used and gender and condition were found to have significant effects on the perceptions of the RIASEC types, while only gender was found to have a significant effect on positive/negative ratings of the RIASEC types. The sexism and conservatism covariates were found to have significant effects with both perceptions of and attitudes toward the RIASEC types. These results are discussed in light of other research and implications for further research and career counseling.

CHAPTER 1. INTRODUCTION

Career decisions are among the most important made by an individual in her or his lifetime. For many people, careers are central to identity. Knowing what someone does for a living is seen as significant information about her or him. Recently, as will be discussed in more detail later in this introduction, attitudes toward women in the workplace have changed and structural barriers that once kept women from entering into or succeeding in particular careers have been either removed or minimized. However, women and men still tend to select different careers. Reasons for this continued discrepancy in the face of societal change are unclear. The present study addresses this central question through the consideration of conservatism-related variables, attitudes toward women, and the perceptions of the femininity and masculinity of occupations.

According to a 2011 report, called 'Women in the Labor Force', from the U.S. Bureau of Labor Statistics, women in the American workplace have made considerable strides since the 1970s. The numbers of American women working outside of the home has increased substantially and more women work full time than in the past. This 2011 report noted that the American workforce is made up of, approximately, 47% women. The report also stresses the increased number of women in the workforce with college degrees (11% in 1970 to 36% in 2010). Additionally, women have begun to close the pay gap and, in 2010, earned approximately 81% of what men earned (compared to 62% in 1970).

Although these statistics are encouraging, the same U.S. Bureau of Labor Statistics report also shows the continued differences in career choices of women and men and gives information related to the outcomes of these choices for women. Women and men are still overrepresented in traditionally feminine and masculine career fields, respectively. In other words, women and men,

as groups, are still making highly gendered career choices. Women are overrepresented in fields utilizing characteristics typically associated with women, such as service and clerical fields. On the other hand, men are overrepresented in traditionally masculine fields (e.g. math- and science-related fields).

It is important to note here that careers often chosen by women also tend to be lower in prestige and pay than those chosen by men. A striking example of this within the same general fields is the proportion of women and men working as nurses or doctors in the medical field. According to the 2011 U.S. Bureau of Labor Statistics report, approximately 91.9% of nurses in the United States are women. Conversely, women constitute only 32.3% of physicians and surgeons. Physicians and surgeons are paid more and generally assume more status and authority within a work environment (e.g. a hospital) than nurses. The fact that women tend to choose careers with lower prestige and pay may contribute to continued differences in the status of women and men in society at large.

As mentioned earlier in this introduction, changes have taken place in society that may, theoretically, have given women more opportunity to attain equal participation in the workforce. Attitudes toward women and gender equality have changed significantly over time. Twenge (1997) conducted a meta-analysis of attitudes toward women spanning from 1970 to 1995. She learned that explicit attitudes toward women have become significantly less sexist and more feminist over time. Both women and men in college in the 1990s expressed more feminist attitudes than the majority of women and men from studies done in the 1970s. Specifically, views of women appeared to be becoming less gender-stereotyped. In 2011, as a follow-up to her observations from 1997, Twenge wrote about changes in this area over time, reporting that

college students in the 2000s expressed greater support for gender equality compared to those of earlier generations.

The removal of structural barriers to women's advancement and changes in attitudes toward women over time have enabled women to make progress in workforce participation. However, the continued discrepancies in career choices made by women and men suggest that factors are still at play that prevent women from attaining full equality with men in this arena of life. Furthermore, as illustrated earlier, these differences are not insignificant and career choices made by women likely impact the quality and characteristics of their lives and how others view them. Therefore, the study of variables potentially related to gendered career choice is incredibly important.

The present study examined conservatism- and gender-related variables that may influence beliefs about women, men, and careers. These beliefs may, in turn, impact career choice. For instance, our personal belief systems may influence the ways in which we evaluate or perceive others and their career choices. The perceived gender of a person in a career may also impact the degree to which we view that career as feminine or masculine and, therefore, appropriate or inappropriate for us on the basis of our own gender.

CHAPTER 2. LITERATURE REVIEW

Overview

In order to provide a solid foundation for more in-depth discussion of the present study's research questions and hypotheses, which have to do with the influence of conservatism- and gender-related variables on perceptions of careers, the following literature review will address a variety of relevant topics. Given the importance of gender to the present study, the review will begin with a discussion of gender as a psychological construct. This will include the study of the dimensionality of femininity and masculinity and the measurement of gender, including the perceived positive and negative aspects of femininity and masculinity. Vocational interests and gender differences in interests will be reviewed, followed by a discussion of potential influences on general gender differences.

The review will then move to discussion of attitudes toward women, religious fundamentalism, right-wing authoritarianism, and the relationships between these constructs to prejudice and career choice. These variables are central to the present study. Finally, the review will cover two previous studies upon which the present study builds (Bergner, 2013; Callahan, 2015) and relevant sorting methodology issues. It was proposed, in this study, that the variables discussed in this literature review may contribute to restriction of occupational exploration, more gender-traditional career interests, and discrepancies in career choices made by women and men.

Gender as a Psychological Construct

It is common to differentiate between people on the basis of certain aspects of identity, such as gender. In fact, gender is one of the aspects of identity that is most frequently used to differentiate among individuals. People incorporate gender into their self-concept beginning at a young age (Berger & Krahe, 2013). As a result, gender is likely to impact the ways in which one

interacts with the world, how other people respond to the person, and other factors such as career choice (Egan & Perry, 2001; Bussey & Bandura, 1999). Gender is one of the most frequently studied constructs in psychology (Egan & Perry, 2001; Hyde, 1990; Petersen & Hyde, 2010).

Over time, researchers began to make a distinction between biological sex and gender as they became aware that biological sex does not determine one's gender identity. This distinction between femininity and masculinity, as opposed to female and male, arose in the 1950s (Money, Hampson, & Hampson, 1955, a, b; 1957), which allowed for more opportunities in psychological research to study societal influences on gender differences, not only biological influences (Crawford & Kaufman, 2006). Gender, as often conceptualized in terms of femininity and masculinity, will be discussed in more detail in the following section.

Femininity and Masculinity

For several decades, gender roles have been described in terms of femininity and masculinity. People described as feminine exhibited more feminine traits, or traits typically associated with women. Those described as masculine exhibited more masculine traits, or traits typically associated with men. It was traditionally presumed that someone possessing more feminine traits would demonstrate fewer masculine traits and vice versa. In other words, it was assumed that femininity and masculinity existed on a single bipolar dimension, with femininity on one end and masculinity on the other end (Gough, 1964; Terman & Miles, 1936).

As research on gender progressed, researchers began to question these long-standing assumptions about the nature of femininity and masculinity. The dimensionality of femininity and masculinity as previously and currently conceptualized will be discussed in more detail in the following section. Researchers also became motivated to understand what, precisely, the constructs of femininity and masculinity were actually accessing and representing. Some

researchers have offered different terms, other than femininity and masculinity, that they believe may more accurately express what is being described.

In 1955, Parsons and Bales suggested that the terms ‘femininity’ and ‘masculinity’ be replaced with ‘expressivity’ and ‘instrumentality’, respectively. Expressivity has been described as including a concern for interpersonal relations and the act of caring for others. Instrumentality, on the other hand, has an emphasis on solving practical problems and getting things done. Instrumentality may also be described as being more concerned with the self than with relationships with other people (Bem, Martyna, & Watson, 1976).

Researchers have shown that people tend to view expressive traits as characteristic of the ‘ideal woman’ and instrumental traits as characteristic of the ‘ideal man’ (Spence & Helmreich, 1978). Furthermore, it is important to note that expressivity and instrumentality have frequently been described in terms that strongly resemble traditional gender roles for women and men. Parsons and Bales (1955) talked about the roles of expressivity and instrumentality in various systems, such as the family. The expressive leader of the family may be seen as more responsible for the inner workings of the family system, such as providing individual care to family members or mediating disputes between members. The instrumental leaders could be seen as more responsible for the functions and tasks of the family that are related to the world outside the home and the family. This person may frequently be the decision-maker and problem-solver. Parsons and Bales (1955) additionally noted that women often adopt the expressive roles in systems, while men frequently take on the instrumental roles.

Femininity and masculinity have also been called ‘communion’ and ‘agency’, respectively (Bakan, 1966). The descriptions of these terms, as will be seen, are very similar to previous descriptions of expressivity and instrumentality, as well as femininity and masculinity.

Communion is associated with a primary focus on relationships with others, which involves helping others achieve their goals and being part of a system. Agency, on the other hand, is associated with an emphasis on personal goals, relative to goals of a group, and a strong recognition of oneself as an individual (Bakan, 1966; Helgeson & Fritz, 1999).

Bakan (1966) also described what may be considered negative sides of communion and agency and, therefore, femininity and masculinity. He named these ‘negative’ aspects ‘unmitigated communion’ and ‘unmitigated agency’. Unmitigated communion describes an emphasis on others while excluding consideration of the self. Unmitigated agency refers to an emphasis on the self while excluding consideration of others. In other words, Bakan considered extreme levels of both communion and agency as potentially negative and imbalanced. As with expressivity and instrumentality, the descriptions of these terms strongly resemble descriptions of traditional gender roles. The expression of traditional gender roles is frequently seen in the career choices of individuals. Women often take, for example, serving and caregiving positions while men are more likely to be found in leadership and supervisory positions.

Dimensionality of Femininity and Masculinity

As discussed above, early gender researchers made the assumption that femininity and masculinity existed on opposite ends of a single bipolar dimension (Gough, 1964; Terman & Miles, 1936). If this conceptualization of gender is true, those with many feminine traits would have fewer masculine traits and vice versa. In other words, individuals could not have *both* many feminine traits and many masculine traits. This perspective also implies that women, who are typically expected to possess mostly feminine traits, would not be well-suited to careers seen as requiring large numbers of masculine traits. Similarly, men would not be expected to be particularly suited to careers seen as requiring largely feminine traits.

The assumption that femininity and masculinity exist on opposite ends of a bipolar dimension began to be questioned by researchers who suggested that they may actually be separate constructs varying independently of one another (Spence, Helmreich, & Holahan, 1979). This new conceptualization allows for the possibility that a person of either sex could possess feminine and masculine traits in relatively equal numbers. As researchers began to study this possibility, they concluded that there was enough evidence to justify further exploration of the idea that femininity and masculinity are two separate orthogonal dimensions, contrary to earlier assumptions (Constantinople, 1973; Spence & Helmreich, 1978).

Bem (1974) developed a measure that could assess femininity and masculinity in individuals. The Bem Sex Role Inventory (BSRI; Bem, 1974) is perhaps the most prominent example of this type of measure. The BSRI conceptualizes femininity and masculinity as separate, independently varying dimensions, consistent with the newer ideas about these constructs. Bem developed items to make up feminine and masculine subscales by determining traits that were viewed as socially desirable for women and men, respectively. An additional subscale is composed of gender-neutral socially desirable and undesirable traits. One of the ideas that shaped the development of the BSRI was androgyny, which may be defined as the existence of feminine and masculine traits in the same individual (Bem, 1974). Bem proposed that, if this new conceptualization of femininity and masculinity proved true, evidence of androgyny could be found in research. If androgyny exists, femininity and masculinity could not realistically be opposite ends of a single bipolar dimension.

Bem believed that the BSRI could be used to categorize individuals as sex-typed or androgynous. A person can be considered sex-typed if she or he has large differences in scores on the feminine and masculine subscales. If the differences were small, the individual can be

labelled androgynous (Bem, 1974). Later on, researchers started to question whether distinctions should be made among people with small differences in feminine and masculine subscale scores, depending on whether the differences were small due to high or low numbers of both feminine and masculine traits. Eventually, it became common to make this distinction and to talk about the four following groups: 1) feminine (high femininity and low masculinity), 2) masculine (high masculinity and low femininity), 3) androgynous (high femininity and high masculinity), and 4) undifferentiated (low femininity and low masculinity) (Bem, 1977; Spence, Helmreich, & Stapp, 1975).

Other researchers, in measures of femininity and masculinity, have begun to specifically address both positive and negative aspects of the constructs. Berger and Krahe (2013) noted that the inclusion of femininity and masculinity into our self-concept requires that we accommodate both positive and negative aspects of ourselves as related to these constructs, even though we may *prefer* to focus on our positive traits. These researchers developed a measure called the Positive-Negative Sex-Role Inventory (PN-SRI). This measure features traits meant to represent positive femininity, negative femininity, positive masculinity, and negative masculinity. ‘Oversensitive’, for example, may be viewed as a negative feminine trait, while ‘power-hungry’ may be seen as a negative masculine trait. Measures such as the PN-SRI allow researchers to study these constructs in broader, more complete terms and also may provide a more up-to-date measure of these constructs, as many other frequently used measures (e.g. BSRI; Bem, 1974) were developed several decades ago.

Gender and Psychological Well-Being

Researchers have long been interested in the relationship between psychological health or well-being and sex type. Traditionally, many have assumed that individuals would be most

psychologically healthy if their sex type matched their biological sex. In other words, women who were more feminine would be healthier, psychologically, than their less feminine counterparts. Among men, those who were most masculine would be the healthiest (Kagan, 1964; Mussen, 1969). On the other hand, however, some researchers proposed that androgyny is the best route to psychological health (Block, von der Lippe, & Block, 1973; Heilbrun, 1968).

Empirical evidence initially seemed to support the notion that androgynous individuals were most psychologically healthy (Bem & Lewis, 1975; Bem & Lenney, 1976; Block, von der Lippe, & Block, 1973; Spence, Helmreich, & Stapp, 1975). However, additional research demonstrated that, rather than the possession of both feminine and masculine traits, it was largely the possession of masculine traits that contributed to higher scores on measures of psychological health, such as higher self-esteem and less anxiety (Bassoff & Glass, 1982; Whitley, 1983, 1985). At this point, researchers began to consider why the possession of masculine traits may have a positive impact on psychological well-being. Cook (1985) described as 'masculine supremacy effect' that values masculine traits over feminine traits and therefore sets up more masculine individuals for better psychological health. Egan and Perry (2001) found evidence supporting the assertion that masculine traits are more highly valued and, in addition, that this preference for masculine traits is stronger in societies in which the power and status differences between women and men are greater. In other words, to the extent that men have more status and power than women in a particular society, stronger value will be placed on masculine traits.

Despite advances made by women in recent decades, Hofstede (2001) demonstrated that the United States still leans toward greater gender differentiation. Women and men continue to possess, on average, differing amounts of power and status. This is frequently related to the careers that women and men pursue. Although many structural and legal barriers to equality have

been removed or minimized, women are still underrepresented in traditionally masculine jobs, which often have higher prestige than traditionally feminine jobs. As a result, some researchers have turned to the study of vocational interests as a factor that could be contributing to the different career choices made by women and men.

Vocational Interests

Reliable gender differences in vocational interests correspond to gender differences in career choice. Unequal representation of women and men in various careers, discussed earlier in this paper, is likely fostered, in part, by these gender differences in interests. It is also possible that gender differences in vocational interests have a connection to perceptions of the femininity and masculinity of careers and to what careers are seen as suitable for women or men. The following section of this literature review will include an overview of Holland's theory of vocational choice and Prediger's bipolar dimensions. The section will conclude with a more in-depth discussion of gender differences in interests.

Holland's Theory of Vocational Choice

John Holland's RIASEC model (1959, 1997) has been utilized frequently as a means of conceptualizing and understanding vocational interests of individuals. Holland, in proposing the RIASEC model, suggested that individuals and work environments could be described using a combination of six vocational interest types. These six types are: 1) Realistic, 2) Investigative, 3) Artistic, 4) Social, 5) Enterprising, and 6) Conventional. The types are collectively referred to by the first-letter acronym RIASEC. Since these interest types can describe both people and work environments, researchers and practitioners are able to discuss the extent to which a person's vocational interest type matches the type of the work environment she or he is currently considering. This is also known as person-environment fit or congruence (Holland, 1959; 1997).

In the following paragraphs, the primary characteristics of the six vocational interest types will be briefly outlined.

The *Realistic* type typically most prefers hands-on activities with practical goals and tangible results. This person would likely enjoy using tools, objects, or machines to complete work tasks. She or he would likely see her or himself as technically, athletically, or mechanically skilled (Holland, 1997). The *Realistic* type may be seen as the ‘doers’. Example careers associated with this type are construction workers and pilots. This type, along with its values and characteristics, is likely to be perceived by others as more masculine than feminine.

The *Investigative* type tends to prefer activities in which the goal is to resolve scientific or mathematical questions or problems. This person would likely value scholarly and scientific work and may see her or himself as logical, meticulous, and intelligent (Holland, 1997). This type shares some similarities with the *Realistic* type, as both are associated less with work with people, as are some other types to be discussed in the following paragraphs. The *Investigative* type may be seen as the ‘thinkers’. Example careers associated with this type are mathematicians and chemists. This type is likely to be seen as more masculine than feminine.

The *Artistic* type is comfortable with ambiguity in a project or work environment. This person may, in fact, actively avoid very structured tasks and activities. She or he tends to prefer activities in which they are able to use their self-expression and creativity. They enjoy tasks in which the goal is to create something new and unique. This person often sees her or himself as original, independent, and a free-thinker (Holland, 1997). The *Artistic* type may be seen as the ‘creators’. Example careers associated with this type are graphic designers and sculptors. This type may be most often seen as more feminine than masculine, likely due to the expressivity that is at its core.

The *Social* type is associated with activities in which the person is able to help, teach, or give information to others. A person who expresses high *Social* interests is likely to value working toward the resolution of social problems and helping others gain great efficacy in interpersonal interactions (Holland, 1997). The *Social* type may be seen as the ‘helpers’. Example careers related to this type are counselors and teachers. Given its focus on interpersonal skills and offering support to others, this type is likely to be perceived as more feminine than masculine.

The *Enterprising* type is similar to the *Social* type in its focus on working with people. However, the goal and context of working with others, for the *Enterprising* type, is quite different than for the *Social* type. The *Enterprising* type is associated with working with others in order to persuade, manage, or lead them. This person often values achievement in specialized arenas, such as business or politics. She or he would generally see her or himself as persuasive, ambitious, and high-achieving (Holland, 1997). The *Enterprising* type may be seen as the ‘persuaders’. Example careers associated with this type are sales managers and lawyers. This type may be seen as more traditionally masculine than feminine, but significant gender differences in *Enterprising* interests have not been found (Su, Rounds, & Armstrong, 2009).

The *Conventional* type typically prefers working with data (e.g. records, numbers). Common work tasks often include managing, storing, and presenting data in a systematic and orderly way (Holland, 1997). A person who expresses high *Conventional* interests would likely value achievement in settings such as business, much like the *Enterprising* type, but would more often be found in supportive, rather than leading, roles in these settings. In these supportive roles, she or he would be able to establish and follow set plans for carrying out tasks. The *Conventional* type may be seen as the ‘organizers’. Example careers related to this type are statisticians and

administrative assistants. Some aspects of this type may be perceived as traditionally feminine (e.g. supportive tasks), while others may be seen as more masculine (e.g. emphasis on goal attainment in areas such as business).

Holland's six vocational interest types are arranged, pictorially, around a hexagonal structure (see Figure 1). The types are positioned on this hexagon according to the degrees of similarity between them. Types found closer to each other on the hexagon (e.g. *Realistic* and *Investigative*) are presumed to be more similar to each other than types found further apart (e.g. *Realistic* and *Social*) (Holland, 1997).

As discussed earlier, Holland's RIASEC model describes both people and work environments and it is posited that job satisfaction increases as people find greater congruence between themselves and their careers. Those who express interests in types that are more similar to each other are said to have a greater degree of consistency in their interests. These people may have an easier time, in the beginning stages of career exploration, finding careers that are a good match for their interests. Research has generated significant support for Holland's RIASEC model and its contributions to research, the development of psychological measures, and career counseling have been emphasized (Armstrong, Hubert, & Rounds, 2003; Darcy & Tracey, 2007; Su et al., 2009).

Prediger's Bipolar Dimensions

Prediger proposed that two bipolar dimensions, Things-People and Data-Ideas, underlie the RIASEC hexagonal model (1982; see Figure 1). This notion has shed greater light on the nature of the RIASEC types and their relationships to each other. Later on, particular work tasks that represent these bipolar dimensions were detailed and discussed (Prediger & Swaney, 2004).

‘Things’ refers to tools, machines, and other non-personal objects. ‘People’ refers to an inclination to help, teach, and support others. Therefore, the Things-People dimension differentiates between work activities based on the degree to which they are non-personal or interpersonal in nature. ‘Data’ refers to facts, numbers, or recorded information. Work with data may be described as largely impersonal. ‘Ideas’, on the other hand, refers to theories or abstract concepts that are typically intrapersonal. These descriptions demonstrate that the Data-Ideas bipolar dimension differentiates between activities that are generally non-personal or intrapersonal (Prediger & Swaney, 2004). As is the case with Holland’s RIASEC types, significant gender differences in interest along the dimensions have been found. These gender differences, along with differences in vocational interests as expressed by the RIASEC types, will be discussed next.

Gender Differences in Vocational Interests

Differences between women and men in expressed vocational interests relate strongly to the differences seen between them in career choice, which will be discussed later on. One meta-analysis (Su et al., 2009) demonstrated that women are significantly more interested than men in the Social, Artistic, and Conventional RIASEC types (i.e. the tasks associated with these types). Men are significantly more interested than women in the Realistic and Investigative types. No significant gender differences have been found for the Enterprising type.

This meta-analysis (Su et al., 2009) also examined potential gender differences in interests along Prediger’s bipolar dimensions. It was found that women are significantly more interested in People, whereas men are significantly more interested in Things. This is perhaps not surprising, given the fact that People may be especially associated with the Social type, which women express more interest in, and that Things may be especially associated with the Realistic

type, which men express more interest in. Gender differences along the Data-Ideas dimension were small.

There have been significant societal changes related to women's rights and sexist attitudes toward women in the past several decades. Therefore, some researchers have begun to examine possible changes in expressed vocational interests by gender. Bubany and Hansen (2011) conducted a cross-temporal meta-analysis of vocational interests, with the goal of determining whether gender differences in interests have changed over time. They utilized study samples from 1976 to 2004, which generated a total sample size for the meta-analysis of 33,520 to be used in analyses.

These authors (Bubany & Hansen, 2011) found that some changes in expressed interests by gender have, indeed, occurred over time. Women have grown significantly more interested in the Enterprising area. Men's interests in the Realistic, Investigative, and Artistic areas have decreased. While these changes might suggest a movement toward fewer and smaller gender differences in interests, it is important to note other results of this meta-analysis that did not reflect significant change. In particular, women did not show increases in the traditionally masculine Realistic and Investigative areas. Additionally, men did not show increases in the traditionally feminine Social areas. In other words, significant gender differences in interests still exist despite societal change.

It is likely that, to some degree, differences in interests influence differential career choices made by women and men. Ultimately, then, these differences may influence the representation of women and men in various careers. A frequently discussed example of unequal representation is the underrepresentation of women in Science, Technology, Engineering, and Mathematics (STEM) fields (Ceci, Williams, & Barnett, 2009). STEM fields tend to be quite

Realistic and Investigative in nature and are the types of careers that men tend to gravitate toward. Furthermore, women tend to be overrepresented in careers, such as nursing and elementary school teaching, that reflect interests most often expressed by women, including Social, Conventional, and Artistic interests (O*NET OnLine, 2012). One important area of research has studied the factors that create and maintain these gender differences in spite of the removal of many structural barriers to women's full and equal participation in the workforce. Some of these factors are discussed in the following section.

Influences on Gender Differences

Research has addressed a variety of factors that may influence differences seen between women and men, including differences in vocational interests discussed earlier. Some researchers have focused on the development of differences and gender identity, especially in children. Others have turned their attention to the factors that maintain gender differences and gender identity over time. Potential biological influences on gender differences in behavior and attitudes will be discussed here as well. In many cases, the factors that contribute to the formation of gender differences also play a role in the maintenance of these differences.

Gender Role Socialization

Gender role socialization involves the development and maintenance of gender identity and, as a result, gender differences. Self-knowledge related to gender identity develops early in life. Gender identity starts with a recognition of one's membership in a gender category, which eventually progresses to an understanding that gender typically does not change over time (Slaby & Frey, 1975; Egan & Perry, 2001). A potentially valuable line of research involves the study of the origins of this gender-related self-knowledge. This self-knowledge may be related to the development of gender differences in a variety of areas, including career choice.

Play, for children, is a primary means of social interaction and is a rich source of information for researchers about what children have learned and are learning about gender identity. By three years old, children have often developed a preference for same-sex playmates (Fagot, 1991; Howes, 1988; Howes & Phillipsen, 1992). This preference has not been seen, in general, in children younger than three (La Freniere, Strayer, & Gauthier, 1984). Researchers have determined that girls and boys tend to choose types of play that are consistent with traditional norms and societal expectations for their gender (Maccoby, 1998). For example, girls often engage in cooperative play, whereas boys are likely to be found engaging in competitive play. In addition to research on specific situations, such as children's play, that may illuminate gender identity development, several theories and models have been proposed as attempts to explain its development and, therefore, gender differences. One will be reviewed here briefly, gender schema theory.

Gender Schema Theory

Gender schema theory was proposed by Sandra Bem in 1981 and is one explanation that has been offered for gender differences. In this theory, a "schema" may be thought of as a cognitive structure that people use to organize perceptions and information. It is presumed that children are taught to see the world in gendered terms and to filter new information through what they have previously learned about gender. In addition, children learn that they are expected to develop and maintain behavior that is gender-congruent. This frequently leads to the development of skills and traits that are associated with a particular gender. Furthermore, children start to assume that others of their gender will also behave in similar ways (Bem, 1981, 1983; Martin & Halverson, 1981; Martin, Ruble, & Szkrybalo, 2002).

Important adults in children’s lives, such as parents or other caregivers, send messages to children about the appropriateness (or inappropriateness) of various activities and behaviors. Parents are likely to show support for sex-typed activities. In other words, they are likely to encourage behavior that is congruent with their child’s presumed gender. Research has shown that this may be particularly true for parents of boys (Fling & Manosevitz, 1972; Lansky, 1967; Maccoby & Jacklin, 1974).

Gender Stereotypes in Advertising

Eisend (2010) ran a meta-analysis of gender roles in advertising in an attempt to evaluate the extent to which stereotyping by gender in advertising occurs, as well as how it has changed over time. He additionally wanted to provide further evidence in a debate regarding the relationship between societal developments and advertising. Eisend determined that gender stereotyping, in which women and men are depicted in traditional gender roles, occurs less frequently than in the past. However, this change is due primarily to changes occurring in countries in which gender differentiation is greater and masculine traits are highly favored over feminine traits (also called “high masculinity countries”).

Four components of gender stereotypes were discussed in Eisend’s meta-analysis: 1) trait descriptors, 2) physical characteristics, 3) role behaviors, and 4) occupational status. It was determined that gender stereotyping occurs most often within the occupational status component. In other words, women and men are likely to be shown in stereotypically traditional jobs in stereotypically traditional locations for their gender (e.g. the home for women, the workplace outside the home for men).

Eisend also studied evidence from his meta-analysis for the purpose of lending support to either the “mirror” or “mold” argument that exists regarding the relationship between gender

stereotyping in advertising and gender-related changes in society. The “mirror” argument posits that gender stereotypes in advertising merely reflect changes in society. The “mold” argument, on the other hand, holds that gender stereotypes in advertising produce gender-related developments and value changes. Evidence gained from Eisend’s meta-analysis lends support for the “mirror” argument, suggesting that advertising is more likely to depend on changes in society.

Gender Priming

Gender priming may also impact the likelihood that women will express interest or confidence in various occupations. Steele and Ambady (2006) performed a series of studies designed to determine the degree to which gender priming influences women’s liking for art- (stereotypically feminine) or math-related (stereotypically masculine) activities. Gender priming was represented in this study by a condition in which the participants’ gender as a woman was made salient. Three separate studies were done. Participants were assigned to female, male, or neutral conditions depending on the study and were primed subliminally (i.e. flashing words for 80 ms in front of participants) or more explicitly (i.e. asking about participant’s gender and whether she lived in a co-ed or single-sex environment). These researchers found that participants in the female-gender priming condition, as opposed to those in the male-gender priming or neutral conditions (depending on the study), resulted in the women participants expressing greater preference for arts-related activities.

Oswald (2008) conducted a similar study that also evaluated the impact of gender priming. In this study, the gender of the women participants was made salient through a questionnaire that assessed gender identification. Participants whose gender was made salient expressed significantly more preference for and confidence in their ability to do well in

stereotypically feminine occupations, such as nurse or teacher, when compared to those participants who did not complete the gender priming questionnaire.

Taken together, the results of these studies (Oswald, 2008; Steele & Ambady, 2006) suggest the existence of several factors that may contribute to the career choices made by women. Gender priming exists in many forms and can influence the degree to which women feel confident in their ability to do well in various jobs and to which they express preferences for certain jobs over others. Self-efficacy, the amount of confidence a person feels in her or himself to do particular tasks, could be related to career choice for women. Researchers have, in fact, demonstrated that people are likely to eliminate occupations from consideration if they believe they will not be successful in them. In one study of children ages 11 to 15, girls reported greater self-efficacy for traditionally feminine occupations, while boys reported greater self-efficacy for traditionally masculine occupations (Bandura, Barbaranelli, Caprara, & Pastorelli, 2001). One concept, related to self-efficacy, called stereotype threat, is discussed below.

Stereotype Threat

Many activities and occupations have traditionally been considered as more suitable for one gender over the other. For example, many may believe that elementary school teaching is more suitable for women while science- and math-related fields are more suitable for men. Stereotypes exist regarding the abilities of women and men in, for example, math-related activities. Specifically, one common stereotype is that women perform worse on math-related tasks than men. Some researchers have examined the role that stereotypes such as this one play in the performance of women and men on various tasks.

Stereotype threat can be considered a form of priming, discussed above. It primes women to consider actual or perceived gender differences in this areas. Stereotype threat predicts that

women will do worse on certain tasks when they are made aware of related stereotypes (Nguyen & Ryan, 2008). In fact, women have been found to perform worse on math-related activities when they are told that a task (e.g. a test) can detect gender differences. This is not the case when women are told that a task is gender-fair (Halpern, Benbow, Geary, Gur, Hyde, & Gernsbache, 2007). Clearly, self-efficacy beliefs based on messages received about one's gender have the power to impact performance.

Same-Gender Role Models in Careers

Some research has started to look at the role the gender of career role models may play in career choice and an individual's likelihood of remaining and succeeding in a gender non-traditional career (e.g. women in STEM fields). Young and colleagues (2013) found, by utilizing the Implicit Association Task, that women who saw female professors as positive role models more strongly identified with science and saw science as being more feminine than masculine. Lockwood (2006) suggested that women may especially benefit from same-gender role models, in comparison to men, because of the relatively negative gender-related stereotypes they face in gender non-traditional careers (e.g. women are not as good at math).

Biological Preparedness

Alexander (2003) has argued that biological preparedness for gender roles may unite with social learning to direct women and men into traditional gender roles. She studied children's preferences for toys and proposed that girls and boys may be predisposed to choose different toys because of evolved differences in visual processing. Specifically, it was theorized that differences in visual processing may be a result of the tasks typically performed by early humans. Early human females were often responsible for tasks such as childcare and food gathering, while early human males often performed tasks such as hunting. These early tasks

may have contributed, through evolution, to modern women's stronger ability, in comparison to men, in facial expression processing and greater sensitivity to object features. Men often have greater spatial ability than females, which may correspond with the tasks often performed by early male humans.

Alexander (2003) observed that girls are often drawn to dolls or "warm-colored objects", which may reflect the greater abilities of girls and women in facial expression processing and sensitivity to features of objects, such as colors. Boys, on the other hand, often play with toys such as trucks or balls, which involve motion and allow them to use their spatial abilities. Alexander proposed that biological influences predispose children to choose these types of toys. As has been seen in discussions of influences on gender differences so far, socialization methods and biological influences likely jointly influence the development and maintenance of gender roles, which may in turn impact differential career choices by women and men.

Gender Differences in Ability

As has been mentioned earlier in this literature review, it is frequently assumed that women and men differ in their abilities. If this supposition was true, it would be logical that women and men may be differentially represented in careers that emphasize certain skills and tasks. For example, many believe that men are better in science and math than women. If this is true, it would explain the fact that women tend to be underrepresented in science, engineering, and mathematics.

However, researchers have not found empirical support for presumed differences in abilities or differences in other characteristics such as sociability, self-esteem, and learning styles (Hyde, 2005; Maccoby & Jacklin, 1974; Spelke, 2005). Hyde (2005) went so far as to propose a "gender similarities hypothesis". This hypothesis holds that, notwithstanding the widespread

assumption of pervasive gender differences across multiple domains, women and men are actually very similar on most psychological variables.

Attitudes toward Women and Career Choice

Socioanalytical Model and Gottfredson's Theory of Circumscription and Compromise

To this point, this literature review has covered a variety of potential explanations for gender differences in vocational interests and career choice. Various theories, such as the socioanalytic model of personality (Hogan & Roberts, 2000) and Gottfredson's theory of circumscription and compromise (1981) have been developed to account for both internal and external factors influencing career choice. These two theories will be discussed briefly next.

The socioanalytic model of personality assumes that factors both within and outside of the individual impact her or his interests and choices. This theory also emphasizes the role that our existence in groups plays in our motivations and decision-making. People are simultaneously motivated to: 1) fit in with their group and 2) to gain status. In some cases, this may be accomplished by adhering to the expectations that the group places on the individual. These expectations may be based in part on the categories in which the individual falls, such as gender. In other words, a particular social group may expect women and men to fit in with the group in different ways that may align with traditional gender roles. A person's gender may also influence the way in which they are able to gain more status in their group. Personality and self-efficacy beliefs, as well as societal or group messages regarding appropriate gender roles, may influence the career choice an individual ultimately makes (Hogan & Roberts, 2000).

Gottfredson's (1981) theory of circumscription and compromise emphasizes career choice as a process, not a single event. This theory was developed in part to attempt to explain differences in career choices across demographics, including gender. She proposed that,

beginning at a very young age, children begin to form ideas about what careers may be suitable or unsuitable for them on the basis of certain groups they may be part of, such as gender. These ideas are referred to as 'occupational images' and may be thought of as generalizations made about specific careers. As these occupational images are formed, individuals are involved in an ongoing process of evaluating career options, determining whether or not each career is suitable for them, and eliminating career options that are found to be unsuitable. Specific to gender, women and men form occupational images that give information about the femininity and masculinity of careers (Gottfredson, 1981).

Personality and Vocational Interests

Some research has explored the relationships between personality traits and RIASEC interests (Holland, 1959; 1997). This has led to the consideration of attitudes toward women and their impact on career choice. Sullivan and Hansen (2004) examined correlations between the RIASEC types and the lower-order personality traits of the Big Five personality factors. The Big Five model of personality conceptualizes human personality through the use of five trait dimensions: 1) Extraversion, 2) Agreeableness, 3) Neuroticism, 4) Openness, and 5) Conscientiousness (Goldberg, 1990; John & Srivastava, 1999; McCrae & Costa, 1997). A brief description of each of these traits follows.

Extraversion involves a tendency to seek the company of others and the propensity to get energy from interactions with others. Agreeableness involves a tendency to engage with others in a prosocial, cooperative way. Neuroticism is associated with the frequent experiencing of emotions often seen as 'negative' or unpleasant, such as anxiety and sadness. Openness involves an appreciation for new experiences, curiosity, and different ideas. Finally,

conscientiousness involves a focus on planned actions and dependability, as well as organization (Goldberg, 1990; John & Srivastava, 1999; McCrae & Costa, 1997).

Research has found some significant correlations between the RIASEC types and these personality traits. There is a positive relationship between Extraversion and the Social type and a negative correlation between Openness to Feelings and the Investigative type. Larson, Rottinghaus, and Borgen (2002) found significant relationships between Openness and the Investigative and Artistic types; Extraversion and the Social and Enterprising types; and Agreeableness and the Social type. Implications of these connections depend partly upon the strength of each particular relationship. Those expressing certain vocational interests may be expected to display certain personality traits. For example, a person with strong Artistic interests may be more likely to exhibit greater Openness to Experience. It is important to consider other related questions, such as whether or not personality traits precede the development of vocational interests, as some models of career development (e.g. social cognitive model; Lent, Brown, & Hackett, 1994) would suggest.

Conformity to Traditional Masculine Norms and Men's Vocational Interests

Related research has involved the study of traditional masculine norms in men and traditionally masculine vocational interests. Tokar and Jome (1998) found that men in more traditionally masculine jobs endorsed more anti-feminine norms. Additionally, men who endorsed more anti-feminine attitudes expressed greater interest on the Things end of the Things-People dimension and less interest in the Artistic, Enterprising, and Social Holland RIASEC types. Mahalik, Perry, Coonerty-Femiano, Catraio, and Land (2006) presented very similar findings. Men who more strongly endorsed traditional masculine norms were more likely to have interests in Holland's Realistic and Enterprising areas than in the other areas. These findings,

taken together, suggest that attitudes toward women may be related to the vocational interests of men.

Religious Fundamentalism and Right-Wing Authoritarianism

Religious Fundamentalism

In 1966, Allport noted a paradox that wished to explore. Specifically, he observed that religious traditions often advocate and practice ‘brotherhood’ and concern for others while simultaneously being associated with greater prejudice. He stated that ‘...there is something about religion that makes for prejudice, and something about it that unmakes prejudice’ (p. 447). This observation prompted focused study of the relationship between religiosity and prejudice.

As researchers have tried to shed light on the factors underlying this paradoxical relationship, many constructs have been posited that may account for it, such as immature and mature religion, low quest orientation and high quest orientation, and extrinsic and intrinsic orientation (Altemeyer & Hunsberger, 1992; Allport, 1966; Batson, 1976; Herek, 1987; Mavor, Louis, & Laythe, 2011). Religious fundamentalism and right-wing authoritarianism have also arisen as prominent players in this area of study. As will be seen in the following sections of this literature review, religious fundamentalism is often associated with conservative gender attitudes and beliefs in traditional gender roles. Therefore, it is possible that religious fundamentalism may relate to the traditionalism of career choice for women and men.

Various definitions of religious fundamentalism have been proposed (Emerson & Hartman, 2006). Popular definitions tend to root fundamentalism in modernity or describe specific characteristics of fundamentalism. A definition proposed by Antoun (2001) and highlighted by Emerson and Hartman (2006) is as follows: ‘a religiously based cognitive and affective orientation to the world characterized by protest against change and the ideological

orientation of modernism' (p. 130). The connection between fundamentalism and modernity will be discussed later in more detail. Altemeyer and Hunsberger (1992) provided a descriptive definition featuring common characteristics of fundamentalism:

The belief that there is one set of religious teachings that clearly contains the fundamental, basic, intrinsic, essential, inerrant truth about humanity and deity; that this essential truth is fundamentally opposed by forces of evil which must be vigorously fought; that this truth must be followed today according to the fundamental, unchangeable practices of the past; and that those who believe and follow these fundamental teachings have a special relationship with the deity. (p. 118)

Almon, Sivan, and Appleby (1995) highlighted the characteristics fundamentalist groups often exhibit. Some (e.g. Iannaccone, 1997) have noted that Almond and colleagues' list may be not perfect, since some groups typically called fundamentalist do not display all of the characteristics, while other groups that are not typically labelled as fundamentalist do, in fact, display all of the characteristics. However, this list may still be helpful in illuminating the construct of religious fundamentalism.

Almond and colleagues (1995) divided the nine characteristics of fundamentalist groups into two categories: 1) Ideological and 2) Organizational. The Ideological characteristics are: 1) reactivity to the marginalization of religion, 2) selectivity (chooses aspects of religious tradition to defend, with particular emphasis on those that separate the group from mainstream society), 3) dualistic worldview, 4) absolutism and inerrancy, and 5) millennialism and messianism. The Organizational characteristics are: 1) elect, chosen membership (members are believed to be called or set aside for a special purpose), 2) sharp boundaries (e.g. between members and those

who are not in the group), 3) authoritarian organization (often organized around leaders who are frequently said to be chosen by the deity), and 4) behavioral requirements.

The term 'fundamentalism' was initially used to describe an American Protestant religious group that existed from approximately 1870 to 1925 (Emerson & Hartman, 2006). This group, along with present-day fundamentalist groups, was formed largely as a reaction against modernization attempts within Protestantism. This group primarily directed its attention at other Protestant groups. On the other hand, present-day groups often direct their attention at what they perceive to be an increasingly secular society. The story of this group illustrates common themes behind the formation of present-day fundamentalist groups.

Many researchers hold that fundamentalism cannot be properly understood outside of the context of modernity, since it is seen as a direct response to modernization and the secularization of society (Emerson & Hartman, 2006). Fundamentalism is not limited to American Christianity. Fundamentalist groups have been found in countries in Africa, the Middle East, North America, Latin America, and Asia. They exist within many major religions, including Judaism, Islam, Christianity, and Buddhism (Emerson & Hartman, 2006).

As mentioned earlier in this section, researchers have studied religious fundamentalism and its connections to prejudice, which in turn may be connected to the ways in which people perceive careers and their eventual decisions about which careers are suitable for themselves and others as women or men. In addition, the connection between religious fundamentalism and another construct, right-wing authoritarianism, has been explored. Right-wing authoritarianism, in addition to being connected to fundamentalism, is also associated with prejudice. In the next section of this literature review, this construct will be described in order to prepare for a more thorough discussion of the relation of these two constructs to prejudice.

Right-Wing Authoritarianism

Right-wing authoritarianism has been described as a ‘syndrome’ (Altemeyer & Hunsberger, 1992, p. 114). A common way to describe the construct is through discussion of its three components as identified by Altemeyer (2006): 1) authoritarian aggression, 2) authoritarian submission, and 3) conventionalism. Authoritarian aggression is hostility or aggression toward those viewed as deviating from some established norm. Authoritarian submission is defined as a willingness to submit to authorities deemed legitimate. Finally, conventionalism is an adherence to societal norms as perceived by the individual. Conventionalism also includes a strong belief that others should adhere to these norms as well.

Those who express high levels of right-wing authoritarianism, also called ‘authoritarians’, tend to be relatively prejudiced. This will be discussed in more detail in this literature review’s next section. Other characteristics of authoritarians have also been studied, identified, and described. Authoritarians tend to report religious training in childhood that taught them to submit to authority, follow strict behavioral rules, and demonstrate hostility to outsiders (Altemeyer, 1988). Authoritarians also tend to be relatively punitive and to believe in the use of physical punishment with children. They are inclined to frequently use double standards in their differential reaction to, for example, the actions of right-wing or left-wing governments, often supporting an action of a right-wing government that they would decry if taken by a left-wing government (Altemeyer, 1988). Finally, authoritarians may view themselves as individualists, despite their strict adherence to set norms and regulations, and they may be self-righteous in spite of being no less likely to lie and cheat than others (Altemeyer, 1988).

Relationship between Religious Fundamentalism and Right-Wing Authoritarianism

Altemeyer (2003) noted that ‘fundamentalism seems to be the way right-wing authoritarians respond to the religious impulse’ (p. 18). He developed scales meant to measure both religious fundamentalism and right-wing authoritarianism (Religious Fundamentalism Scale, 1992, 2004; Right-Wing Authoritarianism Scale, 1996, 2006) and stated in his 2003 article that correlations between these scales typically fall in the .70s. It appears that the two constructs share some relationship given the level of correlation between them.

Hathcoat and Barnes (2010) described the relationship between religious fundamentalism and right-wing authoritarianism in terms of partial mediation. Specifically, they proposed a mediation relationship in which beliefs in ‘certain and simple’ (p. 73) knowledge and an all-knowing authority are derived from religious fundamentalism and are then partially responsible for the maintenance of authoritarianism. In a study of this relationship, 227 participants completed the Revised Religious Fundamentalism Scale (Altemeyer, 2004), the Right-Wing Authoritarianism Scale (Altemeyer, 1996), and the Epistemic Belief Inventory (Schraw, Bendixen, & Dunkle, 2002). These researchers found support for their partial mediation hypothesis and, therefore, their proposition regarding the relationship between right-wing authoritarianism and religious fundamentalism (Hathcoat & Barnes, 2010).

Religious Fundamentalism, Right-Wing Authoritarianism, and Prejudice

As mentioned earlier in this literature review, religious fundamentalism and right-wing authoritarianism emerged as constructs meant to partially explain the relationship between religiosity and prejudice (Mavor, Louis, & Laythe, 2011). The descriptions above demonstrate the distinct nature of these constructs, but the correlation between them is fairly high (Altemeyer, 2003). In addition, both have been found to at least partially account for the relationship between

religiosity and prejudice (Altemeyer & Hunsberger, 1992; Johnson, Rowatt, Barnard-Brak, Patock-Peckham, LaBouff, & Carlisle, 2011; Mavor, Louis, & Laythe, 2011).

Altemeyer's Religious Fundamentalism Scale (1992, 2004) and Right-Wing Authoritarianism Scale (2006) have often been utilized to study the relationship between the constructs and prejudice of different kinds. Jonathan (2008) used these scales with a sample of 96 students to determine the relationship between the constructs and prejudice against people who identify as homosexual. Of these participants, approximately half identified as Christian (Catholic or Protestant), while the other half reported their religious affiliation as Judaism, Islam, or 'other'. This researcher found that higher levels of religious fundamentalism and right-wing authoritarianism each predicted more negative attitudes toward those who identify as homosexual.

Hunsberger (1996) reported findings with a sample of non-Christian individuals. Participants in this study identified with either Islam, Hinduism, or Judaism. The findings of this study strongly resembled Jonathan's (2008) findings with the mixed group of Christian and non-Christian participants. Hunsberger (1996) found that higher levels of right-wing authoritarianism and religious fundamentalism were associated with more negative attitudes toward people who identify as homosexual. Schwartz and Lindley (2005) reported a similar connection between religious fundamentalism and homophobia. Additionally, a 2009 (Whitley) meta-analysis examined all relevant literature and reported a consistent, positive relationship between religious fundamentalism and homonegativity.

Studies discussed thus far have examined the relationship between religious fundamentalism, right-wing authoritarianism, and prejudice against people who identify as homosexual. Other forms of prejudice, such as racial and ethnic prejudice, have been studied as

well. Rowatt and Franklin (2004), for example, demonstrated a positive relationship between right-wing authoritarianism and implicit racial prejudice. Additionally, in a 2010 meta-analysis, Hall, Matz, and Wood found that religious fundamentalism is positively related to racial prejudice. Finally, researchers have also studied the relationship between right-wing authoritarianism, religious fundamentalism, and sexism or traditional beliefs about women.

Emerson and Hartman (2006) highlighted the ‘consistent finding...that fundamentalists are strong traditionalists on matters of family and gender relations. Patriarchal families, with distinct and separate roles for males and females, are core components of fundamentalist beliefs and practices across religious and continents’ (p. 135). Several writers have discussed the connections between religious fundamentalism and adherence to traditional gender norms in particular (e.g. Bendroth, 1999; Riesebrodt, 1993 [1990]). Indeed, opposition to changes in acceptable sexual activity, gender norms, and family structures have been rallying points for many fundamentalists and have encouraged political action in these groups (Emerson & Hartman, 2006). Fundamentalists may be more likely than those who express lower levels of religious fundamentalism to believe in and adhere to, for example, traditional gender norms, which may in turn influence their likelihood of selecting careers they perceive as being unsuitable for their gender.

Hunsberger, Owusu, and Duck (1999) conducted a cross-cultural study of students in Canada and Ghana. They reported findings that, in both of these countries, right-wing authoritarianism and religious fundamentalism were associated with sexist or traditional attitudes toward women. Specifically, higher levels of these two variables corresponded with more traditional and sexist attitudes. In addition, Sheldon and Parent (2002) found a positive correlation between religious fundamentalism and both old-fashioned and modern sexism.

Nagoshi, Adams, Terrell, Hill, Brzuzy, and Nagoshi (2008) found a similar positive correlation between religious fundamentalism and hostile and benevolent sexism.

Given the established link between, in particular, religious fundamentalism and prejudice, some have turned their attention to potential explanations for this link. Cognitive style and various cognitive patterns, such as personal need for structure, preference for consistency, and need for closure, have been studied as potential mediators in the relationship between religious fundamentalism and prejudice. Specifically, it has been hypothesized that religious fundamentalists possess certain cognitive tendencies that make them more likely to possess prejudiced views. Religious fundamentalists may differ in the process and complexity of their thought (Hill, Terrell, Cohen, & Nagoshi, 2010; Hunsberger, Alisat, Pancer, & Pratt, 1996) and be more likely to engage in convergent cognition that seeks to confirm prior teachings and attempts to reinterpret new information through those teachings.

On the other hand, those who demonstrate lower levels of religious fundamentalism may be more likely to engage in divergent cognition, in which new information and material that calls into question the teachings to which they have been exposed is not automatically rejected. Instead, this new, potentially contradictory information may, in fact, lead to the development of new beliefs. Still, for fundamentalists, this type of thinking may be less likely to occur. Rather, as discussed above, new information may always be filtered through already held beliefs. For example, a fundamentalist who has been taught that homosexuality is a sin may feel threatened by the existence or progress of people who identify as homosexual and may respond with homophobia that denigrates these people and removes some perceived challenges to religious teachings. The fundamentalist is then able to dismiss people who identify as homosexual as a

definitive 'other' and are less motivated to critically think about the explicit and implicit prejudicial messages in their culture (Hill, Terrell, Cohen, & Nagoshi, 2010).

In addition, Pek and Leong (2003) found that need for closure was positively related to hostile sexism. Brandt and Reyna (2010) cited closed-mindedness, an aspect of need for closure, as a significant mediation in the relationship between religious fundamentalism and the denigration of people who identify as homosexual. Other researchers studied a concept they named 'personal need for structure' and found that this construct holds a positive relationship with a greater likelihood of endorsing beliefs that ethnic prejudice and discrimination are inevitable (Hodson & Esses, 2005) and with greater likelihood of endorsing stereotypical gender traits (Neuberg & Newsom, 2003). In general, it would seem that cognitive rigidity and a desire to maintain prior beliefs potentially contribute to the link between religious fundamentalism and prejudice.

Right-Wing Authoritarianism and Career Choice

A relatively small number of studies have explored the relationships between right-wing authoritarianism and career choice. Religious fundamentalism has not been explicitly studied in relation to career choice, although religious fundamentalism and right-wing authoritarianism are highly correlated (Altemeyer, 2003) and it is possible that religious fundamentalism may relate to career choice in similar ways as does right-wing authoritarianism. As has been emphasized in earlier sections of this literature review, religious fundamentalism and right-wing authoritarianism are linked to more rigid beliefs about appropriate roles for various people, perhaps particularly including roles based on gender (Peterson & Zurbriggen, 2010). It has also been noted by some researchers that women and men often choose careers that are related to frequently-used definitions of femininity and masculinity (e.g. Parsons & Bales, 1955).

Furthermore, some researchers have found that those pursuing different academic and career fields exhibit differing levels of sexist attitudes (Fernandez, Castro, Otero, Foltz, & Lorenzo, 2006).

It is possible that those exhibiting higher levels of religious fundamentalism and right-wing authoritarianism may choose careers that are more traditional for their gender and may view others who choose gender non-traditional careers (e.g. a woman as a medical doctor, a man as an elementary school teacher) in more negative ways because they are prone to negative evaluations of those they believe are breaking a specified 'rule'. This section of the literature review will discuss research that is relevant to these questions, as they were examined in the present study.

One researcher, Rubinstein, has done research into the relationship between right-wing authoritarianism and careers. In one study, published in 2006, he examined levels of right-wing authoritarianism in four groups: 1) border police officers, 2) career soldiers, 3) airport security guards, and 4) members of a control group. He used a shortened version of Altemeyer's (2006) Right-Wing Authoritarianism Scale to measure right-wing authoritarianism and hypothesized that differences would emerge in the level of this variable between these groups, with border police officers displaying the highest levels and members of the control group displaying the lowest levels. He developed this hypothesis on the basis of theories, such as Holland's theory of vocational choice (1959; 1997), that predict that individuals will choose careers based on the degree to which they believe they will get their needs (e.g. interests) met in each career considered. In this 2006 study, Rubinstein found that levels of right-wing authoritarianism generally differed in the predicted order, with border police officers showing the highest levels and members of the control group showing the lowest levels.

In an earlier study (2003), Rubinstein considered the relationships between creativity, right-wing authoritarianism, and career choice. He again used Altemeyer's (2006) scale to measure right-wing authoritarianism. In this study, he included design, behavioral sciences, and law students as participants and predicted that levels of right-wing authoritarianism and creativity would differ among these groups. The major finding was that students of design were significantly more creative and less authoritarian than students in behavioral sciences and law. Rubinstein (1997) attempted to replicate an earlier study (Weller & Nadler, 1975), which found that students in biology, chemistry, and engineering were more authoritarian than philosophy and psychology students. In his study, Rubinstein found that students in social sciences were significantly less authoritarian (again measured using Altemeyer's [2006] scale) than students in the humanities, hard sciences, and life sciences.

Other researchers have also studied related questions but have similarly focused on right-wing authoritarianism and have not included religious fundamentalism. Duncan, Peterson, and Ax (2003) examined the relationship between right-wing authoritarianism and a variety of variables in the lives of educated women pursuing a variety of career and home-life trajectories. They found that right-wing authoritarianism shared significant relationships with a number of factors for these women. First, women pursuing graduate degrees in the social sciences or humanities demonstrated significantly lower levels of right-wing authoritarianism than women pursuing professional degrees. Additionally, women expressing higher levels of right-wing authoritarianism also expressed greater preference for male romantic partners exhibiting many masculine characteristics (as opposed to those exhibiting fewer masculine characteristics). Finally, participants assessed at midlife who had followed a career path seen as more non-traditional for their gender (e.g. they combined work and family) and had reported higher levels

of right-wing authoritarianism were more likely to acknowledge finding role combination stressful when compared to women expressing lower levels of right-wing authoritarianism. In other words, for these women, more authoritarian views were associated to greater role combination stress.

Peterson and Lane (2001) found that levels of right-wing authoritarianism correlated with grade point averages among college students in liberal art fields. Specifically, students in these fields who reported higher levels of right-wing authoritarianism had significantly lower grade point averages than students in the same fields with lower levels of right-wing authoritarianism. These researchers believed that the relatively ambiguous nature of knowledge associated with the liberal arts may pose difficulties for students high in right-wing authoritarianism. Taken together, the results of the studies discussed in this section lend support for hypotheses suggesting that right-wing authoritarianism, and the very closely related variable religious fundamentalism, may impact career choice and our attitudes about those who pursue gender non-traditional careers.

Bergner (2013) and Callahan (2015)

Two recent studies have previously examined questions similar to those that will be addressed in the present study. This section of the literature review will present the results of these two studies, which will allow for later discussion of the present study's research questions and methods. Bergner (2013) was the first study to utilize the Occupation-Adjective Matching Card Sort activity, also used in Callahan (2015). The present study will use an online sorting procedure that is similar to the Occupation-Adjective Matching Card Sort activity. The procedure used in the present study is discussed in detail later in this paper, with particular attention paid to the differences between the procedure in the present study and these two earlier studies. These studies have explored questions relevant to the continued unequal distribution of

women and men in the United States workforce in spite of the removal of many structural barriers to women's advancement and entrance into fields traditionally dominated by men.

In each study, participants were given a set of six occupational descriptions and asked to match 60 Bem Sex Role Inventory (BSRI; Bem, 1974) traits (feminine, masculine, and socially desirable) to the descriptions based on their beliefs about what type of person would be working in each occupation. Each description reflected a Holland RIASEC type (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional; Holland, 1959; 1997). In Bergner (2013), participants were divided into three conditions. Participants viewed either 1) female names in all job descriptions, 2) male names in all job descriptions, or 3) gender-neutral job descriptions. Participants were asked to match ten adjectives to each description. In this way, the study attempted to determine the degree to which the perceived gender of the person in the occupational description impacted the participants' perceptions of the femininity and masculinity of the RIASEC types.

Bergner found that participant gender, but not condition, had a significant impact on ratings of the femininity and masculinity of the RIASEC types. In other words, this study's results suggested that perceptions of the RIASEC types differed somewhat depending on the gender of the person assigning adjectives to the RIASEC types (i.e. there were some significant differences in how women and men rated the RIASEC types), but that the overall pattern was consistent in the face of changes in the gender of the people believed to be working in various jobs. Participants rated certain RIASEC types as feminine (e.g. Social) and masculine (e.g. Realistic) when comparing same-gender targets across the six Holland types. When comparing men in Realistic jobs to men in Social jobs, or women in Realistic jobs to women in Social jobs, the ratings of masculinity and femininity were stable.

Callahan (2015) utilized very similar methodology to address similar questions, but details about the card sort activity differed from Bergner (2013). In Callahan's later study, participants were given the same six occupational descriptions and the same set of 60 cards featuring the traits of the BSRI (Bem, 1974). This study, however, featured two, rather than three, conditions. Each participant in this study was exposed to female and male names in the job descriptions, but differed by condition in the particular name-description combinations to which they were exposed. Gender-neutral job descriptions were not included in this study. Participants placed in the first condition received the following six descriptions: 1) Realistic tasks- male name, 2) Investigative tasks- female name, 3) Artistic tasks- male name, 4) Social tasks- female name, 5) Enterprising tasks- male name, and 6) Conventional tasks- female name. Participants in the second condition received the following six descriptions: 1) Realistic tasks- female name, 2) Investigative tasks- male name, 3) Artistic tasks- female name, 4) Social tasks- male name, 5) Enterprising tasks- female name, and 6) Conventional tasks- male name.

Callahan (2015) reached somewhat different conclusions than Bergner (2013) on the basis of participant's assignment of adjectives to the six occupational job descriptions. In Callahan's (2015) study, participants perceived certain RIASEC types as either feminine or masculine regardless of the gender of the individual working in the occupation (e.g. Social type seen as feminine, Realistic type seen as masculine). However, there were shifts in the degree to which a RIASEC type was perceived as either feminine or masculine depending on whether the representative descriptions featured a female or male name. Therefore, it may be possible to shift someone's view of how feminine or masculine jobs representative of a certain type are to a degree (e.g. view the Realistic type as less masculine, but still masculine overall, when a woman is seen working in the job).

The results of this study may be significant for those working with clients addressing career issues. Perceptions of the femininity and masculinity of the RIASEC types reflect gender differences in vocational interests (e.g. Social type seen as feminine; women express more Social interests than men; Su, Rounds, & Armstrong, 2009). As was mentioned earlier in this review, some research has begun to examine the ways in which same-gender role models may influence an individual's choice or desire to enter into a certain career (Young, Rudman, Buettner, & McLean, 2013; Lockwood, 2006). Therefore, it is important to consider the degree to which clients' perceptions of occupations may have been influenced by the examples of women and men in various careers to which they have been exposed and how appropriate they believe the career is for someone of their gender (Gottfredson, 1981) as a result of this exposure.

Callahan (2015) also examined the roles of attitudes toward women, right-wing authoritarianism, and religious fundamentalism in participants' perceptions of the femininity and masculinity of the RIASEC types. It was hypothesized that these variables may allow for more accurate predication of the participants' ratings of the types and would account for a significant portion of the variance in perceptions. This was a central research question of the study due to the well-established link between these constructs and prejudice of different forms (e.g. Hunsberger, Owusu, & Duck, 1999; Sheldon & Parent, 2002; Nagoshi, Adams, Terrell, Hill, Brzuzy, & Nagoshi, 2008). In Callahan (2015), religious fundamentalism and right-wing authoritarianism did not have significant effects on assignment of adjectives to the occupational descriptions. That is, participants did not differ in their assignment of feminine or masculine traits to the RIASEC types based on whether they displayed high or low levels of right-wing authoritarianism and religious fundamentalism.

It is possible that the structure of the card sort activity used in this study (Callahan, 2015) reduced the researcher's ability to demonstrate the effects religious fundamentalism and right-wing authoritarianism may have on perceptions of the femininity and masculinity of the RIASEC types. In order for these variables to have accounted for a significant portion of the variance in perceptions of the femininity and masculinity of the RIASEC types, there would have had to be differential effects of each variable across the types. For example, people who displayed higher levels of religious fundamentalism would have had to respond differently, or in a more sexist manner, to one RIASEC type and not another. The forced-choice paradigm inherent to this study, in which participants were required to assign ten adjectives to each of six occupational descriptions, may have potentially obscured sexist perceptions of the RIASEC by requiring an equal number of adjectives to be assigned to each category.

It is also possible that sexist attitudes toward women, religious fundamentalism, and right-wing authoritarianism may impact other related circumstances more strongly than perceptions of the RIASEC types. Perceptions of the femininity and masculinity of the RIASEC types may, in fact, be so deeply entrenched in our collective psyche that, regardless of an individual's levels of conservatism or sexism, we may all have stereotyped views of the RIASEC types and people who work in careers representative of these types. This may lead to a situation in which most participants, when faced with a task such as this card sort activity, fall back on their stereotyped views in order to complete the task. As was discussed earlier in this literature review, variables such as religious fundamentalism and right-wing authoritarianism may impact other things, such as our views of traits typically seen as either feminine or masculine or the degree to which we view someone in a gender non-traditional career positively or negatively. As

will be seen later in this paper, the present study attempted to shed more light on the degree to which these variables impact our perceptions of careers and other related situations.

Gendered Perceptions of the RIASEC Types and Sorting Procedures

Overview of Sorting

As noted in the previous section of this literature review, sorting methodology may have accounted for the lack of significant results found in an earlier study (Callahan, 2015). This study attempted to examine the relationships between religious fundamentalism, right-wing authoritarianism, and perceptions of the femininity and masculinity of the RIASEC types. The present study utilized a somewhat different sorting methodology to explore the possibility that these conservatism-related variables may in fact influence perceptions of the RIASEC types. Therefore, this section of the literature review will give a brief overview of sorting and different sorting procedures.

Coxon (1999) defined ‘sorting’ as a process of categorization and classification. In other words, sorting is done to place a certain number of things (e.g. ideas, phrases, words) into a smaller number of categories on the basis of some rule (e.g. similarity, the degree to which each thing matches a description of each group). An important factor in studies that utilize sorting is that participants should be required to sort according to rules that allows each thing/object to be placed into only one category. Types of common sorting procedures are discussed next.

Types of Sorting Procedures

Coxon (1999) emphasized the potential benefits of free-sorting on social science research. ‘Free-sorting’ was described as a type of sorting methodology in which participants are given a set of objects and asked to place them into categories or group that they are allowed to define themselves. Some benefits associated with free-sorting may apply to sorting techniques in

general, while others may apply specifically to the free-sorting technique. Sorting procedures, in general, may be less draining on participants' energy and may be enjoyed by some participants. Additionally, sorting procedures can be designed in such a way that they can be used with nonliterate individuals or young children. Sorting may allow for the categorization of a large number of things/objects. Free-sorting can provide additional information to researchers as it requires participants to establish categories using their own beliefs about the qualities of and connections between the items needing categorization. It can therefore be beneficial to ask participants, after the sorting task has been completed, to talk with the researchers about the criteria they used to establish categories and sort things into the categories (Coxon, 1999).

Variations on the basic free-sorting technique may be preferred by some researchers (Coxon, 1999). Object-related variants exist, such as the use of photos or some other depiction of the object instead of the object itself or a word representing the object. Descriptions of objects may also be used instead of a name or single word. Some variations utilize differences in the categories. Fixed-sorting is a procedure in which participants are asked to sort objects into categories that have already been determined in some way, whether by the labels given to the categories or the number of categories. For example, participants may be given 30 objects and asked to sort them into 6 categories, which may or may not have predetermined labels. Coxon appears to favor free-sorting procedures in many situations and stated that fixed-sorting reduces researchers' ability to learn about the way in which a particular participant may have 'naturally' sorted the materials.

There are a variety of additional sorting techniques that have been described and utilized. Graded-sorting requires participants to arrange the categories they have created during the initial sorting into a rank-order, often based on a specific criterion. Multiple sorting is done when

researchers ask participants to sort the same set of things/objects multiple times. In this case, participants may be given the same set of instructions for each sorting, which could provide the researchers with a measure of test-retest reliability. Researchers may also choose to give the participants different instructions for sorting each time. Participants may be asked to sort the things/objects using a different stand or criterion. Another sorting technique is called Q methodology, in which participants are asked to sort the materials based on the degree to which they agree or disagree with the ideas presented in the items (McKeown & Thomas, 1988; Coxon, 1999).

Social science research has used a variety of sorting techniques. Researchers should attempt to choose a sorting technique that will allow them to address the questions at hand, maximizing relevant information gained while maintaining the ability to conduct appropriate statistical analyses and draw comparisons between participants. It is possible that sorting techniques utilizing 'free' methodology may lend certain benefits to researchers that more fixed techniques may not (Coxon, 1999).

As this literature review has demonstrated, a number of psychological traits and factors may be considered as we begin to explore the causes of vocational interest gender differences and gendered career choice. The development of vocational interests may be impacted by the careers an individual allows her or himself to consider. Those who endorse sexist beliefs and traditional attitudes toward women may be more likely to restrict themselves to career choices they feel are appropriate for their gender. Religious fundamentalism and right-wing authoritarianism, taken together to represent conservatism, may be related to traditional beliefs about gender roles and an unwillingness to consider careers that appear to fall outside of

traditional roles. Additionally, those who hold sexist beliefs, or are fundamentalist or authoritarian, may evaluate the 'non-traditional' career choices of others negatively.

The Present Study

The primary objective of the present study is to examine connections between gender- and conservatism-related psychological factors and vocational constructs. In previous studies, such as Callahan (2015), the relationship between the perceived gender of a person working in an occupation and the perceptions of that occupation were explored. This study built upon previous studies by utilizing an unstructured sorting procedure to examine the extent to which individual differences in perceptions of careers are related to other factors, such as religious fundamentalism and right-wing authoritarianism. Additionally, it is predicted that these conservatism-related factors, as well as sexism, may also influence other circumstances related to gender and career choice, including attitudes toward people working in gender traditional or non-traditional careers.

The following section details the main research questions and hypotheses for this study. This section is divided into two parts representing the two major areas of interest: 1) perceptions of the femininity and masculinity of the RIASEC types and 2) positive/negative ratings of traits assigned to the RIASEC types. Each interest area includes four separate but related questions, for a total of eight research questions for the study as a whole. For each interest area, the first question addresses the basic methodology used in the study, while the second, third, and fourth questions address the influence of sexism, conservatism, and sexism and conservatism taken together, respectively. More specific information about these research questions is included below.

Perceptions of the Femininity and Masculinity of the RIASEC Types

1a. Are there significant differences in participants' perceptions of the femininity and masculinity of the RIASEC types depending on their exposure to job descriptions related to the RIASEC types that are gender-neutral or that feature female or male names?

This research question was examined, to some degree, in the two previous studies (Bergner, 2013; Callahan, 2015) discussed in this paper's literature review. Bergner utilized three conditions for her occupation-adjective matching card sort: 1) female names in descriptions, 2) male names in descriptions, and 3) gender-neutral descriptions. Callahan utilized two conditions for the occupation-adjective matching card sort which exposed all participants to descriptions with female and male names but differed in the particular combinations of gender and descriptions. No participants in Callahan's (2015) study were exposed to gender-neutral descriptions. The present study had three conditions including the two conditions from Callahan's (2015) study and the gender-neutral condition from Bergner's (2013) study. The present study utilized the 60 BSRI items (Bem, 1974), as well as items from the Positive-Negative Sex-Role Inventory (PN-SRI; Berger & Krahe, 2013) and the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978). In the two studies conducted previously, only BSRI items were used.

In this study, this research question was used as a building block for further questions regarding the roles of sexism and conservatism in the relationship between participant exposure to job descriptions that are gender-neutral or that feature female or male names and perceptions of the femininity and masculinity of the RIASEC types. It was hypothesized that results from this study would mirror results from Callahan (2015), in which the Artistic, Social, and Conventional RIASEC types are rated as feminine and the Realistic, Investigative, and Enterprising RIASEC

types are rated as masculine. Significant differences are expected to occur in femininity and masculinity ratings amongst those who are exposed to female or male names in the job descriptions for all but the Enterprising RIASEC type, as no significant differences were found for this type in Callahan (2015). Differences are expected to take the form of shifts rather than reversals in perceptions, with shifts indicating that the degree to which participants rate a type as feminine or masculine has changed and reversals indicating that participants have rated a type previously viewed as feminine as masculine and vice versa. No particular hypotheses are made regarding participants in the third, gender-neutral, condition.

The three questions listed below were considered separately in this study, through the use of separate analyses. They are discussed here together as they each build upon the first research question (1a), which addresses the relationship between the gender of a person depicted in an occupational description and participant perceptions of the femininity and masculinity of the RIASEC types represented in these descriptions. These three questions look at the roles that sexism and conservatism play in this relationship. Question 1b considers the effect of sexism on this relationship. Question 1c considers the effect of conservatism on the relationship. Finally, question 1d considers the effects of sexism and conservatism, taken together, on the relationship.

1b. To what extent does sexism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant perceptions of the femininity and masculinity of the RIASEC types?

1c. To what extent does conservatism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant perceptions of the femininity and masculinity of the RIASEC types?

1d. To what extent do sexism and conservatism, taken together, contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant perceptions of the femininity and masculinity of the RIASEC types?

Right-wing authoritarianism and religious fundamentalism are associated with prejudice (such as sexism) and could relate to rigid, traditional beliefs about appropriate roles for women and men. Right-wing authoritarianism and religious fundamentalism are correlated with each other (Altemeyer, 2003) and were considered, in this study, to reflect a more general, underlying construct of 'conservatism'. It is possible that these two constructs, taken together, could partially account for the perceptions of femininity and masculinity of the RIASEC types. As prejudice is correlated with these conservatism variables, sexism may also impact participant perceptions of the femininity and masculinity of the RIASEC types.

These questions were previously addressed to some extent in Callahan's (2015) examination of similar concepts. Conservatism was specifically included in analyses in this earlier study. The role of sexism, as addressed in the present study, was not examined. In the 2015 study, right-wing authoritarianism and religious fundamentalism did not account for a significant portion of the variance in perceptions of the femininity and masculinity of the RIASEC types. In other words, those who demonstrated higher levels of religious fundamentalism and right-wing authoritarianism were not more likely than those demonstrating lower levels of these variables to rate the RIASEC types in gender-stereotyped ways. This type of rating occurred regardless of participant conservatism.

It may be that gender-related stereotypes are strong enough that differences in conservatism may not produce reliable and significant differences in perceptions of the femininity and masculinity of the RIASEC types. In other words, people, regardless of how conservative they are, may rely on gender stereotypes to evaluate and characterize careers. However, it is possible that a different sorting methodology may provide participants with more freedom and, consequently, allow differences based on conservatism to emerge. In this study,

this question was addressed again to determine if this will, in fact, occur or if religious fundamentalism and right-wing authoritarianism definitively do not impact perceptions of the femininity and masculinity of the RIASEC types. Therefore, measures of sexism, religious fundamentalism, and right-wing authoritarianism were tested as covariates in the present study.

Sexism was measured by the Modern Sexism Scale (Swim, Aikin, Hall, & Hunter, 1995) and the Ambivalent Sexism Inventory (Glick & Fiske, 1996). Religious fundamentalism was measured by the Revised Religious Fundamentalism Scale (R-RFS; Altemeyer & Hunsberger, 2004). Right-wing authoritarianism was measured by the Right-Wing Authoritarianism Scale (Altemeyer, 2006). Scores on these scales may be considered separately or together (total mean score) in analyses. It was hypothesized that sexism and conservatism would be found to account for a significant portion of the variance in perceptions of femininity and masculinity of the RIASEC types, both separately and when included together in analyses.

Positive and Negative Ratings of Traits Assigned to the RIASEC Types

2a. Are there significant differences in participants' positive/negative ratings of traits assigned to the RIASEC types depending on their exposure to job descriptions related to the RIASEC types that are gender-neutral or that feature female or male names?

This research question was used as a building block for additional questions about the roles that sexism and conservatism may play in the relationship between participant exposure to job descriptions that are gender-neutral or that feature female or male names and positive/negative ratings of traits assigned to the RIASEC types. This question was not specifically addressed in the two studies that preceded this one (Bergner, 2013; Callahan, 2015). The procedures discussed earlier in this section were used to answer this set of questions as well.

It was hypothesized that participants may rate traits more negatively when they are assigned to descriptions featuring non-traditional gender-occupation pairings (e.g. a female name

in a Realistic job description or a male name in a Social job description), than they would when the traits are assigned to descriptions featuring traditional gender-occupation pairings (e.g. a female name in a Social job description).

The three questions listed below were considered separately in this study, through the use of separate analyses. They are discussed here together because they each build upon the most basic research question (2a), which addresses the relationship between the gender of a person depicted in an occupational description and participant positive/negative ratings of traits assigned to the RIASEC types. These three questions look at the roles that sexism and conservatism play in this relationship. Question 2b considers the effect of sexism on this relationship. Question 2c considers the effect of conservatism on the relationship. Finally, question 2d considers the effects of sexism and conservatism, taken together, on the relationship. It can be noted here that the successive addition of covariates in this second set of research question mirrors that found in the first set of questions, discussed earlier.

2b. To what extent does sexism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant positive/negative ratings of traits assigned to the RIASEC types?

2c. To what extent does conservatism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant positive/negative ratings of traits assigned to the RIASEC types?

2d. To what extent do sexism and conservatism, taken together, contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant positive/negative ratings of traits assigned to the RIASEC types?

Sexism and conservatism-related factors are considered as potential covariates here.

Right-wing authoritarianism and religious fundamentalism, taken together to represent conservatism, and prejudice such as sexism are highly correlated (e.g. Hunsberger, Owusu, and

Duck, 1999). These variables may also relate to more traditional and rigid beliefs about appropriate roles for people based on gender. This may, in turn, cause those who demonstrate higher levels of sexism and conservatism to display more negative attitudes toward those they perceive as being in a gender non-traditional role. In this study, this would take the form of more negative attitude ratings of traits assigned to job descriptions with non-traditional gender-occupation pairings.

It is hypothesized here that sexism taken alone, conservatism taken alone, and sexism and conservatism taken together will each significantly affect the relationship between the perceived gender of a person in an occupational description and participant attitude ratings of traits assigned to the descriptions representing the six RIASEC types. As discussed above, these questions were not specifically addressed in either Bergner (2013) or Callahan (2015). Measures of sexism, religious fundamentalism, and right-wing authoritarianism were tested as covariates in this second set of research questions. Sexism was again measured by the Modern Sexism Scale (Swim, Aikin, Hall, & Hunter, 1995) and the Ambivalent Sexism Inventory (Glick & Fiske, 1996). Religious fundamentalism was measured by the Revised Religious Fundamentalism Scale (R-RFS; Altemeyer & Hunsberger, 2004), while right-wing authoritarianism was measured by the Right-Wing Authoritarianism Scale (Altemeyer, 2006). Scores on these scales may be considered separately or together (total mean score) in analyses. It was hypothesized that sexism and conservatism would be found to account for a significant portion of the variance in participants' positive and negative ratings of traits assigned to the RIASEC types.

CHAPTER 3. METHOD

Participants

Participants for the present study were 509 students from a large, Midwestern university. All participants were recruited from undergraduate psychology courses and received course credit for their participation. 279 (54.8%) of the participants identified as female, while 230 (45.2%) identified as male. The ages of the participants ranged from 18 to 41. Three participants did not provide their ages. The mean age of this sample was 19.54 years ($SD = 1.74$). 233 of the participants were freshmen (45.8%). There were also 148 (29.1%) sophomores, 82 (16.1%) juniors, and 45 (8.8%) seniors. One (.20%) participant did not report their year in school.

The sample consisted of 20 (3.9%) participants who identified as African American, 19 (3.7%) who identified as Asian American, 20 (3.9%) who identified as Hispanic American, 3 (.59%) who identified as Native American, 419 (82.3%) who identified as European American/White, and 19 (3.7%) who identified themselves as international students. 8 (1.6%) participants in this sample reported their ethnic identity as 'Other' and described themselves as being either biracial or multiracial. Three participants did not designate their ethnic identity.

Participants in this study were also asked to provide information about their political and religious identity. 132 (25.9%) participants designated their political affiliation as Democrat, 5 (.98%) as Green Party, 21 (4.1%) as Libertarian, 143 (28.1%) as Republican, and 8 (1.6%) as 'Other'. Two participants who selected 'Other' described their political affiliation as 'conservative'. Four who selected 'Other' described their political affiliation as 'independent'. Two participants who identified as 'Other' did not provide additional information about their political identity. A large number of participants, 196 (38.5%), selected 'No political affiliation'.

A majority of the participants in the sample, 334 (65.6%), identified their religious affiliation as Christian. Additionally, 16 participants selected established other religious categories, including Buddhist, Hindu, Jewish, and Muslim. Twenty (3.9%) participants listed their religious affiliation as ‘Other’ and used a variety of terms to define this choice, including ‘Atheist’, ‘Agnostic’, ‘Pagan’, ‘Dao’, ‘Seventh Day Adventist’, ‘New Age’, and several specific variations that would traditionally be classified as ‘Christian’ (i.e., Lutheran, Methodist). A large number of participants, 139 (27.3%), chose ‘No religious affiliation’.

Measures

Demographic Questionnaire

Participants completed a one-page questionnaire requesting basic demographic information. The questionnaire asked all participants to share their name, university ID number, NetID, age, major program of study, level of satisfaction with their current major, current grade point average (GPA), sex, year in school, ethnic/cultural identity, political affiliation, and religious affiliation. For political affiliation and religious affiliation, participants were allowed to select ‘no political affiliation’ and ‘no religious affiliation’ (see Appendix A to view the demographic questionnaire).

Occupation-Adjective Matching Sort Activity

The sorting activity used in this study was initially developed for use in a previous study that tested similar hypotheses (Bergner, 2013) and was used again in a follow-up study (Callahan, 2015). In the present study, an online version of this sorting procedure was used. There are important differences in this study that are particularly related to the sorting procedure. In Bergner (2013) and Callahan (2015), the sorting activity was done during an in-person, in-lab

session during which participants used physical notecards to complete the sorting task. In this study, since it is done entirely online, no actual cards will be used.

A second difference is in the structure of the sorting activity and the instructions given to participants completing the task. In the two previous studies (Bergner, 2013; Callahan, 2015) participants were asked to read a set of six occupational descriptions, with each description detailing job tasks associated with one of the six Holland types (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional; Holland, 1959; 1997). Each job description featured a female name, a male name, or was gender neutral, depending on the condition each participant was assigned to. Descriptions were otherwise identical across condition and studies. In these earlier studies, participants were given a set of 60 cards featuring traits from the BSRI (Bem, 1974; see Appendix C for BSRI items used in this study). 20 cards contained traditionally feminine traits, 20 cards contained traditionally masculine traits, and the remaining 20 cards contained gender neutral but socially desirable traits.

Participants received an answer sheet on which they recorded their occupation-adjective matches. They were given the following instructions: ‘Included with this answer sheet is a box containing a set of 60 adjectives. Divide the adjectives into six groups of ten cards that best describe the individuals who work in each of the six occupations described below. Each card has a code on it. Please write the code for each adjective you choose for each occupation in one of the boxes, using each card only one time.’

In the present study, participants viewed the same set of six occupational descriptions and a set of 102 traits from the Bem Sex Role Inventory (BSRI; Bem, 1974) traits, the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978) traits, and the Positive-Negative Sex-Role Inventory (PN-SRI; Berger & Krahe, 2013) traits. All 60 BSRI items were used. Items

from the PN-SRI and PAQ that are unique to these scales and do not overlap with BSRI items or each other will be used. The traits from the PAQ and PN-SRI were not used in the previous studies, while the BSRI traits were used. The 102 traits utilized in this sorting procedure are provided in Appendix C.

Participants were assigned to one of three conditions which determined the specific set of descriptions they viewed online (condition information found in Table 1). Conditions differed in the gender of the person portrayed in each description (i.e. working in a job representative of the six RIASEC types; Holland, 1959; 1997). Participants in the first condition received the following six descriptions: 1) Realistic tasks- male name, 2) Investigative tasks- female name, 3) Artistic tasks- male name, 4) Social tasks- female name, 5) Enterprising tasks- male name, and 6) Conventional tasks- female name. Participants in the second condition received the following six descriptions: 1) Realistic tasks- female name, 2) Investigative tasks- male name, 3) Artistic tasks- female name, 4) Social tasks- male name, 5) Enterprising tasks- female name, and 6) Conventional tasks- male name. Finally, participants in the third condition received the same six descriptions but with no female or male name to indicate a gender. In other words, the third condition was gender-neutral (see Appendix B for a complete list of occupational descriptions in each condition).

There are differences between the instructions given to the participants in this study and those given to participants in the two earlier studies (Bergner, 2013; Callahan, 2015). In the present study, participants were given the following instructions: ‘You will view a set of 102 adjectives. Review the six paragraphs below describing occupations. Based on how you would describe an individual who works in this occupation, assign adjectives to each description. You

may assign as many or as few adjectives to a description as you wish. However, you must assign each adjective to a description and may not assign an adjective to more than one description.’

As shown in the descriptions above, the sorting technique used in this study did not match the free-sorting technique described in Coxon (1999) exactly. Participants were required to use six categories that reflect the six predetermined RIASEC types (Holland, 1959; 1997). However, in contrast to previous studies, participants were allowed to sort the adjectives from the BSRI, PN-SRI, and PAQ into the categories in a relatively free manner. This could allow for greater differences to emerge between participants on the basis of variables such as right-wing authoritarianism and religious fundamentalism.

Bem Sex Role Inventory (BSRI; Bem, 1974)

The BSRI, used in this study and developed by Sandra Bem, measures femininity and masculinity. It has three subscales, each containing 20 items: 1) Femininity, 2) Masculinity, and 3) Social Desirability. The Femininity subscale contains 20 traits that are considered desirable for women in the United States. The Masculinity subscale, on the other hand, contains 20 traits that are considered desirable for men in the United States. The Social Desirability subscale contains 20 traits that are considered desirable but are not associated in particular with either women or men. Sample items from the Feminine, Masculine, and Social Desirability subscales are ‘Affectionate’, ‘Independent’, and ‘Conscientious’, respectively. These three scales combined contain a total of 60 items (see Appendix C for a list of BSRI items). Items were chosen after judges reviewed larger numbers of traits and determined the degree to which they were socially desirable for women, men, or people in general in the United States.

BSRI items are rated on a 7-point (1 [*never or almost never true*] to 7 [*almost always true*]) Likert-type scale based on the extent to which the individual believes the trait describes

her or himself. Four separate scores may be calculated for each person who completes the measure: 1) Femininity score, 2) Masculinity score, 3) Social Desirability score, and 4) Androgyny score. Higher scores indicate greater Femininity, Masculinity, Social Desirability, and Androgyny, respectively. Those who have roughly equal scores for the Femininity and Masculinity subscales may be said to be androgynous. Sex-typed individuals are those with larger differences in their scores for the Femininity and Masculinity subscales.

The BSRI was administered to a group of undergraduate students at two different colleges ($n= 917$) to determine its psychometric qualities. Internal consistency for the measure's four scales range from $\alpha= .70$ to $\alpha= .86$. Test-retest reliability for these subscales was adequate and ranged from $\alpha = .89$ to $\alpha = .93$. The Social Desirability subscale did not significantly correlate with the Androgyny subscale (r range .04 to .08), while the Femininity and Masculinity subscales were significantly and positively correlated with the Social Desirability subscale (r range from .19 to .38) (Bem, 1974).

Bem also compared scores on the BSRI to scores on other measures of sex roles that were popular at the time, which helped evaluate the validity of the BSRI. In fact, the BSRI did not strongly correlate with these other measures. Bem believed that this was because the BSRI was accessing an aspect of sex roles that the older measures were not designed to access. The BSRI subscales were moderately correlated with the Masculinity-Femininity scales contained in the California Personality Inventory (CPI; Gough, 1956). No significant correlations emerged between the Guilford-Zimmerman Temperament Survey (GZTS; Guilford & Zimmerman, 1949) and the BSRI subscales.

Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978)

The Personal Attributes Questionnaire (PAQ) was created in the 1970s to measure the constructs of femininity and masculinity. The authors established both short and long versions of the measure. The short version has been used and referenced most often in research, including by the authors themselves (Spence & Helmreich, 1978). The short version consists of 24 items. Each item includes a trait description that is set up on a bipolar scale. There are three separate eight-item scales in the 24-item version of the measure: 1) Femininity scale, 2) Masculinity scale, and 3) Masculinity-Femininity scale. The Femininity and Masculinity scales contain items that are considered to be socially desirable for both women and men but are typically found in women or men to a greater degree. The Masculinity-Femininity scale, on the other hand, includes traits whose social desirability may differ by gender (i.e. society prefers women or men to possess the trait to a larger degree).

A sample item from the Femininity scale is ‘Not at all emotional-Very emotional’, with ‘emotional’ being the trait under consideration. A sample item from the Masculinity scale is ‘Not at all independent-Very independent’, with ‘independent’ being the trait under consideration. Finally, a sample item from the Masculinity-Femininity scale is ‘Very submissive-Very dominant’.

A number of researchers have demonstrated reliability information for the PAQ, which generally has adequate internal consistency. Wilson and Cook (1984) found that, for the Masculinity, Femininity, and Masculinity-Femininity scales respectively, alpha coefficients are .85, .82, and .78. In another study, alpha coefficients for the Femininity and Masculinity scales were .75 and .74, respectively. Yoder and colleagues (1982), another group of researchers,

determined that test-retest reliability for the PAQ over a 2.5-month time period was approximately .60.

Spence and Helmreich (1978) reported that, as they predicted based on the development of their scale, men scored significantly lower than women on the Femininity scale and significantly higher than women on the Masculinity scale and the Masculinity-Femininity scale (scored in a masculine direction). To establish construct validity for the PAQ, researchers have often correlated scores on the Femininity and Masculinity scales to various traits typically seen as either feminine or masculine. For example, Spence and Helmreich (1978) found a positive correlation between the Masculinity scale and a typical masculine trait, competitiveness. Similarly, Bem, Martyna, and Watson (1976) correlated the Femininity scale with a typical feminine trait, nurturance.

In the present study, PAQ items that do not overlap with items on the BSRI or the Positive-Negative Sex Role Inventory (PN-SRI; Berger & Krahe, 2013) were used in the sorting procedure, for participant self-ratings, and for the participants' positive and negative ratings of traits. Traits from the original bipolar scale of the PAQ were utilized individually. For example, instead of including a 'Not at all emotional-Very emotional' scale item, the trait 'emotional' was isolated and used on its own as a trait for participants to rate and match to occupational descriptions (see Appendix C for a list of PAQ items included in this study).

Positive-Negative Sex Role Inventory (PN-SRI; Berger & Krahe, 2013)

Berger and Krahe developed a new measure, the Positive-Negative Sex Role Inventory (PN-SRI), in 2013, to evaluate positive and negative aspects of sex role identity. They believed that currently used measures of sex role identity, such as the BSRI and the PAQ, are lacking in that they focused solely on desirable or positive characteristics associated with women and men

and did not include characteristics potentially seen as negative or less desirable. Berger and Krahe noted that, while we may prefer to focus on positive aspects of our identity, we all must integrate both our ‘strengths’ and ‘weaknesses’ into our self-concept. They also pointed out that sex roles have changed significantly since commonly used measures such as the PAQ and the BSRI were developed and that the characteristics included in these measures may no longer fully capture some aspects of sex roles for women and men.

The final version of the PN-SRI has 24 items spread across four subscales. The four subscales are: 1) Positive Masculinity, 2) Negative Masculinity, 3) Positive Femininity, and 4) Negative Femininity. Each subscale contains six items. The items have been translated from German to English. Sample items from each subscale, listed in the order of the subscales presented earlier in this paragraph, are: 1) Objective, 2) Harsh, 3) Empathic, and 4) Oversensitive. Items are rated on a 7-point Likert scale ranging from 1 (*not at all true*) to 7 (*completely true*). Participants rate items on the basis of the degree to which they believe the characteristic is a part of their personality. In the present study, PN-SRI items that do not duplicate items on the BSRI or the PAQ were used in the sorting procedure, for participant self-ratings, and for participant ratings of positive/negative ratings of traits (see Appendix C for a list of PN-SRI items included in this study).

The 24-item version of the PN-SRI was developed through a series of studies that 1) determined the necessity for a new measure of sex roles, 2) generated a pool of possible PN-SRI items, 3) determined desirability and typicality of each item for each gender and narrowed down potential items to the final list, and 4) demonstrated the reliability and validity of the new measure. The first study determined that the BSRI may not fully capture current attitudes about

sex roles. Mean differences in femininity and masculinity scores were significantly smaller than those found by Bem in 1974.

In the second study, 197 participants were asked to list up to seven positive and up to seven negative attributes that they consider as typical for either women or men. The researchers eliminated redundant attributes, which resulted in a list of 237 different attributes. An attribute was chosen to be considered in the next study if it: 1) was selected by at least 2% of the sample, 2) was chosen by both women and men as typical for one sex, 3) did not appear on the list for the other sex group, and 4) was not a synonym or antonym of another attribute. This process produced 127 attributes, 31 for positive masculinity, 36 for negative masculinity, 31 for positive femininity, and 29 for negative femininity.

The third study narrowed down this list of items to the final 24 by examining the desirability and typicality of the items. Separate groups of participants were asked to rate themselves on a selection of the items, as well as the typicality and desirability of the items. Berger and Krahe evaluated the results of this study and selected six attributes for each subscale to make up the final measure.

The fourth and fifth studies provided evidence for the reliability and validity of the 24-item PN-SRI. Convergent validity was established by determining the relationship between the subscales of the PN-SRI and the subscales of the BSRI and the Extended Personal Attributes Questionnaire (EPAQ). With one exception, the PN-SRI subscales correlated in expected ways with the subscales of the other two measures. The Positive Femininity subscale of the PN-SRI was correlated with the femininity subscale of the BSRI ($r = .76$) and with the positive femininity subscale of the EPAQ ($r = .58$). The Positive Masculinity subscale of the PN-SRI correlated with the masculinity subscale of the BSRI ($r = .48$) and with the positive masculinity

subscale of the EPAQ ($r = .40$). The Negative Masculinity PN-SRI subscale correlated with the masculinity subscale of the BSRI ($r = .24$) and with the negative masculinity subscale of the EPAQ ($r = .83$). The one exception to these expected correlations was the Negative Femininity PN-SRI subscale, which correlated significantly with the negative femininity subscale of the EPAQ ($r = .72$) but did not correlate significantly with the femininity subscale of the BSRI ($r = .13$; Berger & Krahe, 2013).

To establish construct validity of the PN-SRI, Berger and Krahe (2013) used specific validation constructs they expected to be uniquely related to each of the PN-SRI subscales. The Positive Masculinity subscale was positively correlated with a measure of achievement motivation ($r = .49$). The Negative Masculinity subscale was positively correlated with a trait measure of power orientation ($r = .30$). The Positive Femininity subscale was positively correlated with a measure of social values (e.g. empathy, nurturance; $r = .50$). Finally, the Negative Femininity subscale was positively correlated with a measure of anxious depressiveness ($r = .52$). Additionally, women scored higher than men on the Positive and Negative Femininity subscales, while men scored higher than women on the Positive and Negative Masculinity subscales. Confirmatory factor analysis demonstrated that the four-factor model (Positive Masculinity, Negative Masculinity, Positive Femininity, and Negative Femininity) fit the data well (Berger & Krahe, 2013).

Internal consistency for the scale was good (Berger & Krahe, 2013), for both the total sample and women and men separately. Alpha coefficients ranged from $\alpha = .73$ to $.88$. Item-total correlations were all above $.30$. These researchers also examined test-retest reliability, with a selection of 128 participants completing the measure twice, separated by eight weeks. Over the eight-week period, test-retest reliability for the four subscales was as follows: 1) Positive

Masculinity, $r = .70$, 2) Negative Masculinity, $r = .63$, 3) Positive Femininity, $r = .61$, and 4) Negative Femininity, $r = .71$ (Berger & Krahe, 2013).

Ratings of Positive and Negative Ratings of Femininity and Masculinity Items

After participants rated the degree to which they believe each trait used in the sorting procedure fits them, they were asked to rate how positively or negatively they view each of the 102 traits used in the occupation-adjective matching sorting procedure. A scale was used ranging from 1 (*very negative*) to 7 (*very positive*). Each participant's ratings for the feminine items was averaged to generate an overall attitude score for the feminine traits. Then, each participant's ratings for the masculine items were averaged to obtain an overall attitude score for the masculine traits (see Appendix C for a list of these items and the instructions provided to participants for their self-ratings on the items and for their positive/negative ratings of the items).

Alternate Forms Public Domain RIASEC Markers (Armstrong, Allison, & Rounds, 2008)

Participants' vocational interests were conceptualized using Holland's RIASEC model (Holland, 1959; 1997) and measured using the Alternate Forms Public Domain (AFPD) RIASEC Markers (Armstrong, Allison, & Rounds, 2008). The AFPD RIASEC Markers were developed as a tool for researchers that would be free of restrictions common to other measures of vocational interests. These other measures have tended to be commercial instruments with copyright and time restraints.

The AFPD RIASEC Markers consists of six scales (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) with eight items each (48 items total). These items reflect work tasks that are typically associated with each of the six RIASEC types. Sample items are 'Lay brick or tile' (Realistic subscale), 'Conduct biological research' (Investigative subscale), 'Design artwork for magazines' (Artistic subscale), 'Teach children how to read'

(Social subscale), ‘Manage a department within a large company’ (Enterprising subscale), and ‘Use a computer program to generate customer bills’ (Conventional subscale) (see Appendix D for a complete list of AFPD RIASEC Markers items). Participants rate each item on a Likert-type scale ranging from 1 (*strongly dislike*) to 5 (*strongly like*) based on the degree to which they would like to do each activity. Participants are ultimately assigned a mean score for each scale (Armstrong, Allison, & Rounds, 2008).

Convergent validity for the AFPD RIASEC Markers has been demonstrated by correlating scores from the measure with other measures of vocational interests. The AFPD RIASEC Markers correlate with the General Occupational Themes of the Strong Interest Inventory (SII; Strong, Donnay, Morris, Schaubhut, & Thompson, 2004), with correlations ranging from .56 to .67, and with occupation-based interest ratings, with correlations from .72 to .87. In addition, structural validity of the AFPD RIASEC Markers has been demonstrated. The measure produce an arrangement of the six RIASEC types that is consistent with the Holland model’s arrangement. Internal consistency for the AFPD RIASEC Markers is adequate with a mean of .88 (Armstrong, Allison, & Rounds, 2008) (see Appendix D for a list of AFPD items).

Attitudes toward Women

Attitudes toward women were measured in the present study by the Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996) and the Modern Sexism Scale (MSS; Swim, Aikin, Hall, & Hunter, 1995). An average score on items from these two scales was generated for each participant, which was then used to represent the extent to which participants expressed sexist or traditional attitudes toward women (see Appendix E for a complete list of ASI and MSS items).

Ambivalent Sexism Inventory (ASI; Glick & Fiske, 1996). The Ambivalent Sexism Inventory (ASI) is a self-report measure of ambivalent attitudes toward women. Glick and Fiske

defined ambivalent sexism as ‘simultaneously holding two sets of related sexist beliefs: hostile and benevolent sexism’ (p. 494). The ASI is composed of two subscales that reflect this definition: 1) Hostile Sexism and 2) Benevolent Sexism. Each subscale is made up of 11 items rated on a 5-point Likert scale (0 = strongly disagree, 1 = disagree somewhat, 2 = disagree slightly, 3 = agree slightly, 4 = agree somewhat, and 5 = agree strongly). Six ASI items are reverse-scored.

The Benevolent Sexism subscale addresses attitudes toward women that reflect beliefs in traditional gender roles and are subjectively more positive in tone. These attitudes may produce prosocial behavior, such as intimacy-seeking. A sample item from this subscale is ‘Men should be willing to sacrifice their own well-being in order to provide financially for the women in their lives’. The Hostile Sexism subscale addresses attitudes toward women that reflect a traditional definition of prejudice against women. This may be what many people immediately think of when asked to define sexism or anti-woman prejudice. These attitudes are subjectively more negative in tone than those representative of Benevolent Sexism. A sample item from the Hostile Sexism subscale is ‘Once a woman gets a man to commit to her, she usually tries to put him on a tight leash’.

Data has been presented (Glick & Fiske, 1996) that provide support for the psychometric soundness of the ASI. Convergent validity was demonstrated through comparison of ASI total and subscale scores with scores on related measures, including the Attitudes Toward Women Scale (AWS; Spence & Helmreich, 1972), the Modern Sexism Scale and the Old-Fashioned Sexism Scale (Swim, Aikin, Hall, & Hunter, 1995), and the Rape Myth Acceptance Scale (Burt, 1980). Significant positive correlations between the ASI subscales and total scores and the measures of sexism listed above were found. These correlations were largely accounted for by

correlations between the measures and the Hostile Sexism subscale. The authors of the ASI believe that the Benevolent Sexism subscale accesses a construct not previously addressed by other measures (Glick & Fiske, 1996).

The authors also found a significant positive relationship between the Benevolent Sexism subscale scores and favorable attitudes toward women, as well as a significant negative relationship between the Hostile Sexism subscale scores and favorable attitudes toward women. Reliability was established, across six samples, with alpha coefficients between .73 (Benevolent Sexism in one sample) and .92 (Hostile Sexism and total ASI score in one sample; Glick & Fiske, 1996).

Modern Sexism Scale (MSS; Swim, Aikin, Hall, & Hunter, 1995). As was emphasized in the discussion of the ASI, several researchers have begun to conceptualize sexism as existing in various forms that may be expressed differently. The Modern Sexism Scale (MSS) differentiates between traditional and more modern forms of sexism. The measure's authors (Swim, Aikin, Hall, & Hunter, 1995) presented evidence that, though people are less likely to endorse explicitly sexist attitudes than they were in the past, sex discrimination continues to exist (Biernat & Wortman, 1991; Rowe, 1990). As a result, Swim and colleagues discussed differences between 'old-fashioned', direct, explicit sexism and 'modern', more implicit, and more indirect sexism. Their instrument therefore includes two scales, one to address modern sexism and one to address old-fashioned sexism.

The items for the MSS were adapted from items previously created for a measure of modern racism (Sears, 1988). The old-fashioned sexism scale is made up of items that reflect support of treating women and men differently, the endorsement of stereotypes about women's abilities, and approval of traditional gender roles. There are five old-fashioned sexism items. A

sample item from this scale is ‘It is more important to encourage boys than to encourage girls to participate in athletics’. The modern sexism scale contains items designed to reflect resentment toward the demands of women, antagonistic feelings about ‘special favors’ accorded to women, and denial of continued discrimination against women. There are eight modern sexism items. A sample item from this scale is ‘It is rare to see women treated in a sexist manner on television’. Items from both scales are rated on a 5-point Likert scale (1= strongly agree, 5= strongly disagree). Responses for the items from each scale are averaged to obtain scale scores.

Swim et al. (1995) detailed two studies conducted in order to demonstrate the validity of the MSS. In the first study, the authors examined the factor structure of the modern and old-fashioned sexism scales, as well as sex differences in response to the items making up the two scales. Support was found for the construct validity of the two separate scales to measure sexism. Specifically, confirmatory factor analyses determined that a two-factor solution fit data better than a one-factor solution. The authors also explored the relationship of individualistic and egalitarian values to modern sexism and the perception of sex segregation in the workforce. Stronger individualistic beliefs and weaker egalitarian beliefs were associated with higher sexism scores. Additionally, higher scores on the Modern Sexism Scale correlated with overestimations of the numbers of women in traditionally male-dominated occupations.

The second of these two studies (Swim et al., 1995) was done in order to replicate the results of the first study and to give further evidence of the construct validity of the MSS. In this study, participants were asked about sex segregation in the workplace. Some participants took part in phone interviews in which they were asked about their preferences for a female or male candidate in a local political election. Again, results from this study confirmed the two-factor solution, providing additional support for the two sexism scales. Modern Sexism Scale scores

were more predictive than Old-Fashioned Sexism Scale scores of preference for a male candidate in the local election. Finally, higher scores on the Modern Sexism Scale were associated with a greater likelihood of citing biological differences as a primary cause of sex segregation in the workforce (Swim et al., 1995).

Religious Fundamentalism and Right-Wing Authoritarianism

Measures of religious fundamentalism and right-wing authoritarianism, authored by Altemeyer (2006) and Altemeyer and Hunsberger (2004), respectively, were administered to participants in the present study. These measures, called the Revised Religious Fundamentalism Scale (R-RFS) and the Right-Wing Authoritarianism Scale (RWAS), will be discussed in further detail below (see Appendix F for a complete list of R-RFS and RWAS items).

Revised Religious Fundamentalism Scale (R-RFS; Altemeyer & Hunsberger, 2004). Altemeyer and Hunsberger presented the first version of their Religious Fundamentalism Scale in 1992, with the purpose of assessing religious fundamentalism, defined as:

The belief that there is one set of religious teachings that clearly contains the fundamental, basic, intrinsic, essential, inerrant truth about humanity and deity; that this essential truth is fundamentally opposed by forces of evil which must be vigorously fought; that this truth must be followed today according to the fundamental, unchangeable practices of the past; and that those who believe and follow these fundamental teachings have a special relationship with the deity. (Altemeyer & Hunsberger, 1992; p. 118)

This original scale consisted of 20 items and had generally good psychometric properties. However, the authors later determined that the original scale did not fully capture some aspects of the above definition, while putting too much focus on other aspects. They also acknowledged

some researchers' desire for a shorter measure of religious fundamentalism. Therefore, in their revised scale, they attempted to restore balance to the content of items while reducing the number of items (Altemeyer & Hunsberger, 2004).

The authors then tested a number of 'candidate items' with hundreds of students and parents associated with two different universities. They eventually reduced the number of candidate items to 20 and began studying these items to choose those that provided the greatest amount of topical breadth and a scale balanced against response sets. Their goal was to reduce the number of items from the original scale without sacrificing psychometric soundness. The most recent R-RFS contains 12 items. The authors noted that four of the original RFS items remained unaltered in the R-RFS, five are revisions of original RFS items, and the remaining three are new. Items are rated on a scale including: -4= very strongly disagree, -3= strongly disagree, -2= moderately disagree, -1= slightly disagree, 0= neutral, 1= slightly agree, 2= moderately agree, 3= strongly agree, and 4= very strongly agree. If one finds that she or he agrees with one part of an item more than another, she or he is asked to combine their responses (e.g. a -4 and a 1 would be combined to produce a response of 3). Some items are reverse-scored (Altemeyer & Hunsberger, 2004). The lowest possible total score is 12, while the highest possible total score is 108. Higher scores indicate greater levels of religious fundamentalism.

The R-RFS maintains the good reliability of the original RFS, with alpha coefficients of .91 in the tested student sample for both measures and alpha coefficients of .93, for the original scale, and .92, for the revised scale, in the parent sample. The R-RFS also demonstrates similar and strong validity, as evidenced by its correlations with related constructs such as right-wing authoritarianism (.79 for students, .72 for parents), dogmatism (.75 for students, .70 for parents), and religious ethnocentrism (.71 for students, .73 for parents). Therefore, the authors concluded

that the revised version of their scale demonstrates strong psychometric properties that, coupled with the practical advantages over the original scale discussed above, make it an appealing choice for researchers (Altemeyer & Hunsberger, 2004).

Right-Wing Authoritarianism Scale (RWAS; Altemeyer, 2006). Altemeyer also developed a measure of a construct he calls ‘right-wing authoritarianism’. He defines this construct in terms of its three components: 1) authoritarian submission, 2) authoritarian aggression, and 3) conventionalism. Authoritarian submission is defined as a willingness to submit to authorities deemed legitimate. Authoritarian aggression refers to hostility or aggression toward those seen as deviating from an established norm. The third component, conventionalism, is seen as adherence to societal norms as perceived by the individual and a strong belief that others should also adhere to these norms (Altemeyer, 2006).

The most recent version of the RWAS contains 22 items addressing these three components of right-wing authoritarianism. Items are rated on a scale identical to that of the R-RFS (Altemeyer & Hunsberger, 2004) and some items are reverse-scored. The RWAS also utilizes the same rating procedure in which those completing the scale are asked to combine their responses to reflect differences in agreement with various parts of an item (Altemeyer, 2006). The lowest possible total score is 20, while the highest possible total score is 180. Higher scores represent greater levels of right-wing authoritarianism.

Altemeyer provided evidence for the validity of his scale through separate discussion of constructs and phenomena related to each of right-wing authoritarianism’s three components. High scorers on the RWAS are more likely than lower scorers to endorse, for example, obedience to authority and law and to report trust in specific authority figures (e.g. George W. Bush, Richard Nixon), demonstrating the scale’s relevance to authoritarian submission. For

authoritarian aggression, Altemeyer reported that high scorers on the RWAS are more likely than lower scorers to support lengthy prison time for those convicted of crimes. Coverage of the third component, conventionalism, was evidenced by the greater likelihood of high RWAS scorers to be extremely orthodox members of their religion, when compared to lower RWAS scorers.

In addition, Altemeyer described 'feedback-conformity experiments' (2006; p. 28) that provide further validity evidence for the scale. In these experiments, participants complete the RWAS and then are told, by the researcher, what the average response was for each item. Participants are then asked to complete the scale again. High RWAS scorers adjust their answers to more closely match the average approximately twice as much as low RWAS scorers do. Finally, Altemeyer reports internal consistency of alpha coefficient= .90 for the RWAS as a whole (2006).

Procedure

This study was completed by participants in one online session. Participants signed up for the study via the Department of Psychology's web-based SONA System. The three conditions of this study were set up on the SONA System as three separate studies. Timeslots were added to these studies each week and participants were only allowed, by the system, to sign up for and participate in one of the three studies. This prevented participants from being included in analyses in more than one condition. Upon sign-up, they were sent a link to the study, which was on Qualtrics. Each condition had a unique survey link and participants were sent the link matching their assigned condition. The three surveys on Qualtrics were identical except for the differences in the occupation-adjective matching sorting procedure. Participants were given a set time period, known at sign-up, during which they would be able to complete the online survey for course credit.

Prior to beginning the survey, participants were presented with an informed consent document to review. If they agreed to complete the survey, they were then directed to a demographic questionnaire. This questionnaire asked for their name, university ID number, NetID, age, major program of study, current grade point average (GPA), sex, year in school, ethnicity/cultural identity, and religious and political affiliations.

Participants then completed the occupation-adjective matching sorting procedure in one of three conditions. This free sorting activity and the conditions were described in some detail in the 'Measures' section of this paper. Once the participants completed the sorting procedure, they were asked to complete the Modern Sexism Scale (MSS) and the Ambivalent Sexism Inventory (ASI) to measure their attitudes toward women. Upon completion of these measures, they completed the items from the Bem Sex Role Inventory (BSRI), Personal Attributes Questionnaire (PAQ), and Positive-Negative Sex-Role Inventory (PN-SRI) that had been used in the sorting procedure. The purpose of this rating was to gauge their gender identity.

Participants then completed the Revised Religious Fundamentalism Scale (R-RFS), the Right-Wing Authoritarianism Scale (RWAS), and the Alternate Forms Public Domain (AFPD) RIASEC Markers. Finally, they were asked to rate their attitudes toward the items used in the sorting procedure. All of the measures mentioned here were described in more detail in the 'Measures' section of this paper.

After they completed the study measures, participants viewed a debriefing page thanking them for their participation and providing some additional information about the study. This page also gave contact information for the researchers and information about career-related and counseling resources on campus. Participants received two credits via the SONA System for full participation in the study.

Data Preparation

Data from the present study was screened using guidelines outlined by Tabachnik and Fidell (2007). Data preparation consisted of removing cases with an incomplete data set, identifying outliers, and examining the data in regards to the assumptions for the proposed analyses. 582 people completed the study. Of these, 59 (10.14%) were removed due to too much missing data. Specifically, participants were removed when they had not provided answers to one-third or more of the items on one or more scales. 13 (2.23%) participants were not included in analyses because they were identified as outliers or because of random responding. Therefore, the final sample used for analyses consisted of 509 participants (279 females and 230 males) across three experimental conditions. In the first experimental condition there were 170 (33.40%) participants, with 171 (33.60%) in the second condition, and 168 (33.01%) in the third condition.

Data Analyses

Means and standard deviations were calculated for all variables used in this study's analyses (see Tables 2 and 3). Correlational data for all variables used in analyses can be found in Table 4.

Multivariate analysis of variance (MANOVA) and multivariate analysis of covariance (MANCOVA) were used to answer the research questions in this study. In particular, MANOVA was used to evaluate differences by participant gender and condition (female or male names in job descriptions or gender-neutral job descriptions) in perceptions of the femininity and masculinity of the RIASEC types. MANCOVA was used to answer the remaining three research questions. MANCOVA enabled the evaluation of the contributions of religious fundamentalism, right-wing authoritarianism, and attitudes toward women on gender differences and differences by condition in the perceptions of the femininity and masculinity of the RIASEC types.

MANCOVA was also used to determine the impact of religious fundamentalism and right-wing authoritarianism on the relationship between participant gender, condition, and perceptions of the RIASEC types.

MANOVA is used to test for significant differences between group means in situations when there are multiple dependent variables, as in the present study. MANOVA prevents inflation of the familywise error rate that would grow if analyses of variance (ANOVAs) were done for each dependent variable separately. MANOVA provides a researcher with information about the relationships between dependent variables and about differences for the dependent variables along a number of dimensions (Field, 2009).

When using MANOVAs, a number of assumptions are made and must be evaluated when reviewing analysis results. These statistical assumptions are: 1) statistically independent observations, 2) homogeneity of covariance matrices, 3) multivariate normality of the dependent variable, and 4) dependent variables measured on at least an interval scale. In the present study, Levene's test was used as an initial test of the equality of variances between groups. To meet this assumption, the results for a data set must not be significant for any of the dependent variables. In this analysis, five of the six dependent variables (the average gender ratings of the RIASEC types) were non-significant. However, the average gender rating for the Enterprising type was significant, $p < .05$. When the dependent variables under consideration were the positive/negative ratings of traits assigned to the RIASEC types, none of the six dependent variables were significant.

Box's test was also used to evaluate the covariance matrices between groups for this data set. For Box's test, the assumption is met if the matrices are the same and the result is non-significant (Field, 2009). Box's test was significant, $p < .05$, when the dependent variables under

consideration were the positive/negative ratings. However, it is known that Box's test is a fairly sensitive test of the homogeneity of variance-covariance matrices (Tabachnick & Fidell, 2007). Data in the present study was grouped and the sample size was of a large enough size that the assumption of multivariate normality of the dependent variables was met. However, when this assumption has been violated, researchers have been encouraged to use the Pillai-Bartlett statistic (Pillai's trace) to assess multivariate significance (Olson, 1976; 1979). Pillai's trace was utilized in this study. Box's test was not significant when the dependent variables considered were the average gender ratings.

MANCOVAs, also used with this data set, require that the assumptions of MANOVAs are met and also have two additional assumptions. MANCOVA calculates variance in the dependent variables that is due to designated covariates. The two additional assumptions for MANCOVAs are: 1) independence of the covariate and treatment effect and 2) homogeneity of regression slopes (Field, 2009). An ANOVA was used to test for significant differences between the two conditions for each covariate, which allowed for the testing of the independence of the covariate. The independent variables in this study were participant gender, with two levels (woman or man), and experimental condition, with three levels. Participants in the first condition received these occupational descriptions: 1) Realistic tasks- male name, 2) Investigative tasks- female name, 3) Artistic tasks- male name, 4) Social tasks- female name, 5) Enterprising tasks- male name, and 6) Conventional tasks- female name. Participants in the second condition received these descriptions: 1) Realistic tasks- female name, 2) Investigative tasks- male name, 3) Artistic tasks- female name, 4) Social tasks- male name, 5) Enterprising tasks- female name, and 6) Conventional tasks- male name. Participants in the third condition received gender-neutral descriptions.

There were two sets of dependent variables needed to address the two sets of research questions detailed earlier. For the first set of research questions, the average gender rating of each RIASEC types served as dependent variables. Dummy coding was used to establish how many feminine and masculine traits were assigned by participants to the six job descriptions in the conditions representing the six RIASEC types. Feminine traits were given '-1's and masculine traits were given '1's. Means for each of the six RIASEC types were then calculated to give the gender ratings discussed above. Given the particulars of the dummy coding used, the more negative a mean for a RIASEC type, the more feminine the type was rated by participants. More positive means show that a RIASEC type was rated as more masculine.

For the second set of research questions, the average positive/negative ratings of traits assigned to each RIASEC type served as dependent variables. Participants were asked to rate each of the traits used in the sorting activity based on how positively or negatively they viewed them, on a scale of 1 (very negative) to 7 (very positive). Average positive/negative ratings for traits assigned to each of the six RIASEC types, as represented by the six occupational descriptions, were calculated. Higher average attitude ratings for traits assigned to a RIASEC type represented more positive views toward those traits. Lower average attitude ratings, on the other hand, represented more negative views of the traits. Analyses done for each research question will be discussed below.

MANOVAs and MANCOVAs were used to address the two sets of research questions detailed in earlier sections of this paper. The first set of questions addressed the relationship between the perceived gender of a person in a career and participant ratings of the femininity and masculinity of careers, as represented by the six RIASEC types. The second set of questions addressed the relationship between the perceived gender of a person in a career and participant

positive/negative ratings of traits assigned to the representative RIASEC types. Each set consisted of four questions: 1) basic methodology, 2) effects of sexism, 3) effects of conservatism, and 4) effects of sexism and conservatism taken together.

MANOVAs allowed the researcher to address the first, most basic research question in each set. For each MANOVA, the independent variables were participant gender and condition. Dependent variables were either the average gender ratings of the RIASEC types or the average attitude ratings of the RIASEC types. MANCOVAs were done to answer the remaining three research questions in each set. For each MANCOVA, the original independent and dependent variables remained the same. Then, covariates were progressively added to the analyses. In total, six MANCOVAs were done, three for each set of research questions. For each set of questions, the three MANCOVAs done utilized sexism, conservatism, and sexism and conservatism taken together as covariates.

CHAPTER 4. RESULTS

Perceptions of the Femininity and Masculinity of the RIASEC Types

Basic Methodology and Perceptions of Femininity and Masculinity

The first research question in this study – ‘Are there significant differences in participants’ perceptions of the femininity and masculinity of the RIASEC types depending on their exposure to job descriptions related to the RIASEC types that are gender-neutral or that feature female or male names?’ -- was addressed through a MANOVA (results in Table 5). Participant gender (two levels) and condition (three levels) were the independent variables, while the gender ratings of the RIASEC types were the dependent variables (six total). The *F*-statistic for Pillai’s trace was significant for participant gender, Pillai’s trace = .046, $F(6, 490) = 3.95, p \leq .05$. The *F*-statistic for Pillai’s trace was also significant for condition, Pillai’s trace = .148, $F(12, 982) = 6.54, p \leq .001$. The *F*-statistic for the participant gender by condition interaction was not significant. Tests of between-subjects effects for the dependent variables and means for genders and conditions were examined.

Participant gender accounted for approximately 4.6% of the variance in the average gender ratings of the RIASEC types. For participant gender, between-subjects effects were statistically significant for the Investigative type at the $p \leq .05$ level, with a small effect size, $\eta^2 = .019$. Results were not statistically significant for the other RIASEC types. For the Investigative type, the average gender rating of women participants was .265, while the average gender rating of men participants was .169. Women rated the Investigative type as significantly more masculine than did men.

Condition accounted for approximately 7.4% of the variance in the average gender ratings of the RIASEC types. For condition, between-subjects effects were statistically

significant for the Investigative, Artistic, and Conventional types at the $p \leq .001$ level. The effects for the Realistic and Social types were statistically significant at the $p \leq .05$ level. There was no significant effect for condition for the Enterprising type. Effect sizes for significant results were small (Realistic $\eta^2 = .017$, Investigative $\eta^2 = .027$, Artistic $\eta^2 = .044$, Social $\eta^2 = .017$, and Conventional $\eta^2 = .043$).

For the Realistic type, the average gender rating of condition 1 participants was .414, the average gender rating of condition 2 participants was .308, and the average gender rating of condition 3 participants was .371. Condition 1 participants viewed a Realistic job description with a male name and condition 2 participants viewed the same Realistic job description with a female name. Condition 3 participants viewed a version of the Realistic job description that was gender-neutral. These results demonstrate that participants who read a Realistic job description with a male name perceived the Realistic type as more masculine than did participants who read a Realistic job description with a female name or a description that was gender-neutral. It should also be noted that participants who read the gender-neutral Realistic job description rated the type as more masculine than did participants who read the description with a female name. Although these differences in perceptions were significant between conditions, all groups rated the type as masculine rather than feminine.

For the Investigative type, the average gender ratings of participants in the three conditions were .202, .294, and .155, respectively. Condition 1 participants viewed an Investigative job description with a female name, condition 2 participants viewed the Investigative job description with a male name, and condition 3 participants viewed a version of the job description that was gender-neutral. Therefore, participants who viewed the Investigative job description with a male name perceived the type as significantly more masculine than did

participants who viewed the same job description with a female name or as gender-neutral. In this case, participants who viewed the gender-neutral description rated the type as less masculine than did participants who viewed the description with a female name. For all groups, the type was rated overall as more masculine than feminine, despite these significant differences in the degree to which it was perceived as masculine.

For the Artistic type, the average gender rating of condition 1 participants was $-.264$, the average gender rating of condition 2 participants was $-.397$, and the average gender rating of condition 3 participants was $-.325$. As seen above, condition 3 participants viewed a gender-neutral Artistic job description. Condition 1 participants viewed an Artistic job description with a male name and condition 2 participants viewed the job description with a female name. So, participants who viewed the description with a female name rated the type as significantly more feminine than did participants who viewed the description with a male name or as gender-neutral. The participants who viewed the gender-neutral description perceived the type as more feminine than those who viewed the description with a male name. All participants, regardless of condition, rated the type overall as more feminine than masculine. Significant differences between groups therefore were the result of differences in the degree to which participants viewed the type as feminine.

For the Social type, the average gender rating for participants in each of the three conditions was $-.614$, $-.551$, and $-.531$, respectively. Participants in the first condition viewed a Social job description with a female name, participants in the second condition viewed the description with a male name, and participants in the third condition viewed a version of the description that was gender-neutral. For this type, participants who viewed the job description with a female name rated it as significantly more feminine than did participants who viewed the

description with a male name and participants who viewed a gender-neutral version. Participants in the gender-neutral condition rated the type as less feminine than did participants who viewed the job description with a male name. All groups rated the type, overall, as more feminine than masculine.

For the Conventional type, the average gender rating of condition 1 participants was $-.238$, the average gender rating of condition 2 participants was $-.077$, and the average gender rating of condition 3 participants was $-.021$. Condition 1 participants viewed a Conventional job description with a female name, while condition 2 participants viewed the description with a male name. Once again, condition 3 participants viewed a gender-neutral Conventional job description. Therefore, participants who viewed the description with a female name rated the type as more feminine than did participants who viewed the description with a male name or a gender-neutral description. Participants who viewed the description with a male name rated the type as more feminine than did participants who viewed the gender-neutral description. As with all other interest types discussed in this section, overall all groups rated the type as feminine instead of masculine. Significant differences between groups in average gender ratings were the result of differences in the degree to which participants rated the type as feminine.

Influence of Sexism on Perceptions of Femininity and Masculinity

A MANCOVA was done to address the second research question in this study – ‘To what extent does sexism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant perceptions of the femininity and masculinity of the RIASEC types?’ (results in Table 5). Participant gender (two levels) and condition (three levels) were the independent variables, while the gender ratings of the RIASEC types were the dependent variables (six total). Results of the

Modern Sexism Scale (MSS) and the Ambivalent Sexism Inventory (ASI) were included as covariates and have been taken together here to represent sexism. This research question is similar to the first research question, with the addition of the sexism variables as covariates.

The F -statistic for Pillai's trace was significant for participant gender, Pillai's trace = .033, $F(6, 488) = 2.75, p \leq .05$. The F -statistic for Pillai's trace was also significant for condition, Pillai's trace = .151, $F(12, 978) = 6.66, p \leq .001$. For the ASI, the F -statistic for Pillai's trace was significant, Pillai's trace = .033, $F(6, 488) = 2.74, p \leq .05$. Finally, for the MSS, the F -statistic for Pillai's trace was significant, Pillai's trace = .108, $F(6, 488) = 9.85, p \leq .001$. The F -statistic for the participant gender by condition interaction was not significant. Tests of between-subjects effects for the dependent variables and means for genders and conditions were conducted, which allowed for determination of the exact nature of the significant effects of participant gender, condition, and the covariates.

ASI results accounted for approximately 3.3% of the variance in gender ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Conventional type at the $p \leq .05$ level ($\eta^2 = .023$). Results were not statistically significant for the other four RIASEC types. MSS results accounted for about 10.8% of the variance in gender ratings of traits assigned to the RIASEC types. For the MSS, between-subjects effects were statistically significant for the Realistic, Investigative, Social, and Conventional types at the $p \leq .001$ level ($\eta^2 = .042, .032, .072, \text{ and } .003$) and the Artistic type at the $p \leq .05$ level ($\eta^2 = .018$). For the remaining RIASEC type (Enterprising), results were not statistically significant.

When the sexism covariates were included in analyses, participant gender accounted for approximately 3.3% of the variance in the average gender ratings of the RIASEC types, down from 4.6% when the sexism covariates were not included. For participant gender, between-

subjects effects were statistically significant for the Realistic, Artistic, and Social types at the $p \leq .05$ level, with small effect sizes (Realistic, $\eta^2 = .012$; Artistic, $\eta^2 = .009$; and Social, $\eta^2 = .009$). Results were not statistically significant for the other RIASEC types. For the Realistic type, the average gender rating of women participants was 3.29, while the average gender rating of men participants was 4.07. Men rated the Realistic type as significantly more masculine than did women. For the Artistic type, the average gender rating of women participants was -3.04 and the average gender rating of men participants was -3.57. In other words, men rated the Artistic type as more feminine than did women participants. For the Social type, the average gender rating of women participants was -5.43, while the average gender rating of men participants was -5.95. The men participants rated the Social type as more feminine than did women.

When the sexism covariates were included, condition accounted for approximately 7.6% of the variance in the average gender ratings of the RIASEC types, up slightly from 7.4% when the sexism covariates were not included. For condition, between-subjects effects were statistically significant for the Realistic, Investigative, and Social types at the $p \leq .05$ level, with small effect sizes (Realistic, $\eta^2 = .019$; Investigative, $\eta^2 = .025$; and Social, $\eta^2 = .017$). Results for the Artistic and Conventional types were statistically significant at the $p \leq .001$ level, with small effect sizes (Artistic, $\eta^2 = .045$ and Conventional, $\eta^2 = .045$).

For the Realistic type, the average gender ratings of participants in the three conditions were .415, .308, and .381, respectively. Condition 1 participants saw a Realistic job description with a male name and condition 2 participants viewed the same Realistic job description with a female name. Condition 3 participants saw a version of the Realistic job description that was gender-neutral. These results demonstrate that participants who read a Realistic job description with a male name perceived the Realistic type as more masculine than did participants who read

a Realistic job description with a female name or a description that was gender-neutral. Participants who read the gender-neutral Realistic job description rated the type as more masculine than did participants who read the description with a female name. These differences in perceptions were significant between conditions, but all groups rated the type as masculine rather than feminine.

For the Investigative type, the average gender ratings of participants in the three conditions were .203, .294, and .164, respectively. Condition 1 participants saw an Investigative description with a female name and condition 2 participants saw the same description with a male name. Condition 3 participants saw a gender-neutral Investigative description. Therefore, results show that participants who viewed the description with a male name perceived the type as significantly more masculine than did participants who viewed either the female or gender-neutral description. Additionally, participants who viewed the description with a female name rated the type as more masculine than did participants who saw the gender-neutral description. Overall, the type was rated as masculine rather than feminine.

For the Artistic type, the average gender ratings for participants in the first, second, and third conditions were -.264, -.397, and -.330, respectively. Participants in the first condition viewed an Artistic job description with a male name, participants in the second condition viewed the description with a female name, and participants in the third condition viewed the gender-neutral version. These significant results demonstrate that participants who viewed an Artistic description with a female name perceived the type as significantly more feminine than did participants viewing either the male or gender-neutral version. Furthermore, participants who read the gender-neutral version of the description perceived the type as more feminine than did

participants viewing the male version. Overall, the type was rated as feminine rather than masculine.

For the Social type, average gender ratings for participants in the three conditions were -.616, -.551, and -.542. Condition 1 participants viewed a Social description with a female name, condition 2 participants viewed a description with a male name, and condition 3 participants viewed a description that was gender-neutral. Therefore, results show that participants viewing the Social description with a female name rated the type as significantly more feminine than did participants viewing the male or gender-neutral versions of the Social description. Additionally, participants viewing the gender-neutral description rated the type as less feminine than did participants viewing the male description. Overall, by participants in all three conditions, the Social type was rated as more feminine than masculine.

Lastly, for the Conventional type, the average gender ratings of the three conditions were -.241, -.080, and -.024, respectively. Condition 1 participants viewed a Conventional description with a female name. Condition 2 participants viewed the description with a male name. Condition 3 participants saw the description in a gender-neutral version. Therefore, significant results for the Conventional type demonstrate that participants viewing a female version of the description perceived the type as more feminine than did participants in the male or gender-neutral condition. Participants viewing the male description rated the type as more feminine than participants in the gender-neutral description. Overall, the type was rated as feminine rather than masculine.

Influence of Conservatism on Perceptions of Femininity and Masculinity

The third research question – ‘To what extent does conservatism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job

descriptions representing the RIASEC types and participant perceptions of the femininity and masculinity of the RIASEC types?' -- addresses the role of two conservatism-related variables, religious fundamentalism and right-wing authoritarianism, play in the relationship between perceived gender of a person in a career and participants' perceptions of the femininity and masculinity of the RIASEC types as representative of various careers. Another MANCOVA was done with two independent variables: participant gender (two levels) and condition (three levels) (results in Table 5). Again, the dependent variables (six total) were the gender ratings of the RIASEC types. Results of the Right-Wing Authoritarianism Scale (RWAS) and the Revised-Religious Fundamentalism Scale (R-RFS) were added as covariates and have been taken together here to represent conservatism.

The F -statistic for Pillai's trace was significant for participant gender, Pillai's trace = .045, $F(6, 488) = 3.81, p \leq .05$. The F -statistic for Pillai's trace was significant for condition, Pillai's trace = .156, $F(12, 978) = 6.90, p \leq .001$. The F -statistic for Pillai's trace was significant for the RWA, Pillai's trace = .114, $F(6, 488) = 10.44, p \leq .001$. The F -statistic for the R-RFS was not significant. Therefore, when it comes to conservatism, right-wing authoritarianism (as measured by the RWA) was as a significant covariate while religious fundamentalism (as measured by the R-RFS), was not. The F -statistic value for the participant gender by condition interaction was also not significant.

RWA results accounted for approximately 11.4% of the variance in gender ratings of the RIASEC types. For the RWA, between-subjects effects were statistically significant for all six RIASEC types. At the $p \leq .001$ level, effects were significant for the Social and Enterprising types ($\eta^2 = .075$ and $.092$). At the $p \leq .05$ level, effects were significant for the Realistic, Investigative, Artistic, and Conventional types ($\eta^2 = .014, .022, .022, \text{ and } .015$).

When the conservatism covariates were included in analyses, participant gender accounted for approximately 4.5% of the variance in the average gender ratings of the RIASEC types, down slightly from 4.6% when the conservatism covariates were not included. For participant gender, between-subjects effects were statistically significant for the Investigative type at the $p \leq .05$ level, with small effect size ($\eta^2 = .015$). Results were not statistically significant for the other RIASEC types. For the Investigative type, the average gender rating of women participants was .261, while the average gender rating of men participants was .173. Women, therefore, rated the Investigative type as significantly more masculine than did men.

When these conservatism covariates were included, condition accounted for approximately 7.8% of the variance in the average gender ratings of the RIASEC types, up slightly from 7.4% when the conservatism covariates were not included. For condition, between-subjects effects were statistically significant for the Realistic, Investigative, and Social types at the $p \leq .05$ level, with small effect sizes (Realistic, $\eta^2 = .019$; Investigative, $\eta^2 = .030$; and Social, $\eta^2 = .025$). Results for the Artistic and Conventional types were statistically significant at the $p \leq .001$ level, with small effect sizes (Artistic, $\eta^2 = .042$ and Conventional, $\eta^2 = .048$). Results for the Enterprising type were not significant.

For the Realistic type, the average gender ratings of participants in the three conditions were, respectively, .418, .308, and .370. Condition 1 participants viewed a Realistic job description with a male name and condition 2 participants with a female name. Condition 3 participants viewed a gender-neutral version of the Realistic description. Therefore, these results show that participants who viewed the Realistic description with a male name rated the type as significantly more masculine than did participants who viewed it with a female name or who viewed a gender-neutral version. Additionally, participants who viewed the gender-neutral

description perceived the type as more masculine than did participants who saw the female version. Overall, the type was perceived as more masculine than feminine by participants regardless of condition.

For the Investigative type, participants in the three conditions had average gender ratings of .207, .294, and .150. Participants in condition 1 viewed an Investigative description with a female name, participants in condition 2 viewed a description with a male name, and participants in condition 3 viewed a gender-neutral description. These significant Investigative results demonstrate that participants who viewed an Investigative description with a male name viewed the type as significantly more masculine than did participants who viewed the female or gender-neutral version. It can also be noted that participants who viewed the gender-neutral Investigative description viewed the type as less masculine than participants who viewed the female Investigative description. Overall, the Investigative type was rated as more masculine than feminine by participants in all three conditions.

For the Artistic type, the average gender ratings of participants in the three conditions were -.268, -.396, and -.325. Participants in condition 1 viewed an Artistic description with a male name, while participants in condition 2 viewed the same description with a female name. Participants in the third condition viewed a gender-neutral version of the Artistic description. Results therefore demonstrate that participants who viewed the female version of the Artistic description rated the Artistic type as more feminine than did participants in either of the remaining two conditions. Furthermore, participants in the gender-neutral description rated the type as more feminine than did participants in the male condition. Overall, however, regardless of condition, participants rated the Artistic type as feminine rather than masculine.

For the Social type, the average gender ratings of participants by condition were -.622 for condition 1, -.550 for condition 2, and -.528 for condition 3. Condition 1 participants viewed a Social description with a female name, condition 2 participants viewed a Social description with a male name, and Condition 3 participants viewed a gender-neutral Social description. Therefore, it can be seen that participants who viewed the Social description with a female name rated the type as significantly more feminine than participants in either the male or gender-neutral conditions. It should also be noted that, in this case, participants in the gender-neutral condition rated the Social type as slightly less feminine than did participants in the male condition.

For the Conventional type, the average gender ratings of participants in the three conditions were -.243, -.077, and -.017, respectively. Condition 1 participants read a Conventional description with a female name. Condition 2 participants saw a Conventional description with a male name. Finally, condition 3 participants saw a gender-neutral Conventional description. These results demonstrate that participants who viewed a feminine Conventional description perceived the Conventional type as significantly more feminine than did participants in the gender-neutral or male conditions. Participants in the male condition viewed the type as more feminine than participants in the gender-neutral condition.

Influence of Sexism and Conservatism on Perceptions of Femininity and Masculinity

The fourth research question – ‘To what extent do sexism and conservatism, taken together, contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant perceptions of the femininity and masculinity of the RIASEC types?’ -- examines the role of the sexism and conservatism covariates when added into the analysis together. As in the other analyses already described, a MANCOVA was done with two independent variables: participant gender (two

levels) and condition (three levels) (results in Table 5). The dependent variables (six total) were the gender ratings of the RIASEC types. Results of the Right-Wing Authoritarianism Scale (RWAS) and the Revised- Religious Fundamentalism Scale (R-RFS) were added as covariates and have been taken together here to represent conservatism, while results of the Modern Sexism Scale (MSS) and the Ambivalent Sexism Inventory (ASI) were included as covariates and considered together to represent sexism.

The F -statistic for Pillai's trace was significant for participant gender, Pillai's trace = .036, $F(6, 486) = 3.01$, $p \leq .05$. The F -statistic for Pillai's trace was significant for condition, Pillai's trace = .155, $F(12, 974) = 6.82$, $p \leq .001$. When it comes to the covariates, the F -statistic for Pillai's trace was significant for the MSS, Pillai's trace = .052, $F(6, 486) = 4.45$, $p \leq .001$. The F -statistic for Pillai's trace was also significant for the ASI, Pillai's trace = .037, $F(6, 486) = 3.09$, $p \leq .05$. Therefore, each of the sexism-related variables (the MSS and the ASI) had significant results, with the MSS emerging as the more influential sexism covariate. The F -statistic for Pillai's trace was significant for the RWA, Pillai's trace = .073, $F(6, 486) = 6.34$, $p \leq .001$. The F -statistic for the R-RFS was not significant. When it comes to conservatism, right-wing authoritarianism (as measured by the RWA) therefore emerged as a significant covariate while religious fundamentalism (as measured by the R-RFS), did not. The F -statistic values for the participant gender by condition interaction was not significant.

Tests of between-subjects effects allowed for further exploration of the significant effects found here. Participant gender accounted for approximately 3.6% of the variance in the gender ratings of the RIASEC types (down from 4.6% when none of the covariates were included). For participant gender, between-subjects effects were statistically significant for the Realistic type at the $p \leq .05$ level ($\eta^2 = .011$). For the other RIASEC types, results were not statistically

significant. For the Realistic type, the average gender rating of women participants was .329, while for men participants it was .406, meaning that men rated the Realistic type traits as significantly more masculine than did the women. However, overall the type was rated by participants as more masculine than feminine.

Condition accounted for approximately 7.8% of the variance in the gender ratings of the traits assigned to the RIASEC types (slightly up from 7.4% when none of the covariates were included). For condition, between-subjects effects were statistically significant for the Realistic, Investigative, and Social types at the $p \leq .05$ level ($\eta^2 = .020, .028, \text{ and } .022$, respectively). Between-subjects effects were significant for the Artistic and Conventional types at the $p \leq .001$ level ($\eta^2 = .042 \text{ and } .048$, respectively). Results were not significant for the Enterprising type.

For the Realistic type, the average gender rating of condition 1 participants was .417, the average gender rating of condition 2 participants was .307, and the average gender rating of condition 3 participants was .379. Condition 1 participants viewed a Realistic job description with a male name and condition 2 participants viewed the same Realistic job description with a female name. Condition 3 participants read a version of the Realistic job description that was gender-neutral. These results show that participants who read a Realistic job description with a male name perceived the Realistic type as more masculine than did participants who read a Realistic job description with a female name or a description that was gender-neutral. It should also be noted that participants who read the gender-neutral Realistic job description rated the type as more masculine than did participants who read the description with a female name. Although these differences in perceptions were significant between conditions, all groups rated the type as masculine rather than feminine.

For the Investigative type, the average gender rating of condition 1 participants was .206, the average gender rating of condition 2 participants was .294, and the average gender rating of condition 3 participants was .156. Condition 1 participants viewed an Investigative job description with a female name, condition 2 participants viewed the same Investigative job description with a male name, and condition 3 participants read a version of the Investigative job description that was gender-neutral. These results show that participants who read an Investigative job description with a male name perceived the Investigative type as more masculine than did participants who read an Investigative job description with a female name or a description that was gender-neutral. Participants who read the gender-neutral Investigative job description rated the type as less masculine than did participants who read the description with a female name. Although these differences in perceptions were significant between conditions, all groups rated the type as masculine rather than feminine.

For the Artistic type, the average gender rating of participants in the three conditions was -.267, -.395, and -.328, respectively. Condition 1 participants read an Artistic job description with a male name, condition 2 participants read one with a female name, and condition 3 participants read the gender-neutral version of the Artistic job description. Therefore, results show that participants who read the Artistic job description with a female name rated the type as significantly more feminine than did those who read the same description in either a male-name or gender-neutral version. Furthermore, participants who viewed the gender-neutral description rated the type as more feminine than participants who viewed the description with a male name. Overall, however, participants rated the Artistic type as more feminine than masculine.

For the Social type, the average gender rating of Condition 1 participants was -.621. The average gender ratings of Condition 2 and 3 participants were, respectively, -.549 and -.536.

Participants in Condition 1 viewed a Social description with a female name. Condition 2 participants viewed the description with a male name. Finally, Condition 3 participants read a Social description that was gender-neutral. Therefore, when participants viewed the description with a female name, they rated the Social type as significantly more feminine than when they viewed the description with a male name or when they viewed the gender-neutral description. Participants who viewed the male version of the description rated the type as slightly more feminine than did those who saw the gender-neutral description. Overall, by participants in all three conditions, the type was rated as more feminine than masculine.

Finally, for the Conventional type, participants in the first, second, and third conditions had average gender ratings of $-.243$, $-.079$, and $-.020$, respectively. Condition 1 participants saw a Conventional description with a female name, condition 2 participants saw the description with a male name, and condition 3 participants saw a gender-neutral version of the description. Consequently, participants who viewed the female version of the description rated the type as significantly more feminine than did participants who saw either the male or gender-neutral versions of the description. Participants in the gender-neutral condition rated the type as less strongly feminine than did participants who saw the description with a male name. Still, despite these differences, participants in all conditions rated the Conventional type as more feminine than masculine.

MSS results accounted for about 5.2% of the variance in positive/negative ratings of traits assigned to the RIASEC types. For the MSS, between-subjects effects were statistically significant for the Realistic, Social, and Enterprising types at the $p \leq .001$ level ($\eta^2 = .029$, $.029$, and $.022$) and the Investigative type at the $p \leq .05$ level ($\eta^2 = .010$). For the other two RIASEC types (Artistic and Conventional), results were not statistically significant. ASI results accounted

for approximately 3.7% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Artistic, Social, and Conventional types at the $p \leq .05$ level ($\eta^2 = .014, .009, \text{ and } .012$, respectively). Results were not statistically significant for the other three RIASEC types.

RWA results accounted for approximately 7.3% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Social and Enterprising types at the $p \leq .001$ level ($\eta^2 = .043 \text{ and } .057$) and the Investigative and Artistic types at the $p \leq .05$ level ($\eta^2 = .013 \text{ and } .021$, respectively). Results were not statistically significant for the two remaining RIASEC types (Realistic and Conventional).

Positive and Negative Ratings of Traits Assigned to the RIASEC Types

Basic Methodology and Attitudes toward the RIASEC Types

The fifth research question in this study – ‘Are there significant differences in participants’ attitude ratings of traits assigned to the RIASEC types depending on their exposure to job descriptions related to the RIASEC types that are gender-neutral or that feature female or male names? -- was also addressed through a MANOVA (results in Table 6). Participant gender (two levels) and condition (three levels) were the independent variables, while the positive/negative ratings of traits assigned to the RIASEC types were the dependent variables (six total). The F -statistic for Pillai’s trace was significant for participant gender, Pillai’s trace = .046, $F(6, 490) = 3.95, p \leq .05$. The F -statistic for condition was not significant. The F -statistic for the participant gender by condition interaction was also not significant. Tests of between-subjects effects for the dependent variables and means for genders and conditions were

conducted, allowing the researcher to determine the exact nature of the significant effects for participant gender.

Participant gender accounted for approximately 8.4% of the variance in the average attitude ratings of traits assigned to the RIASEC types. For participant gender, between-subjects effects were statistically significant for the Artistic and Social types at the $p \leq .001$ level, with small effect sizes (Artistic, $\eta^2 = .024$; Social, $\eta^2 = .026$). Between-subjects effects were statistically significant for the Realistic type at the $p \leq .05$ level. Results were not statistically significant for the other RIASEC types. For the Realistic type, the average attitude rating of women participants was 4.63, while the average attitude rating of men participants was 4.79. Men rated traits assigned to the Realistic type more positively than did women. For the Artistic type, the average attitude rating of women participants was 4.29 and the average attitude rating of men participants was 4.07. Women rated traits assigned to the Artistic type more positively than did men. For the Social type, the average attitude rating of women participants was 5.43, while the average attitude rating of men participants was 5.17. Women rated traits assigned to the Social type more positively than did men.

Influence of Sexism on Attitudes toward the RIASEC Types

The sixth research question – ‘To what extent does sexism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant positive/negative ratings of traits assigned to the RIASEC types?’ -- was answered using a MANCOVA (results in Table 6). Participant gender (two levels) and condition (three levels) were the independent variables, while the attitude ratings of traits assigned to the RIASEC types were the dependent variables (six total). Results of

the Modern Sexism Scale (MSS) and the Ambivalent Sexism Inventory (ASI) were added as covariates and have been taken together here to represent sexism.

The F -statistic for Pillai's trace was significant for participant gender, Pillai's trace = .057, $F(6, 488) = 4.92, p \leq .001$. The F -statistic for Pillai's trace was also significant for the MSS results, Pillai's trace = .104, $F(6, 488) = 9.47, p \leq .001$. For the ASI, the F -statistic for Pillai's trace was significant, Pillai's trace = .039, $F(6, 488) = 3.30, p \leq .05$. The F -statistic was not significant for either condition or the participant gender by condition interaction. Between-subjects effects tests provided for further exploration of the nature of the significant effects found.

MSS results accounted for approximately 10.4% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Social type at the $p \leq .001$ level ($\eta^2 = .089$) and were significant for the Realistic and Conventional types at the $p \leq .05$ level ($\eta^2 = .012$ and $\eta^2 = .009$, respectively). Results were not statistically significant for the other three RIASEC types. ASI results accounted for about 3.9% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Artistic, Enterprising, and Conventional types at the $p \leq .05$ level ($\eta^2 = .010$, $\eta^2 = .018$, and $\eta^2 = .018$, respectively). Results were not statistically significant for the other RIASEC types.

Participant gender accounted for 5.7% of the variance in the positive/negative ratings of traits assigned to the RIASEC types, down from 8.4% when the sexism covariates were not included. For participant gender, between-subjects effects were statistically significant for the Artistic type at the $p \leq .001$ level ($\eta^2 = .027$) and for the Realistic type at the $p \leq .05$ level ($\eta^2 = .019$). Results were not statistically significant for the other four RIASEC types. For the Artistic

type, the average attitude rating for women participants was 4.31, while the average attitude rating for men participants was 4.05. Women, in other words, rated traits assigned to the Artistic type more positively than did men. For the Realistic type, the average attitude ratings for women and men, respectively, was 4.59 and 4.83. Men, therefore, rated traits assigned to the Realistic type more positively than women did.

Influence of Conservatism on Attitudes toward the RIASEC Types

The seventh research question – ‘To what extent does conservatism contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant positive/negative ratings of traits assigned to the RIASEC types?’ – was evaluated with a MANCOVA (results in Table 6). Participant gender (two levels) and condition (three levels) were the independent variables and the average attitude ratings of the traits assigned to the six RIASEC types were the dependent variables (six total). Results of the Right-Wing Authoritarianism Scale (RWAS) and the Revised- Religious Fundamentalism Scale (R-RFS) were added as covariates and have been taken together here to represent conservatism.

The F -statistic for Pillai’s trace was statistically significant for participant gender, Pillai’s trace = .065, $F(6, 488) = 5.69, p \leq .001$. For the RWA, the F -statistic for Pillai’s trace was also significant, Pillai’s trace = .108, $F(6, 488) = 9.84, p \leq .001$. Finally, for the R-RFS, the F -statistic for Pillai’s trace was significant, Pillai’s trace = .032, $F(6, 488) = 2.69, p \leq .05$. The F -statistic was not significant for condition or the participant gender by condition interaction. In order to allow the researcher to learn more about the precise nature of the significant effects found here, tests of between-subjects effects for the dependent variables and means for genders and conditions were conducted.

RWA results accounted for approximately 10.8% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Social and Conventional types at the $p \leq .001$ level ($\eta^2 = .071$ and $\eta^2 = .026$, respectively). Results were not statistically significant for the other RIASEC types. R-RFS results accounted for approximately 3.2% of the variance in attitude ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Social type at the $p \leq .001$ level ($\eta^2 = .027$). Results were not statistically significant for any of the other five RIASEC types.

In this analysis, participant gender accounted for approximately 6.5% of the variance in the positive/negative ratings for traits assigned to the six RIASEC types. This represents a decrease from the analysis without the conservatism covariates, when participant gender accounted for 8.4% of the variance. For participant gender, between-subjects effects were statistically significant for the Realistic, Artistic, and Social types at the $p \leq .05$ level (Realistic $\eta^2 = .013$; Artistic $\eta^2 = .024$; and Social $\eta^2 = .011$). For the Realistic type, the average attitude rating of women participants was 4.62, while the average attitude rating of men participants was 4.80, meaning that the men participants rated traits assigned to the Realistic type more positively than did the women participants. For the Artistic type, women participants had an average attitude rating of 4.29 and men participants had an average rating of 4.07. Women participants therefore rated the Artistic type traits more positively than did men participants. Finally, for the Social type, the women participants had an average attitude rating of 5.38, while the men had an average attitude rating of 5.22. The women rated the Social type traits more positively than men did.

Influence of Sexism and Conservatism on Attitudes toward the RIASEC Types

The eighth and final research question – ‘To what extent do sexism and conservatism, taken together, contribute to the relationship between participant exposure to gender-neutral, female, or male names in job descriptions representing the RIASEC types and participant positive/negative ratings of traits assigned to the RIASEC types?’ -- examines the role of the sexism and conservatism covariates when added into the analysis together. As in the other analyses already described, a MANCOVA was done with two independent variables: participant gender (two levels) and condition (three levels) (results in Table 6). The dependent variables (six total) were the average attitude ratings of traits assigned to the RIASEC types. Results of the Right-Wing Authoritarianism Scale (RWAS) and the Revised- Religious Fundamentalism Scale (R-RFS) were added as covariates and have been taken together here to represent conservatism, while results of the Modern Sexism Scale (MSS) and the Ambivalent Sexism Inventory (ASI) were included as covariates and, taken together, represent sexism.

The F -statistic for Pillai’s trace was significant for participant gender, Pillai’s trace = .046, $F(6, 486) = 3.87, p \leq .001$. The F -statistic for Pillai’s trace was significant for the MSS, Pillai’s trace = .066, $F(6, 486) = 5.77, p \leq .001$. The F -statistic for Pillai’s trace was also significant for the ASI, Pillai’s trace = .027, $F(6, 486) = 2.22, p \leq .05$. Therefore, each of the sexism-related variables (the MSS and the ASI) had significant results, with the MSS emerging as the more influential sexism covariate. The F -statistic for Pillai’s trace was significant for the RWA, Pillai’s trace = .045, $F(6, 486) = 3.85, p \leq .001$. Additionally, the F -statistic for Pillai’s trace was significant for the R-RFS, Pillai’s trace = .028, $F(6, 486) = 2.32, p \leq .05$. When it comes to conservatism, right-wing authoritarianism (as measured by the RWA) therefore emerged as the stronger covariate when compared to religious fundamentalism (as measured by

the R-RFS). It should also be noted that the F -statistic values for both condition and the participant gender by condition interaction were not significant.

ASI results accounted for approximately 2.7% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Enterprising and Conventional types at the $p \leq .05$ level ($\eta^2 = .016$ and $\eta^2 = .008$, respectively). Results were not statistically significant for the other four RIASEC types. MSS results accounted for about 6.6% of the variance in attitude ratings of traits assigned to the RIASEC types. For the MSS, between-subjects effects were statistically significant for the Social type at the $p \leq .001$ level ($\eta^2 = .058$) and the Realistic type at the $p \leq .05$ level ($\eta^2 = .008$). For the other RIASEC types, results were not statistically significant.

RWA results accounted for approximately 4.5% of the variance in positive/negative ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant for the Social type at the $p \leq .001$ level ($\eta^2 = .028$) and the Conventional type at the $p \leq .05$ level ($\eta^2 = .008$). Results were not statistically significant for the four remaining RIASEC types. R-RFS results accounted for approximately 2.8% of the variance in attitude ratings of traits assigned to the RIASEC types. Between-subjects effects were statistically significant only for the Social type, at the $p \leq .001$ level ($\eta^2 = .022$). Results were not statistically significant for the other five RIASEC types.

Tests of between-subjects effects allowed for further exploration of the significant effects found here. Participant gender accounted for approximately 4.6% of the variance in the positive/negative ratings of the traits assigned to the RIASEC types (down from 8.4% when none of the covariates were included). For participant gender, between-subjects effects were statistically significant for the Realistic and Artistic types at the $p \leq .05$ level ($\eta^2 = .017$ and $\eta^2 =$

.017, respectively). For the other RIASEC types, results were not statistically significant. For the Realistic type, the average attitude rating of women participants was 4.60, while for men participants it was 4.83, meaning that men rated the Realistic type traits more positively than did women. For the Artistic type, women participants' average attitude rating was 4.29 and men participants' was 4.08. In other words, women rated the type's assigned traits more positively than did men.

CHAPTER 5. DISCUSSION

The present study examined perceptions of the femininity and masculinity of the RIASEC types, as well as attitudes toward the RIASEC types. Overt sexism and structural barriers (e.g. laws) to women's full and equal representation in the work have been reduced in recent decades. However, gendered views of occupations, as well as more general positive or negative views of occupations, may influence career decision-making and perpetuate gender differences in vocational choice. Although women have made significant strides, they are still underrepresented in many traditionally masculine careers, such as the STEM (science, technology, engineering, mathematics) fields. Men are simultaneously underrepresented in many traditionally feminine fields. However, these differences in representation may impact women more negatively than they do men, as careers that are overpopulated by women tend to be lower in prestige and pay. Results of this study showed that gendered perceptions of the RIASEC types may be shifted in intensity by the gender of the person depicted in a representative 'career'. In addition, this study demonstrated that positive/negative ratings of the RIASEC types differ by participant gender, but not by the gender of the person depicted in a career. Additionally, various sexism- and conservatism-related factors may influence both perceptions of, and attitudes toward, the RIASEC types. These findings shed greater light into gender-related perceptions of occupations and the career decision-making process. As such, the present study may provide useful information to those who assist others in making these decisions, such as career counselors.

Perceptions of the Femininity and Masculinity of the RIASEC Types

Overall, there was great consistency in participant perceptions of the masculinity and femininity of the RIASEC types. First, participants consistently rated the six RIASEC types as

either feminine or masculine. The Artistic, Social, and Conventional types were perceived as feminine regardless of participant gender or condition and regardless of which covariates were included. It should be noted that the Conventional type, while rated consistently as more feminine than masculine, the average gender ratings of this type were less strongly feminine than for the other feminine types. The Realistic, Investigative, and Enterprising types were consistently perceived as masculine. The gender of the person depicted in the careers was not sufficient to reverse participant perceptions of the career's 'gender'. For example, showing a man working in a Social career was not powerful enough to cause participants in this condition to view the Social career as masculine rather than feminine.

In spite of this, participant condition did emerge as a significant predictor of perceptions of the femininity and masculinity of the RIASEC types. As in another similar study (Callahan, 2015), there were shifts in the degree to which participants rated each type as either feminine or masculine, although overall reversals of the kind discussed above did not occur. An earlier study (Bergner, 2013), had not found significant results for condition but found that the RIASEC types were perceived as feminine or masculine in the same ways as in this study (e.g. Realistic perceived as masculine, Social perceived as feminine). Across the four analyses done related to participant perceptions of the femininity and masculinity of the RIASEC types, five of the six RIASEC types showed significant results. These five types were Realistic, Investigative, Artistic, Social, and Conventional. Mirroring Callahan's (2015) results, the Enterprising type did not contribute to the significant results for condition.

It is important to note here that these results match closely with differences found in vocational interests by gender. Su, Rounds, and Armstrong (2009), found that women consistently demonstrate more interest in the Social, Conventional, and Artistic types. These

types were rated consistently as more feminine than masculine in this study. Su et al. (2009) also reported that men show more interest in the Realistic and Investigative types, which were rated as more masculine than feminine in this study. Finally, Su and colleagues did not find significant differences in Enterprising interests by gender. In this study, Enterprising was rated as more masculine than feminine, but significant results by condition did not appear. In other words, participants did not differ in how masculine they perceived the type depending on the gender of the person depicted in the representative occupational description.

In Callahan (2015), possible reasons for the differences with the Enterprising type were discussed. It was proposed that leadership, typically associated with the Enterprising type, may not be currently viewed as a singularly masculine domain. It also seems likely that, given these results, women who enter leadership positions are not viewed as more masculine given their participation in this field. This may not be true for women entering other traditionally masculine fields, such as those represented partially by the Realistic type (e.g. construction worker). In these cases, women may in fact be perceived as more masculine given their chosen occupation.

The traits used in the sorting activity in this study were drawn from the Bem Sex Role Inventory (BSRI; Bem, 1981), the Personal Attributes Questionnaire (PAQ; Spence & Helmreich, 1978), and the Positive-Negative Sex Role Inventory (PN-SRI; Berger & Krahe, 2013). Fundamentally, the Enterprising type was rated as masculine by participants in this study because the authors of these scales categorized the traits assigned to this type as masculine rather than feminine. Given the consistent results between Callahan (2015) and the present study, as well as results of Su and colleagues' (2009) meta-analysis of gender differences in interests, it seems clear that different factors are currently at play with the Enterprising type. This may be

due to changes in society and our culture at large. A closer look at the Enterprising type and the traits assigned to this type, typically categorized as masculine, seems warranted.

One key difference between the present study and the earlier Callahan (2015) study is the inclusion, in this study, of a gender-neutral third condition. Participants in the first two conditions viewed occupational descriptions with alternating female and male names, while participants in the third condition viewed gender-neutral (no name) versions of the descriptions. For each of the five significant RIASEC types, participants in the condition featuring the name (female or male) matching the way in which the type was perceived (feminine or masculine) showed the strongest gendered responses. In other words, for example, participants viewing the Realistic description with a male name rated the type as more strongly masculine than did participants viewing the Realistic description with a female name or the gender-neutral Realistic description. Similarly, participants who saw the Social description with a female name rated the type as more strongly feminine than did those who saw the same description with a male name or as gender-neutral.

No specific hypotheses were made regarding the gender-neutral condition in this study and how, in particular, those in this condition may rate the RIASEC types. The significant shifts in the perceptions of the femininity and masculinity of the RIASEC types, as discussed above, were a matter of *degree* rather than over complete reversals. Therefore, it is possible to, for each RIASEC type, order the three conditions in terms of how feminine or masculine they rated the five significant types. Across the four analyses, the ordering remained the same for each type, but the position of the gender-neutral condition was not the same for each type.

For the Realistic type, which was perceived as masculine by all three conditions, those who viewed a male name in the description rated it as most masculine, followed by the gender-

neutral condition and then, lastly, those in the condition who saw the female name. It is not surprising that those viewing the male name rated the type as most masculine. Additionally, then, those in the gender-neutral condition rated the type as more masculine than those who saw the female name. For the Investigative type, which was rated overall as masculine, those viewing the male name in the description rated it as most strongly masculine, followed by the female name condition and then the gender-neutral condition. Therefore, in this case, in contrast to the Realistic type, the gender-neutral condition participants rated the type as less strongly masculine than those in the female name condition.

The remaining significant RIASEC types (Artistic, Social, and Conventional) were all rated, overall, as feminine. Shifts in the degree to which participants rated the types as feminine occurred by condition, however. Again, it is possible to look more closely at the positioning of the gender-neutral condition within these results. For all three of these types, participants in the female name condition rated the type as most strongly feminine. For the Artistic type, participants in the gender-neutral condition rated the type as more feminine than did participants in the male name condition. On the other hand, for the Social type, participants in the gender-neutral condition rated the type as less feminine than participants in the male name condition. Finally, for the Conventional type, the gender-neutral condition participants rated the type as less feminine than participants in the male name condition.

In the present study, it is unclear precisely what factors have influenced these gender-neutral results that differ by RIASEC type but are consistent across the four analyses. Perhaps this is related to differences in how strongly participants tend to view the types as either feminine or masculine. For example, the Realistic type is rated as more strongly masculine than the Investigative type. It is possible that, given how strong the perception of the Realistic type as

masculine is, it is more difficult for participants to view the type as masculine when a woman is in the job than it is to view the type as masculine when no gender is specified. However, it is not possible to apply this to each of the significant RIASEC types in this study. For example, the Social type is rated as more strongly feminine than the Conventional type. In this study, though, participants in the gender-neutral condition fell last, for both types, in terms of how feminine they rated the types.

The same RIASEC types were significant for condition regardless of whether covariates were included in analyses and regardless of which covariates were included. The same is not true of participant gender. Participant gender emerged as a significant predictor of perceptions of the femininity and masculinity of the RIASEC types in all four analyses. However, depending on the stage of analysis, participant gender was significant on the basis of different RIASEC types. In the first analysis, which did not include covariates, participant gender was significant for only the Investigative type. When the sexism covariates were included, participant gender was significant for the Realistic, Artistic, and Social types. When the sexism covariates were removed and the conservatism covariates were included, participant gender was again only significant for the Investigative type. Finally, when all covariates were included together, participant gender was significant for only the Realistic type.

When the Investigative type was significant, women rated the type as more masculine than men. In each case that the Realistic type was significant, men rated it as more masculine than women. For the Artistic and Social types, men rated the type as more feminine than did women.

Some research has already addressed the differential messages girls and boys receive from parents or other caregivers about genders. For example, parents of boys may be more likely

than parents of girls to encourage gender-congruent behavior (Fling & Manosevitz, 1972; Lansky, 1967; Maccoby & Jacklin, 1974). This may be due to a particular concern on the part of parents of boys that their sons will engage in behavior seen as feminine, which may be more socially damaging than girls who engage in behavior seen as masculine. The term ‘tomboy’ does not carry a negative association to the extent that corresponding terms for boys may. It is unclear the degree to which factors such as these discussed here influence the differential ways in which women and men in this study rated the RIASEC types.

Sexism, Conservatism, and RIASEC Perceptions

The covariates considered in this study were previously included in Callahan’s (2015) study examining the role that conservatism sexism may play in perceptions of the femininity and masculinity of the RIASEC types. This earlier study by Callahan, however, did not find significant results for any of the included covariates. In other words, it was found that variables such as sexism, religious fundamentalism, and right-wing authoritarianism did not impact participants’ perceptions of the femininity and masculinity of the RIASEC types. Two potential interpretations for the lack of significant results were proposed. First, it was acknowledged that these variables simply may not have a notable effect on the issues at hand. Alternatively, it was noted that the forced-choice paradigm inherent to this earlier study may have reduced the researcher’s ability to detect the influence of the covariates. In order for the covariates to have had significant results, there would need to be differential effects of each across the types. For example, people who showed higher levels of right-wing authoritarianism would have needed to respond differently to one RIASEC type and not another.

To test the hypothesis that the forced-choice paradigm impacted the researcher’s ability to detect the influence of sexism and conservatism, the present study utilized a different

methodology. Participants were again required to match each trait to one (and only one) description, but could assign any number of traits to the descriptions. This represented a substantial change from the earlier Callahan study by allowing participants greater freedom in how they assigned the traits to the descriptions. Participants also had more traits to choose from in the present study, as the number of traits climbed from 60 to 102 and included traits often viewed negatively as well as those often viewed positively.

Across analyses addressing the perceptions of the femininity and masculinity of the RIASEC types, there was considerable consistency in the effects of the covariates representing sexism and conservatism. Specifically, each of the covariates representing sexism (Modern Sexism Scale [MSS] and Ambivalent Sexism Inventory [ASI]) consistently rose to the level of significance. In addition, right-wing authoritarianism produced significant results while religious fundamentalism did not.

Both the ASI and MSS results emerged as significant. However, there was a large difference between them in the amount of variance accounted for in the perceptions of the RIASEC types. When these two variables were included in analyses as the only covariates, the ASI accounted for only 3.3% of the variance in this analysis, while the MSS accounted for 10.8% of the variance. The MSS showed significant results for the Realistic, Investigative, Artistic, Social, and Enterprising types, while the ASI showed significant results for only the Conventional type. When all four covariates, including the two conservatism variables, were included, the ASI accounted for 3.7% of the variance in the dependent variables, while the MSS accounted for 5.2% and right-wing authoritarianism accounted for 7.3%.

In order to begin to consider why the MSS emerged as a stronger covariate than the ASI, a brief review of the two scales is warranted. The ASI was designed as a measure of ambivalent

sexism, or the state of exhibiting two sets of sexist beliefs at once: hostile and benevolent sexism. Hostile sexism is defined as attitudes toward women that reflect a more traditional definition of prejudice against women. It may be more negative in tone, subjectively, than benevolent sexism. At first glance, benevolent sexism may seem positive, but actually represents very traditional views of appropriate roles for women (and, by default, men as well). The MSS similarly measures two different kinds of sexism, ‘old-fashioned’ (more direct, explicit) and ‘modern’ (more indirect, implicit).

As stated earlier in this section, right-wing authoritarianism emerged as a strong covariate, while there were no significant results for religious fundamentalism. Right-wing authoritarianism accounted for 11.4% of the variance in perceptions of the RIASEC types when only the two conservatism covariates were included in analyses. Additionally, it was found that right-wing authoritarianism played a role for all six RIASEC types, as significant results were found for each. When all four covariates (sexism and conservatism variables) were included in analyses, right-wing authoritarianism still accounted for 7.3% of the variance in perceptions of the RIASEC types. Significant results were found for all RIASEC types except the Enterprising type.

Religious fundamentalism may be defined as a belief in a single set of religious teachings that contain an inerrant truth about people, a deity, and their relationship to each other. Those who display high levels of religious fundamentalism often believe that they must defend rigorously against what they perceive as the dangers of modernity (Altemeyer & Hunsberger, 1992). Right-wing authoritarianism, on the other hand, has been said to encompass three more specific factors: 1) authoritarian aggression, 2) authoritarian submission, and 3) conventionalism

(Altemeyer, 2006). It is possible that right-wing authoritarianism is a broader or more general representation of conservatism, causing it to emerge as the strong covariate in these analyses.

Given the significant results found for covariates in these analyses, it seems likely that the freer-choice paradigm used for the sorting activity in this study did in fact allow the true influence of the covariates to emerge. Coxon (1999) stated that a potential benefit for freer-choice sorts, in comparison to forced-choice sorts, may be that participants are able to respond more 'naturally' to the stimuli.

Positive and Negative Ratings of Traits Assigned to the RIASEC Types

The present study allowed the researcher to consider participants' attitudes toward individuals working in gender-traditional or gender non-traditional careers, through the inclusion of occupational descriptions featuring both female and male names. An example of a gender non-traditional occupation pairing would be a woman depicted as working in a Realistic career, found in the second condition. Similarly, a man working in an Artistic career was depicted in the first condition.

In analyses addressing participant attitudes, participant gender produced significant results while condition did not. Therefore, it does not appear that differential views of individuals working in gender-traditional or non-traditional careers impacted participants' attitude ratings of the RIASEC types. Participant gender, however, did account for approximately 8.4% of the variance in attitudes toward the RIASEC types when no covariates were included, 5.7% when the sexism covariates were included, 6.5% when the conservatism covariates were included, and 4.6% when all covariates were included.

Across analyses, as the particular covariates included differed, the RIASEC types for which significant results were found differed as well. With no covariates, significant results were

found for participant gender for the Realistic, Artistic, and Social types. When only the sexism covariates were included, significant results were found for the Realistic and Artistic types. When only the conservatism covariates were included, significant results were found for the Realistic, Artistic, and Social types, similar to when no covariates were included. Finally, when all covariates were incorporated, there were significant results for the Realistic and Artistic types.

Therefore, participant gender was as reliable a significant variable in the attitudes analyses as it was in the previously discussed analyses addressing the perceptions of the femininity and masculinity of the RIASEC types. This time, it may be easier to determine why women or men rated these types more positively or negatively than did the other gender. Without exception, when significant results emerged, participants rated types more positively that were also considered as more characteristic of their gender.

For example, when significant differences by participant gender for the Realistic type existed, men rated the type more positively than did women. The Realistic type is seen as more masculine than feminine and men tend to express more Realistic interests than women. Similarly, women in this study rated the Social type more positively than men. Women also express more Social interests than men (Su et al., 2009) and participants in this study, regardless of gender, perceived this type as more feminine than masculine. It seems possible that participants rated types more positively when they felt they were characteristic of themselves or someone of their gender.

The results addressing attitudes toward the RIASEC types share one important similarity with those for the perceptions of the femininity and masculinity of the RIASEC types. Namely, the MSS was the stronger covariate when compared to the ASI. The ASI showed significant

results for the Artistic, Enterprising, and Conventional types (strongest effects for the Enterprising and Conventional types), while the MSS showed significant results for the Realistic, Social, and Conventional types (strongest effects for the Social type). Specifically, the ASI accounted for 3.9% of the variance in these dependent variables, while the MSS accounted for 10.4% when these two variables were included as covariates without the conservatism covariates.

When the conservatism variables, religious fundamentalism and right-wing authoritarianism, were included, both demonstrated a significant impact on the participants' positive/negative ratings of the RIASEC types. However, the effects of right-wing authoritarianism outweighed those of religious fundamentalism. Right-wing authoritarianism accounted for 10.8% of the variance in attitudes and religious fundamentalism accounted for only 3.2%. As discussed earlier in the section of this discussion addressing perceptions of the femininity and masculinity of the RIASEC types, it is possible that right-wing authoritarianism is a more general concept encompassing more aspects of conservatism than religious fundamentalism. In this analysis, religious fundamentalism showed significant effects for the Social type, while right-wing authoritarianism showed significant effects for the Social and Conventional types.

In the final analysis, when all four covariates were included, each produced significant effects. Unsurprisingly, the MSS and right-wing authoritarianism produced the strongest effects, accounting for 6.6% and 4.5% of the variance in the dependent variables, respectively. Religious fundamentalism and the ASI however, each accounted for just under 3% of variance, at 2.8% and 2.7% respectively. The ASI showed significant effects for the Enterprising and Conventional types and the MSS for the Realistic and Social types. For religious fundamentalism, significant

effects were found only for the Social type. Finally, for right-wing authoritarianism, significant effects were found for the Social and Conventional type (strongest effects for the Social type).

Implications for Career Counseling Models and Practice

The present study, in addition to earlier studies addressing similar questions (Bergner, 2013; Callahan, 2015), found that individuals perceive the six RIASEC types in predictable ways. Particularly, we tend to view these types as either feminine or masculine in nature. The Realistic, Investigative, and Enterprising types are often perceived as masculine, while the Artistic, Social, and Conventional types are perceived as more feminine. Individuals tend to seek careers they feel are appropriate for them on the basis of identity aspects such as gender (Gottfredson, 1981) and seek to fit in with a group and gain status within that group (Hogan & Roberts, 2000). Given these motivations, it seems likely that our perceptions of the RIASEC types as either feminine or masculine will influence which careers we choose as women or men. If a woman chooses a job that includes many Realistic tasks, she is risking not being seen as 'feminine enough' and not fitting in with a group she belongs to: women. These concerns could both discourage women from pursuing traditionally masculine careers and impact their success and longevity in them if they do choose them.

Results of this study suggest that shifts in perceptions of the Enterprising and Conventional types may be occurring, likely on a societal level. The Enterprising type was perceived as more masculine than feminine, but the gender of the person in the career did not influence how masculine participants perceived the type to be. This may mean that women who pursue Enterprising-heavy careers may not be perceived as masculine to the degree that women in other traditionally masculine arenas, such as Realistic-heavy careers, may. Additionally, the Conventional type was perceived as more feminine than masculine, but to a much lesser degree

than other feminine types, the Social and Artistic types, were. In other words, the Conventional type is seen as less strongly feminine than the Social and Artistic types. Shifts in our society's views of these two 'outlier' types (Enterprising and Conventional) may influence decision-making regarding entering these careers, as well as the experiences of women and men working in careers associated with each type.

Career counselors often work with clients to create a 'list' (physical or mental) of potential careers. Career counselors may begin this process with clients by encouraging them to consider how their interests, as represented by the RIASEC types, match up with potential careers. For example, a client demonstrating strong Realistic and Investigative interests can learn to identify careers that may provide an outlet for these interests. The client could then, through online research or talking with others who may have relevant information (e.g. professors, advisors), begin to determine a set of careers that could match with their interests.

Clients are then often asked to incorporate other aspects of their identity into the process, such as their work values (e.g. work-life balance, flexibility, helping others) or personality (e.g. introversion, preference for structure). Using similar resources as mentioned above, the client could then determine the degree to which careers considered as a result of an interest match fit with these preferences and other aspects of their identity. For example, someone who has expressed a strong desire to have good work-life balance in their future career may read information online or conduct job shadowing or informational interviews to decide how likely a particular career is to fulfill this work value.

Part of the decision-making process, for clients, naturally involves eliminating careers from consideration and, ultimately, deciding on a particular career or career field. In addition to helping clients explore how certain factors like their interests or personality may influence their

satisfaction in a future career, career counselors may also assist clients in exploring their attitudes toward different careers in particular or the RIASEC types more generally. Clients may also be encouraged to examine to what degree they perceive a certain career to be appropriate for them on the basis of their gender, socioeconomic status, or any number of other identity variables.

The results of this study suggest that attitudes may differ by an individual's gender and perceptions of the femininity and masculinity may differ by a person's gender *and* the particular 'examples' she or he has seen of people working in careers. For example, a woman client in career counseling may be found to view Social-oriented careers more positively than a man would, and it would be important for a counselor to help her explore any impactful reasons for this more positive view. In addition, how does this more positive view of Social careers impact her decision-making? Does she eliminate other types of careers from consideration because of her strongly positive views of Social careers? No two individuals are the same and one's views cannot be predicted with certainty on the basis of their membership in some group. However, as results here suggest differences on the basis of gender, this may be a fruitful area for counselors to explore with clients.

Other research has studied the role that the gender of career role models plays in vocational choice, as well as a person's likelihood of staying and succeeding in gender non-traditional careers. This research relates quite directly to the present study, as it was found here that our perceptions of the femininity and masculinity of the RIASEC types shifts somewhat in intensity on the basis of the gender of the person depicted in a career. If a woman interested in, for example, a STEM (science, technology, engineering, and mathematics) field is exposed to positive women role models who are succeeding in STEM careers, she may be more likely to

choose and succeed in one of these traditionally masculine careers. Specifically, Young and colleagues (2013) found that women who saw women professors as positive role models identified more with science and perceived science as being more feminine than masculine.

Finally, sexism and right-wing authoritarianism, in particular, emerged as significant covariates in analyses addressing both attitudes toward and perceptions of the femininity and masculinity of the RIASEC types. This suggests that career counselors should consider whether, for a particular client, these variables play a role in their career decision-making. It is possible that these topics could be addressed during conversations surrounding role models the client has been exposed to in different careers and their attitudes toward these individuals, as well as discussions about the client's family of origin, the client's religious beliefs (if they report any), and the client's belief about gender roles.

Limitations and Future Directions

Several characteristics of the present study may limit the applicability of the results to the general population. First, the sample used in the study may not be fully representative of the population at large. The gender split in this study was fairly even, with 54.8% of participants identifying as women and 45.2% identifying as men. However, the majority (82.3%) of participants identified as European American and all were college students. Nearly half (45.8%) of the sample identified as freshman and the mean age of the sample was 19.54 years.

Given the variables of interest in this study, it is also notable that a majority (65.6%) of the sample identified their religious affiliation as Christian. In addition, large numbers of participants reported that they have no political (38.5%) or religious (27.3%) affiliation. It is unclear how the results of this study may have differed if the sample used was more

representative of the general population. Application of these results to a more heterogeneous population should be done with caution.

The results of this study provide a variety of potential avenues for future research. First, a researcher could attempt to replicate results found in this study that differed from either Callahan (2015) or Bergner (2013). For example, the sexism and conservatism covariates, such as right-wing authoritarianism, could again be studied to determine effects they may have on factors that could influence career decision-making. It would be interesting to begin to include variables such as right-wing authoritarianism more often in vocational and other research, given its strong effects in this study. Researchers could also explore other variables that they feel may influence how individuals perceive careers and evaluate how ‘appropriate’ they are for someone of their gender. In addition to gender, individuals differ in many other ways, such as race/ethnicity, ability level, socioeconomic status, and sexual orientation or gender identity. Any one of these variables, including many others, could be studied to determine how people eliminate or select careers they feel are appropriate for them. For example, how do people differ in their perceptions of how socioeconomic status makes someone suitable or not suitable for certain careers?

This study did not find significant results for condition related to attitudes toward the RIASEC types or, by extension, individuals working in gender traditional or non-traditional careers. However, participant gender did emerge as a significant predictor of attitudes toward the RIASEC types, as well as perceptions of the femininity and masculinity of the RIASEC types. More research could be done addressing potential reasons for and effects of these gender differences.

The present study included a third gender-neutral condition in addition to two conditions containing occupational descriptions with both female and male names. Earlier in this discussion,

specific ‘ordering’ of these three conditions was discussed in relation to how feminine or masculine individuals in each of these three conditions perceived the RIASEC types to be. Further research could attempt to study why, for example, the gender-neutral condition consistently perceived the Realistic type to be more masculine than the female name condition. Since the gender-neutral condition did not universally produce more extreme perceptions than the opposite name condition (e.g. Realistic description and female name), this may be a potentially interesting line of research.

Summary and Conclusions

The present study attempted to examine several variables related to vocational choice that may serve to perpetuate continued gender differences in the workforce. Specifically, the study turned a spotlight on factors influencing perceptions of the femininity and masculinity of the RIASEC types and attitudes toward the RIASEC types. As in an earlier Callahan (2015) study, it was found that participants view the RIASEC types as consistently feminine or masculine. However, it was again found that shifts in the *degree* to which the types are perceived as feminine or masculine do occur based on the gender of the person depicted in representative careers, lending additional support for other research that has noted the importance of same-gender role models, particularly for women pursuing gender non-traditional careers. For example, the pairing of a female name with a traditionally masculine RIASEC type (e.g. Realistic) resulted in a decrease in the extent to which this type was viewed as masculine, although it was still viewed as masculine overall.

Additionally, participant gender impacted attitudes toward the RIASEC types, while the gender of the person depicted in a career did not. Sexism, religious fundamentalism, and right-wing authoritarianism emerged as significant covariates in these analyses, suggesting that sexism

and conservatism play a strong role in our perceptions of and attitudes toward careers. Future research could examine a number of these variables, or related variables (e.g. race/ethnicity in place of gender), to replicate findings or determine the effects of new factors on the dependent variables at hand in this study. The present study highlights ongoing gender-related concerns in career decision-making that may serve to perpetuate imbalances in the representation of women and men across careers.

REFERENCES

- Alexander, G. M. (2003). An evolutionary perspective of sex-typed toy preferences: Pink, blue, and the brain. *Archives of Sexual Behavior*, 32, 7-14. doi: 10.1023/A:1021833110722
- Allport, G. (1966). The religious context of prejudice. *Journal for the Scientific Study of Religion*, 5, 447-457. doi: [10.2307/1384172](https://doi.org/10.2307/1384172)
- Altemeyer, B. (1988). *Enemies of freedom: Understanding right-wing authoritarianism* Jossey-Bass, San Francisco, CA. Retrieved from <http://search.proquest.com/docview/617502710?accountid=10906>
- Altemeyer, B. (2003). Why do religious fundamentalists tend to be prejudiced? *The International Journal for the Psychology of Religion*, 13, 17-28. doi: 10.1207/S15327582IJPR1301_03
- Altemeyer, B. (2006). *The Authoritarians*. University of Manitoba, Winnipeg, Canada.
- Altemeyer, B. & Hunsberger, B. (1988). *Enemies of freedom: Understanding right-wing authoritarianism*. San Francisco: Jossey-Bass.
- Altemeyer, B. & Hunsberger, B. (1992). Authoritarianism, religious fundamentalism, quest, and prejudice. *The International Journal for the Psychology of Religion*, 2, 113-133. doi: [10.1207/s15327582ijpr0202_5](https://doi.org/10.1207/s15327582ijpr0202_5)
- Altemeyer, B. & Hunsberger, B. (2004). A Revised Religious Fundamentalism Scale: The short and sweet of it. *The International Journal for the Psychology of Religion*, 14, 47-54. doi: [10.1207/s15327582ijpr1401_4](https://doi.org/10.1207/s15327582ijpr1401_4)
- Armstrong, P. I., Allison, W., & Rounds, J. (2008). Development and initial validation of brief public domain RIASEC marker scales. *Journal of Vocational Behavior*, 73, 287-299. doi: 10.1016/j.jvb.2008.06.003

- Armstrong, P. I., Hubert, L., & Rounds, J. (2003). Circular unidimensional scaling: A new look at group differences in interest structure. *Journal of Counseling Psychology, 50*, 297-308. doi: 10.1037/0022-0167.50.3.297
- Bakan, D. (1966). *The duality of human existence: An essay on psychology and religion*. Oxford, England: Rand McNally.
- Bandura, A., Barbaranelli, C., Caprara, G. V., & Pastorelli, C. (2001). Self-efficacy beliefs as shapers of children's aspirations and career trajectories. *Child Development, 72*, 187-206. doi: 10.1111/1467-8624.00273
- Bassoff, E. S., & Glass, G. V. (1982). The relationship between sex roles and mental health: A meta-analysis of twenty-six studies. *The Counseling Psychologist, 10*, 105-112. doi: 10.1177/0011000082104019
- Batson, C. D. (1976). Religion as prosocial: Agent or double agent? *Journal for the Scientific Study of Religion, 15*, 29-45. doi: [10.2307/1384312](https://doi.org/10.2307/1384312)
- Bem, S. L. (1974). The measurement of psychological androgyny. *Journal of Consulting and Clinical Psychology, 42*, 155-162. doi: 10.1037/h0036215
- Bem, S. L. (1977). On the utility of alternative procedures for assessing psychological androgyny. *Journal of Consulting and Clinical Psychology, 45*, 196-205. doi: 10.1037/0022-006X.45.2.196
- Bem, S. L. (1981). Gender schema theory: A cognitive account of sex typing. *Psychological Review, 88*, 354-364. doi: 10.1037/0033-295X.88.4.354
- Bem, S. L. (1983). Gender schema theory and its implications for child development: Raising gender-aschematic children in a gender-schematic society. *Signs, 8*, 598-616. doi: 10.1086/493998

- Bem, S. L., & Lenney, E. (1976). Sex typing and the avoidance of cross-sex behavior. *Journal of Personality and Social Psychology, 33*, 48-54. doi: 10.1037/h0078640
- Bem, S. L., & Lewis, S. A. (1975). Sex role adaptability: One consequence of psychological androgyny. *Journal of Personality and Social Psychology, 31*, 634-643. doi: 10.1037/h0077098
- Bem, S. L., Martyna, W., & Watson, C. (1976). Sex typing and androgyny: Further explorations of the expressive domain. *Journal of Personality and Social Psychology, 34*, 1016-1023. doi: 10.1037/0022-3514.34.5.1016
- Bendroth, M. L. (1999). Fundamentalism and the family: Gender, culture, and the American profamily movement. *Journal of Women's History, 10*, 35-54. doi: 10.1353/jowh.2010.0537
- Berger, A. & Krahe, B. (2013). Negative attributes are gendered too: Conceptualizing and measuring positive and negative facets of sex-role identity. *European Journal of Social Psychology, 43*, 516-531. doi: 10.1002/ejsp.1970
- Bergner, C. M. (2013). *We Can Do It, But I Wouldn't Like It: Gender, Interests, and Occupational Perceptions*. (Unpublished doctoral dissertation). Iowa State University, Ames, IA.
- Biernat, M., & Wortman, C. B. (1991). Sharing of home responsibilities between professionally employed women and their husbands. *Journal of Personality and Social Psychology, 60*, 844-860. doi: 10.1037/0022-3514.60.6.844
- Block, J., von der Lippe, A., & Block, J. H. (1973). Sex-role and socialization patterns: Some personality concomitants and environmental antecedents. *Journal of Consulting and Clinical Psychology, 41*, 321-341. doi: 10.1037/h0035332

- Brandt, M. J. & Reyna, C. (2010). The role of prejudice and the need for closure in religious fundamentalism. *Personality and Social Psychology Bulletin*, 36, 715-725. doi: [10.1177/0146167210366306](https://doi.org/10.1177/0146167210366306)
- Burt, M. R. (1980). Cultural myths and supports for rape. *Journal of Personality and Social Psychology*, 38, 217-230. doi: 10.1037/0022-3514.38.2.217
- Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychological Review*, 106, 676-713. doi: 10.1037/0033-295X.106.4.676
- Coxon, A. P. M. (1999). *Sorting Data: Collection and Analysis*. Quantitative applications in the social sciences. California: Sage Publications, Inc.
- Callahan, M. N. (2015). *The Right Attitude: Gender, Conservatism, and Career Choice*. (Unpublished master's thesis). Iowa State University, Ames, IA.
- Ceci, S. J., Williams, W. M., & Barnett, S. M. (2009). Women's underrepresentation in science: Sociocultural and biological considerations. *Psychological Bulletin*, 135, 218-261. doi: 10.1037/a0014412
- Constantinople, A. (1973). Masculinity-femininity: An exception to a famous dictum? *Psychological Bulletin*, 80, 389-407. doi: 10.1037/h0035334
- Cook, E. P. (1985). *Psychological androgyny*. Elmsford, NY: Pergamon.
- Crawford, M., & Kaufman, M. R. (2006). Sex differences versus social processes in the construction of gender. In K. Dindia, & D. J. Canary (Eds.), *Sex differences and similarities in communication: Second edition* (pp. 179-194). Mahwah, New Jersey: Lawrence Erlbaum Associates.

- Darcy, M. U. A., & Tracey, T. J. G. (2007). Circumplex structure of Holland's RIASEC interests across gender and time. *Journal of Counseling Psychology, 54*, 17-31. doi: 10.1037/0022-0167.54.1.17
- Duncan, L. E., Peterson, B. E., & Ax, E. E. (2003). Authoritarianism as an agent of status quo maintenance: Implications for women's careers and family lives. *Sex Roles, 49*, 619-630. doi: 10.1023/B:SERS.0000003132.74897.f3
- Egan, S. K., & Perry, D. G. (2001). Gender identity: A multidimensional analysis with implications for psychological adjustment. *Developmental Psychology, 17*, 451-463. doi: 10.1037/0012-1649.37.4.451
- Eisend, M. (2010). A meta-analysis of gender roles in advertising. *Journal of the Academy of Marketing Science, 38*, 418-440. doi: 10.1007/s11747-009-0181-x
- Emerson, M. O. & Hartman, D. (2006). The rise of religious fundamentalism. *Annual Review of Sociology, 32*, 127-144. doi: [10.1146/annurev.soc.32.061604.123141](https://doi.org/10.1146/annurev.soc.32.061604.123141)
- Fagot, B. I. (1991). *Peer relations in boys and girls from two to seven*. Paper presented at the biennial meeting of the Society for Research in Child Development, Seattle, WA.
- Fernandez, M. L., Castro, Y. R., Otero, M. C., Foltz, M. L., & Lorenzo, M. G. (2006). Sexism, vocational goals, and motivation as predictors of men's and women's career choice. *Sex Roles, 55*, 267-272. doi: 10.1007/s11199-006-9079-y
- Field, A. (2009). *Discovering statistics using SPSS: Third edition*. London, England: SAGE Publications Ltd.
- Fling, S., & Manosevitz, M. (1972). Sex typing in nursery school children's play interests. *Developmental Psychology, 7*, 146-152. doi: 10.1037/h0033008

- Glick, P., & Fiske, S. T. (1996). The Ambivalent Sexism Inventory: Differentiating hostile and benevolent sexism. *Journal of Personality and Social Psychology*, 70, 491-512. doi: 10.1037/0022-3514.70.3.491
- Goldberg, L. R. (1990). An alternative “description of personality”: The Big-Five factor structure. *Journal of Personality and Social Psychology*, 59, 1216-1229. doi: 10.1037/0022-3514.59.6.1216
- Gottfredson, L. S. (1981). Circumscription and compromise: A developmental theory of occupational aspirations. *Journal of Counseling Psychology*, 28, 545-579. doi: 10.1037/0022-0167.28.6.545
- Gough, H. G. (1956). *California Psychological Inventory*. Palo Alto, CA: Consulting Psychologists Press.
- Gough, H. G. (1964). *California Psychological Inventory: Manual*. Palo Alto, CA: Consulting Psychologists Press.
- Hall, D. L., Matz, D. C., & Wood, W. (2010). Why don't we practice what we preach? A meta-analytic review of religious racism. *Personality and Social Psychology*, 65, 1105-1118. doi: 10.1177/1088868309352179
- Halpern, D. F., Benbow, C. P., Geary, D. C., Gur, R. C., Hyde, J. S., & Gernsbache, M. A. (2007). The science of sex differences in science and mathematics. *Psychological Science in the Public Interest*, 8, 1-51. doi: 10.1111/j.1529-1006.2007.00032.x
- Hathcoat, J. D. & Barnes, L. L. B. (2010). Explaining the relationship among fundamentalism and authoritarianism: An epistemic connection. *The International Journal for the Psychology of Religion*, 20, 73-84. doi: 10.1080/10508611003607884

- Heilbrun, A. B. (1968). Sex role, instrumental-expressive behavior, and psychopathology in females. *Journal of Abnormal Psychology, 73*, 131-136. doi: 10.1037/h0025584
- Helgeson, V. S., & Fritz, H. L. (1999). Unmitigated agency and unmitigated communion: Distinctions from agency and communion. *Journal of Research in Personality, 33*, 131-158. doi: 10.1006/jrpe.1999.2241
- Herek, G. M. (1987). Religious orientation and prejudice: A comparison of racial and sexual attitudes. *Personality and Social Psychology Bulletin, 13*, 34-44. doi: [10.1177/0146167287131003](https://doi.org/10.1177/0146167287131003)
- Hill, E. D., Terrell, H. K., Cohen, A. B., & Nagoshi, C. T. (2010). The role of social cognition in the religious fundamentalism-prejudice relationship. *Journal for the Scientific Study of Religion, 49*, 724-739. doi: 10.1111/j.1468-5906.2010.01542.x
- Hodson, G. & Esses, V. M. (2005). Lay perceptions of ethnic prejudice: Causes, solutions, and individual differences. *European Journal of Social Psychology, 35*, 329-344. doi: [10.1002/ejsp.251](https://doi.org/10.1002/ejsp.251)
- Hofstede, G. H. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: Sage Publications.
- Hogan, R., & Roberts, B. W. (2000). A socioanalytic perspective on person-environment interaction. In W. B. Walsh, K. H. Craik, & R. H. Price (Eds.), *Person-environment psychology: New directions and perspectives (2nd ed.)* (pp. 1-23). Mahwah, NJ: Lawrence Erlbaum Associates Publishers.
- Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology, 6*, 35-45. doi: 10.1037/h0040767

- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments (3rd ed.)*. Odessa, FL: Psychological Assessment Resources.
- Howes, C. (1988). Same- and cross-sex friends: Implications for interaction and social skills. *Early Childhood Research Quarterly, 3*, 21-37. doi: 10.1016/0885-2006(88)90027-0
- Howes, C., & Phillipsen, L. (1992). Gender and friendship: Relationships within peer groups of young children. *Social Development, 1*, 230-242. doi: 10.1111/j.1467-9507.1992.tb00126.x
- Hunsberger, B. (1996). Religious fundamentalism, right-wing authoritarianism, and hostility toward homosexuals in non-Christian religious groups. *The International Journal for the Psychology of Religion, 6*, 39-49. doi: [10.1207/s15327582ijpr0601_5](https://doi.org/10.1207/s15327582ijpr0601_5)
- Hunsberger, B., Alisat, S., Pancer, M. S., & Pratt, M. (1996). Religious fundamentalism and religious doubts: Content, connections, and complexity of thinking. *The International Journal for the Psychology of Religion, 6*, 201-220. doi: 10.1207/s15327582ijpr0603_7
- Hunsberger, B., Owusu, V., & Duck, R. (1999). Religion and prejudice in Ghana and Canada: Religious fundamentalism, right-wing authoritarianism, and attitudes toward homosexuals and women. *The International Journal for the Psychology of Religion, 9*, 181-194. doi: 10.1207/s15327582ijpr0903_2
- Hyde, J. S. (1990). Meta-analysis and the psychology of gender differences. *Signs: Journal of Women in Culture and Psychology, 16*, 55-73. doi: 10.1086/494645
- Hyde, J. S. (2005). The gender similarities hypothesis. *American Psychologist, 60*, 581-592. doi: 10.1037/0003-066X.60.6.58

- John, O. P., & Srivastava, S. (1999). The Big Five Trait taxonomy: History, measurement, and theoretical perspectives. In L. A. Pervin, & O. P. John (Eds.), *Handbook of personality: Theory and research (2nd ed.)* (pp. 102-138). New York, NY: Guilford Press.
- Johnson, M. K., Rowatt, W. C., Barnard-Brak, L. M., Patock-Peckham, J. A., LaBouff, J. P., & Carlisle, R. D. (2011). A mediational analysis of the role of right-wing authoritarianism and religious fundamentalism in the religiosity-prejudice link. *Personality and Individual Differences, 50*, 851-856. doi: [10.1016/j.paid.2011.01.010](https://doi.org/10.1016/j.paid.2011.01.010)
- Jonathan, E. (2008). The influence of religious fundamentalism, right-wing authoritarianism, and Christian orthodoxy on explicit and implicit measures of attitudes toward homosexuals. *The International Journal for the Psychology of Religion, 18*, 316-329. doi: [10.1080/10508610802229262](https://doi.org/10.1080/10508610802229262)
- Kagan, J. (1964). A cognitive-developmental analysis of children's sex-role concepts and attitudes. In M. L. Hoffman, & L. W. Hoffman (Eds.), *Review of child development research* (pp. 137-167). New York: Russell Sage Foundation.
- La Freniere, P., Strayer, F. F., & Gauthier, R. (1984). The emergence of same-sex affiliative preferences among preschool peers: A developmental/ethological perspective. *Child Development, 55*, 1958-1965. doi: 10.2307/1129942
- Lansky, L. (1967). The family structure also affects the model: Sex-role attitudes in parents of preschool children. *Merrill-Palmer Quarterly: Journal of Developmental Psychology, 13*, 139-150.
- Larson, L. M., Rottinghaus, P. J., & Borgen, F. H. (2002). Meta-analyses of Big Six interests and Big Five personality factors. *Journal of Vocational Behavior, 61*, 217-239. doi: 10.1006/jvbe.2001.1854

- Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior*, 45, 79-122.
- Maccoby, E. E. (1998). *The two sexes: Growing up apart, coming together*. Cambridge, MA: Belknap Press/Harvard University Press.
- Maccoby, E. E., & Jacklin, C. N. (1974). *The psychology of sex differences*. Stanford, CA: Stanford University Press.
- Mahalik, J. R., Perry, J. C., Coonerty-Femiano, A., Catraio, C., & Land, L. N. (2006). Examining conformity to masculinity norms as a function of RIASEC vocational interests. *Journal of Career Assessment*, 14, 203-213. doi: 10.1177/1069072705283761
- Martin, C. L., & Halverson, C. F. (1981). A schematic processing model of sex typing and stereotyping in children. *Child Development*, 52, 1119-1134. doi: 10.2307/1129498
- Martin, C. L., Ruble, D. N., & Szkrybalo, J. (2002). Cognitive theories of early gender development. *Psychological Bulletin*, 128, 903-933. doi: 10.1037/0033-2909.128.6.903
- Mavor, K. I., Louis, W. R., & Laythe, B. (2011). Religion, prejudice, and authoritarianism: Is RWA a boon or bane to the psychology of religion? *Journal for the Scientific Study of Religion*, 50, 22-43. doi: [10.1111/j.1468-5906.2010.01550.x](https://doi.org/10.1111/j.1468-5906.2010.01550.x)
- McCrae, R. R., & Costa, P. T. (1997). Personality trait structure as a human universal. *American Psychologist*, 52, 509-516. doi: 10.1037/0003-066X.52.5.509
- McKeown, B. & Thomas, D. (1988). *Q Methodology*. Quantitative approaches in the social sciences. California: Sage Publications, Inc.

- Money, J., Hampson, J. G., & Hampson, J. L. (1955a). Hermaphroditism: recommendations concerning assignment of sex, change of sex, and psychologic management. *Johns Hopkins Hospital Bulletin*, 97, 284-300.
- Money, J., Hampson, J. G., & Hampson, J. L. (1955b). An examination of some basic sexual concepts: The evidence of human hermaphroditism. *Johns Hopkins Hospital Bulletin*, 97, 301-319.
- Money, J., Hampson, J. G., & Hampson, J. L. (1957). Imprinting and the establishment of gender role. *Archives of Neurology & Psychiatry (Chicago)*, 77, 333-336.
- Mussen, P. H. (1969). Early sex-role development. In Goslin, D. A. (Ed.), *Handbook of socialization theory and research* (pp. 707-731). Chicago: Rand McNally and Co.
- Nagoshi, J. L., Adams, K. A., Terrell, H. K., Hill, E. D., Brzuzy, S., & Nagoshi, C. T. (2008). Gender differences in correlates of homophobia and transphobia. *Sex Roles*, 59, 521-531. doi: [10.1007/s11199-008-9458-7](https://doi.org/10.1007/s11199-008-9458-7)
- Neuberg, S. L. & Newsom, J. T. (1993). Personal need for structure: Individual differences in the desire for simpler structure. *Journal of Personality and Social Psychology*, 65, 113-131. doi: [10.1037/0022-3514.65.1.113](https://doi.org/10.1037/0022-3514.65.1.113)
- Nguyen, H. D., & Ryan, A. M. (2008). Does stereotype threat affect test performance of minorities and women? A meta-analysis of experimental evidence. *Journal of Applied Psychology*, 93, 1314-1334. doi: [10.1037/a0012702](https://doi.org/10.1037/a0012702)
- O*Net OnLine. (2012). Retrieved from <http://www.onetonline.org/>
- Oswald, D. L. (2008). Gender stereotypes and women's reports of liking and ability in traditionally masculine and feminine occupations. *Psychology of Women Quarterly*, 32, 196-203. doi: [10.1111/j.1471-6402.2008.00424.x](https://doi.org/10.1111/j.1471-6402.2008.00424.x)

- Parsons, T., & Bales, R. F. (1955). *Family, socialization, and interaction process*. Glencoe, IL: Free Press.
- Pek, J. C. X., & Leong, F. T. L. (2003). Sex-related self-concepts, cognitive styles, and cultural values of traditionality-modernity as predictors of general and domain-specific sexism. *Asian Journal of Social Psychology*, 6, 31-49. doi: [10.1111/1467-839X.t01-1-00008](https://doi.org/10.1111/1467-839X.t01-1-00008)
- Petersen, J. L., & Hyde, J. S. (2010). A meta-analytic review of research on gender differences in sexuality, 1993-2007. *Psychological Bulletin*, 136, 21-38. doi: 10.1037/a0017504
- Peterson, B. E. & Lane, M. D. (2001). Implications of authoritarianism for young adulthood: Longitudinal analysis of college experiences and future goals. *Personality and Social Psychology Bulletin*, 27, 678-690. doi: 10.1177/0146167201276004
- Peterson, B. E. & Zurbriggen, E. L. (2010). Gender, sexuality, and the authoritarian personality. *Journal of Personality*, 78, 1801-1826. doi: 10.1111/j.1467-6494.2010.00670.x
- Prediger, D. J. (1982). Dimensions underlying Holland's hexagon: Missing link between interests and occupations? *Journal of Vocational Behavior*, 21, 259-287. doi: 10.1016/0001-8791(82)90036-7
- Prediger, D. J., & Swaney, K. B. (2004). Work task dimensions underlying the world of work: Research results for diverse occupational databases. *Journal of Career Assessment*, 12, 440-459. doi: 10.1177/1069072704267737
- Riesebrodt, M. (1993 [1990]). *Pious Passion: The Emergence of Modern Fundamentalism in the United States and Iran*. Transl. D Reneau (From German). Berkeley: University of California Press.

- Rowatt, W. C. & Franklin, L. M. (2004). Christian orthodoxy, religious fundamentalism, and right-wing authoritarianism as predictors of implicit racial prejudice. *International Journal for the Psychology of Religion*, 14, 125-138. doi: [10.1207/s15327582ijpr1402_4](https://doi.org/10.1207/s15327582ijpr1402_4)
- Rowe, M. P. (1990, August). *Barriers to equality: The power of subtle discrimination to maintain unequal opportunity*. Paper presented at the 98th Annual Convention of the American Psychological Association, Boston, MA.
- Rubinstein, G. (1997). Authoritarianism, political ideology, and religiosity among students of different faculties. *The Journal of Social Psychology*, 137, 559-567. doi: 10.1080/00224549709595478
- Rubinstein, G. (2003). Authoritarianism and its relation to creativity: A comparative study among students of design, behavioural sciences, and law. *Personality and Individual Differences*, 34, 695-705. doi: [10.1016/S0191-8869\(02\)00055-7](https://doi.org/10.1016/S0191-8869(02)00055-7)
- Rubinstein, G. (2006). Authoritarianism among border police officers, career soldiers, and airport security guards at the Israeli border. *The Journal of Social Psychology*, 146, 751-761. doi: 10.3200/SOCP.146.6.751-761
- Schraw, G., Bendixen, L. D., & Dunkle, M. E. (2002). Development and validation of the epistemic belief inventory (EBI). (pp. 261-275) Lawrence Erlbaum Associates Publishers, Mahwah, NJ. Retrieved from <http://search.proquest.com/docview/619701443?accountid=10906>
- Schwartz, J. P. & Lindley, L. D. (2005). Religious fundamentalism and attachment: Predictors of homophobia. *International Journal for the Psychology of Religion*, 15, 145-157. doi: [10.1207/s15327582ijpr1502_3](https://doi.org/10.1207/s15327582ijpr1502_3)

- Sears, D. O. (1988). Symbolic racism. In P. A. Katz, & D. A. Taylor (Eds.), *Eliminating racism: Profiles in controversy*, (pp. 53-84). New York, NY: Plenum Press.
- Sheldon, J. P. & Parent, S. L. (2002). Clergy's attitudes and attributions of blame toward female rape victims. *Violence Against Women*, 8, 233-256. doi: [10.1177/10778010222183026](https://doi.org/10.1177/10778010222183026)
- Slaby, R. G., & Frey, K. S. (1975). Development of gender constancy and selective attention to same-sex models. *Child Development*, 46, 849-856. doi: 10.2307/1128389
- Spelke, E. S. (2005). Sex differences in intrinsic aptitude for mathematics and science?: A critical review. *American Psychologist*, 60, 950-958. doi: 10.1037/0003-066X.60.9.950
- Spence, J. T., & Helmreich, R. L. (1972). The Attitudes Toward Women Scale: An objective instrument to measure attitudes toward the rights and roles of women in contemporary society. *Journal Supplement Abstract Service Catalog of Selected Documents in Psychology*, 2, 66-67.
- Spence, J. T., & Helmreich, R. L. (1978). *Masculinity and femininity: Their psychological dimensions, correlates, and antecedents*. Austin, TX: University of Texas Press.
- Spence, J. T., Helmreich, R. L., & Holahan, C. K. (1979). Negative and positive components of psychological masculinity and femininity and their relationships to self-reports of neurotic and acting out behaviors. *Journal of Personality and Social Psychology*, 37, 1673-1682. doi: 10.1037/0022-3514.37.10.1673
- Spence, J. T., Helmreich, R. L., & Stapp, J. (1975). Ratings of self and peers on sex role attributes and their relation to self-esteem and conceptions of masculinity and femininity. *Journal of Personality and Social Psychology*, 32, 29-39. doi: 10.1037/h0076857

- Steele, J. R., & Ambady, N. (2006). "Math is Hard!" The effect of gender priming on women's attitudes. *Journal of Experimental Social Psychology*, *42*, 428-436. doi: 10.1016/j.jesp.2005.06.003
- Strong, E. K., Jr., Donnay, D. A. C., Morris, M. L., Schaubhut, N. A., & Thompson, R. C. (2004). Strong Interest Inventory ®, Revised Edition. Mountain View, CA: Consulting Psychologists Press, Inc.
- Su, R., Rounds, J., & Armstrong, P. I. (2009). Men and things, women and people: A meta-analysis of sex differences in interests. *Psychological Bulletin*, *135*, 859-884. doi: 10.1037/a0017364
- Sullivan, B. A., & Hansen, J. C. (2004). Mapping associations between interests and personality: Toward a conceptual understanding of individual differences in vocational behavior. *Journal of Counseling Psychology*, *51*, 287-298. doi: 10.1037/0022-0167.51.3.287
- Swim, J. K., Aikin, K. J., Hall, W. S., & Hunter, B. A. (1995). Sexism and racism: Old-fashioned and modern prejudices. *Journal of Personality and Social Psychology*, *68*, 199-214. doi: 10.1037/0022-3514.68.2.199
- Terman, L. M., & Miles, C. C. (1936). *Sex and personality: Studies in masculinity and femininity*. New York, NY: McGraw-Hill.
- Tokar, D. M., & Jome, L. M. (1998). Masculinity, vocational interests, and career choice traditionality: Evidence for a fully mediated model. *Journal of Counseling Psychology*, *45*, 424-435. doi: 10.1037/0022-0167.45.4.424
- Twenge, J. M. (1997). Attitudes toward women, 1970-1995: A meta-analysis. *Psychology of Women Quarterly*, *21*, 35-51. doi: 10.1111/j.1471-6402.1997.tb00099.x

- Twenge, J. M. (2011). The duality of individualism: Attitudes toward women, generation me, and the method of cross-temporal meta-analysis. *Psychology of Women Quarterly*, 35, 193-196. doi: 10.1177/0361684310395918
- United States Bureau of Labor Statistics. (2011). *Women in the labor force: A databook*. Washington DC: United States Department of Labor. Retrieved from <http://www.bls.gov/cps/wlf-databook-2011.pdf>
- Weller, L. & Nadler, A. (1975). Authoritarianism and job preference. *Journal of Vocational Behavior*, 6, 9-14. doi: [10.1016/0001-8791\(75\)90016-0](https://doi.org/10.1016/0001-8791(75)90016-0)
- Whitley, B. E. (1983). Sex role orientation and self-esteem: A critical meta-analytic review. *Journal of Personality and Social Psychology*, 44, 765-778. doi: 10.1037/0022-3514.44.4.765
- Whitley, B. E. (1985). Sex-role orientation and psychological well-being: Two meta-analyses. *Sex Roles*, 12, 207-225. doi: 10.1007/BF00288048
- Whitley, B. E. (2009). Religiosity and attitudes toward lesbians and gay men: A meta-analysis. *International Journal for the Psychology of Religion*, 19, 21-38. doi: [10.1080/10508610802471104](https://doi.org/10.1080/10508610802471104)
- Wilson, F. R. & Cook, E. P. (1984). Concurrent validity of four androgyny instruments. *Sex Roles*, 11, 813-837.
- Yoder, J. D., Rice, R. W., Adams, J., Priest, R. F., & Prince, H. T. (1982). Reliability of the Attitudes Toward Women Scale (AWS) and the Personal Attributes Questionnaire. *Sex Roles*, 8, 651-657.

FIGURE

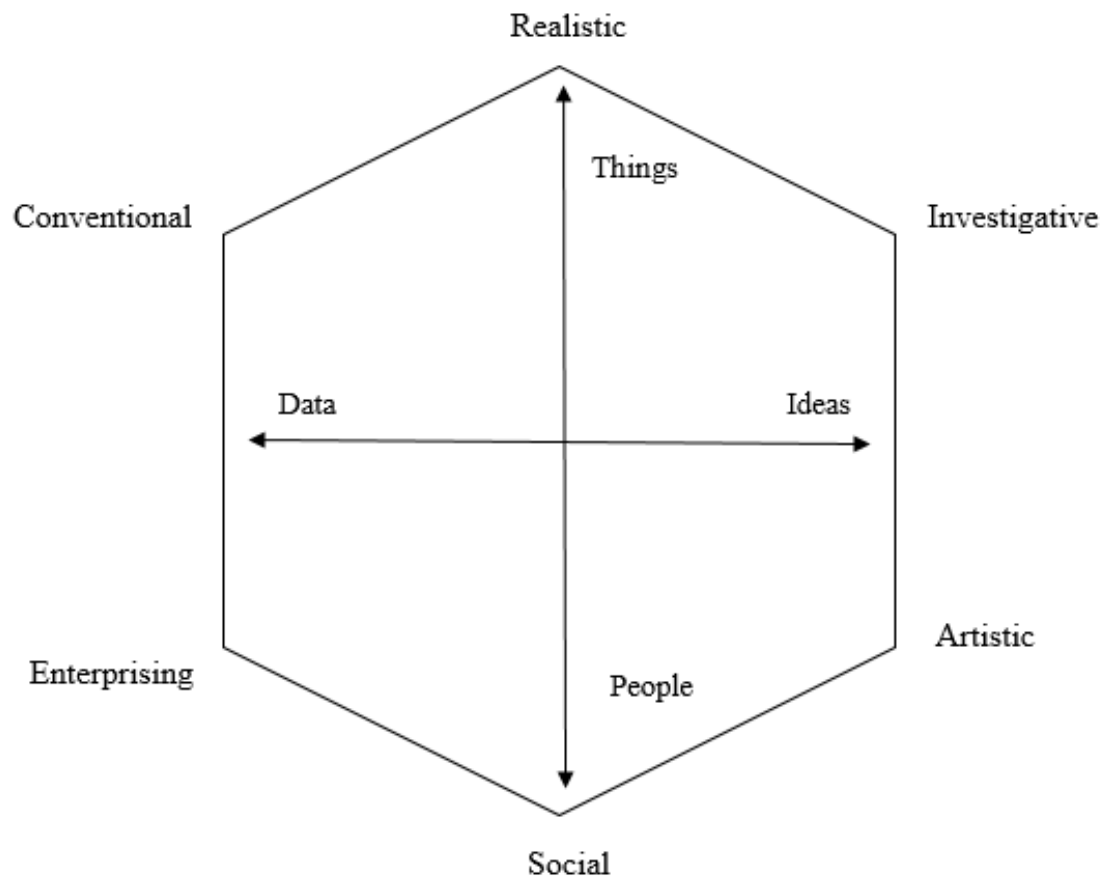


Figure 1: Holland's (1959, 1997) RIASEC Model and Prediger's (1982) Bipolar Dimensions

TABLES

Table 1. Experimental Conditions in the Present Study

	Job Descriptions		
	Condition 1 Name	Condition 2 Name	Condition 3 Name
RIASEC Type			
Realistic	Male	Female	Unspecified
Investigative	Female	Male	Unspecified
Artistic	Male	Female	Unspecified
Social	Female	Male	Unspecified
Enterprising	Male	Female	Unspecified
Conventional	Female	Male	Unspecified

Table 2. Means by Condition and Gender of Participants.

	Condition 1 ^a		Condition 2 ^b		Condition 3 ^c	
	M ^d	F	M	F	M	F
M/F of RIASEC						
Realistic	0.42	0.42	0.32	0.30	0.39	0.35
Investigative	0.12	0.28	0.27	0.32	0.11	0.20
Artistic	-0.30	-0.23	-0.41	-0.39	-0.33	-0.32
Social	-0.59	-0.64	-0.56	-0.54	-0.52	-0.55
Enterprising	0.52	0.59	0.47	0.52	0.49	0.54
Conventional	-0.17	-0.31	-0.10	-0.05	-0.01	-0.03
Attitudes toward RIASEC						
Realistic	4.69	4.63	4.81	4.72	4.87	4.53
Investigative	4.45	4.71	4.55	4.67	4.49	4.48
Artistic	3.99	4.33	4.09	4.36	4.13	4.19
Social	5.05	5.42	5.25	5.51	5.22	5.35
Enterprising	4.59	4.42	4.73	4.61	4.43	4.46
Conventional	3.98	3.94	3.88	3.95	3.98	3.95
Conservatism						
RWAS ^e	89.68	82.75	86.58	82.78	85.66	81.87
R-RFS	49.74	54.24	51.00	54.72	48.13	53.77
Sexism						
ASI	3.49	3.10	3.49	3.12	3.40	3.17
MSS	2.66	2.10	2.56	2.19	2.72	2.17

^a Condition 1= Realistic job- Male name, Investigative job- Female name, Artistic job- Male name, Social job- Female name, Enterprising job- Male name, Conventional job- Female name

^b Condition 2= Realistic job- Female name; Investigative job- Male name, Artistic job- Female name, Social job- Male name, Enterprising job- Female name, Conventional job- Male name

^c Condition 3= Realistic job- Gender neutral, Investigative job- Gender neutral, Artistic job- Gender neutral, Social job- Gender neutral, Enterprising job- Gender neutral, Conventional job- Gender neutral

^d 'M' and 'F' beneath Condition 1, Condition 2, and Condition 3 refer to the sex of the participants, Male or Female.

^e RWAS= Right-Wing Authoritarianism Scale; R-RFS= Revised Religious Fundamentalism Scale; ASI= Ambivalent Sexism Inventory; MSS= Modern Sexism Scale

Table 3. Standard Deviations by Condition and Gender of Participants.

	Condition 1 ^a		Condition 2 ^b		Condition 3 ^c	
	M ^d	F	M	F	M	F
M/F of RIASEC						
Realistic	0.30	0.33	0.32	0.36	0.34	0.31
Investigative	0.31	0.36	0.32	0.32	0.36	0.39
Artistic	0.26	0.26	0.24	0.24	0.28	0.25
Social	0.26	0.24	0.27	0.27	0.28	0.26
Enterprising	0.35	0.29	0.37	0.33	0.42	0.33
Conventional	0.45	0.39	0.42	0.40	0.50	0.42
Attitudes toward RIASEC						
Realistic	0.68	0.76	0.79	0.77	0.92	0.76
Investigative	0.75	0.81	0.70	0.76	0.71	0.77
Artistic	0.65	0.80	0.67	0.70	0.64	0.71
Social	0.72	0.77	0.83	0.64	0.80	0.79
Enterprising	0.64	0.81	0.68	0.75	0.76	0.64
Conventional	0.87	0.86	0.74	0.87	0.91	0.86
Conservatism						
RWAS ^e	28.14	30.07	28.98	26.62	28.21	28.79
R-RFS	22.73	23.53	21.26	20.67	24.08	21.71
Sexism						
ASI	0.59	0.81	0.71	0.75	0.71	0.68
MSS	0.53	0.53	0.57	0.56	0.54	0.55

^a Condition 1= Realistic job- Male name, Investigative job- Female name, Artistic job- Male name, Social job- Female name, Enterprising job- Male name, Conventional job- Female name

^b Condition 2= Realistic job- Female name; Investigative job- Male name, Artistic job- Female name, Social job- Male name, Enterprising job- Female name, Conventional job- Male name

^c Condition 3= Realistic job- Gender neutral, Investigative job- Gender neutral, Artistic job- Gender neutral, Social job- Gender neutral, Enterprising job- Gender neutral, Conventional job- Gender neutral

^d 'M' and 'F' beneath Condition 1, Condition 2, and Condition 3 refer to the sex of the participants, Male or Female.

^e RWAS= Right-Wing Authoritarianism Scale; R-RFS= Revised Religious Fundamentalism Scale; ASI= Ambivalent Sexism Inventory; MSS= Modern Sexism Scale

Table 4. Correlation Matrix.

	1	2	3	4	5	6	7	8
M/F ^a of RIASEC								
1. Realistic	1.00							
2. Investigative	.07	1.00						
3. Artistic	-.29**	-.27**	1.00					
4. Social	-.38**	-.37**	.16**	1.00				
5. Enterprising	.27**	.18**	-.34**	-.63**	1.00			
6. Conventional	-.17**	-.19**	-.16**	.20**	-.31**	1.00		
RIASEC Attitudes								
7. Realistic	.20**	-.00	-.04	-.18**	.17**	-.14**	1.00	
8. Investigative	.02	.40**	-.09*	-.16**	.15**	-.14**	.17**	1.00
9. Artistic	-.16**	-.17**	.28**	.15**	-.18**	.03	.08	.08
10. Social	.23**	.22**	-.22**	-.36**	.43**	-.15**	.29**	.29**
11. Enterprising	.05	.05	-.06	-.07	-.02	.05	.17**	.16**
12. Conventional	-.18**	-.16**	.02	.24**	-.25**	.34**	.03	.13**
Conservatism								
13. R-RFS ^b	-.07**	-.20**	.03	.20**	-.18**	.16**	-.04	-.11*
14. RWAS	-.11**	-.28**	.12**	.32**	-.34**	.19**	-.06	-.15**
Sexism								
15. ASI	-.03	-.14**	-.03	.14**	-.16**	.21**	.00	-.04
16. MSS	-.16**	-.26**	.08	.29**	-.30**	.16**	-.05	-.12**

** $p \leq .001$ * $p \leq .05$ ^a M/F = Masculinity/Femininity^b RWAS= Right-Wing Authoritarianism Scale; R-RFS= Revised Religious Fundamentalism Scale; ASI= Ambivalent Sexism Inventory; MSS= Modern Sexism Scale

Table 4. (Continued).

	9	10	11	12	13	14	15	16
M/F ^a of RIASEC								
1. Realistic								
2. Investigative								
3. Artistic								
4. Social								
5. Enterprising								
6. Conventional								
RIASEC Attitudes								
7. Realistic								
8. Investigative								
9. Artistic	1.00							
10. Social	.12**	1.00						
11. Enterprising	.10**	.20**	1.00					
12. Conventional	.23**	.01	.05	1.00				
Conservatism								
13. R-RFS ^b	.15**	-.05	.08	.17**	1.00			
14. RWAS	.13**	-.24**	.08	.23**	.76**	1.00		
Sexism								
15. ASI	.06	-.15**	.17**	.20**	.42**	.57**	1.00	
16. MSS	-.02	-.35**	.08	.17**	.33**	.56**	.57**	1.00

** $p \leq .001$

* $p \leq .05$

^a M/F = Masculinity/Femininity

^b RWAS= Right-Wing Authoritarianism Scale; R-RFS= Revised Religious Fundamentalism Scale; ASI= Ambivalent Sexism Inventory; MSS= Modern Sexism Scale

Table 5. MANCOVA Results for Masculinity and Femininity of the RIASEC Types.

MANCOVA Model and Covariates	Multivariate <i>F</i>	η^2
1. No covariates		
Gender	3.95**	.046
Condition	6.54**	.074
Gender x Condition	.77	.009
2. Sexism		
Gender	2.75*	.033
Condition	6.66**	.076
Gender x Condition	.75	.009
ASI ^a	2.74*	.033
MSS	9.85**	.108
3. Conservatism		
Gender	3.81**	.045
Condition	6.90**	.078
Gender x Condition	.75	.009
R-RFS	1.69	.020
RWAS	10.44**	.114
4. Sexism and conservatism		
Gender	3.01*	.036
Condition	6.82**	.078
Gender x Condition	.78	.010
ASI	3.09*	.037
MSS	4.45**	.052
R-RFS	1.49	.018
RWAS	6.34**	.073

** $p \leq .001$

* $p \leq .05$

^a RWAS= Right-Wing Authoritarianism Scale; R-RFS= Revised Religious Fundamentalism Scale; ASI= Ambivalent Sexism Inventory; MSS= Modern Sexism Scale

Table 6. MANCOVA Results for Attitudes toward the RIASEC Types.

MANCOVA Model and Covariates	Multivariate <i>F</i>	η^2
1. No covariates		
Gender	7.50**	.084
Condition	1.14	.014
Gender x Condition	1.01	.012
2. Sexism		
Gender	4.92**	.057
Condition	1.13	.014
Gender x Condition	1.07	.013
ASI ^a	3.30*	.039
MSS	9.47**	.104
3. Conservatism		
Gender	5.69**	.065
Condition	1.09	.013
Gender x Condition	.98	.012
R-RFS	2.69*	.032
RWAS	9.84**	.108
4. Sexism and conservatism		
Gender	3.87**	.046
Condition	1.11	.013
Gender x Condition	1.08	.013
ASI	2.22*	.027
MSS	5.77**	.066
R-RFS	2.32*	.028
RWAS	3.85**	.045

** $p \leq .001$

* $p \leq .05$

^a RWAS= Right-Wing Authoritarianism Scale; R-RFS= Revised Religious Fundamentalism Scale; ASI= Ambivalent Sexism Inventory; MSS= Modern Sexism Scale

APPENDIX A: DEMOGRAPHIC QUESTIONNAIRE

Perceptions of Work Environments

Demographic Information

Name (print): _____

*University ID number:
(middle 9 digits)* _____

NetID: _____

Age: _____

Major Program of Study: _____

How satisfied are you with your current major?

Very Satisfied	Satisfied	Somewhat Satisfied	Not Satisfied
----------------	-----------	--------------------	---------------

Current GPA: _____

Gender: Female Male

Year in School: Freshman Sophomore Junior Senior

Ethnic/cultural identity: African American Asian American Hispanic American
Native American White/European American
Other: _____

Political affiliation: Democrat Green Libertarian Republican
No political affiliation Other: _____

Religious affiliation: Buddhism Christianity Judaism Islam
Hinduism No religious affiliation Other: _____

APPENDIX B: OCCUPATIONAL DESCRIPTIONS

Condition #1

Realistic Occupational Description

Michael works in a job where he performs hands-on activities that involve precise movements and measurements. He monitors specific areas and people to make sure that there are no problems with the operation of equipment, but he does not often work directly with others. He is often on his feet throughout the day. Michael's job involves mechanical and technical abilities, and his work often requires the use of tools and operation of machines. He is involved in both indoor and outdoor work activities.

Investigative Occupational Description

Ashley works in a job where she gathers information and designs experiments to test theories in order to develop new knowledge in her field. Her job involves looking for trends and patterns in the data she collects. Ashley's work activities involve publishing the findings of her research as well as evaluating the research of others. Her job requires critical thinking and the ability to figure out problems mentally. She uses objective data to solve problems rather than using feelings or the social environment.

Artistic Occupational Description

Matthew works in a job where he creates original works of art. He designs and creates materials to meet his personal standards as well as the standards of clients and managers. He attempts to integrate various elements in order to produce certain effects in his artwork, such as illustration of ideas, emotions, or moods. Matthew generates new ideas and develops plans for his art based on these ideas. He uses artistic ability and creative competencies in his work and does not engage in clerical activities.

Social Occupational Description

Brittany works in a job where she counsels and advises individuals. She teaches important life skills to individuals and groups and uses a variety of methods to instruct them. She evaluates the progress of the individuals and groups, and she works collaboratively with others to develop educational programs to help meet their needs. Brittany's job does not involve the use of tools and machines, but rather she uses interpersonal skills and the ability to communicate effectively to carry out her work.

Enterprising Occupational Description

Andrew works in a job where he directs the activities of employees. He works to establish relationships with business customers and makes recommendations to customers based on the needs they communicate. Andrew is also involved in training of staff and in the hiring of personnel. He often networks within communities to attract new business and does not work

behind the scenes doing research. His job requires skills in leadership and the ability to effectively make decisions.

Conventional Occupational Description

Emily works in a job where she prepares and manages extensive databases of information. She files documents and keeps records of customer accounts. Much of her work is performed on a computer, and her job requires clerical abilities and skills in attention to detail. Emily works with data rather than ideas, and she works to detect errors in data to verify the accuracy and validity of the data. Her job also involves preparing tables and graphs of the data.

Condition #2

Realistic Occupational Description

Jessica works in a job where she performs hands-on activities that involve precise movements and measurements. She monitors specific areas and people to make sure that there are no problems with the operation of equipment, but she does not often work directly with others. She is often on her feet throughout the day. Jessica's job involves mechanical and technical abilities, and her work often requires the use of tools and operation of machines. She is involved in both indoor and outdoor work activities.

Investigative Occupational Description

Christopher works in a job where he gathers information and designs experiments to test theories in order to develop new knowledge in his field. His job involves looking for trends and patterns in the data he collects. Christopher's work activities involve publishing the findings of his research as well as evaluating the research of others. His job requires critical thinking and the ability to figure out problems mentally. He uses objective data to solve problems rather than using feelings or the social environment.

Artistic Occupational Description

Samantha works in a job where she creates original works of art. She designs and creates materials to meet her personal standards as well as the standards of clients and managers. She attempts to integrate various elements in order to produce certain effects in her artwork, such as illustration of ideas, emotions, or moods. Samantha generates new ideas and develops plans for her art based on these ideas. She uses artistic ability and creative competencies in her work and does not engage in clerical activities.

Social Occupational Description

Joshua works in a job where he counsels and advises individuals. He teaches important life skills to individuals and groups and uses a variety of methods to instruct them. He evaluates the progress of the individuals and groups, and he works collaboratively with others to develop educational programs to help meet their needs. Joshua's job does not involve the use of tools and

machines, but rather he uses interpersonal skills and the ability to communicate effectively to carry out his work.

Enterprising Occupational Description

Sarah works in a job where she directs the activities of employees. She works to establish relationships with business customers and makes recommendations to customers based on the needs they communicate. Sarah is also involved in training of staff and in the hiring of personnel. She often networks within communities to attract new business and does not work behind the scenes doing research. Her job requires skills in leadership and the ability to effectively make decisions.

Conventional Occupational Description

Brandon works in a job where he prepares and manages extensive databases of information. He files documents and keeps records of customer accounts. Much of his work is performed on a computer, and his job requires clerical abilities and skills in attention to detail. Brandon works with data rather than ideas, and he works to detect errors in data to verify the accuracy and validity of the data. His job also involves preparing tables and graphs of the data.

Condition #3

Realistic Occupational Description

This person works in a job where they perform hands-on activities that involve precise movements and measurements. This individual works to plan and modify product configurations and inspect systems for defects and malfunctions. This person tests equipment performance and diagnoses problems with products. This job involves coordinating and directing projects and following detailed plans to accomplish goals. This person prefers to solve problems using concrete, practical solutions.

Investigative Occupational Description

This person works in a job gathering information and designing experiments to test theories in order to develop new knowledge in the field. This individual's job involves looking for trends and patterns in the data collected. This person's work activities involve publishing the findings of the research as well as evaluating the research of others. This individual prefers to solve problems by gathering information and analyzing objective data.

Artistic Occupational Description

This person works in a job creating original works of art. This individual designs materials to meet personal standards and standards of clients. This job involves integration of various elements in order to produce certain effects in the artwork, such as illustration of ideas, emotions, or moods. This person generates new ideas and develops plans for the art based on these ideas. This individual prefers to solve problems using intuition and originality.

Social Occupational Description

This person works in a job helping and serving others. This person teaches important life skills to individuals and groups and uses a variety of methods to teach them. This job involves evaluating the progress of the individuals and groups and working collaboratively with others to develop programs to help meet their needs. This individual also trains others to do this work. This person prefers to solve problems by communicating and cooperating with others.

Enterprising Occupational Description

This person works in a job where they direct financial activities to maximize investments and increase efficiency in the organization. This individual is also involved in supervising the work of others and evaluation of their performance. This person networks with others to develop new business accounts, prepares and delivers sales presentations, and implements procedures to maximize productivity. This individual prefers to solve problems through negotiation in terms of economic goals for the organization.

Conventional Occupational Description

This person works in a job where they prepare and manage extensive databases of information. This individual works to verify the accuracy of the data and resolve discrepancies in the records. The work sometimes involves writing detailed reports and preparing charts and graphs to illustrate the data. This person prepares and updates files and works to maintain software. This individual prefers to solve problems through careful planning and use of established rules and procedures.

APPENDIX C: FEMININITY AND MASCULINITY ITEMS

Items derived from the Bem Sex Role Inventory (BSRI), the Personal Attributes Questionnaire (PAQ), and the Positive-Negative Sex-Role Inventory (PN-SRI).

Item	Source(s)
Able to devote self completely to others	PAQ
Active	PAQ
Acts as a leader	BSRI
Adaptable	BSRI
Affectionate	BSRI
Aggressive	BSRI, PAQ
Ambitious	BSRI
Analytical	BSRI, PN-SRI
Anxious	PN-SRI
Arrogant	PN-SRI
Assertive	BSRI
Athletic	BSRI
Aware of others' feelings	PAQ
Boastful	PN-SRI
Cheerful	BSRI
Childlike	BSRI
Cold in relations with others	PAQ
Compassionate	BSRI
Competitive	BSRI, PAQ
Conceited	BSRI
Conscientious	BSRI
Conventional	BSRI
Cries easily	PAQ
Defends own beliefs	BSRI
Disoriented	PN-SRI
Does not use harsh language	BSRI
Dominant	BSRI, PAQ
Eager to soothe hurt feelings	BSRI
Emotional	PAQ, PN-SRI
Empathic	PN-SRI
Excitable in a major crisis	PAQ
Feelings easily hurt	PAQ
Feels very inferior	PAQ
Feels very superior	PAQ
Feminine	BSRI
Flatterable	BSRI
Forceful	BSRI
Friendly	BSRI
Gentle	BSRI, PAQ

Goes to pieces under pressure	PAQ
Gullible	BSRI
Happy	BSRI
Harsh	PN-SRI
Helpful	BSRI, PAQ
Home-oriented	PAQ
Inconsiderate	PN-SRI
Independent	BSRI, PAQ
Individualistic	BSRI
Inefficient	BSRI
Jealous	BSRI
Kind	PAQ
Leadership ability	BSRI
Likable	BSRI
Logical	PN-SRI
Loves children	BSRI
Loving	PN-SRI
Loyal	BSRI
Makes decisions easily	BSRI, PAQ
Masculine	BSRI
Moody	BSRI
Naïve	PN-SRI
Needful of others' approval	PAQ
Never gives up	PAQ
Objective	PN-SRI
Ostentatious	PN-SRI
Overcautious	PN-SRI
Oversensitive	PN-SRI
Passionate	PN-SRI
Passive	PAQ
Power-hungry	PN-SRI
Practical	PN-SRI
Rational	PN-SRI
Reliable	BSRI
Rough	PAQ
Secretive	BSRI
Self-confident	PAQ
Self-doubting	PN-SRI
Self-reliant	BSRI
Self-sufficient	BSRI
Sensitive	BSRI
Shy	BSRI
Sincere	BSRI
Soft-spoken	BSRI
Solemn	BSRI

Solution-focused	PN-SRI
Stands up well under pressure	PAQ
Strong need for security	PAQ
Strong personality	BSRI
Submissive	PAQ
Sympathetic	BSRI
Tactful	BSRI
Tender	BSRI
Theatrical	BSRI
Truthful	BSRI
Understanding	BSRI, PAQ
Unpredictable	BSRI
Unsystematic	BSRI
Warm	BSRI, PAQ
Willing to take a stand	BSRI
Willing to take risks	BSRI
Worldly	PAQ
Yielding	BSRI

Instructions for Self-Ratings of Feminine and Masculine Traits:

Please indicate how well each of the following characteristics describes you. The scale ranges from 1 (“Never or almost never true”) to 7 (“Almost always true”).

Instructions for Rating of Attitudes Toward BSRI, PAQ, and PN-SRI Items:

For each personality adjective listed below, please indicate the degree to which you believe the trait to be positive or negative, using the following scale: Very negative, Somewhat negative, Slightly negative, Neither positive nor negative, Slightly positive, Somewhat positive, Very positive

APPENDIX D:ALTERNATE FORMS PUBLIC DOMAIN RIASEC MARKERS

Please rate how much interest you have in performing each activity listed below using the following scale: 1= Strongly Dislike, 2= Dislike, 3= Neutral, 4= Like, 5= Strongly Like.

Test the quality of parts before shipment
Study the structure of the human body
Conduct a musical choir
Give career guidance to people
Sell restaurant franchises to individuals
Generate the monthly payroll checks for an office
Lay brick or tile
Study animal behavior
Direct a play
Do volunteer work at a non-profit organization
Sell merchandise at a department store
Inventory supplies using a hand-held computer
Work on an offshore oil-drilling rig
Do research on plants or animals
Design artwork for magazines
Help people who have problems with drugs or alcohol
Manage the operations of a hotel
Use a computer program to generate customer bills
Assemble electronic parts
Develop a new medical treatment or procedure
Write a song
Teach an individual an exercise routine
Operate a beauty salon or barber shop
Maintain employee records
Operate a grinding machine in a factory
Conduct biological research
Write books or plays
Help people with family-related problems
Manage a department within a large company
Compute and record statistical and other numerical data
Fix a broken faucet
Study whales and other types of marine life
Play a musical instrument
Supervise the activities of children at a camp
Manage a clothing store
Operate a calculator
Assemble products in a factory
Work in a biology lab
Perform stunts for a movie or television show
Teach children how to read

Sell houses
Handle customers' bank transactions
Install flooring in houses
Make a map of the bottom of an ocean
Design sets for plays
Help elderly people with their daily activities
Run a toy store
Keep shipping and receiving records

APPENDIX E: AMBIVALENT SEXISM INVENTORY AND MODERN SEXISM SCALE

Ambivalent Sexism Inventory

Below is a series of statements concerning men and women and their relationships in contemporary society. Please indicate the degree to which you agree or disagree with each statement using the following scale: Disagree strongly, Disagree somewhat, Disagree slightly, Agree slightly, Agree somewhat, Agree strongly.

Item
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 ought not necessarily to 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: Women 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 a 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.
22: Women, as compared to men, tend to have a more refined sense of culture and good taste.

Modern Sexism Scale

Please indicate the degree to which you agree or disagree with each statement using the following scale: Strongly agree, Agree, Neutral, Disagree, Strongly disagree.

Item
1: Women are generally not as smart as men.
2: I would be equally comfortable having a woman as a boss as a man.
3: It is more important to encourage boys than to encourage girls to participate in athletics.
4: Women are just as capable of thinking logically as men.
5: When both parents are employed and their child gets sick at school, the school should call the mother rather than the father.
6: Discrimination against women is no longer a problem in the United States.
7: Women often miss out on good jobs due to sexual discrimination.
8: It is rare to see women treated in a sexist manner on television.
9: On average, people in our society treat husbands and wives equally.
10: Society has reached the point where women and men have equal opportunities for advancement.
11: It is easy to understand the anger of women's groups in America.
12: It is easy to understand why women's groups are still concerned about societal limitations of women's opportunities.

13: Over the past few years, the government and news media have been showing more concern about the treatment of women than is warranted by women's actual experiences.

APPENDIX F: REVISED RELIGIOUS FUNDAMENTALISM SCALE AND RIGHT-WING AUTHORITARIANISM SCALE

Revised Religious Fundamentalism Scale

This survey is part of an investigation of general public opinion concerning a variety of social issues. You will probably find that you agree with some of the statements and disagree with others, to varying extents. Please indicate your reaction to each statement by using the following rating scale: -4= Very strongly disagree, -3= Strongly disagree, -2= Moderately disagree, -1= Slightly disagree, 0= Neutral, 1= Slightly agree, 2= Moderately agree, 3= Strongly agree, and 4= Very strongly agree. You may find that you sometimes have different reactions to different parts of a statement. For example, you might very strongly disagree (“-4”) with one idea in a statement, but slightly agree (“1”) with another idea in the same item. When this happens, please combine your reactions and write down how you feel on balance (a “-3” in this case).

Item
1: God has given humanity a complete, unailing guide to happiness and salvation, which must be totally followed.
2: No single book of religious teachings contains all the intrinsic, fundamental truths about life.
3: The basic cause of evil in this world is Satan, who is still constantly and ferociously fighting against God.
4: It is more important to be a good person than to believe in God and the right religion.
5: There is a particular set of religious teachings in this world that are so true, you can't go any "deeper" because they are the basic, bedrock message that God has given humanity.
6: When you get right down to it, there are basically only two kinds of people in the world: the Righteous, who will be rewarded by God; and the rest, who will not.
7: Scriptures may contain general truths, but they should NOT be considered completely, literally true from beginning to end.
8: To lead the best, most meaningful life, one must belong to the one, fundamentally true religion.
9: "Satan" is just the name people give to their own bad impulses. There really is <i>no such thing</i> as a diabolical "Prince of Darkness" who tempts us.
10: Whenever science and sacred scripture conflict, <i>science</i> is probably right.
11: The fundamentals of God's religion should never be tampered with, or compromised with others' beliefs.

12: *All* of the religions in the world have flaws and wrong teachings. There is *no* perfectly true, right religion.

Right-Wing Authoritarianism Scale

This survey is part of an investigation of general public opinion concerning a variety of social issues. You will probably find that you agree with some of the statements, and disagree with others, to varying extents. Please indicate your reaction to each statement by using the following rating scale: -4= Very strongly disagree, -3= Strongly disagree, -2= Moderately disagree, -1= Slightly disagree, 0= Neutral, 1= Slightly agree, 2= Moderately agree, 3= Strongly agree, and 4= Very strongly agree. You may find that you sometimes have different reactions to different parts of a statement. For example, you might very strongly disagree (“-4”) with one idea in a statement, but slightly agree (“1”) with another idea in the same item. When this happens, please combine your reactions and write down how you feel on balance (a “-3” in this case).

Item
1: The established authorities generally turn out to be right about things, while the radicals and protestors are usually just “loud mouths” showing off their ignorance.
2: Women should have to promise to obey their husbands when they get married.
3: Our country desperately needs a mighty leader who will do what has to be done to destroy the radical new ways and sinfulness that are ruining us.
4: Gays and lesbians are just as healthy and moral as anybody else.
5: It is always better to trust the judgment of the proper authorities in government and religion than to listen to the noisy rabble-rousers in our society who are trying to create doubt in people’s minds.
6: Atheists and others who have rebelled against established religions are no doubt every bit as good and virtuous as those who attend church regularly.
7: The only way our country can get through the crisis ahead is to get back to our traditional values, put some tough leaders in power, and silence the troublemakers spreading bad ideas.
8: There is absolutely nothing wrong with nudist camps.
9: Our country <u>needs</u> free thinkers who have the courage to defy traditional ways, even if this upsets many people.
10: Our country will be destroyed someday if we do not smash the perversions eating away at our moral fiber and traditional beliefs.
11: Everyone should have their own lifestyle, religious beliefs, and sexual preferences, even if it makes them different from everyone else.

12: The “old-fashioned ways” and the “old-fashioned values” still show the best way to live.
13: You have to admire those who challenged the law and the majority’s view by protesting for women’s abortion rights, for animal rights, or to abolish school prayer.
14: What our country really needs is a strong, determined leader who will crush evil, and take us back to our true path.
15: Some of the best people in our country are those who are challenging our government, criticizing religion, and ignoring the “normal way things are supposed to be done.”
16: God’s laws about abortion, pornography and marriage must be strictly followed before it is too late, and those who break them must be strongly punished.
17: There are many radical, immoral people in our country today, who are trying to ruin it for their own godless purposes, whom the authorities should put out of action.
18: A “woman’s place” should be wherever she wants to be. The days when women are submissive to their husbands and social conventions belong strictly in the past.
19: Our country will be great if we honor the ways of our forefathers, do what the authorities tell us to do, and get rid of the “rotten apples” who are ruining everything.
20: There is no “ONE right way” to live life; everybody has to create their <u>own</u> way.
21: Homosexuals and feminists should be praised for being brave enough to defy “traditional family values.”
22: This country would work a lot better if certain groups of troublemakers would just shut up and accept their group’s traditional place in society.

APPENDIX G: INFORMED CONSENT DOCUMENT

INFORMED CONSENT DOCUMENT

Title of Study: Evaluations of Work Environments

Investigators: Megan Callahan, M.S.
Patrick Ian Armstrong, Ph.D., Caitlin Anderson, B.A., Elizabeth TenBrook, M.P.A.

This is a research study being conducted by the Identity Development Laboratory, Department of Psychology, Iowa State University. Please take your time in deciding if you would like to participate. Please feel free to ask questions at any time. As indicated in your course syllabus, participation in experiments is one option for earning experimental credit.

INTRODUCTION

The purpose of this study is to learn more about occupations and the career choices people make. This study will examine perceptions of different occupations and different work environments. You are being invited to participate in this study because you are currently enrolled as a student at Iowa State University.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your total participation will last for 60 minutes or less. If you agree to participate, you will be asked to complete an online sorting activity and online surveys of demographic, personality, interest, and attitude measures. You will receive 2 SONA credits for completing all parts of the study.

RISKS

While participating in this study you may experience the following risks: There are no known physical, legal, pain, or privacy risks in this study. This study may be inconvenient due to the estimated 60 minutes or less needed to complete the assessments. Although unlikely, there is also the potential for minimal psychological and emotional discomfort as you complete the vocational, personality, and attitude assessments. Completing these assessments may bring up questions for you about career exploration, career decision-making, or your personality or attitudes. To minimize these risks, you will receive contact information for career exploration and counseling services in case you would like to seek out these services. You may end your participation at any time. You may skip any question that you do not wish to answer or that makes you feel uncomfortable.

BENEFITS

If you decide to participate in this study there will be no direct benefit to you. It is hoped that the information gained in this study will benefit society by contributing to the understanding of

vocational and personality assessments and to the understanding of career choices. In addition, this information may provide career counselors with increased knowledge of the assessments they use in helping people make career-related decisions. Ultimately, the information gained in this study could benefit clients in career counseling.

COSTS AND COMPENSATION

You will not have any costs associated with participation in this study. You will receive 2 SONA credits as compensation for your time to complete the card-sorting activity and survey questions.

PARTICIPANT RIGHTS

Your participation in this study is completely voluntary and you may refuse to participate or leave the study at any time. If you decide not to participate in this study or to leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. To earn research credit for your course, there are alternatives to completing the study that are described in your course syllabus.

CONFIDENTIALITY

Records identifying participants will be kept confidential to the extent permitted by applicable laws and regulations and will not be made publicly available. However, federal government regulatory agencies, auditing departments of Iowa State University, and the Institutional Review Board (a committee that reviews and approves human subject research studies) may inspect and/or copy your records for quality assurance and data analysis. These records may contain private information.

To ensure confidentiality to the extent permitted by law, the following measures will be taken. Participants will be assigned a unique code. Participant's name and student number will be removed once this code is assigned and data has been entered. Only the faculty member and research assistants on this project will have access to the data. The data will be stored in locked filing cabinets and on password-protected computers in locked offices. Raw data will be stored for five years after the results are published and then will be destroyed. Your individual answers will be combined with those obtained from other participants and reported as a group. If the results are published, your identity will remain confidential.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study.

- For further information about your participation in the study contact Patrick Armstrong, Ph.D., at 515-294-8788, pia@iastate.edu.

- If you have questions about the rights of research subjects or research-related injury, please contact the IRB administrator, 515-294-4566, IRB@iastate.edu, or Director, 515-294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.

.....

INSTRUCTIONS

The survey questions for this research project appear on the next page. A progress bar at the bottom of each page will indicate how much of the survey you have completed.

If you would like to continue participating in this study, please complete the information requested below. All personal information will be kept confidential. Then, click the “Next” button at the bottom of this page. If you decide at any point that you would not like to continue this study, you can exit out of the survey by exiting out of the window. *= required item

*Name: _____

*Student ID Number: _____

*NetID: _____

Date: _____

APPENDIX H: DEBRIEFING STATEMENT

DEBRIEFING STATEMENT

Thank you for participating in the Evaluations of Work Environments Project. This study is an investigation of perceptions of a variety of occupations conducted by Patrick Armstrong, Ph.D. from the Counseling Psychology program, Department of Psychology, Iowa State University.

The primary objective of this project is to learn more about students' perceptions of masculinity and femininity of different types of occupations and potential differences in these perceptions based upon a number of factors. The psychological attributes under investigation in this study are perceptions of masculinity and femininity of occupations, career interests, sex roles, attitudes toward women, religious and political beliefs, and perceptions of personality traits. It is hoped that the information gained in this study will benefit society by contributing to the understanding of gender-related perceptions of occupations and to the understanding of career choices.

We asked for your participation in this study because you are currently enrolled in a psychology class at Iowa State University. Your participation in this study has made an important contribution towards the completion of the project. If you are interested in receiving a copy of the study results, please complete the form at the bottom of this page. Please remember that your participation in this study is voluntary and you are free to withdraw from this study at any time without penalty. Your decision to participate or not participate in this study will not have an effect on your grade in any course you take as a student at Iowa State University. As mentioned before, all responses will be kept confidential. Your responses will be kept in a locked cabinet, in a locked office, and on password protected computers.

If you have any concerns about this study, please direct your questions to Patrick Armstrong at 294-8788 (e-mail: pia@iastate.edu). If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, (515) 294-3115, Office for Responsible Research, Iowa State University, Ames, Iowa 50011.

If participation in this study raised personal concerns that you would like to discuss with a counselor, there are community resources listed below. If you are interested in learning more about how the personal psychological attributes involved in this study relate to career exploration and development, please contact the ISU Career Exploration Service.

Community Resources

Student Counseling Services: 3rd Floor Student Services Building, 294-5056.

Career Exploration Service: 2nd Floor Student Services Building, 294-0742.

Career Services website:

<http://www.public.iastate.edu/~stdtcouns/Careerservices2.htm>

Richmond Center: 1619 South High Street, Ames, IA. 232-5811.

APPENDIX I: INSTITUTIONAL REVIEW BOARD APPROVAL FORM

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Institutional Review Board
Office for Responsible Research
Vice President for Research
1138 Pearson Hall
Ames, Iowa 50011-2207
515-294-4366
FAX 515-294-4267

Date: 1/12/2016

To: Megan Callahan
W112 Lagomarcino Hall

CC: Dr. Patrick Armstrong
W237 Lagomarcino Hall

From: Office for Responsible Research

Title: Evaluation of Work Environments

IRB ID: 15-717

Approval Date: 1/8/2016 **Date for Continuing Review:** 1/7/2018

Submission Type: New **Review Type:** Expedited

The project referenced above has received approval from the Institutional Review Board (IRB) at Iowa State University according to the dates shown above. Please refer to the IRB ID number shown above in all correspondence regarding this study.

To ensure compliance with federal regulations (45 CFR 46 & 21 CFR 56), please be sure to:

- **Use only the approved study materials** in your research, including the recruitment materials and informed consent documents that have the IRB approval stamp.
- **Retain signed informed consent documents for 3 years after the close of the study**, when documented consent is required.
- **Obtain IRB approval prior to implementing any changes** to the study by submitting a Modification Form for Non-Exempt Research or Amendment for Personnel Changes form, as necessary.
- **Immediately inform the IRB of (1) all serious and/or unexpected adverse experiences** involving risks to subjects or others; and (2) **any other unanticipated problems** involving risks to subjects or others.
- **Stop all research activity if IRB approval lapses**, unless continuation is necessary to prevent harm to research participants. Research activity can resume once IRB approval is reestablished.
- **Complete a new continuing review form** at least three to four weeks prior to the **date for continuing review** as noted above to provide sufficient time for the IRB to review and approve continuation of the study. We will send a courtesy reminder as this date approaches.

Please be aware that IRB approval means that you have met the requirements of federal regulations and ISU policies governing human subjects research. **Approval from other entities may also be needed.** For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. **IRB approval in no way implies or guarantees that permission from these other entities will be granted.**

Upon completion of the project, please submit a Project Closure Form to the Office for Responsible Research, 1138 Pearson Hall, to officially close the project.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.

ACKNOWLEDGMENTS

I neglected to write an acknowledgements section for my thesis. So, these acknowledgements will have to cover my thesis as well as this dissertation.

As this process (finally) comes to a close, I'd first like to thank my partner, Berry Ross. He listened to me talk about my thesis and dissertation more than anyone and has never once asked to talk about something else. Therefore, I thank him for his patience, but also for his unending support of and belief in me. I also appreciate his enthusiasm for what enthuses me, his frustration when I am frustrated, and his gentle encouragement to keep going when I'm at the end of my rope. Berry, I couldn't have done this without you.

Additionally, I'd like to thank my awesome cat, Chloe. She will never read this, but I felt she deserved a mention anyway. She was sitting on my lap (or my laptop) for a good portion of the thesis and dissertation writing process and supported me in her own way. Chloe makes me laugh and keeps me on my toes. She doesn't know what the word 'dissertation' means, but she does know 'treats' and she'll get plenty as a reward for helping keep me sane.

Thank you as well to my dissertation committee and friends during graduate school who also helped me reach this milestone. I especially thank my friend, Andrea Paulet, who visited me in Iowa often and provided much-needed relief from discussing anything grad school-related. I also thank my mom, Norene Gottschalk Callahan, my dad, Ken Callahan, and my nana, Marian Olson Gottschalk, who instilled early on in me a belief in the value of education.