Concordance of Vocational Interest and Efficacy of Female College Students Pursuing a Traditional Career Path

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CONCORDANCE OF VOCATIONAL INTEREST
AND EFFICACY IN FEMALE COLLEGE STUDENTS
PURSUING A TRADITIONAL CAREER PATH

By

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Bachelor of Science
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1977

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A dissertation submitted in partial fulfillment
of the requirements for the

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May 2012
ABSTRACT

Concordance of Vocational Interest and Efficacy in Female College Students Pursing a Traditional Career Path

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Women make up a considerable portion of the 21st century workforce. Despite the increase in the labor force, the Census Bureau continues to reflect that the majority of women are employed in what are defined as traditionally female occupations (Watson, Quatman & Edler, 2002). Even though the proportion of women in the work force has increased, women continue to be underrepresented in high-paying, high status professions that have been traditionally male dominated (Betz, 1994). Significant research has been devoted to understanding the unique variables which affect women’s career choices and behaviors. According to Fitzgerald, Fassinger, and Betz (1995), women’s vocational behavior is distinctive as well as more complicated than that of men.

The idea that there is value in choosing an occupation based one’s abilities and interest as suggested by the trait-factor approach in general and Holland’s model (1997) in particular has generally been supported in the field of career psychology. However, the increase in women’s participation in the world of work during the 20th and beginning of the 21st century should have resulted in occupations more evenly populated by women
and men. Occupational gender segregation persists, as indicated by the continued underrepresentation of women in science and technology fields. Therefore, it seems that there is not a simple direct matching of person and occupation, particularly in the case of women’s career development.

This study examined the correlations between career choices and vocational self-efficacy for college women who have chosen a traditional feminine career path. A total of 157 women from ages 18 to 40+ years responded to this study. Congruence was measured using traditional and trait based measures of vocational interests and a measure of vocational efficacy. In addition, this study examined the degree to which participants conform to an array of feminine norms consistent with the dominant US culture.

Using quantitative research methodology complemented with a qualitative aspect, information was gathered through online surveys using research-based questionnaires. To enhance this study, five follow up interviews were conducted with selected participants. This qualitative aspect provided a voice to the study as well as allowing further exploration of how a woman determines her career choice, albeit a stereotypical female career path.

Two general questions were asked in this study. The first examined if the vocational self-efficacy of a female college student pursuing a traditionally female career path corresponds to the standard Holland model of vocational interests or to an adapted vocational interest scale and if age was a significant variable. The second examined whether today’s female college student adheres or rejects traditional feminine norms.

In this study, vocational interests were measured with both the traditional Holland vocational inventory and the CogStyle scale, an adapted measure designed to elicit the
underlying personality trait. This study indicates that within a group of women pursuing a traditionally female career path, the interest scores based on personality preferences were more consistent with perceived self-efficacy than were the interest scores based on traditional occupational stereotypes.

This study also revealed that in a sample of women pursuing a traditionally female career path, the younger college student has a higher adhere to feminine norms than the nontraditional college student. Analyses revealed that there was a statistically significant difference with the age of the participant and her conformity to feminine norms scores. Post hoc comparisons revealed that the youngest age group differed significantly from the oldest age group. And overall, the mean score for the oldest age group was lower than the other three. The CFNI-45 scores were designed to measure conformity to traditional gender role norms, so lower scores indicate a rejection of these norms. These findings may also suggest that adhering to traditional feminine norms was a factor that led to selection of a traditional female career.

The results of this study were also examined from a feminist perspective. It is well documented that women are still heavily involved as a prominent force in the education field. Education has been criticized for becoming feminized. Instead of looking at how to move women away from the field, this study came from the viewpoint of women, knowingly making a choice to pursue a career in the educational field, and seeking to provide some insight to the factors involved in that choice.

Career self-efficacy is an important variable in the educational and career development of all students (Hackett, Betz, Casas, & Rocah-Sigh, 1992) but may be especially critical to the career development of women (Betz & Hackett, 1981; Bonett,
A thorough understanding of the dynamics involved in the career decision making processes of women has significant value to the career counseling of women (Gysbers, Heppner, & Johnson, 2009). It is hoped that the findings of this study will contribute to the field of counseling and hopefully provide data to career counselors as well as counselor educators in addressing the needs of women.
ACKNOWLEDGEMENTS

To imply that this process is a journey is to acknowledge that this is just a stopping point along the way. This has been an amazing climb and I am grateful to be at this summit at this point in my life. However, one does not climb a mountain alone. I have several people I would like to recognize as integral participants in my doctoral journey.

For as far back as I can remember, before I ever entered a school, my parents impressed upon me the importance of education. My father felt that he would not be able to provide his children with money but knew that education was one thing he could impart that would never be taken from us. Although both have passed, I dedicate this educational endeavor to my parents.

To my husband Ronald, I wish to thank you for your patience and your encouragement. To my daughters Laura and Julia, I hope I have been an inspiration for you to continue your own journeys, where ever they may take you.

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# TABLE OF CONTENTS

ABSTRACT ................................................................................................. iii

ACKNOWLEDGEMENTS ........................................................................... vii

CHAPTER 1 INTRODUCTION ................................................................. 1
Women’s Career Development ............................................................... 2
Assessment of Career Choices ............................................................... 8
Feminist Identity and Career Counseling .............................................. 10
Conceptual Framework of Study ......................................................... 12
Significance of Study ............................................................................. 12
Purpose of Study ................................................................................... 14
Research Questions ............................................................................... 15

CHAPTER 2 LITERATURE REVIEW ...................................................... 17
Self-Efficacy ......................................................................................... 17
Self-Efficacy and Career Exploration .................................................. 19
Career Development ........................................................................... 21
Holland’s model ................................................................................. 22
Self-Efficacy and Career Development .............................................. 26
Gender and Occupational Choice ....................................................... 42
Women’s Career Development ............................................................ 46
Role Conflict ....................................................................................... 46
Work Discrimination .......................................................................... 49
Race ..................................................................................................... 50
Socioeconomics .................................................................................. 50
The Impact of Gender ......................................................................... 51
Underutilization of talents and abilities .............................................. 54
Summary and Conclusion ................................................................... 56

CHAPTER 3 METHODOLOGY ............................................................... 58
Purpose of Study .................................................................................. 58
Research Questions ............................................................................ 59
Hypotheses .......................................................................................... 59
Participants and Procedures ............................................................... 60
Instruments ........................................................................................... 61
Demographic Information ................................................................... 61
Holland’s Vocational Performance Inventory (VPI) ............................. 61
CogStyle Scale ................................................................................... 62
Vocational Efficacy Scale ................................................................... 64
Conformity to Feminine Norms Inventory-Short Form CFNI-45 ......... 65
Measures of Congruence ................................................................... 67
The Iachan Index ................................................................................ 69
Data Analysis ....................................................................................... 70
Qualitative Voice ................................................................................ 71
LIST OF TABLES

Table 1  Congruence for Two-Letter Codes ........................................... 106
Table 2  Modified Index for Two-Letter Codes ................................. 107
Table 3  Descriptions of Participants ................................................. 108
Table 4  Descriptives: Age with Congruence Index VPI with VES ........... 110
Table 5  Analysis of Variance with Age .............................................. 111
Table 6  LSD Post Hoc Test – Age and Iachan Index between VPI and VES ................................................................................. 112
Table 7  Paired Sample T-Test ............................................................... 113
Table 8  Descriptive Statistics of Age with CFNI-45 Scores .................... 114
Table 9  Analysis of Variance Age and CFNI-45 Score ......................... 115
Table 10 LSD Post Hoc Test – CFNI-45 Scores and Age ....................... 116
Table 11 Descriptive Statistics .............................................................. 117
Table 12 Correlations ........................................................................... 118
CHAPTER 1

Introduction

Over the last fifty years, the role of work in the lives of women in the United States has undergone a significant change (Betz, 2005, Fullerton, 1999). Indeed, women make up a considerable portion of the 21st century workforce. At the beginning of the century, the U.S. Department of Labor projected that the number of women in the labor force was expected to grow at a more rapid pace than men, increasing from 46.5 percent in 2002 to a projection of 47.5 percent in 2012 (Census Bureau, 2001). Social changes, including the women’s movement, the enactment of Title VII of the Civil Rights Act, affirmative action legislation, socio-economic forces, and societal shifts in perspectives, have led to increased vocational opportunities for women.

The census report of 2010 indicates that approximately 47% of the American workforce is female. These numbers contrast drastically with the stereotype of the stay-at-home housewife and breadwinning husband, which characterized only 7% of American families in the mid-1990s (Jalilvand, 2000; Stephenson & Burge; Tinklin et al., 2005). Nieva and Gutek (1981) credited the increase in women’s employment rates to more favorable attitudes toward working women, longer life expectancies, changing marriage patterns, and improvements in and acceptance of birth control methods. Today, no questions remain whether women will participate in the workforce. In addition, working women are no longer considered deviations from the norm, but rather they are the norm (Rainey & Borders, 1997; Betz, 2005).

Despite women’s increased participation over the last half-century, notable differences still exist between women and men regarding the nature of their vocational experiences. The majority of women are still employed in what is defined as traditionally
female occupations (Watson, Quatman & Edler, 2002). Even though the proportion of women in the work force has increased, women continue to be underrepresented in high-paying, high status professions that have been traditionally male dominated. Women continue to gravitate to those careers considered female-oriented versus male-oriented; to enter the workforce in lower-status, lower-paying jobs; and remain clustered in a limited number of conventional careers (Tinklin, Croxford, Ducklin, & Frame, 2005). Low-paying traditionally female careers, including administrative support, sales, service, nursing, teaching, social work, and clerical jobs, reflect society’s persistent attitudes regarding stereotypical occupational roles for males and females (Rainey & Borders, 1997; Sellers, Satcher, & Comas, 1999; Stephenson & Burge, 1997; Watson, Quatman, & Elder, 2002). According to the census report (2010), women still dominate the fields of Health Care support (89%), Education (74%), more specifically preschool and kindergarten teachers (97%), and Administrative Support (74%). Of the 45 million women who worked full time in wage and salary jobs, 17 million were employed in education and health services, and 5 million were employed in wholesale and retail trade. Financial activities and professional and business services each employed about 4 million women. Over the past 40 years, the educational attainment of women aged 25 to 64 in the labor force has risen substantially. In 2010, 36 percent of women held college degrees, compared with 11 percent in 1970 (Bureau of Labor Statistics, 2010).

Women’s Career Development

Women were essentially ignored for the first 50 or 60 years of the history of career psychology because women were not perceived as pursuing careers (Betz, 1994). For this reason, attention to women in the field of career psychology is a relatively recent
phenomenon. Several cultural factors have spurred interest in women’s career development, such as the rise of the feminist movement and legislation requiring sex equity in education and the workplace. Significant research has been devoted to understanding the unique variables that affect women’s career choices and behaviors. According to Fitzgerald, Fassinger, and Betz (1995), women’s vocational behavior is distinctive as well as more complicated than that of men.

Research over the past thirty years indicates that the limitation and sometimes disadvantaged position of women in the workforce seems to be due to a variety of issues often stemming from socialized gender differences and does not appear to indicate aptitude or ability (Betz, 1994; Hackett & Betz, 1981). Even when girls consider a wide range of career choices, they tend to aspire to careers that have traditionally been appealing to women (Whiston & Brecheisen, 2002). The educational and career achievements of men often seem to take into account their intellectual capacities and talent, while the educational and career aspirations of women do not. Ironically, females start out as the higher achievers in comparison to males. As children, girls are more likely to use their abilities in educational pursuits. Girls’ academic achievement in school is also superior to that of boys (Hyde, 2004). In college, women consistently receive higher grades than men in major fields, whether in humanities and social sciences or in engineering and mathematics (Rosser, 1989).

Several factors contribute to the divergent gender role socialization experiences between men and women: social and familial influences, a lack of awareness regarding nontraditional options, an unwelcoming environment in many male-dominated fields, discrimination within career fields, high turnover rates for women, and less seniority in
given occupations (Stephenson & Burge, 1997). In addition, career choice is also impacted by gender stereotypes, interests, and one’s belief system (Anker, Malkas, & Korten, 2003; Baunach, 2002; Betz, 2005; Betz & Fitzgerald, 1987; Eccles, 1994, 2006).

Gender occupational segregation is the tendency for women and men to be separated into specific occupations. Gender occupational segregation is widely noted in the U.S. and elsewhere in the world (Anker, Malkas, & Korten, 2003; Baunach, 2002; Betz, 2005; Betz & Fitzgerald, 1987; Blackburn, Browne, Brooks, & Jarman, 2002; Yoder & Kahn, 2003). According to Anker et al (2003), occupational segregation is one of the most noteworthy as well as enduring aspect of labor markets worldwide as it is extensive in every region, at all economic development levels, under all political systems, and in diverse religious, social and cultural environments. Betz (2005) observed that in spite of the importance for women to find satisfying career pursuits, there are still many who choose occupations that are lower paying than the jobs men gravitate towards, is not consistent with their ability level, and represents a smaller range of choices concentrated in occupations traditionally held by women.

In a landmark study, Shinar (1975) examined the gender stereotypes of occupations using subjective ratings of occupations as masculine or feminine by college-aged students. Shinar’s study brought several important premises to the forefront. First, college students held clear gender stereotypes of occupations. These categorizations remained constant and similar between women and men. Second, there were socially desirable traits uniquely associated with women versus men. Third, occupational stereotypes were described using personality attributes identified as masculine or feminine. Fourth, the perception of occupations along gender stereotypic lines was
apparently supported by occupational stereotypes. Shinar also noted that the connection between gender role and occupational stereotyping is a self-perpetuating and self-promoting system. This schema appeared to have an early impact on career development for those women and men in her study.

Gettys and Cann (1981) found that children as young as 2 ½ years could distinguish masculine versus feminine occupations. In addition, Betz and Fitzgerald (1987) cited research which identified the role of parents, teachers, and children’s books in fostering sexual stereotypes. In their review of the literature on “Occupational Sex Stereotypes” Betz and Fitzgerald observed that children select sex-typed stereotypic occupational preferences that are safe and from a limited range of occupations traditionally held by women. The early formation of occupational gender stereotypes is especially harmful in that they appear to interact with other factors associated with barriers to women’s career choices such as restricted vocational interests and self-efficacy expectations (Betz, 2005).

Despite the greater involvement of women in the work force, gender stereotypes are still influential regarding vocational behavior (Fitzgerald & Harmon, 2001). In her research, Betz (2005) noted that women continue to remain highly underrepresented in scientific and technical careers as well as in high-level positions found in business, government, education, and the military. According to Betz, socialized barriers lead women to select careers from only certain areas. One of the factors related to these barriers is gender and occupational stereotypes. Betz cited research demonstrating two detrimental effects of gender stereotypes: 1) gender role stereotypes may influence girls to believe they should emphasize domestic rather than educational and/or career
aspirations, and 2) gender occupational stereotypes may influence women to consider some occupations as better suited for either men or women and to avoid those they think will be dominated by men.

In response to the cultural factors influencing career decisions, Fitzgerald and Betz (1994) argue that commonly held theories may not be adequate to describe the vocational behavior of large groups of people. One issue identified as a contributing problem to current career developmental theories is the failure to address structural and cultural factors that still appear to be powerful. Many socioeconomic factors act as filters of relevant information in several areas, including education received and information obtained, values held, observable role models, possible course of action and level of encouragement. Fitzgerald and Betz (1994) identified occupational stereotypes as a specific example of a structural factor important to the concept of gender and career development. Furthermore, they indicated that occupational sex stereotypes are a related cultural factor.

Another aspect of career choice is one of interest. An interest in an occupation is influenced by many things, including a belief that one can succeed in that occupation (Eccles et al., 1983; Correll, 2004; Eccles, 2006). The work of Shelley Correll (2004, 2001) determined that girls assess their mathematical ability lower than boys with equivalent past mathematical achievement. At the same time, girls hold themselves to a higher standard in subjects like math, where boys are considered to excel. Because of this, girls are less likely to believe that they will be successful in fields predominated by science and math, and therefore, are less likely to express interest in a career with math or science.
Pajares (2005) found that gender differences in self-confidence begin in middle school and increase in high school and college, with girls reporting less confidence than boys in math and science ability. In part, boys gain greater confidence in math and science through the experience of developing relevant skills. A number of studies have shown that gender differences in self-confidence disappear when variables such as previous achievement or opportunity to learn are controlled (Lent et al., 1986; Zimmerman & Martinez-Pons, 1990; Cooper & Robinson, 1991; Pajares, 1996, 2005). Students who lack confidence in their math or science skills are less likely to engage in tasks that require those skills and will give up more easily in the face of difficulty. Research has also found that beginning in early adolescence is particularly vulnerable to a girl’s self-perception. At this developmental stage, girls are especially susceptible to losing confidence in the fields of math and science. Her perceptions of her self-efficacy in regards to a career choice may be negatively impacted, which may, in turn, account for the observed underutilization of women’s vocational talents (Betz & Hackett, 1981; 1983; Lent & Hackett, 1987).

A belief that one can succeed in a male-dominated field such as math or science is important but is not the only factor. Culturally prescribed gender roles also influence occupational interest (Low et al., 2005). A review of child vocational development by Hartung et al. (2005) found that children—and girls especially—develop beliefs that they cannot pursue particular occupations because there are perceived as inappropriate for their gender. Jacquelynne Eccles, a leading researcher in the field of occupational choice, has spent the past 30 years developing a model and collecting evidence about career choice. Her work suggests that occupational choice is influenced by a person’s values as
well as expectancy for success (Eccles et al., 1983; Eccles, 1994, 2006). Gender
differences also exist in the value that men and women place on doing work that
contributes to society. This research says that women are more likely than men to prefer
work with a clear social purpose (Jozefowicz et al., 1993; Konrad et al., 2000; Margolis
et al., 2002; Lubinski & Benbow, 2006; Eccles, 2006).

**Assessment of Career Choices**

Through the years, several career interest inventories have been developed to
predict and guide one’s vocational choice. John Holland’s (1973) RIASEC model is one
of the most influential theories of career choice. Holland’s theory of vocational behavior
is based on four basic assumptions: (1) people can be categorized as one of six
personality types—Realistic, Investigative, Artistic, Social, Enterprising, or
Conventional; (2) there are six model environments (RIASEC); (3) people seek
environments that allow them to express their abilities and values; and (4) a person’s
behavior is determined by the interaction between personality and environment.
According to Holland, a basic principle underlying this model is one of congruence. In
other words, positive vocational outcomes are dependent on the congruence, or degree of
match, between one’s personality and the environment in which someone works. For
example, a realistic person in a realistic environment would illustrate the highest degree
of congruence. According to Holland, the vocational literature is supportive of this
assumption (Spokane, 1985 and Assouline & Meier, 1987).

However, some researchers have found using a direct application of person
environment congruence (i.e., matching person to work environment) does not, in fact, fit
well for explaining women’s career choices (Betz, 2005; Fitzgerald & Betz, 1994). As
previously noted women are frequently found to undervalue and not use their abilities and, therefore, often segregate into careers traditionally held by women. It can be argued that if women select careers based on perceived gender-appropriateness rather than whether the occupation represents a match with individual abilities and interests, choices for women are less likely than those of men to be congruent.

Wolfe and Betz (1981) examined whether the traditionality of occupational preferences and sex-role orientation were related to occupational congruence in college women. They found a significant relationship between congruence and traditionality of occupational choice. Women choosing a nontraditional career field were more likely to make choices congruent with their personalities versus those women choosing traditional fields. Wolfe and Betz proposed that Holland’s theory is perhaps differentially valid for women as a function of the influence of sex-role stereotypes, occupational sex stereotypes, traditionality of career choice, and sex-role orientation. They concluded that Holland’s proposal that people gravitate toward occupational environments that match with their personality orientations seems to be more congruent with those women who resist the effects of socialization toward the traditionally female careers than of those whose choices continue to correspond with socialization pressures.

The idea that there is value in choosing an occupation based on one’s abilities and interest as suggested by the trait-factor approach in general, and Holland’s model in particular has generally been supported in the field of career psychology. However, the increase in women’s participation in the world of work during the 20th and beginning of the 21st century should have resulted in occupations more evenly populated by women and men. Occupational gender segregation persists, as indicated by the continued
underrepresentation of women in science and technology fields. Therefore, it seems that there is not a simple direct matching of person and occupation, particularly in the case of women’s career development.

More and more, the issue of gender is being recognized as critical to the provision of career counseling (Gysbers, Heppner, & Johnson, 2009). Conflicting roles, social constraints, and economic barriers have been broadly recognized as influencing the vocational opportunities and choices of women. Likewise, counselors and researchers are becoming more sensitive to the impact of the divergent socialization experiences on the career development of both women and men (Betz, 1994). Although there has been a substantial increase in attention to women’s career issues over the past three decades, clearly, there is still more to learn.

**Feminist Identity and Career Counseling**

The basic tenets of feminism are built on the belief in social, political, and economic equality between women and men (Brooks & Forrest, 1994). The application of feminist principles to counseling in general and career counseling in particular, has resulted in a form of therapy that recognizes the social inequalities that lead to traditional psychopathology in women (Brooks & Forrest, 1994). Feminists recognize that males have traditionally received more support and encouragement for career pursuits and achievements (Hackett & Betz, 1981). In addition, traditional female socialization experiences have been associated with the development of strong internal constraints that seriously limit perceptions of career opportunity and lower the expectations for vocational success.
Feminist therapy is informed by the following principles: (1) socio-cultural conditions are a primary source of women’s problems; (2) social structures have a direct impact on the personal lives of women; (3) the therapeutic relationship is egalitarian in nature and (4) the goals of feminist therapy are personal self-definition and self-determination (Brooks & Forrest, 1994). Women continue to struggle with issues related to sex-role stereotyping and gender bias that limit their educational pursuits, career preparation and career decision-making. Sex-role stereotyping or gender stereotyping and gender bias can shape the way males and females are socialized and even impact what kind of employment they may seek (Chliwniak, 1997; Ostling & Urquhart, 1992).

A feminist approach to career counseling may have significant implications for career counseling outcomes. It has been suggested that a direct confrontation of the effect of gender role socialization to the career development of women might lead to an increase in women’s self-efficacy expectations for the nontraditional career (Jutenen, 1996).

In summary, trends over the past 50 years as well as recent data, strongly suggest the importance of occupational pursuits in the plans and lives of women. Given that almost all women will work outside the home, employment will play a critical role in their lives. Although the extent of women’s labor force participation is approaching that of men, the nature of that participation continues to differ. Most working women remain economically disadvantaged, lower in status, and burdened with multiple role demands. The career and life choices made by young women continue to be oriented towards stereotypically female occupations and to represent lower levels of both educational and career achievement compared to equally able males.
Conceptual Framework of Study

The conceptual framework of this study is an intersection of trait-factor theory, career development theory, and feminist principles. The intent of trait-factor theory is to define human behavior by specific traits, such as aptitude, achievement, personality, and interests. These traits can then be integrated in a variety of ways to form constellations of individual characteristic called factors. Based on identified traits and factors, a scientific problem-solving method could be employed that had statistically predictable outcomes that could be applied differently to individuals (Rounds & Tracey, 1990). The trait-factor theory in this study evolved from a vocational perspective and can be seen in Holland’s vocational personality theory. With evidence that the career development of women differs from the career development of men, this study also incorporates the principles of feminist theory, more specifically, how cultural factors may influence a woman’s vocational efficacy as well as her career choice.

Significance of Study

A thorough understanding of the dynamics involved in the career decision making processes of women has significant value to the career counseling of women (Gysbers, Heppner, & Johnson, 2009). Conflicting roles, social constraints, and economic barriers have been broadly recognized as influencing the vocational opportunities and choices of women. The social trends and empirical evidence for nearly five decades have clearly illustrated the importance of the role of career in the lives of women (Betz, 1994), yet the vast majority of research indicates that women’s career efficacy, interests, and choices are still aligned with traditionally feminine career options. These options often require
less education and may result in lower socio-economic rewards than the career interest, efficacy, and choices of their male peers (Betz, 1994).

In review of the literature, a number of authors (e.g., Betz, 1994; Gilbert, Hallett, & Eldridge, 1994; Hackett & Lonborg, 1994; Kerr & Maresh, 1994; Walsh & Osipow, 1994) have recognized the importance of understanding and addressing the unique concerns of women in career counseling. A young woman’s concept of self is defined through cultural and societal messages. Therefore, how a woman perceives her identity, in alignment with current feminine norms or not, may have significant findings and could be a valuable tool to the career counseling of women in assessing and conceptualizing their needs.

Career self-efficacy is an important variable in the educational and career development of all students (Hackett, Betz, Casas, & Rocah-Sigh, 1992) but may be especially critical to the career development of women (Betz & Hackett, 1981; Bonett, 1994). Due to differences in gender role socialization (Lent, & Hackett, 1987) women are likely to have less opportunity for exposure to efficacy building learning experiences. This has resulted in women having lower expectations of efficacy for a range of career behaviors and options than men. Some authors have suggested that clinical attention to the origin and nature of self-efficacy expectations in career counseling may prove effective in decreasing gender-role limitations in a range of career related behaviors (Betz, 1992; Betz & Voyter, 1997; Brown, Lent, & Larkin, 1989; Hackett & Betz, 1981).

A number of studies over the past three decades have verified that significant differences in career self-efficacy exist between men and women (Bonett, 1994; Campbell & Hackett, 1986; Church, Teresa, Rosebrook, & Szendre, 1992; Hackett, Betz,
O’Halloran, & Romac, 1990; Mathieu, Sowa, & Niles, 1993; Matsui, 1994; Stickel & Bonett, 1991). Research in this area has repeatedly indicated that socialized gender experience may account for a significant portion of these differences.

**Purpose of Study**

The purpose of this study is to examine the correlations between career choices and vocational efficacy for college women who have chosen a traditional feminine career path. In addition, this study examines what influence adherence to feminine norms has to the vocational self-efficacy of college women. Conformity to cultural norms of femininity is posited to play an important role in women's lives across a range of domains, including mental health, relationships, and work (Brown & Brodsky, 1992; Philpot, Brooks, Lusterman, & Nutt, 2002; Worell & Johnson, 2004). Also, in a societal context that construes power hierarchically, prescriptive feminine norms serve to constrain and disempower women. Therefore, the assessment of conformity to such norms can be important in feminist research and practice with women. Researchers have studied conformity to feminine norms by using various measures such as those of instrumentality and expressiveness; or measures of attitudes about the rights and roles of women; or by using measures which focus on specific norms without considering them as part of a larger picture. These measures have not directly assessed the construct of conformity to current social feminine norms. The Conformity to Feminine Norms Inventory (CFNI) represents an important advancement in the research of women's experiences and well-being, because it assesses conformity to feminine norms directly and multidimensionally, as well as a part of a broader set of interconnected norms that reflect societal construal of femininity (Mahalik et al, 2005). This instrument refers to a
very specific set of gender-related beliefs and values. The specificity inherent in this model may provide valuable insight into the specific learning experiences that underlie the development of career efficacy.

Feminist counseling has been found to be an effective and preferential practice for career counseling in general and for career efficacy concerns in particular (Enns & Hackett, 1993; Hackett, Enns, & Zetzer, 1992; Jutenen, 1996). Feminist identity development has been empirically linked to the development of career self-efficacy expectations for women (Sinner, 1995). Therefore, the clarification of the relation of feminist attitudes and belief to the origin and nature of self-efficacy and career choice may be used to inform the practice of school counselors seeking to decrease gender role constraints in a range of career-related behaviors.

**Research Questions**

The study examines college women, seeking a traditional career path, and the congruency of her vocational self-efficacy in conjunction with her vocational interests and her adherence to feminine norms as defined by our predominant culture. Wolfe and Betz (1981) found that women who stated preferences for nontraditional occupations made more congruent choices than women making traditional career choices. In this study, congruence was determined between a traditional Holland interest inventory, an adapted Holland interest inventory, and a self-reported vocational efficacy scale. In addition, this study measured the degree to which participants conform to an array of feminine norms consistent with the dominant US culture. The targeted population for this study was female university students pursuing careers in the education or counseling fields, both traditionally typed as female. The following questions guided this research:
1. Is there an age difference in the extent of congruence between Holland occupational codes based on a traditional vocational inventory scale and comparable codes based on a scale of vocational efficacy?

2. Is the extent of congruence between vocational interests and career efficacy related to whether vocational interests are measured with a traditional vocational inventory or measured with an adapted vocational inventory designed to elicit the underlying trait?

3. Is there an age difference in the extent of adherence to feminine norms?

4. Is adherence to feminine norms related to the extent of congruence between vocational interests and vocational efficacy?

This study attempts to provide more information on women’s vocational aspirations and to determine if societal conformity is still a viable factor in a woman’s career choice.
CHAPTER 2

Literature Review

This literature review includes the following: an overview of Bandura’s self-efficacy postulate (1977, 1986) and social cognitive theory as it applies to career development; a synopsis of career development, with primary focus on the Holland’s theory of vocational personalities and work environments (1997); and, lastly, career development in response to women in the workforce, including the effects of occupational gender stereotypes and perceived barriers.

Self-Efficacy

Self-efficacy is defined as one's belief in the ability to influence events which affect one’s life. According to Albert Bandura (1977, 2006) self-efficacy plays a pivotal role in human functioning. He further defined this belief as core to the foundation of human motivation, performance accomplishments, and emotional well-being. Bandura explains that a person’s level of motivation, affective states, and actions are based more on what one believes rather than on what is objectively true. Therefore, how a person behaves can be a reflection of the beliefs one holds about his/her capabilities rather than what one is actually capable of accomplishing. Self-efficacy can often be a component in determining what an individual may do with the knowledge and skills one has. Unless a person believes he/she can produce desired effects by his or her actions, there is little incentive to undertake activities or to persevere in the face of difficulties. Whatever other factors may serve as guides and motivators, one is rooted in the core belief that one can make a difference by one's actions.
Bandura conceptualized self-efficacy as varying along three dimensions: level, strength, and generality (Lent & Hackett, 1987). The level of self-efficacy expectations refers to the degree of difficulty of the task an individual feels capable of attempting, which in turn, influences the kinds of behaviors attempted or avoided. Strength of self-efficacy expectations is the person’s confidence in his/her capability. This will influence the persistence in behavior in the face of obstacles or aversive experiences. Generality of self-efficacy concerns the range of situations in which a person considers him or herself efficacious (Lent & Hackett, 1987).

Social cognitive theory is grounded in the concept that individuals are agents, proactively engaged in their own development, and able to make things happen by their actions. Key to this sense of agency is that individuals possess self-beliefs. These self-beliefs provide a person with a measure of control over their thoughts, feelings, and actions. Therefore, what people think, what they believe, and how they feel will ultimately impact how they behave (Bandura, 1986). Bandura provided a view of human behavior in which the beliefs that people have about themselves are critical elements in the exercise of control and personal agency. The end result is individuals are viewed both as products and as producers of their own environments and of their social systems.

Social cognitive theory posits that factors such as economic conditions, socioeconomic status, and educational and familial structures do not affect human behavior directly. Instead, they affect it to the degree that they influence people's aspirations, self-efficacy beliefs, personal standards, emotional states, and other self-regulatory influences.
Self-Efficacy and Career Exploration

Self-beliefs about abilities play a central role in the career decision-making process. People move toward those occupations requiring capabilities they think they either have or can develop. People move away from those occupations requiring capabilities they think they do not possess or they cannot develop.

Personal goals may also influence career behaviors. Personal goals relate to one’s determination to engage in certain activities to produce a particular outcome. Goals help to organize and guide behavior over long periods of time. The relationship among goals, self-efficacy, and outcome expectations is complex and occurs within the framework of Bandura’s Triadic Reciprocal Model of Causality – these factors are all affecting each other simultaneously: personal attributes, external environmental factors, and overt behavior (Bandura, 1997, 2006).

In essence, aspects of a person, such as gender, interact with contextual factors, such as culture and learning experiences, to influence self-efficacy beliefs and outcome expectations. Self-efficacy beliefs and outcome expectations in turn shape people’s interests, goals, actions, and eventually, their attainments. Beliefs and outcome expectations may also be influenced by related factors such as job opportunities, access to training opportunities, or financial resources.

Bandura (1997, 2006) explains that self-efficacy expectations are defined by at least three major behavioral indicators: (a) approach versus avoidance behavior, (b) quality of performance of behavior in the target domain, and (c) persistence in the face of obstacles or disconfirming experiences. Therefore, the assumption is that a person exhibiting low self-efficacy expectations regarding a particular domain (for example,
math ability) will result in avoidance of that domain, poorer performance in it, and an increased tendency to give up when faced with discouragement or failure.

When related to career issues, self-efficacy theory focuses on individual cognitive processes that govern actions related to career choice and decision making. Sharf (1997) noted that the way individuals view their abilities and capacities can affect academic, career, and other choices. Individuals with a low sense of self-efficacy may have thoughts that they will not be able to perform a task well, become discouraged or overwhelmed, and therefore, not persist (Sharf, 1997). Even obstacles, either assumed or unsubstantiated, may directly impact an individual’s career decision-making process. On the other hand, higher self-efficacy enables some individuals to persist and succeed even in predominantly unsupportive environments (Sharf, 1997).

Research by Shelley Correll, a sociologist at Stanford University, demonstrated how girls’ and women’s seemingly voluntary decisions to avoid science and math careers are influenced by the cultural belief that these disciplines are male domains. Correll’s research (2001, 2004) focused on self-assessment and its consequences for interest in math and science. She found that among students with equivalent past achievement in math, boys assessed their mathematical ability higher than girls did. Controlling for actual ability, the higher students assessed their mathematical ability, the greater the odds were that they would enroll in a high school calculus course and choose a college major in science, math, or engineering. Correll found that boys were more likely than their equally accomplished female peers to enroll in calculus not because boys were better at math but because they believed that they were better at math. When mathematical self-assessment levels were controlled, the previous higher enrollment of boys in calculus
disappeared and the gender gap in college major choice was reduced (Correll, 2001). In a follow-up study, Correll (2004) verified in a laboratory experiment that when cultural beliefs about male superiority exist in any area, even a fictitious one, girls assess their abilities in that area lower, judge themselves by a higher standard, and express less of a desire to pursue a career in that area than boys do. Undoubtedly, many factors influence an individual’s career choice, but at a minimum, individuals must believe they have the ability to succeed in a given career to develop preferences for that career.

In the context of career development, self-efficacy expectations can influence the types of courses, majors, and careers individuals feel comfortable attempting. They can influence performance on the tests necessary to complete college coursework or the requirements of a job training program. A willingness to even select an educational major or pursue a vocation can be viewed through a person’s self-efficacy. Furthermore, low self-efficacy will cause an individual to eliminate options and limit initial interest development by avoidance of the kinds of experiences and learning opportunities that could facilitate the development of new interests (Betz & Borgen, 2000).

Finally, the effects of self-efficacy on persistence can influence the long-term pursuit of an individual’s goals in the face of obstacles, occasional failures, and discouraging messages from society, such as gender or ethnic discrimination or harassment.

Career Development

In American culture, we are what we do. The impact that career development has on a young person is long-term. The process of career development often fosters a work identity (Tiedeman & O’Hara, 1963). More frequently we are asked “What do you do?”
rather than “Who are you?” For the young, this decision is critical in determining the outcome of their lives.

Several career theories have developed over the past sixty years, most notably, John Holland’s typology of personality types. Spokane and Cruza-Guets (2005) observed that Holland’s unique concept of a vocational system formulated on personality types has been subjected to more tests and analysis than any other model of career development. As well as noted the considerable amount of research done in support of the concept of congruence. In addition, these authors also cited the valuable contribution of Holland’s theory regarding assessment instruments for persons and environments, as well as the inclusion of Holland’s types in measures of vocational interests.

**Holland’s model**

In the early 20th century, psychologists of experimental, social, and personality theories attempted to apply person-environment interactions to explain behavior. According to Osipow (1983), matching of an individual’s abilities and interests with vocational choices can be accomplished. The trait perspective, in particular, has comprised a major portion of the vocational behavior literature. Chartrand, Strong, and Weitzman (1995) remarked that those working from this perspective, often seek to describe people and their environments in terms of matching these components to a degree of fit, or congruence. This set of measures often predicts behavior. One of the more known and used predictors in career counseling is Holland’s (1973, 1997) theory of vocational personalities and work environments.

The basic premise of John Holland’s theory (1997) is that an individual's early genetic endowments determine methods for coping and dealing with social and
environmental tasks. The typical way a person responds to his or her environment is known as the person's modal personal orientation. Holland's personality/environment types are usually referred to by the first letter of each word; or the RIASEC model. Holland categorized people and work environments into six groups: realistic (R), investigative (I), artistic (A), social (S), enterprising (E), and conventional (C).

According to Holland, realistic types seek environments that allow them to work with tools, objects, animals, or machines, and avoid environments that require social interaction. Investigative types prefer observing and systematically examining physical, biological, or cultural phenomena, and avoid environments that require persuasive activities. Artistic types prefer unstructured and ambiguous activities that allow them to create art from physical, verbal, or human materials and avoid clerical and computational environments. Social types prefer teaching, developing, or curing and avoid working with objects such as machines. Enterprising types prefer working in leadership roles and tend to avoid science. Conventional types prefer examination of data and tend to avoid ambiguous unstructured environments (Fritzsche, McIntire, & Yost, 2002). Therefore, the implication is when realistic interests and confidence align within Holland’s investigative theme, occupations such as engineering and technical specialties become viable for career exploration (Betz & Schifano, 2000).

Holland further proposed that these same six classifications are appropriate for characterizing work environments that allow the individual to use their skills and abilities. These classifications also express the individual’s attitudes and values. Holland noted that vocational behavior is a result of the interaction between the personality and environmental characteristics. Therefore, effective career development is the result of a
matching between personality and environmental characteristics. Because Holland described personality characteristics and work environments in the same terms, he emphasized a perspective that has a long history in society, in general, and in the counseling profession, in particular, specifically, that work is a way of life (Holland, 1973).

Holland (1997) noted a shift in American culture, one toward a greater equality for women, and he felt that this would be reflected in the interest profiles of women. Holland further acknowledged the influence of variables such as age, gender, race, and social class in possibly reducing the range of careers one considers. Accordingly, he recommended the inclusion of measures of age, gender, social class, intelligence, and environmental measures to better integrate these constructs with his theory.

In their seminal research, Hackett and Betz (1981) examined traditionality of occupational choices and sex-role orientation related to Holland’s concept of congruence. Although research may support the findings that indicate people often choose an occupational environment corresponding with their personality type, Hackett and Betz questioned the consistency of this finding. Particularly with regard to women, the authors speculated that Holland’s theory is differentially valid. Noting that occupational gender stereotypes have been well-documented, these authors proposed that women who choose traditional occupations are influenced by stereotypes. Therefore, these women may not be making occupational choices congruent with their personalities, in comparison with women who choose from a broader range of choices. Hackett and Betz also question the influence of sex-role orientation as a moderator of career choice, noting some evidence of androgynous women being less likely to choose traditional careers for women.
Hackett and Betz’s findings suggest that greater congruence was associated with those women whose occupational choices were in nontraditional fields, while women making incongruent choices selected traditionally occupations. They also found that masculine-typed women were more likely to make both congruent choices as well as choices in traditionally masculine career fields than were feminine-typed, androgynous, or undifferentiated women. The authors concluded that Holland’s congruence postulate is a better predictor of women’s career choices if they have not been socialized to select traditional career fields. Finally, they suggested the possible value of examining additional variables to better understand the applicability of Holland’s congruence postulate to women’s career development.

In their review of research in vocational psychology, Swanson and Gore (2000) discussed Holland’s model and acknowledged the importance of the congruence postulate. The authors cited studies indicating that congruence is associated with academic and career outcomes. Swanson and Gore ultimately concluded that Holland’s theory continues to influence research and practice, that research findings are not as insignificant as they might appear given statistical and methodological issues in previous research, and that data support the idea that people seek congruent environments.

In spite of this, Spokane and Cruza-Guets (2005) reported problems regarding Holland’s theory in regards to the vocational behavior of women. Women consistently have higher raw scores on inventories such as the Self-Directed Search in social and artistic areas and lower scores on investigative and realistic areas compared to males. The authors also described women’s career development as directed less by personal preferences and may be inhibited by more barriers and arbitrary realities than that of men.
One example is women consider family issues related to career development to a higher extent than men. Another example described is reduced math and science efficacy which appeared to be a result in part to gender role socialization. In conclusion, Spokane and Cruza-Guet caution professionals assessing or counseling women regarding career choice to consider the potential bias in assessments and to include instruments that account for gender norms. And, lastly, work with women clients to explore realistic exploration of career opportunities.

Finally, evaluating the practical applications of his theory, Holland (1997) outlined several points related to an ideal that he terms *adaptive vocational behavior*. Three of these points are of particular relevance: 1) a person has had sufficient occupational experience so that his/her reference of occupational information and stereotypes has a degree of validity and is free of major contradictions; 2) a person has had sufficient self-clarifying experiences so that his/her interests, competencies, and personal characteristics are accurate; and 3) a person’s plans are not distorted in any major way by cultural, economic, social, or technological influences (1997). People often have limited occupational experiences or career information, and may be biased as to the nature of choices available to them. The perceptions a person has of the world of work may be composed of occupational stereotypes and based on one’s self-concept. In turn, a person interacts with society in a larger level, such as culture, economy, and social mores, to provide the basis for real-world behavior.

**Self-Efficacy and Career Development**

In the 1970s, vocational psychologists began to question the applicability of existing career development theories to the work lives of women (Vetter, 1973; Osipow,
One concern in particular was the lack of theory to account for observed gender-based occupational segregation. Betz and Hackett (1981) first proposed that self-efficacy is an important variable to include in models of career development (Lent & Hackett, 1987). Building on Bandura’s general self-efficacy theory, these authors developed the concept of career self-efficacy, which is defined as the strength of an individual’s expectation that he/she can prepare for and enter a specific career successfully, focusing on cognitive beliefs about one’s abilities or success (Betz & Hackett, 1981).

Consistent with the conceptual understanding of general self-efficacy, career self-efficacy expectations are assumed to develop from four primary sources: (1) behavioral performance; (2) vicarious experience; (3) verbal persuasion and encouragement; and (4) emotional arousal (Bandura, 1977). Betz and Hackett (1981) posited because men and women experience differential gender socialization in our culture, men and women would also have very distinctive experiences and opportunities for learning. As a result, these differential experiences would also impact the development of self-efficacy.

Traditionally, masculine gender-role socialization emphasizes the development of such personality traits as assertiveness and dominance. These were posited to be more likely to facilitate task accomplishment behaviors as well as increase the probability that such behaviors would be successful. On the contrary, traditionally feminine gender role socialization, which emphasizes such characteristics as nurturance and passivity, was understood to be less likely to lead to positive behavioral performance accomplishments. Betz and Hackett (1981) recognized that culturally, men are exposed more often to career-relevant vicarious learning experiences than women. In addition, the authors noted that males generally receive more encouragement, verbal persuasion, and praise for
achievement accomplishments than females. These discrepancies in opportunities for social learning were hypothesized to facilitate lower perceptions of self-efficacy in women, which in turn, were posited to account for the documented underutilization of talents by women in their career performances.

Even though the authors looked at the influence of self-efficacy on achievement behavior, academic career decisions, and career adjustment for both men and women, the main focus was on understanding self-efficacy expectations of women in choosing male-dominated versus female-dominated occupations (Taylor & Betz, 1983). Betz and Hackett (1981) focused specifically on gender differences in access to the primary sources of efficacy information, such as enactive performance opportunities or performance accomplishments relevant to career pursuits; availability of vocational role models; and encouragement by significant others to pursue non-sex stereotypical endeavors (Lent & Hackett, 1987).

Betz and Hackett (1981) proposed that gender differences in career choice could be explained in terms of gender differences in self-efficacy for traditional versus nontraditional career paths. They hypothesized that women would exhibit higher self-efficacy for traditional occupations and lower self-efficacy for nontraditional occupations. In addition, this sense of self-efficacy was expected to mediate the link between gender and an interest in or choice of occupations.

In the Betz and Hackett (1981) empirical study, students were assessed on self-efficacy with regard to 20 occupational titles designated either as traditional or nontraditional. Traditional was defined as female-dominated careers, those with more than 70% of related positions occupied by women; and nontraditional was defined as
male-dominated careers, those with less than 30% of related positions occupied by women. These categories were defined by the percentage of women employed in the occupation as stipulated by the U.S. Women’s Bureau in 1975. Betz and Hackett (1981) asked college students to report whether they felt themselves capable of completing various educational majors. Participants were asked to indicate their level and strength of self-efficacy expectations as measured by the Occupational Self-Efficacy Scale. The level of self-efficacy was determined by the response of whether felt they could successfully complete educational requirements for a particular field of study. Second, the strength of self-efficacy was measured by a response indicating the degree of confidence for completing the educational requirements to enter the 20 occupations based on a 10-point Likert scale. Respondents were instructed to indicate how much confidence they felt they had to successfully complete the education and/or training requirements to enter each occupation on a scale from No Confidence At All (0) to Complete Confidence (10). The scale also asked respondents to indicate confidence to perform the job duties of the occupation if they had the necessary education and/or training.

Even though the men and women as a group did not differ in their tested abilities, they differed significantly in their self-efficacy beliefs. These differences were especially striking regarding occupations involving mathematics: 59% of college men versus 41% of college women believed themselves able to complete a degree in that field. Seventy-four percent of men, versus 59% of women, believed they could be accountants. Most dramatically, 70% of college men but only 30% of comparably able women believed themselves able to complete a degree in engineering.
Furthermore, results indicated that males reported higher self-efficacy on five traditionally male occupations (accountant, drafter, engineer, highway patrol officer, and mathematician) and females reported greater self-efficacy on five traditionally female occupations (dental hygienist, elementary teacher, home economist, physical therapist, and secretary). There were fewer sex differences in confidence ratings for completing the educational/training requirements; however the mean confidence scores of males were significantly greater than those of females on engineer and highway patrol officer, whereas females reported higher levels of confidence on the occupations of elementary school teacher, home economist, secretary, and social worker.

Following in the footsteps of Betz and Hackett, Lent, Brown, and Larkin (1984; 1987) examined the self-efficacy beliefs of 42 undergraduate students as indicated by their persistence and success in pursuing science and engineering majors. Students participated in a 10-week career-planning course on science and engineering fields. Self-efficacy measures tested their perceived ability to fulfill the education requirements and job duties of a variety of technical and/or scientific occupations. Students were also measured on several variables such as self-esteem, career indecision, vocational interests, and range of perceived career options. A one-year follow-up study indicated that students who initially reported high efficacy achieved higher grades and showed greater persistence in science/engineering majors. Findings from a partial replication of the first study indicated similar results with regards to a significant relation of technical/scientific self-efficacy to grades and persistence in technical majors. Non-significant relationships were found among self-efficacy, self-esteem, and career indecision. Although contributing significantly to the field, these studies have been criticized for using small
samples and for targeting students with high ability, therefore suggesting that these participants might have had more efficacy-building experiences than the general public (Lent & Hackett, 1987).

Self-efficacy research has also been instrumental in examining the relationship between perceived self-efficacy and interests as a predictor of the type of career options college students consider (Betz, Borgen, & Harmon, 1996; Betz, Harmon, & Borgen, 1996; Lapan, Boggs, & Morrill, 1989; Lapan, Shaughnessy, & Boggs, 1996). In a large study sampling 1,105 employed adults in 21 various occupational groups, self-efficacy predicted the greatest differences in occupational interests among the 21 occupational groups, accounting for 82% of the variance (Betz & Borgen, 2000).

Similarly, Lapan et al. (1996) found that math self-efficacy and math interests predicted college major choice in math and science majors. Betz & Hackett, (1983) also found that math self-efficacy was associated to the extent to which students selected math/science related college courses. However, because math self-efficacy was determined based on 18 short math problems, critics suggested limitations in generalizability of these findings (Lent & Hackett, 1987).

Taylor and Popma (1990) looked at the relationship between career decision-making self-efficacy and vocational indecision as well as its relationship to career salience and locus of control. Undergraduates enrolled in a general psychology course were placed into three groups based on their major choice status (i.e. I have declared a major; I am tentatively decided on a major; I am undecided on a major.) In assessing the relationship among career decision-making self-efficacy, traditional and nontraditional range of career options, and occupational self-efficacy for traditional and nontraditional
occupations, a stepwise discriminant analysis revealed that declared majors reported the highest career decision-making self-efficacy compared to the tentative and undeclared groups. These findings suggest that higher self-efficacy for career decision-making behaviors differentiates students who have declared their academic major or selected a career path from their counterparts who are either undecided or have made only tentative choices of an academic major or career choice. A moderate positive relationship was found between the two measures of occupational self-efficacy and career self-efficacy. This seems to indicate that confidence in one’s ability to complete the educational and training requirements for a traditional and nontraditional occupation coincides to some degree with confidence to complete career decision-making tasks (Taylor & Popma, 1990).

When related to career issues, self-efficacy theory focuses on individual cognitive processes that govern actions related to career choice and decision making. Sharf (1997) noted that the way people view their abilities and capacities can affect academic and career choices. A person with a low sense of self-efficacy will often give up on a difficult task because they may have thoughts that they are unable to do the task well. As a result, even presumed yet unsubstantiated obstacles can have a direct impact on an individual’s career decision-making process. On the other hand higher self-efficacy expectations enable some individuals to persist and succeed even in predominantly unsupportive environments (Sharf, 1997).

Early studies were fairly consistent in finding the gender differences in self-efficacy based upon occupation traditionality. Numerous studies confirmed that women reported lower self-efficacy for nontraditional occupations and higher self-efficacy for
traditional occupations (Betz & Hackett, 1981; Church, Teresa, Rosebrook, & Szendre, 1992; Lauver & Jones, 1991; Matsui, 1994; Post-Kammer & Smith, 1985). Lower self-efficacy was particularly evident for math and science occupations (Post-Kammer & Smith, 1985; 1986), as well as occupations associated with Holland’s (1997) realistic (Lapan, Boggs, & Morrill, 1989; Matsui & Tsukamoto, 1991) and investigative domains (Lapan, et al., 1989), both of which include predominantly nontraditional occupations. Furthermore, work tasks often associated with traditional and nontraditional occupations were similarly differentiated. Women expressed lower self-efficacy in data (such as math) tasks (Betz & Hackett, 1983; Hackett 1985; Hackett & Betz, 1989; Hackett, Betz, O’Halloran, & Romac, 1990; Lapan & Jingeleski, 1992; Pajares & Miller, 1994) and higher self-efficacy for working with people (Whiston, 1993).

Research also supported the belief that gender differences in self-efficacy may drive gender differences in career interests and choice, and, therefore, help to explain the observed differences in the patterns of women’s and men’s occupational choices. Stronger self-efficacy for a given domain, such as math, correlated to a greater interest in related college majors and careers (Betz & Hackett, 1981; Hackett et al., 1990; Hackett, Betz, Casas, & Rocha-Singh, 1992; Lent, Larkin, & Brown, 1989; Post-Kammer & Smith, 1985) and also impacted the choice of college majors (Betz & Hackett, 1983; Hackett, 1985; Hackett & Betz, 1989; Lent, Lopez, & Bieschke, 1993). In addition, studies noted that stronger career self-efficacy was linked to more positive outcome expectations, or cognitive beliefs about ability to pursue a particular career (Hackett, et al., 1992; Lent et al., 1993). As women expressed lesser self-efficacy for nontraditional domains, it followed that women also expressed lesser interests in such fields. Therefore,
they were less likely to engage in behaviors or choice of major that allowed them to follow nontraditional career paths (Betz & Hackett, 1983; Hackett, 1985; Hackett & Betz, 1989; Lent, Lopez, & Bieschke, 1993).

Taken as a whole, research examining the relationship between self-efficacy and vocational interest confirms that self-efficacy and interests are related in meaningful ways. Studies using both novel (Betz & Hackett, 1981; Lent et al., 1986; Rotberg et al., 1987) and standardized (Lapan et al., 1989; Lent et al., 1989) measures of vocational interest appear to suggest individuals’ perceptions of their ability are related to corresponding inventoried interests. In addition, the degree of the correlations between self-efficacy and vocational interests, ranging from modest to moderate, suggests that these are distinct constructs and may likely contribute to other aspects of career development such as choice behaviors and vocational aspirations (Lent et al., 1989).

Stereotypes about female’s abilities in mathematics and science persist despite considerable gains in participation and performance in these areas during the last few decades. Two stereotypes are prevalent: girls are not as good as boys in math, and scientific work is better suited to boys and men. As early as elementary school, children are aware of these stereotypes and can express stereotypical beliefs about which science courses are suitable for females and males (Farenga & Joyce, 1999; Ambady et al., 2004).

Furthermore, girls and young women have been found to be aware of, and negatively affected by, the stereotypical image of a scientist as a man (Buck et al., 2008). A large body of experimental research has found that negative stereotypes affect women’s and girls’ performance and aspirations in math and science through a phenomenon called stereotype threat. Even female students who strongly identify with
math—who think that they are good at math and being good in math is important to them—are susceptible to its effects (Nguyen & Ryan, 2008). Stereotype threat may help explain the discrepancy between female students’ higher grades in math and science and their lower performance on high-stakes tests in these subjects, such as the SAT-math (SAT-M) and AP calculus exam.

Additionally, stereotype threat may also explain why fewer girls than boys express interest in and aspirations for careers in mathematically demanding fields. Girls may attempt to reduce the likelihood that they will be judged through the lens of negative stereotypes by saying they are not interested and by avoiding these fields.

In the mid-1990s, Aronson and his colleagues first identified and described the phenomenon of stereotype threat, the threat of being viewed through the lens of a negative stereotype or the fear of doing something that would confirm that stereotype (Steele & Aronson, 1995). Stereotype threat arises in situations where a negative stereotype is relevant to evaluating performance. For example, a female student taking a math test would experience an extra cognitive and emotional burden of worry related to the stereotype that women are not good at math. A reference to this stereotype, however subtle, could adversely affect her test performance. When the burden is removed, however, her performance would improve. This phenomenon was first identified in experiments examining factors that could explain differences in academic performance among African American and white college students.

Aronson et al. (2002) observed that existing research did not fully explain the gaps in academic performance between these groups. In addition to considering factors such as home and family situations, school-related variables, and peer influences, it was proposed
that psychological factors at the student level also needed to be considered. Their theory focused on the psychological predicament rooted in stereotypical images of certain groups as intellectually inferior. Aronson et al. referred to this phenomenon as stereotype threat and offered it as an important factor—albeit not the sole factor—producing group differences in test performance and academic motivation.

Stereotype threat can be felt as both psychological and physiological responses that result in impaired performance. For example, in a study by Blascovich et al. (2001) it was found that African Americans taking an intelligence test under stereotype threat had higher blood pressure levels than whites did. No difference in blood pressure levels of African Americans and whites occurred in the nonthreatening situation. Steele and Aronson (1995) found that stereotyped individuals often made more of an effort, and attempted the same number of items if not more than the nonthreatened participants. However, the stereotyped individual also reread items more often and worked slower with less accuracy. In one of the earliest experiments looking specifically at women, Spencer et al. (1999) recruited 30 female and 24 male first-year university psychology students with strong math backgrounds and similar math abilities as measured by grades and test scores. In addition, all students strongly identified with math. The students were divided into two groups. The researchers administered a math test on computers using items from the math section of the Graduate Record Exam. One group was told that men performed better than women on the test, creating the threat condition; and the second group was told that there were no gender differences in test performance, creating the nonthreatening condition. Spencer et al. hypothesized that if stereotype threat could explain gender differences in performance, then presenting the test as free of gender bias
would remove the stereotype threat. Therefore, women would perform as well as men. If disparity in performance were due to sex-linked ability differences in math, women would perform worse than men even when the stereotype threat was removed. They found that women performed significantly worse than men in the threat situation and the gender difference almost disappeared in the nonthreatening condition.

In the ensuing decade more than 300 studies have been published that support this finding. The results of these experiments indicate that stereotype threat is often the default situation in most testing environments. The threat can be easily induced by asking students to indicate their gender before a test or simply having a larger ratio of men to women in a testing situation (Inzlicht & Ben-Zeev, 2000). Research consistently finds that stereotype threat adversely affects women’s math performance to a modest degree (Nguyen & Ryan, 2008) and may account for as much as 20 points on the math portion of the SAT (Walton & Spencer, 2009).

Aronson’s research also has shown that high-achieving and motivated women who are leaning towards traditional male careers, defined as STEM—Science, technology, engineering, and mathematics, are susceptible to stereotype threat. Aronson conducted a field experiment at a large public university in the southwest to investigate stereotype threat among students in a high-level calculus course, a precursor to future careers in science. The results showed no difference in performance between female and male STEM majors when they were told that a difficult math test was a diagnosis of their ability, imposing the threat condition; however, when the threat was removed by telling the students that women and men performed equally well on the test, the women performed significantly better than the men (Good et al., 2008).
Additionally, a repeated or long-term threat can eventually undermine aspirations in the area of interest through a process called disidentification. Aronson (1995) describes disidentification as a defense to avoid the risk of being judged by a stereotype. Faced with a stereotype that girls are not good at math, for example, an individual might respond by claiming, “I don’t care about math; it’s not who I am.” In extreme cases, rather than repeatedly confronting a negative stereotype, girls and women might avoid the stereotype by avoiding math and science altogether.

How do stereotypes affect self-assessments? Correll (2004) explains that stereotypes act as cognitive crutches in situations in which a person is unsure on how to judge his or her performance. Research shows that even individuals who do not personally endorse beliefs that men are better than women at math are likely to be aware that these beliefs exist in the culture and expect that others will treat them according to these beliefs. This expectation has been shown to influence judgments (Foschi, 1996; Steele, 1997; Lovaglia et al., 1998). If a girl believes most people, especially those in her immediate environment, think boys are better than girls at math; this thought is going to affect her, even if she doesn’t believe it herself.

Correll published a study in 2001 that looked at the correlation between students’ math achievement and self-assessment of their math ability by gender and the influence that self assessment has on persistence on a path to a STEM career. This study analyzed the National Educational Longitudinal Study of 1988 (NELS-88), a national dataset of more than 16,000 high school students. The first NELS-88 survey was conducted in 1988 when the students were in the eighth grade. A subsample of the original students was
again surveyed in 1990, 1992, and 1994, when most were sophomores, seniors, and two years beyond high school, respectively.

Correll identified three items on the survey as indicators of mathematical self-assessment: “Mathematics is one of my best subjects,” “I have always done well in math,” and “I get good marks in math.” Students were asked to agree or disagree, on a six-point scale, with these statements during their sophomore year of high school. Student mathematical achievement was approximated through past math test scores and average math grades that students received in high school. Correll’s analysis showed that high school boys were more likely than their female counterparts of equal past mathematical performance to believe that they were competent at mathematics. Interestingly, the effect was reversed when the students assessed their verbal ability: female students made significantly higher self-assessments of verbal ability, controlling for actual verbal performance. This suggests that stereotypes about gender influence students’ perceptions of their abilities in particular fields: boys do not assess their task competence higher than girls do in every area, just in the areas considered to be masculine domains. These findings suggest that cultural beliefs about the appropriateness of one career choice over another can influence self-assessment and partially account for the disproportionately high numbers of men in the quantitative professions, over and above measures of actual ability (Correll, 2001).

In a follow-up study Correll (2004) tested her theory that boys assess their abilities higher and express higher aspirations to pursue a career in areas considered to be male domains in an experimental setting. She conducted this experiment to show that cultural beliefs about gender, not actual gender differences, influence self-assessments
about math. The previous study relied on the assumption that the students in the sample were aware of the cultural beliefs about gender and mathematical abilities, and this awareness caused the observed gender differences in self-assessments of competence. Since Correll could not isolate and manipulate students’ exposure to gender beliefs associated with these abilities in that study, however, she could not be sure that cultural beliefs about gender caused the difference in self-assessment and not, for example, some additional component of “real” mathematical ability not captured by math grades and test scores. To account for this possibility, Correll designed an experiment around a fictitious skill called “contrast sensitivity ability.” In this experiment, participants were given evidence that contrast sensitivity ability defined as the ability to detect proportions of how much black and white appeared on a screen, was either an ability that men were more likely to have - a male advantage or MA condition; or an ability that showed no gender difference -gender dissociated or GD condition. Eighty first-year undergraduate students were divided into four groups: 20 men and 20 women in the MA group and 20 men and 20 women in the GD group.

Participants completed two 20-item rounds of a computer-administered contrast-sensitivity test. Subjects were given five seconds to judge a series of rectangles and to assess which was more dominate, black or white. Unknown to the participants, the amount of white and black was either equal or very close to equal in each rectangle. Therefore, the test had no right or wrong answers. All subjects were told that they had correctly answered 13 of the 20 items during round one and 12 of 20 in round two. Participants were then asked to assess their performance and indicate their interest in pursuing a career requiring contrast sensitivity ability.
In the male advantaged group, men assessed their contrast-sensitivity ability and their interest in pursuing careers requiring this ability higher than women did, even though all participants received identical scores on the tests. Because the test had no right answers, men could not really be better at the contrast-sensitivity task; yet when told that men excelled at this ability, they assessed their own abilities higher than women assessed their own abilities and expressed more interest than women did in using this ability in a future career. When Correll controlled for level of self-assessment, a gender difference no longer existed in aspirations for a career requiring high contrast-sensitivity ability, which suggests that higher self-assessment among the men led them to express more interest than women did in using this ability in a future career. In the gender disassociated group, where the fictitious skill was described as equally likely to be held by women and men, no gender differences appeared in assessments of ability or interest in using the skill in the future (Correll, 2004).

Perhaps the most interesting finding from this study is that women and men held different standards for what constituted high ability in the male advantaged condition. In the MA condition, women believed they had to earn a score of at least 89 percent to be successful, but men felt that a minimum score of 79 percent was sufficient to be successful—a difference of 10 percentage points.

In the gender disassociated condition, women and men had much more similar ideas about how high their scores would have to be to assess themselves as having high task ability: women said they would need to score 82 percent, while men said they would need to score 83 percent. This finding suggests that women hold themselves to a higher standard than their male peers do in masculine fields. Correll’s findings suggest that the
merek fact that science, technology, engineering, and mathematics are commonly considered to be masculine domains may increase men’s self-assessment of their abilities and interest and lower women’s self-assessment and interest in pursuing careers in these areas. Additionally, the research indicates that women believe that they must achieve at exceptionally high levels in math and science to be successful.

Individuals form career aspirations in part by drawing on perceptions of their own competence at career-relevant tasks. Correll’s research shows that the cultural association of mathematical competence with boys and men negatively influences girls’ self-assessments compared with boys’ and raises the standard by which they judge themselves. Girls’ lower self-assessment of their math ability, even in the face of good grades and test scores, contributes to fewer girls expressing preference for and aspiring to STEM careers. In this way, belief structures in the general culture influence individual choices.

**Gender and Occupational Choice**

Career aspirations are influenced by factors such as gender, socioeconomic status, race, parents’ occupation and education level, and parental expectations (Khallad, 2000; Watson et al., 2002). Researchers examine such factors to determine their role in career behavior and how they affect individuals’ career decisions (Osipow & Fitzgerald, 1996; Rojewski & Yang, 1997).

Numerous studies have investigated self-efficacy and its relationship to factors in career development such as career choice options, achievement, ability, persistence, and interests. Researchers examining gender and self-efficacy have studied a broad range of constructs in efforts to understand the differences as it relates to career choices between

Osipow and Fitzgerald (1996) stated, “Gender is clearly one of the most powerful of all influences on vocational behavior” (p. 63). In the past, fewer occupational choices were available to women due to factors such as sexism, discrimination, and limited education. Studies on gender and career aspirations in the 1970s revealed girls had more restricted career aspirations than boys, and girls often opted for a narrow range of occupational categories (Mendez & Crawford, 2002; Wahl & Blackhurst, 2000). Additionally, Heins et al. (1982) reported that families often encouraged the educational and career aspirations of male children but not those of female children. Therefore, not only did sex differences in career aspirations develop early in childhood, girls appeared to learn quickly that certain adult statuses were available to them, reflecting societal sex-role expectations (Looft, 1971b).

To understand how self-efficacy and interests influence career options in women, Betz and Schifano (2000) evaluated an intervention designed to increase self-efficacy or confidence in women to pursue engineering and scientific occupations by including the sources of primary information as postulated by Bandura (1977). Based on the RAISEC personal styles defined by Holland some researchers suggest that when realistic interests and confidence accompany Holland’s Investigative (scientific) theme, a large array of engineering and technical specialties becomes viable for career exploration (Betz & Schifano, 2000).
Post-Kammer and Smith (1986) examined the relationship of gender differences in consideration of math-oriented and non-math-oriented occupations in disadvantaged students who participated in a precollege program. Regression analysis revealed both self-efficacy and interests contributed significantly to the prediction of both math-related and non-math-related occupational consideration for women, but only interests were predictive of occupational consideration for men (Lent & Hackett, 1987).

Other studies have looked at gender differences with regard to career decision-making self-efficacy and career commitment, (Chung, 2002). Although not examining self-efficacy, Perrone, Sedlacek, and Alexander (2001) examined gender differences with regard to variables influencing career goal setting. Incoming college freshmen were surveyed on (1) factors influencing career choice goals, (2) barriers to achieving career goals, and (3) facilitators of career goals. Respondents were asked to choose from a list of 10 factors and to indicate which was the most important in helping them with long-term career goals. Examples of items listed were: *make an important contribution to society, high anticipated earnings, well-respected or prestigious occupation.* To assess barriers that may inhibit meeting career goals, respondents were asked to pick the one major barrier to achieving career goals. Items included were: *personal finances, time management, and family conflicts.* Facilitators of career goals were assessed on a 5-point Likert scale from 5 (*strongly agree*) to 1 (*strongly disagree*). The items included were: “I prefer to handle my academic problems on my own,” “I would consider seeking study skills training,” and “I would consider seeking time management training.” The study’s outcome supported the initial hypothesis that gender differences did exist among factors which influence career-choice goals. Both males and females cited intrinsic interest in
the field as their long-term career goal. However, differences were noted as males cited high anticipated earnings as most important to a career goal; and females cited a well-respected or prestigious occupation as most important. Lastly, the hypothesis that gender differences were found as perceived barriers to attaining career goals was also noted (Perrone et al., 2001).

Lent et al. (2002) used qualitative methods to examine the perceived influences on college students’ selection and implementation of career choices. Students at two colleges (a state university and a technical college) participated in a structured interview designed to examine factors that promote or impede career paths. Students enrolled at both sites perceived their interests, values, and abilities as important factors with respect to both choices of options they expect to pursue and those they had ruled out (Lent et al., 2002). Nearly all participants mentioned social support or encouragement as a critical support factor. Moderate frequency categories included personal strengths, such as perceived ability and perseverance, direct experience with career-relevant tasks, role models/mentors, and expected outcomes about job opportunities or rewards. Although this study did not specify gender differences, these findings did suggest that certain barriers and supports may be fairly generic, whereas others may differ as a function of career decision makers’ environmental and other life circumstances. Therefore, career decision making needs to assess barriers as well as define supports in light of the characteristics and environments germane to the particular group of decision makers (Lent et. al, 2002).
Women’s Career Development

The literature related to women’s career development focuses on several important themes that set women’s work experiences and career choices apart from those of men (Fassinger, 2000). When examining women’s career development, these areas must be considered: the tension between work and family roles, discrimination in work and school settings, gender role, and the tendency for women to underutilize their talents and abilities (Hackett and Betz, 1981; Betz & Fitzgerald, 1987; Fassinger & O’Brien, 2000). In addition, women themselves often perceive barriers and role conflicts as obstacles in their career development process (Albert & Luzzo, 1999; Brown & Barbosa, 2001; Luzzo & McWhirter, 2001; Stitt-Gohdes, 1997).

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Role Conflict. Since the majority of women with children now work outside of the home, role conflict has become a leading issue in the literature related to women’s career development. Role conflict stems from the difficulties that women experience while managing work and family roles. According to Farmer (1997), women and men are socialized to expect women to be homemakers and mothers, men to be breadwinners. These attitudes continue to cause stress for women who are employed outside the home
because of the expectations to care for both the home and work, while men are still viewed as responsible for work but not homemaking. Cook, Heppner, and O’Brien (2002) wrote that women grow up learning messages that they are supposed to take care of others and that career plans should revolve around this primary responsibility.

Composition of the family has also changed and impacts a female’s career aspirations or may severely limit her abilities to consider various career options. There was a dramatic increase in single-parent families in the United States in the last three decades of the twentieth century; only 13 percent of families were headed by a single parent in 1970. More than one-fourth of children in the United States lived with a single parent in 1996, double the proportion in 1970. As of the census bureau report of 2007, there are 4.1 million female-headed families in poverty; in total more than 14.4 million households are headed by women (US Census Bureau, 2007). Statistics showed these women earned considerably lower salaries compared to men with similar training, meaning a large number of these women and their families lived below the poverty level (Farmer, 1985; Stephenson & Burge, 1997).

Women dividing their time between work and home responsibilities tend to make concessions to better accommodate both roles. Some women lower their career aspirations in order to maintain both home and career roles. Others delay parenthood in order to establish a career prior to having children (Spain & Bianchi, 1996).

While marriage does not appear to hurt women, having young children does affect their chances for advancement. Having young children in the home may affect women’s productivity since child-care responsibilities fall disproportionately on women (Stack, 2004).
Some telling statistics point to the difficulties that mothers still face in an academic environment. Mason and Goulden (2002) found that among tenured faculty in the sciences 12 to 14 years after earning a doctorate, 70 percent of the men but only 50 percent of the women had children living in their home. The same study found that among science professors who had babies within the first five years after receiving a doctorate, 77 percent of the men but only 53 percent of the women had achieved tenure 12 to 14 years after earning a doctorate. In another Mason and Goulden study (2004), more than twice as many female academics (38 percent) as male academics (18 percent) indicated that they had fewer children than they had wanted.

In business and industry, both women and men identify family responsibilities as a possible barrier to advancement, but women are affected differently than men by this “family penalty” (Simard et al., 2008, p. 5). Although both women and men feel that having a family hinders their success at work, women are more likely than men to report foregoing marriage or children and delaying having children. Among women and men with families, women are more likely to report that they are the primary caregiver and have a partner who also works full time. A recent retention study found that most women and men who left engineering said that interest in another career was a reason, but women were far more likely than men to also cite time and family-related issues (Frehill et al., 2008).

Moreover, married working women are more likely to have a partner who is also employed and faces a similarly demanding work schedule. Despite gains in equality in relationships, in the situation of childcare, or even disruption due to career advancement, the man’s career is often given priority (Hewlett et al., 2008).
Replications in the 1980s of earlier studies showed girls had broadened their career preferences, yet their expectations for career attainment remained low, especially for high status, traditionally male jobs (Wahl & Blackhurst, 2000). Recent studies refuted earlier findings and asserted that females demonstrated an interest in a greater number of careers and displayed more gender-role flexibility in their career aspirations than males (Francis, 2002; Mendez & Crawford, 2002). Jones and Womble (1998) revealed that female secondary students had more positive attitudes toward work than males. However, Watson, et. al. (2002) noted adolescent females were more conflicted between their future careers and commitment to marriage and family.

Role conflict can affect the career choices and trajectories of women. Despite the attempt of cultural changes, women may still feel the stress of role conflicts to the extent that they resort to compromising their education and career aspirations.

**Work Discrimination.** Another viable issue at the forefront of research on women’s career development is discrimination in the work place (Betz & Fitzgerald, 1987). Although the Civil Rights Act of 1964 allowed women formal access to careers that were traditionally unavailable to them (Fitzgerald & Harmon, 2001), women continue to experience gender bias as evidenced by lawsuits brought in state and federal courts. For example, the Boeing Company recently provided a financial settlement to a group of women who sued the company for knowingly paying higher salaries and providing better promotion opportunities to men (Lunsford, 2004).

Studies also indicate that there are psychological consequences resulting from discrimination in the workplace. Sexual harassment, for example, can have a significant impact on women’s psychological well-being and job attitude (Schneider, Swan, &
Fitzgerald, 1997). Gender discrimination can push women to over perform or work twice as hard as their male counterparts in order to be accepted and recognized within an organization. These high demands are also associated with psychological distress (Parker & Griffin, 2002).

Discrimination is a barrier that many women face in the workplace. In an attempt to avoid the psychological consequences, women may avoid certain types of work or education where this discrimination is prevalent. Similarly, women may choose to pursue traditionally female occupations in order to avoid discrimination in fields traditionally male dominated.

**Race.** Results of studies examining the effects of race on career aspirations have been mixed (Mau & Bikos, 2000). Hellenga et al. (2002) noted that previous research typically found African Americans to possess lower career aspirations than their European American counterparts. Osipow and Fitzgerald (1996) supported this notion, stating African Americans, Hispanics, and Native Americans exhibit considerably lower educational and occupational outcomes than Caucasians. Further studies asserted people from minority groups, especially those from lower class backgrounds, had more limiting factors influencing their career aspirations compared with Caucasian persons from lower class backgrounds (Farmer, 1985; Gottfredson, 1981). In contrast, a study conducted by Arbona and Novy (1991) determined there were no ethnic differences with regard to their career aspirations.

**Socioeconomics.** Although few studies exist regarding effects of socioeconomic status on career choice, researchers agree socioeconomic status influences career choice (Gottfredson, 1981; Sellers et al., 1999). Mau and Bikos (2000) cited previous findings
showing a positive association between a family’s socioeconomic status and aspirations. Youth from higher socioeconomic statuses were more likely to be knowledgeable of and choose professional occupations (Sellers et al.). In contrast, Brown and Barbosa (2001) found career aspirations of young females who came from low-income families were confined to experiences of their relatives and friends. Influential siblings are thought to play a key role in the career development of adolescents from lower socioeconomic backgrounds (Ali, McWhirter, & Chronister, 2005).

**The Impact of Gender.** Hackett and Betz (1981) proposed that women are consistently exposed to gender-appropriate experiences as defined by the dominant cultures norms which reinforce their participation in traditional labor fields. In addition, women are not exposed to or perhaps actively kept away from experiences that are more normative for men. Scholars believe that people learn gender stereotypes at an early age, which subsequently causes them to generally think and act in stereotype-consistent ways (Cejka & Eagly, 1999; Miller & Budd, 1999). Studies across a variety of domains confirm that when made aware of a prevalent gender stereotype, people tend to behave in a way similar to that predicted by the stereotype (Banaji & Greenwald, 1995). The influence of such gender stereotypes can be so strong that is can influence women to perceive themselves as less able to perform a task that is incongruent with their gender role (Gupta, Turban, & Bhave, 2008; Zhang, Schmader, & Forbes, 2009). Furthermore, such activation of a stereotype can actually hinder a woman’s performance on such a task (Rydell, McConnell, & Beilock, 2009).

According to Lueng and Harmon (1990), the preference of traditionally masculine occupations for boys and traditionally feminine occupations for girls is the earliest
occupational criterion to develop. Day et al. (1992) found that among third, fourth and fifth graders, one of the jobs that the boys most hoped for and expected that they would hold were that of a police officer. For the girls, this was a job that was one most feared. In contrast, many girls hoped and expected to be a teacher, whereas many boys feared it. It is not only children who are influenced by gender stereotyping of occupations. Betz and Fitzgerald (1987) and Betz (1994) reported that in comparison with adult men, adult women have traditionally seen fewer occupations as suitable for themselves; have selected occupations from a narrower range of options, and have chosen careers often inconsistent with their vocational interests.

This idea is consistent with modern constructivist conceptualizations of gender, which suggests gender-based norms pervade not only career-related development but the development of the whole person, influencing how children are socialized in all aspects of life (Levant, 1996; Pleck, Sonenstein, & Ku., 1994). Family and educational systems, media, and even peers communicate expectations of behavior, thoughts and feelings based upon a child’s gender (Levant, 1996). These expectations have been characterized as gender role norms within the extant literature, which has outlined various norms for men and women, specifically within the dominant patriarchal culture within the United States (Levant, Richmond, Majors, Inclan, Rossello, Heesacker et al., 2003; Levant, Smalley, Aupont, House, Richmond, & Noronha, 2007; Mahalik, Locke, Ludlow, Diemer, Scott, Gottfried, et al., 2003; Mahalik, Morray, Coonerty-Femiano, Ludlow, Slattery, & Smiler, 2005).

For women, norms center around chastity, care-taking, submission, emotional expressiveness, and agreeableness; for men, norms center on promiscuity, power, status,
emotional control, and violence, as well as avoidance of femininity and homosexuality (Levant, Richmond et al., 2007; Levant, Smalley et al. 2007; Mahalik et al., 2003; Mahalik et al., 2005). Men and women have been found to vary on the degree to which they adhere to various gender role norms (Levant, Smalley et al., 2007; Mahalik et al., 2003; Mahalik et al., 2005) and a few notable pieces of research have attempted to examine women’s gender role conformity as it relates to select career-related variables (Betz & Hackett, 1983; Gushue & Whitson, 2006; Hackett, 1985; O’Brien & Fassinger, 1993).

The underlying assumptions imply that it is not necessarily being a woman that leads to a traditional or nontraditional career choice, but instead conformity to or disregard for femininity norms (Betz & Hackett, 1983). Support for this theory are findings that higher levels of masculinity relate to higher levels of mathematics self-efficacy (Betz & Hackett, 1983; Hackett, 1985), and that women with more liberal gender role attitudes report greater career decision making self-efficacy (Gushue & Whitson, 2006) and a stronger career orientation (O’Brien & Fassinger, 1993).

Only one study to date, however, has examined the relationship between gender role norms and learning experiences. Tokar and colleagues (2007) demonstrated that conformity to gender role norms accounted for variance in learning experiences above and beyond that of gender. In their combined gender sample, conformity to feminine role norms related to higher reported levels of learning experiences in Holland’s social and artistic domains, two areas conventionally associated with traditionally feminine occupations (Tokar et al., 2007). In the same study, conformity to masculine role norms was related to higher reported levels of learning experiences in Holland’s realistic and
enterprising domains (traditionally masculine areas) and lower levels of social learning experiences (Tokar et al., 2007).

Research also suggests that women have an increased sense of positive personal change after having taken a women’s studies course (Stake & Rose, 1994), lending support to the hypothesis that a more developed feminist identity would be positively related to an orientation toward personal growth. Finally, given research linking exposure to feminism and feminist beliefs with a more healthy self-esteem (Ossana et al., 1992; Weitz, 1982), it was predicted that a stronger feminist identity would be related to enhanced self-acceptance. It is postulated that a sense of feminist identity may equip a young woman with stronger self-efficacy.

**Underutilization of talents and abilities.** Another important factor that may affect women’s career development is the tendency for women to undervalue or underutilize their talents and abilities. Social attitudes and stereotypes may lead women to fail to fully develop their intellectual abilities (Betz & Fitzgerald, 1987). Women who show promise in particular educational subjects may not choose to pursue education and careers in those areas because of their own disbelief in their abilities or because of perceived barriers which interfere with their ability to pursue those career goals.

The notion that women tend to underutilize their talents and abilities in the workforce was noted in a fifteen-year longitudinal study of female valedictorians. Arnold (1993) found a significant divergence in labor force participation plans between male and female valedictorians. By their senior year of college, two-thirds of the women valedictorians planned to reduce or interrupt their future labor force participation order to participate in child rearing.
Better understanding of factors that prevent women from fully employing their talents and abilities is necessary to help women live up to their true educational and career potential. Whether it is due to childcare issues, lack of confidence in their skills and abilities, or other barriers preventing the pursuit of a successful career, many women have high levels of talent and potential that is underdeveloped or underused.

Results of various studies have demonstrated the role of self-efficacy in the selection of career choice (Hackett, 1995; Lent & Hackett, 1987). In general, findings indicate that self-efficacy beliefs influence the choice of majors and career decisions of college students. Undergraduates choose college majors and careers in areas in which they feel most competent and avoid those in which they believe themselves less competent or less able to compete. Researchers have reported that the mathematics self-efficacy of college undergraduates is more predictive of their mathematics interest and choice of math-related courses and majors than either their prior math achievement or math outcome expectations; and male undergraduates report higher mathematics self-efficacy than do female undergraduates (Hackett, 1985; Hackett & Betz, 1989; Lent, Lopez, & Bieschke, 1993; Pajares & Miller, 1994).

In many cases, young women avoid math-related courses and careers because they underestimate their capability rather than because they lack competence or skill (Hackett, 1995). The most critical implication is, given the situation in which many young women find themselves as a result of the lack of connection between their efficacy beliefs and performance skills, enhancing one deficit alone will not correct the problem. Any program or intervention will have to include an emphasis on academic and career-efficacy beliefs with focused attention on career development.
Summary and Conclusion

Work is integral to our lives and has essentially become a definition of who we are. Over the past century, research in career development has flourished, from researchers investigating the social cognitive antecedents to career development, as well as other aspects of the career decision-making process. Effective career decision-making is important because career decisions affect lifestyles (Kraus & Hughey, 1999). Researchers, who acknowledged the importance of exploring the complicated factors of career planning, have attempted to investigate the complexities surrounding career exploration.

Spokane and Cruza-Guet (2005) observed that there has been a recent shift to a more diverse clientele served by vocational counselors. Given the increased participation of women in the world of work, research indicates that there is a need to treat women’s career development as more complex than that of men. In addition, to better understand and facilitate women’s career goals, questions still remain as to how vocational interests, self-efficacy, and occupational gender stereotypes are related.

Although career development and its theories have been questioned as to their applicability for a large percentage of people in the United States (e.g., Fitzgerald & Betz, 1994), this knowledge base provides a foundation for contemporary career counseling. Therefore, as counselors preparing students for the world of work, it is imperative to continue to identify those factors that prohibit as well as promote the career choices of women.

Fassinger (2008) discussed the role psychology plays in understanding the importance of work. Research continues to cite the disadvantages and marginalization of
women in the workforce and these disadvantages often result in a form of segregation. This segregation in turn results in lower status in the workplace as well as an underutilization of capabilities. Although there have been significant changes in the current workforce participation of women, occupational segregation and its additional related effects, such as under representation in leadership and inequitable compensation, are still being experienced by women. Fassinger also noted that even though overt barriers have diminished in many educational and workplace environments, the impact of internalized barriers to career development continues to contribute to a decline in self-efficacy.

Women’s career aspirations have evolved steadily over the last half century, resulting in their increased workforce participation. A multitude of factors have influenced and inhibited women’s career aspirations and career development over the years (Nieva & Gutek, 1981). The types of careers women choose and factors influencing their choices are relevant issues to examine, especially since most research reveals women continue to work in lower-paying, traditionally female-oriented jobs (Rainey & Borders, 1997; Watson et al., 2002). Continued research on the lifelong processes of women’s career aspirations and career development is necessary to explain their unique occupational paths (Rainey & Borders, 1997; Schoon, 2001). It is necessary to continue studying the career interests and career development processes of women, as they will remain an important sector of America’s workforce (Gutek & Larwood, 1987). Gaining insight into career aspirations and career interests may also be useful in expanding career options available to young women (Rainey & Borders, 1997).
CHAPTER 3

Methodology

Purpose of Study

The purpose of this study was to examine the relationships among vocational interests, vocational efficacy, and adherence to feminine norms in a participant sample comprised of college women who have chosen a traditional feminine career option. This study was composed of two parts. The first part was quantitative, with the participants completing online survey instruments. The second part added a qualitative voice with selected participants in a follow-up interview. After the survey instruments were analyzed, if a participant’s answers regarding her self-efficacy, vocational efficacy, and/or her alignment to feminine norms indicated a discrepancy, and she provided an e-mail for follow-up, she was contacted for a follow-up interview.

Four online survey instruments were completed by the participants: 1) a traditional vocational interest survey based on occupational stereotypes; 2) a vocational interest survey based on expressed preferences for specific activities; 3) a vocational efficacy survey in which participants indicate their perceived areas of competence; and 4) a scale for assessment of adherence to feminine norms. The three vocational scales are based on the theoretical framework of John Holland, providing scores on six vocational personality traits: realistic, investigative, artistic, social, enterprising, and conventional. The standard interpretation of performance on the six dimensions is the creation of a “Holland code” representing the two or three highest trait scores. The extent of congruence between interests and efficacy on the Holland codes was one of the basic units of analysis for this study, with attention to possible impact of the self-report of
adherence to feminine norms and participant age on the extent of concordance.

Based on the extent of discrepancy between vocational interests and vocational efficacy and/or atypical responses on the adherence to feminine norms scale, participants who provided an email address were contacted for clarification of their responses.

**Research Questions**

Information was gathered through online surveys using research-based questionnaires. Follow up interviews were conducted with selected participants to further the investigation.

The questions guiding this research study were:

1. Is there an age difference in the extent of congruence between Holland Occupational Codes based on a traditional vocational interests scale and comparable codes based on a scale of vocational efficacy?
2. Is the extent of congruence between vocational interests and career efficacy related to whether vocational interests are measured with traditional occupational stereotypes or measured with stimuli designed to elicit the underlying trait?
3. Is there an age difference in the extent of adherence to feminine norms?
4. Is adherence to feminine norms related to the extent of congruence between vocational interests and vocational efficacy?

**Hypotheses**

1. There will be no statistically significant age difference in congruence of traditional vocational interest codes and vocational efficacy codes.
2. There will be no statistically significant difference in congruence between traditional vocational interest and vocational efficacy scores as compared to congruence between adapted vocational interest and vocational efficacy scores.

3. There will be no statistically significant age difference in scores on a measure of adherence to feminine norms.

4. The correlation coefficient between scores on a measure of adherence to feminine norms and congruence between vocational interests and vocational efficacy will not be statistically significant.

**Participants and Procedures**

The participants in this study were females, currently enrolled as either undergraduate or graduate level students, pursuing a degree in the field of education. The participants were from a large metropolitan area in the southwest United States. Appropriate measures to protect the confidentiality of the participants were in place. Participants were solicited through educational classes which required participation in a research project as part of their coursework. It is noted that the majority of the participants were declared education majors, a field that is considered traditionally female. Participants completed four online surveys regarding career interests and conformity to feminine norms. Participation in this study was voluntary.

In addition, each participant in this study was asked to indicate her willingness to participate in a follow-up interview and provided an e-mail contact if she agreed. After the initial data analysis was complete, twenty-two participants were asked for further clarification of their answers through an interview. This qualitative aspect provided further exploration of how a woman determines her career choice, albeit a stereotypical
female career path. The basic criteria for a follow-up interview were a noted discrepancy between a participant’s interests and her perceived self-efficacy.

**Instruments**

All information for the quantitative portion of this study was gathered online. After agreeing to the Consent Form, the participant completed four different surveys in addition to the demographic data. The four different measurements obtained for this study were: the Holland’s Vocational Performance Inventory Form B (VPI-B); the CogStyle Scale; the Vocational Efficacy Scale (VES); and the Conformity to Feminine Norms Inventory (CFNI-45). The VPI-B and the CFNI-45 are published instruments. Permission was obtained for administering these scales in an online format through the department experiment management system. The other two scales were developed in the Neuropsychological Assessment and Cybercounseling lab and have been used in prior studies. The following describes these measures and the reliability coefficients.

**Demographic Information**

Demographic information included ethnicity, age range, and class ranking (i.e. freshman, sophomore, etc.) as well as reported GPA. In addition, specification as to what area of education (i.e., special education, elementary education, secondary, etc.) the participant is pursuing was asked. If a participant agreed to be interviewed with follow-up questions, she provided contact information, such as a valid e-mail address.

**Holland’s Vocational Performance Inventory**

John Holland's Vocational Preference Inventory (VPI) is among the most widely used instruments in career counseling and has an extensive base of empirical support (Gottfredson & Johnstun, 2009). The VPI Research Form B is one of three abbreviated
forms and is comprised of 42 items (7 items for each of the Holland RIASEC dimensions). As in other VPI forms, the items in Research Form B are occupational titles to which the user responds "like" or "dislike".

The psychometric properties of this revised scale were assessed and evidence was supportive of both the construct and criterion-related validity of this form (Lowman and Schurman, 1982). The reliability coefficients for an adapted VPI-B were Realistic - .66; Investigative - .76; Artistic - .84; Social - .70; Enterprising - .65; and Conventional -.78. Comparable reliability coefficients for the VPI-B were reported for “female only” group.

These results show an acceptable internal consistency. This form was selected due to its brevity, without compromising the reliability and validity.

**CogStyle Scale**

The CogStyle scale was originally developed to facilitate equitable assessment of personality traits among persons with and without a disabling visual condition (Jones, 1996). The CogStyle scale, based on an artificial intelligence model postulated by Lowen (1982) uses the six Holland scales as the base for these four core personality traits: attitude (extraversion- introversion); approach (data-ideas); focus (things-people); and process (detailed-contextual). The Holland scales in the CogStyle IS used in this study.

In CogStyle, there are paired comparisons of six adjectives, one each for the Holland RIASEC dimensions, and paired comparisons of six action verbs, each also corresponding to one of the Holland dimensions. Adjectives are practical, curious, flexible, sympathetic, ambitious, and efficient. The actions are fixing things, investigating things, designing things, assisting others, persuading others, and organizing things.
In the fall of 2009, a study was done to obtain reliability data for the core dimensions that are used to calculate the global scores, the Holland vocational personality traits of Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. A total of 105 subjects provided complete data for this study and completed the 30 item CogStyle scale in an online format.

Split-half reliability coefficients (odd-even) with Spearman Brown correction were calculated for each of the six Holland vocational personality trait dimensions provided in the CogStyle Scale, along with the corresponding standard error of measurement. The reliability coefficients were: Realistic - .65; Investigative - .69; Artistic - .70; Social - .71; Enterprising - .73; and Conventional - .74. The Standard Error of Measurements were: Realistic - 1.22; Investigative - 1.29; Artistic - 1.18; Social - 1.21; Enterprising - 1.25; and Conventional - 1.23.

The results of this study appear to support the reporting and use of the core Holland dimensions on the CogStyle scales. The internal consistency reliability coefficients (split-half) in these results appear essentially comparable to results (Lowman & Schurman, 1982) reported for the short form of Holland's Vocational Preference Inventory. Internal consistency reliability estimates equal to or higher than .50 are suggested as sufficient for group comparisons (Ware, Brook, Ross, Williams, Stewart, & Rogers, et al., 1980). Reliability estimates of .70 or higher are recommended for general use (Corcoran & Fisher, 2002; Pallant, 2007).

All reliability estimates exceeded the minimum for group comparisons. Reliability estimates on four of the six dimensions met or exceeded the minimum standard for
general use. The standard error of measurement (Feldt & Qualls, 1998), another indicator of scale precision, was at a satisfactory level on all dimensions.

**Vocational Efficacy Scale**

Initial development of the Vocational Efficacy Scale (VES) by the author was to supplement the scales that provided assessment of interests using the Holland model with a scale to identify perceived efficacies. Tasks representing each of the six Holland dimensions were included. The participants responded to the following directions:

Rate your skill in doing a number of different kinds of things. On this scale, the focus is not on whether you enjoy a task but on how well you think you can do the task described. You don’t need to be modest when you think you can do something well or embarrassed if you cannot. Be honest with yourself in the rating.

Examples of items for each of the six Holland dimensions are: Use power tools (Realistic); Analyze ideas (Investigative); Sketch, draw, or paint (Artistic); Work as a part of a group (Social); Win arguments (Enterprising); and Keep accurate records (Conventional).

For a pilot study with this scale, six items were prepared for each dimension. Responses were on a Likert scale: *Very difficult for me, Usually difficult for me, Usually easy for me, Very easy for me*. A pilot study of the efficacy scale was conducted in the spring of 2007. Item analysis procedures were used to select the best five items for each of the six dimensions. Data from a study in the fall of 2010, \( n = 118 \), with the resulting 30-item scale found reliability coefficients (Cronbach's alpha) for the efficacy scale of: Realistic- .75; Investigative- .62; Artistic- .54; Social- .72; Enterprising-. .72; and Conventional- .67. Of particular interest for this study were the gender differences noted on the VIP-B, designed to tap preferences and the CogStyles scale, designed to tap
feelings of self-efficacy.

The historical, stereotypical prediction would be for statistically significant differences between females and males, particularly on the Holland realistic and social dimensions with males higher on the former and females on the latter. Typical measures of the Holland dimensions over the years have supported this prediction.

A question to be addressed in this study was whether societal changes in perceived gender roles are reflected in expressed preferences on the Holland dimensions and expressed feelings of efficacy in tasks associated with the dimensions. In the CogStyle reliability study, there was not a statistically significant gender difference in vocational preferences on the realistic or the social scale (W.P. Jones, personal communication, May 5, 2011). However, on the perceived efficacy for tasks in the realistic and social dimensions, statistically significant differences in the stereotypical direction were evident with males expressing stronger feelings of efficacy in the realistic tasks and females’ expressing stronger feelings of efficacy in the social tasks.

**Conformity to Feminine Norms Inventory**

The Conformity to Feminine Norms Inventory (CFNI; Mahalik et al., 2005) is an 84-item instrument that is used to measure the degree to which participants conform to an array of feminine norms found in the dominant United States culture. Participants rate their agreement with statements assessing attitudes, beliefs, and behaviors associated with traditional and nontraditional feminine gender roles. The inventory is rated on a 4 or 5-point scale ranging from SD (strongly disagree) to SA (strongly agree). Participants are asked to indicate how much they personally agree or disagree with each statement.
presented. Higher scores on the CFNI indicate higher levels of adherence to traditional feminine gender roles.

The CFNI (Mahalik et al., 2005) assesses eight distinct factors: Nice in Relationships, Modesty, Domestic, Thinness, Care for Children, Romantic Relationship, Sexual Fidelity, and Invest in Appearance. Mahalik et al. (2005) demonstrated a 2-3 week test-retest reliability estimate of .94 for the CFNI total score and estimates from .83 to .94 for the individual subscales. The internal consistency of the total CFNI in a sample of 733 women and 98 men was .88, with subscale alphas ranging from .77 to .92 (Mahalik et al., 2005). Mahalik et al. also found that the CFNI correlated positively and moderately with the BSRI Femininity Scale, thus supporting the idea that the socially desirable feminine characteristics described by the BSRI are related to, but distinct from, the feminine ideologies described by the CFNI. The CFNI was also compared with the FIDS (Bargad & Hyde, 1991). Results indicated that the CFNI was significantly and negatively related to the Feminist Identity Development Scale (FIDS) stages that reflect increasing levels of feminist identity (Mahalik et al., 2005). Specifically, Modesty was negatively related to the FIDS Embeddedness-Emanation stage, and Investment in Appearance was negatively related to the FIDS Active Commitment stage.

To enhance this measure as a research tool, Parent and Moradi (2010) modified the length of the CFNI to a 45 item survey. The CFNI-45 is approximately half the length of the original 84-item CFNI, and retains all nine factors. Reliability coefficients for CFNI-45 subscale items were comparable to the original subscale item reliabilities. This consistency is noteworthy given that Cronbach’s alpha values are associated positively with number of subscale items (e.g., Ponterotto & Ruckdeschel, 2007). Fit
indices for the CFNI-45 provided tentative support for the nine-factor structure, and the data-model fit for the CFNI-45 was superior to that of the eight- and nine-factor original forms of the CFNI. The CFNI-45 subscales also yielded high correlations with corresponding original form subscales, supporting use of the CFNI-45 as an efficient measure of the original constructs.

**Measures of Congruence**

Holland (1985, 1997) introduced a number of important career-related concepts to the vocational psychology literature, including the concept of congruence. Congruence is one of Holland's central propositions: that a good match between person and environment (termed congruence) will, other things being equal, lead to a person experiencing greater satisfaction, performing better and persisting longer than if he or she were in an incongruent environment.

There is a long history in the field of vocational psychology regarding congruence models (Assouline & Meir, 1987; Spokane, 1985). The heart of the issue of measuring congruence is the difficulty of quantifying the similarity between two Holland codes. Much of the research in vocational psychology concentrates on attempts to clarify this difficulty (Osipow, 1983). While researchers agree with the positive effect of high congruence on vocational output, they have suggested numerous indices to estimate the level of congruence. Complexity in these indices greatly varies from matching between first-letter person and environment codes (Holland, 1997) to inclusion of a correlation matrix in weighted estimates, such as K–P index by Kwak & Pulvino (1982), to the C-index, originated by Brown and Gore (1994).
Several indices have been proposed for the measurement of congruence between an individual’s occupational personality style and his or her work environment. Holland (1973) originally proposed a congruence index based on only the dominant occupational code. The dominant code index is problematic, however, because it maximizes systematic sex differences that occur in mixed male and female samples and in other confounds (e.g., the achievement orientation confound in the congruence-achievement relation) inherent in person-environment fit research. Unfortunately, the vast majority of congruence studies have employed first-letter agreement measures of congruence (Spokane, 1985).

Holland (1979) later endorsed the Zener-Schnuelle (1976) index as a better measure of congruence. The adequacy of the Z-S index has been questioned, however. Several investigators (Kwak & Pulvino, 1982; Robbins, Thomas, Harvey, & Kandefer, 1978; Wiggins & Moody, 1981) have criticized the Z-S for its relative insensitivity to relations between tertiary and secondary codes. Kwak and Pulvino (1982) also proposed an alternative congruence index. The proposed mathematical model congruence index (K-P) was significantly correlated with the Z-S index, but the former was more sensitive to differences in secondary and tertiary codes (Kwak & Pulvino, 1982).

The Iachan (1984) congruence index (M) has also been endorsed by Holland (1985). The promise of this index is based on the fact that it is significantly more discriminating than the Z-S and its extensions, but less complicated to compute than the K-P mathematical index. The Iachan Index is used in this study because it quantitatively describes the degree of congruency between any two separate three-letter codes and because Holland (1985) recommended it as one of the best measures of congruency. In
addition, the Iachan Index can be used to calculate concordance with two-letter Holland codes which can increase the precision of the index.

The Iachan Index

The Iachan Index has an elaborate mathematical development, but its use requires only the ability to add. Certain code pairings are given weights. The value for an exact match (i.e., the first letter for both codes is identical) is 22. The value for a close match (i.e., the first letter of one code appears as the second letter of the other code) is 10. The value of a marginal match (i.e., the first letter of one code appears as the third letter of the other code) is 4. If no letters match between two codes, the total is 0 (Iachan, 1984). In theory, higher scores on the Iachan Index indicate greater congruency. Finally, according to Iachan, interpretation of the congruence score is as follows: (a) scores of 26 to 28 are very close matches, (b) scores of 20 to 25 are close matches, (c) scores of 14 to 19 are not close matches, and (d) scores of 13 and below are poor matches.

For this study, a Holland code (two letters) was generated for each participant based on responses on the measure vocational interest and another based on the vocational efficacy responses. The Iachan index (Iachan, 1990) was then be calculated to assess the congruence of the codes from the two measures.

With two-letter Holland codes, the Iachan index can range from a low of zero to a high of six; with six indicating that the two-letter codes are identical. Iachan index scores of five or six are interpreted as highly congruent; index scores of three and four are interpreted as moderately congruent; index scores less than three are interpreted as incongruent (Cowger, Bickham, Miller, & Springer, 1999).
**Data Analysis**

The information gathered was examined using analysis of variance (ANOVA), t-tests, and correlational statistics. Congruency was measured using the Iachan index. Although correlation does not indicate causation, the degree to which a relationship exists, or not, can give clues as to whether this variable, i.e., self-efficacy, was a factor in career choice. The premise of this study was to determine if significant relationships can be shown in a woman who chooses traditionally female oriented career among measures of her vocational preferences, her sense of self-efficacy, and her degree of integration of a feminine ideology. In addition, age of the participant was examined to determine if this was also a factor.

*Hypothesis 1. There will be no statistically significant age difference in congruence of traditional vocational interest codes and vocational efficacy codes.*

Data analysis included an analysis of variance (ANOVA) with the age categories as the grouping variable and the congruence score (M index) between the Vocational Preference Inventory (VPI) and the Vocational Efficacy Scale (VES) as the dependent variable.

*Hypothesis 2. There will be no statistically significant difference in congruence between traditional vocational interest and vocational efficacy scores as compared to congruence between adapted vocational interest and vocational efficacy scores.*

The congruence measure was determined for the Vocational Preference Inventory (VPI) and the Vocational Efficacy Scale (VES). Then, an additional congruence measure was determined for the CogStyle and the Vocational Efficacy Scale (VES). A t-test was done to determine if the two sets of concordance scores were significantly different.
Hypothesis 3. There will be no statistically significant age difference in scores on a measure of adherence to feminine norms.

Data analysis included an ANOVA with the age categories as the grouping variable and the Conformity to Feminine Norms Inventory (CFNI-45) score as the dependent variable.

Hypothesis 4. The correlation coefficient between scores on a measure of adherence to feminine norms and congruence between vocational interests and vocational efficacy will not be statistically significant.

Data analysis included the calculation of two correlational coefficients. The first included the Conformity to Feminine Norms Inventory (CFNI-45) score and the Vocational Preference Inventory (VPI) and the Vocational Efficacy Scale (VES) congruence measure. The second was with the CFNI score and the CogStyle and Vocational Efficacy Scale (VES) congruence measure.

Qualitative Voice

Whiston and Bouwkamp (2003) stressed the importance of knowing social, cultural, economic, and political contexts of women's career development and how these contexts contribute to the complexity of women's lives. Understanding the contextual complexity can help career counselors understand why, for example, girls and women tend to respond differently than do men to self-appraisal instruments. Women's self-efficacy estimates tend to be lower, resulting often in interest profiles indicating lower interests, particularly in areas of work traditionally associated with men, when in fact such scores may simply reflect lower confidence or less familiarity. To develop a more holistic understanding of women, it is recommended to add voice to one’s answers. As a
means to add voice, participants were given the option to be part of a follow-up interview.

The last page of the last survey asked participants to indicate if a willingness to be contacted for a brief (30 minute) follow-up interview about her responses. Participants indicated permission by entering their email address. Survey responses were not connected to the email address; and it was made clear to the participants that a response to this question did not impact the award of research credits. Those participants who were contacted for the follow-up interviews were told that she retained the right to refuse or stop the interview at any point. The information provided by the participant during the interview was to remain confidential.

Based on the extent of discrepancy between vocational interests and vocational efficacy and/or atypical responses on the adherence to feminine norms scale, twenty-two participants who provided an email address were contacted for clarification of their responses. A separate informed consent was used. This qualitative aspect provided further exploration of how a woman determines her career choice, albeit a stereotypical female career path. Since the participants are already pursuing a female career path, this part of the study was done in order to elicit more information as to what extent a traditionally female career choice was a choice or a residual effect of perceived gender limitations, either in careers available or perceived areas of self-efficacy.

After initial contact was made, interviews were conducted via telephone or in a public, yet confidential place. The questions consisted of the following:

1) What is your current major? What are your career aspirations?

2) Have you ever thought about any other type of career? Have you ever had
another career? If so, why are you pursuing the major you are and/or why are you changing your career field?

3) What experiences helped shape your decision to pursue your current career path?

4) Do you feel that you have had opportunities to explore other career choices or do you feel you have been limited? If so, how have you been limited (or not)?

5) Were there any factors which have contributed to your decisions about pursuing this career path? These factors may be positive or negative: for example, family pressures or sociocultural messages?

6) How would you describe your feelings and beliefs about pursuing your current career path?

Narrative data was compiled and included to enhance and inform the study. Participant responses in the interview remain confidential. Markers that could identify individual participants were removed.
CHAPTER 4

Results and Analysis

The purpose of this study was to examine the relationships among vocational interests, vocational efficacy, and adherence to feminine norms in a participant sample comprised of college women who have chosen a traditional feminine career option. This study was comprised of two parts: quantitative, with participants completing online survey instruments, and a second component with selected participants invited to participate in a follow-up interview. This chapter will present the quantitative results and analyses in the first part; with the interview results in the second part.

Part One

Participants. The sample for this study was comprised of females, currently enrolled as either undergraduate or graduate level students at the University of Nevada, Las Vegas (UNLV), and pursuing a degree in the field of education. A total of 158 women completed the online surveys. One participant’s answers were incomplete and therefore, her surveys were not used. Thus, the total n for this study was 157.

Descriptive statistics revealed that of the 157 participants, the majority of the women (61%) were Caucasian, in the age range of 18 to 24. In addition, the reported grade point average range was 3.5 – 3.9 receiving the most responses (46%). All participants surveyed were enrolled in courses offered through the College of Education. The majority of the participants (25%) responded as pursuing an Undergraduate in Education degree. Detailed participants’ demographic characteristics are presented in Table 3.
**Survey Responses.** Participants were asked to complete four surveys online--the Vocational Preference Inventory (VPI), the CogStyle, the Vocational Efficacy Scale (VES), and the Conformity to Feminine Norms, short form (CFNI-45).

**Vocational Preference Inventory.** The Vocational Preference Inventory (VPI) survey is comprised of 42 items, 7 items for each of the Holland RIASEC dimensions. Participants responded by indicating “like” or “dislike” to occupational titles. Missing data was tabulated as 0. Responses were tallied to reflect the top two Holland Codes for each participant. Ties were noted and included. Data was placed in an excel worksheet. Frequency data indicated order of the initial Holland code as: Social (101 responses); Artistic (53 responses); Investigative (32 responses); Enterprising (21 responses); Conventional (12 responses); and Realistic (3 responses). The second Holland code was defined as: Enterprising (59 responses); Social (42 responses); Artistic (40 responses); Investigative (36 responses); Conventional (27 responses); and Realistic (24 responses).

**CogStyle.** The CogStyle scale uses the six Holland scales as the base for these four core personality traits: *attitude* (extraversion- introversion); *approach* (data-ideas); *focus* (things-people); and *process* (detailed-contextual). Paired adjectives and then action verbs for each of the six dimensions were presented to the participant with instructions to choose the one which "fits you the best." Outcomes were indicated with the top two Holland codes. Ties were included in the tabulation process. Missing data was tabulated as a score of 2.5. Data was placed in an excel worksheet. Frequency data indicated the order of the initial Holland code as: Social (72 responses); Conventional (69 responses); Artistic (18 responses); Investigative (15 responses); Enterprising (9 responses); and Realistic (7 responses). The second Holland code was defined as: Conventional (49
responses); Social (45 responses); Artistic (44 responses); Realistic (32 responses); Investigative (28 responses); and Enterprising (22 responses).

**Vocational Efficacy Scale.** The Vocational Efficacy Scale (VES) asked the participant to rate how well she thinks she can perform a particular task. Six items were prepared for each Holland dimension. Responses were on a Likert scale: *Very difficult for me, Usually difficult for me, Usually easy for me, Very easy for me.* Outcomes were indicated with the top two Holland codes. Ties were included in the tabulation process. Missing data was tabulated as a score of 2.5. Data was placed in an excel worksheet.

Frequency data indicated the order of the initial Holland code as: Social (71 responses); Conventional (56 responses); Realistic (30 responses); Investigative (16 responses); Enterprising (15 responses); and Artistic (10 responses). The second Holland code was defined as: Conventional (58 responses); Social (38 responses); Realistic (37 responses); Enterprising (36 responses); Investigative (32 responses); and Artistic (23 responses).

**Conformity to Feminine Norms.** The Conformity to Feminine Norms, shortened form, (CFNI-45) measures the degree to which participants conform to an array of feminine norms found in the dominant United States culture. Participants rated their agreement with statements assessing attitudes, beliefs, and behaviors associated with traditional and nontraditional feminine gender roles. The inventory is rated on a 4-point scale ranging from SD (*strongly disagree*) to SA (*strongly agree*). Participants were asked to indicate how much she personally agreed or disagreed with each statement presented. Missing items were tabulated as 2.5. Higher scores on the CFNI-45 reflect higher conformity to traditional feminine norms. The mean score on this sample was 85,
with a minimum score of 58, and a maximum of 112. The median score was 84 and the mode was 85.

**Congruence Measures.** One question driving this study was to determine the degree of congruency that may exist between a woman’s vocational preference and her perceived vocational efficacy. The congruency measure used was the Iachan index, modified to reflect a two-trait Holland Code. The Iachan index was calculated for each participant for each of the following variables: the Vocational Preference Inventory (VPI) and the Vocational Efficacy Scale (VES); the Vocational Preference Inventory (VPI) and the CogStyle Score (CS); and the CogStyle Score (CS) and the Vocational Efficacy Scale (VES). Iachan indices ranged from 0 (no congruence) to 6 (high congruence).

**Research Questions**

The questions guiding this research study were:

1. Is there an age difference in the extent of congruence between Holland Occupational Codes based on a traditional vocational interests scale and comparable codes based on a scale of vocational efficacy?
2. Is the extent of congruence between vocational interests and career efficacy related to whether vocational interests are measured with traditional occupational stereotypes or measured with stimuli designed to elicit the underlying trait?
3. Is there an age difference in the extent of adherence to feminine norms?
4. Is adherence to feminine norms related to the extent of congruence between vocational interests and vocational efficacy?
Analyses

**Hypothesis 1.** There will be no statistically significant age difference in congruence of traditional vocational interest codes and vocational efficacy codes.

A one-way between groups analysis of variance (ANOVA) was conducted with the age categories as the grouping variable and the congruence score (Iachan index) between the Vocational Preference Inventory (VPI) and the Vocational Efficacy Scale (VES) as the dependent variable. Iachan indices range from 0 to 6, with the higher score reflecting higher congruence. The mean ranged from 2.01 for Age Group 1 to 2.88 for Age Group 4. An ANOVA was performed to determine if age was a variable that affects the congruence score between the VPI, which is considered the traditional inventory and the VES, which is a reflection of the participant’s view of vocational efficacy. Results are displayed in Tables 4 and 5.

The age differences in congruence of vocational efficacy and traditional vocational interest measures were not statistically significant, $F(3,153) = 1.850$ $p = .140$. Post hoc comparisons using the Fischer LSD test further revealed no significant differences. Results are displayed in Table 6.

The effect size, using the eta squared, was calculated to be 0.035, which in Cohen’s (1988) terms, would be considered a small effect. The null hypothesis is not rejected.

**Hypothesis 2.** There will be no statistically significant difference in congruence between traditional vocational interest and vocational efficacy scores as compared to congruence between adapted vocational interest and vocational efficacy scores.
The congruence indices were calculated between the VPI and the VES, and then, between the CogStyle and the VES. A paired sample t-test was conducted to determine if the congruence indices between a traditional vocational inventory (VPI) and the vocational efficacy scale (VES) differed from the congruence indices between an adapted vocational interest survey (CogStyle) and vocational efficacy scale (VES). For the traditional measure (VPI) the Iachan indices mean was 2.23 and for the adapted measure (CogStyle) the Iachan indices mean was 3.15. Iachan indices range from 0 to 6, with the higher score reflecting higher congruence. There was statistical significance in the difference between congruent indices of the VPI with the VES ($M=2.23$, $SD=1.768$) and the congruence indices of the CogStyle and the VES ($M=3.15$, $SD=1.887$); $t(156) = 4.47$, $p = 0.000$. Results are displayed in Table 7. These results suggest congruence was much higher between the adapted measure (CogStyle) and vocational self-efficacy (VES) than with the traditional measure (VPI) and VES. The null hypothesis is rejected.

**Hypothesis 3.** There will be no statistically significant age difference in scores on a measure of adherence to feminine norms.

A one-way between groups analysis of variance (ANOVA) was conducted with the age as the grouping variable and the CFNI-45 score as the dependent variable. An ANOVA was conducted to explore the impact of age on the level of conformity to feminine norms, as indicated by scores on the CFNI-45 survey. Participants were divided into four groups according to age (Group 1: 18-24; Group 2: 25-29; Group 3: 30-39; Group 4: 40 and above). The mean scores indicated lower CFNI-45 scores with the older participants. Results are displayed in Table 8. There appears to be statistically significant difference with the age of the participant and her conformity to feminine norms.
norms scores at the $p<.05$ level for the four age groups [$F(3,153)=3.572, p=.016$].

Results are displayed in Table 9.

Post hoc comparisons using the Fischer LSD test revealed that Age Group 1 ($M=87.71$) were significantly different than Age Group 4 ($M=80.88$) $p = .018$. In addition, post hoc tests also revealed that Age Group 1 was significantly different from Age Group 2 ($M=82.89$) $p = .026$; and Age Group 1 was significantly different from Age Group 3 ($M=82.09$) $p = .031$. Differences among Age Groups 2, 3, and 4 did not report significant differences. Results are displayed in Table 10.

The effect size, calculated using eta squared, was .06, which in Cohen’s (1988) terms, would be considered a medium effect. The null hypothesis is rejected.

**Hypothesis 4.** The correlation coefficient between scores on a measure of adherence to feminine norms and congruence between vocational interests and vocational efficacy will not be statistically significant.

Each participant completed two vocational interest surveys – a traditional (VPI) and an adapted (CogStyle). A Pearson product-moment correlation coefficient was computed to assess the strength of the relationships; first, between the participant’s CFNI-45 score and the Iachan index score for the VPI and the VES; and then between the participant’s CFNI-45 score and the Iachan index score for the CogStyle and the VES. The Iachan index indicates how congruent the scores are for these two inventories. The question is whether there is a correlation between the level of congruency on either of the vocational interest inventory – the traditional VPI or the adapted CogStyle –and the participant’s on the CFNI-45.
Between the CFNI-45 score and the congruence measure of the VPI and the VES, the correlation coefficient was low and not statistically significant \((r = -.016, n = 157, p = .838)\). The correlation coefficient between the CFNI-45 score and the congruence measure of the CogStyle and the VES was also low and not statistically significant \((r = .056, n = 157, p = .489)\).

To determine if these two correlation coefficients are significantly different from each other, conversion of the two \(r\) values into a standard score form, referred to as \(z\) scores were performed. The \(z\) score calculated as follows: \(z\) score = 2.113 > 1.96 and therefore, indicates that the coefficients are statistically significant. The null hypothesis is rejected. Results are displayed in Tables 11 and 12.

**Part Two**

An additional component to this study was to add voice to the participants and their choice of vocation. Drawing from the same sample pool, participants indicated her agreement to a follow-up interview by supplying a valid e-mail address. After scores and congruent measures were calculated, participants were chosen with the following criteria: (1) a discrepancy in scores given; and (2) a valid e-mail address; (3) completion of the follow-up interview.

A discrepancy was defined by one of the following: a high adherence to feminine norm score and a Holland score that is considered less feminine; a low adherence to feminine norm score and a Holland score that is considered less feminine; a high adherence to feminine norm score and age in either the Group 3 or 4; a low adherence to feminine norm score and age in Group 1.
To better understand the Holland codes, the following provides a simple though not inclusive, explanation of each trait. The traits of $A$—artistic; $C$—conventional; and $S$—social have been defined as more feminine. The traits of $R$—realistic; $E$—enterprising; and $I$—investigative have been defined as more masculine.

An artistic code indicates a person who likes creativity; often described as expressive, independent and original. The artistic person may avoid ordered activities. The conventional code fits a person who follows rules and routines; likes order or direct structure; exhibits great self control; and has respect for power and status. The social trait indicates a person who likes working with people. This is a person who engages in training and educating others; displays a high level of empathy; and values relationships. The realistic trait indicates a person who enjoys working with hands, tools, and machines. This person is viewed as practical, realistic, and mechanical. The enterprising trait corresponds to a person who verbally skilled, persuasive, and direct; often this person is defined as a leader. The investigative trait refers to a person who is analytical and prefers ideas to people. This person is precise, scientific, and intellectual.

**Participant Population**

Twenty-two participants fit the criteria for further follow-up. These participants were further divided into 3 groups. These groups were set to reflect all age groups as well as to include diversity. Eventually, all twenty-two participants were contacted. Each group was sent an initial contact e-mail and a follow-up e-mail if no initial response was received.

A total of five women agreed to answer follow-up questions. The final demographics of this group were: three from Age Group 2; one from Age Group 3; and
one from Age Group 4. One woman listed her ethnicity as Hispanic, with the other four defining themselves as Caucasian. One participant was completing a Bachelor’s degree in Education; the other four were seeking higher education degrees in Counseling or Education.

Consent to an interview was provided prior to the participant answering the questions. Each was informed that she may at any time refuse to answer. The questions consisted of the following:

1. What is your current major? What are your career aspirations?
2. Have you ever thought about any other type of career? Have you ever had another career? If so, why are you pursuing the major you are and/or why are you changing your career field?
3. What experiences helped shape your decision to pursue your current career path?
4. Do you feel that you have had opportunities to explore other career choices or do you feel you have been limited? If so, how have you been limited (or not)?
5. Were there any factors which have contributed to your decisions about pursuing this career path? These factors may be positive or negative: for example, family pressures or sociocultural messages?
6. How would you describe your feelings and beliefs about pursuing your current career path?

The following is a synopsis of the follow-up with the five participants. Information regarding their scores on all the instruments is provided as well. There is no particular order to this information.
Participant A. The first participant identified herself in the Group 2 age range (25-29) and is of Hispanic descent. She is pursuing a degree in higher education. For all three of the vocational interest surveys, Participant A scored differently. For the traditional VPI, she had a tied score for the first trait of S/C — social and conventional. The secondary codes were also tied and were R/I — realistic and investigative. On the adaptive scale, the CogStyle, her Holland traits were CA — conventional and artistic. On the efficacy scale (VES) participant A was coded as R — realistic for her initial trait; and a tie of S/C — social and conventional for the secondary. With so many ties within her vocational interests’ scores, it could be noted that Participant A has a wide range of career interests. In addition, her congruence measures were all very low. The congruency measure indicated a low to medium alignment between the vocational inventories themselves with an index score of 2.8. When factoring Participant A’s sense of vocational self-efficacy, her index scores for congruency were low for both the inventories: an index score of 1.9 for the congruency between the VPI and the VES; and an index score of 0.5 for the congruency between the CogStyle and the VES. This suggests that her sense of vocational self-efficacy is not in agreement with her vocational interests. In addition, she scored a 67 on the CFNI-45, indicating a lower adherence to cultural feminine norms. This may indicate that she views herself stronger in areas that are not normally considered feminine. This is reflected in the realistic code on her VES which is normally defined as a masculine trait.

Participant A is a self-described “career-driven” individual. She initially pursued a vocation in the areas of business or law, but had always gravitated toward math and science. She enrolled in a psychology course in college and felt that her horizon had
been “widened.” Family support has always been a factor, and she was told early in life that she “needed to go to college.” This young woman of Hispanic descent reported that her parents were “very involved” in her career choices, hoping to steer her towards a career with potential as well as one where she can be successful. She has thought about teaching in general and had some feedback from her family to consider something “more prestigious.” Participant A continued to explain that she felt she had strong family support in her endeavors.

As a student in the math and science disciplines, she did say that in her experience, there still existed a stigma attached to a female in these disciplines. These experiences did not detour her, but rather spurred her on even more.

When asked why she thought women often entered the teaching profession, she replied, “Women are naturally more nurturing, more caring and empathetic and the teaching profession is a natural area for them to pursue.” Future goals of this young woman are in higher education, still in the science discipline, but hoping to teach at the university level.

**Participant B.** The next participant identified herself in the Group 2 age range (25-29) with an ethnicity of Caucasian. She is pursuing a degree in higher education. Participant B scored differently on her vocational interest inventories. On the traditional (VPI), she tied on the first trait with I/C — investigative and conventional; with a secondary code of E — enterprising. Two of these traits are normally defined as masculine traits: investigative and enterprising. On the adapted interest scale, CogStyle, her Holland codes were IC — investigative and conventional. The congruence measure between these two inventories (VPI and CogStyle) was in the mid-range of a 3. On the
VES, corresponding to her sense of vocational self-efficacy, participant B was coded as \textit{R--realistic} on the initial and a three-way tie of \textit{A/S/C—artistic, social, and conventional} on the secondary. This correlates to the CFNI-45 score Participant B had of a 67, indicating a lower adherence to cultural feminine norms. Although she appears to be more congruent with her vocational interests, she was not congruent between either of the inventories and the self-efficacy scale, with both indices falling below a 1.0. This could be an indicator of a low self perception of her vocational abilities.

Participant B has aspirations of higher education, hoping to pursue a tenure track faculty position and conduct research. She expressed a love for teaching as a means to “touch a lot of people” and also a love of research.

For a time, Participant B worked in retail management. Working in the business sector, she felt “limited and unfulfilled.” She said she gravitated towards education because she felt that this field is one where she “can make a more personal impact.” She felt there were many barriers and limitations that still exist for women in the business arena. She told of being passed over for a higher management position, with the job going to a male, whom she felt had less qualifications than her.

Participant B’s experience with attending a magnet high school geared her toward careers only in the discipline of the school’s focus. She did feel that she did not explore other avenues of interest until she attended college and she could expand her horizons more. For example, as a film major in her third year of college, she took a psychology course to help with her screenplay writing. Instead, Participant B felt an instant connection to the psychology coursework, and pursued the area of counseling.
Participant B experienced no family pressure negatively or positively, but rather felt she chose to attend college. At this point in her life, she is happy with her career choices and even the experiences that have brought her to this point.

**Participant C.** The next participant identified herself in the Group 2 age range (25-29) with an ethnicity of Caucasian. She is pursuing a degree in higher education. Participant C’s Holland codes were fairly well defined. On the traditional inventory (VPI), she scored AC—artistic and conventional. On the CogStyle, her initial Holland codes was a C—conventional; and the second codes tied with R/A—realistic and artistic. Two traits were consistent with both inventories: conventional and artistic. The congruence measure between these two inventories (VPI and CogStyle) was very strong, an index score of 5.5. This indicates that regardless of which inventory, Participant C consistently chose the same vocational interest areas. For her vocational self-efficacy scale (VES), she was coded as CR—conventional and realistic. The congruent index between the VPI and her self-efficacy was a 3, which is middle range. And for the CogStyle and VES, the congruent index was a 2, falling on the lower end. It could be noted that her interests, whether scored on a traditional or adapted scale, is consistent, whereas, when factoring in her sense of vocational self-efficacy, Participant C is slightly more aligned with the adapted inventory than with the traditional. Her CFNI-45, score was an 84, which fell in the median range. Therefore, her conformity to cultural feminine norms falls in the normal range of this sample population.

Participant C is seeking a Master’s degree in the school counseling program. Previously, she had obtained a Bachelor’s degree in the arts, but explained that she had a “bad experience” with a particular class which caused her to rethink her career direction.
She currently is employed in the business sector as an office manager and says she has taken some time “to figure out what I wanted to do.” Family has played an integral part in her decision as she has family in the education field and school counseling field. Education itself is a value in her upbringing. She further stated that “my family was always supportive of getting any education, and one that I wanted and fit me the best.” She felt she never had any real limitations to pursuing any career she chose.

Participant C ended with feelings of being passionate about her chosen profession, “kids today are the future of America and helping them to develop and become the best people that they each individually can is an awesome opportunity.”

**Participant D.** This participant identified herself in the Group 3 age range (30-39) with an ethnicity of Caucasian. She is pursuing a degree in higher education. Participant D’s Holland codes were fairly well defined on all three inventories. On the traditional inventory (VPI), she scored _SE—social and enterprising_. On the CogStyle, her Holland code was _E—enterprising_ with the secondary codes tied as _S/C—social and conventional_. Two of these traits, _social_ and _conventional_ are typically listed as feminine traits with _enterprising_ defined as a masculine trait. Her congruency measure between the two inventories was an index score of 3, which indicates a medium agreement between the two. On the VES, corresponding to her sense of vocational self-efficacy, Participant D was coded as _SE—social and enterprising_. Participant D scored the same Holland traits for the VPI and the VES which calculates to the maximum Iachan index of a 6. This indicates that her interests on the VPI corresponded with her reported vocational self-efficacy. She had a moderate congruence index (a score of 3) between the CogStyle
and the VES. Her CFNI-45 score was 66, falling at the lower end, indicating a lesser degree of conformity to feminine norms.

Career aspirations of Participant D are to become a middle school counselor and eventually obtain a PhD in the field. She was a middle school special education teacher and felt that the counseling field fit her “personality” better. Teaching showed her that she did enjoy working with students. She added that “having a guidance counselor in middle school that was horrible” was an experience. This influenced her decision to pursue a career in counseling. The negative experience has made her want to be the best possible influence she can be with students.

Family was a different component for this participant. She said that growing up she did not have the best relationship with her father, and wished that she would have had a school counselor to discuss issues with. This experience was one more major impetus for her school counseling path. In addition, she currently has small children, and believes the education field allows her to juggle the demands of a career with family “easier” than other vocations.

Overall, she finds that education and counseling to be the best fit for her career-wise and has no reservations about her choices.

Participant E. This participant identified herself in the Group 4 age range (40+) with an ethnicity of Caucasian. She is pursuing a Bachelor’s degree in education, and indicated that she will be continuing on to pursue a Master’s degree. Participant E’s Holland traits were not clearly defined on any of the scales, resulting in a lot of ties between the traits. On the traditional inventory (VPI), her initial scores were tied with I/A/S — investigative, artistic and social. Her secondary Holland codes were also ties:
R/E—realistic and enterprising. On the CogStyle, her initial Holland code was a tie of A/S/C—artistic, social, and conventional; with the secondary codes tied as R/I/E—realistic, investigative, and enterprising. What is interesting to note is that for the CogStyle, her initial codes are considered the feminine traits and her secondary codes are considered the masculine traits. With several ties for either interest inventories, it could be suggested that Participant E has very eclectic interests, falling across all vocational domains. On the VES, corresponding to her sense of vocational self-efficacy, again the initial codes were tied as S/C—social and conventional and the secondary codes as A/E—artistic and enterprising. Clearly, this participant felt strong in all six traits. Her congruence measures all fell below the medium point. Her congruence measure between the two inventories was an index score of 1.78. Her sense of vocational self-efficacy and the traditional inventory allotted a congruency index of 1.5. Between her VES score and the adapted inventory allotted a congruency index of 2.5. It could be assumed that the adapted inventory interest score was slightly more in line with her perceived self-efficacy. Her CFNI-45 score was 69, falling at the lower end, indicating a lesser degree of conformity to feminine norms.

Participant E is completing her Bachelor’s degree and then hopes to continue with a major in Workforce education and development. Her ultimate goal is to have a chance at a different career when she retires.

Presently, she works as an executive assistant and has had several jobs mainly in business. She has the goal of teaching adults, specifically through Human Resources. Throughout her life, she claims she never really had much of a chance to explore
different career choices. She finds an office setting a good match, but at this point in her career she is seeking to expand and has gravitated towards the education field.

**Summary**

Two women were originally pursuing careers in other disciplines, but took education courses which caused them to rethink their choices and switch to the field of education. Another woman had been working for several years outside the field and is now able to pursue her original goal of a career in the education field. All five expressed interest in the field of education, whether teaching or counseling. One woman felt that women often gravitate to the field of education because of “our nurturing nature.”

In the area of limitations and/or support for her choice, none of the participants felt they faced barriers which restricted their vocational choice. All seemed to feel that education was a career choice they made on their own.

The young woman of Hispanic ethnicity reported that her parents were “very involved” in her career choices, hoping to steer her towards a career with potential as well as one where she could be successful. Another woman is the first to pursue a higher degree in her family and felt “highly” encouraged to pursue her goals.

Not all participants responded to feeling supported in her career choice. One woman said her father was not involved much which she felt spurred her towards a career where she “can help others.”

Another woman had spent time in the business sector, but felt “limited and unfulfilled.” She said she gravitated toward education because she felt that this field is one where she “can make a more personal impact.” An older participant stated that she was seeking a career change to pursue a different vocational course, one in education,
when she retires. Lastly, one woman noted that the field of education fit her desire to have both family and a career without shortchanging either.

All five women responded favorably about her career choice. Comments included: “is a good fit” and “excited about the prospect of teaching.”

The intent of the interviews was to provide a more vocal layer to how a young woman chooses a career in education. It is limited in several ways. The sample pool was drawn from women taking a course in the College of Education, thereby, having the greater chance of the subject being an education major. Ethnic diversity was not a strong reflection of the general public, as most were identified as Caucasian. The original pool of initial interviewees was diverse in nature. However, the participants who responded to the e-mail request for follow-up inquiry did not included any of the women who scored particularly high on the conformity to feminine norms scale or any who self-identified in the youngest age category. This may have provided some interesting insight.
CHAPTER 5

Discussion

The overarching purpose of this study was to further the understanding of how vocational self-efficacy and conformity to feminine norms influence the career development of women who are pursuing a traditional vocational pathway. This study examined the relationships among vocational interests, vocational efficacy, and adherence to feminine norms in a participant sample comprised of college women who have chosen a traditional female career pathway. This study consisted of two parts: quantitative, with participants completing online survey instruments; and interviews, to further exploration. This chapter examines the study in several parts: (a) overview and discussion of research questions, (b) limitations and directions for future research, (c) implications for the counseling profession, and (d) summary.

Overview and Discussion of Research Questions

Over the course of the last century, women’s role in the workforce has grown significantly. Initially, women were limited in their scope of careers; however, social changes including the women’s movement, the enactment of Title VII of the Civil Rights Act, affirmative action legislation, socio-economic forces, and societal shifts in perspectives have led to increased vocational opportunities for women. According to a recent U.S. Census Bureau report (2009), thirty-eight percent of all college students are now 25 or older. These women have grown in a culture that encourages women to seek a career and to expand their horizons. And yet, many women still gravitate towards career paths that are defined as traditionally female.

Research over the past thirty years indicate that the limitation and sometimes disadvantaged position of women in the workforce seems to be due to a variety of issues
often stemming from socialized gender differences, and do not appear to indicate aptitude or ability (Betz, 1994; Hackett & Betz, 1981). Even when girls consider a wide range of career choices, they tend to aspire to careers that have traditionally been appealing to women (Whiston & Brecheisen, 2002). A study by Wolfe and Betz (1981) found that women making traditionally stereotypic career choices were making choices less congruent with their interests than were women making choices in non-stereotypic or even traditionally male dominated areas. Contemporary theories of occupational choice (e.g., Holland, 1997 and Betz & Hackett, 1981 and 1997) predict that the degree of fit, or congruence between one’s work-related interests and career choice, as well as the congruence between confidence in one’s ability to perform work-related tasks and career choice are associated with a greater likelihood to pursue a particular career. These theories extend a fundamental idea in vocational behavior that matching the person to career choice is expected to result in positive occupational outcomes.

Although occupational gender segregation continues to exist both in the United States and internationally (Anker, 2001; Anker et al., 2003), massive changes in the nature and extent of women’s work force participation lead to the question of whether there have been significant changes in occupational gender stereotypes or the relationship of traditionality of choice to the fit of college student career intentions. It was the purpose of this study to: address how congruent the vocational self-efficacy of today’s female college student is to her choice of a career path; whether congruence between self-efficacy and vocational interests varies contingent on how vocational interests are measured; age as a factor; and how aligned she is with current feminine norms. It is
hoped that adding to the discussion of women’s occupational choices would benefit school counselors in educating their students in careers and careers choices.

Information was gathered through online surveys using research-based questionnaires and follow up questions were asked to further the investigation with participants who agreed to be interviewed.

The questions guiding this research study were:

1. Is there an age difference in the extent of congruence between Holland Occupational Codes based on a traditional vocational interests scale and comparable codes based on a scale of vocational efficacy?
2. Is the extent of congruence between vocational interests and career efficacy related to whether vocational interests are measured with traditional occupational stereotypes or measured with stimuli designed to elicit the underlying trait?
3. Is there an age difference in the extent of adherence to feminine norms?
4. Is adherence to feminine norms related to the extent of congruence between vocational interests and vocational efficacy?

Two general questions encompass the heart of this study: does the vocational self-efficacy of a female college student pursuing a traditionally female career path correspond to the standard Holland model of vocational interests or to an adapted vocational interest scale and is age a significant variable? And secondly, does today’s female college student adhere or reject traditional feminine norms?

The participants in this study were females, either undergraduate or graduate level students, enrolled in a course required for a College of Education degree. Participants
completed four online surveys regarding female career interests, with five women participating in additional follow-up questions.

The ages of participants in the study were self-identified as between 18 and 40+. The majority were in the 18 to 24 age group (52%), with the second highest category (23%) between 25 to 29; 13% were between 30 to 39; and 19% were 40+ years. According to a recent U.S. Census Bureau report (2009) thirty-eight percent of all college students are now 25 years or older. This study’s sample reflects the current norm.

In their seminal research, Hackett and Betz (1981) examined traditionality of occupational choices and sex-role orientation related to Holland’s concept of congruence. Although research may support the findings indicating that people often choose an occupational environment corresponding with their personality type, Hackett and Betz questioned the consistency of this finding, particularly with regard to women. In addition, the authors speculated that women gravitating towards traditionally female career paths may not be making occupational choices congruent with their personalities, in comparison with women who choose from a broader range of choices.

The Vocational Efficacy Scale (VES) asked each participant to rate how well she thinks she can perform a particular task, with the outcomes reported as the top two Holland traits. Historically, those in the teaching or helping professions are stronger in the social personality trait. The results in this study were consistent with that history. The majority of respondents had an initial Holland code of social. Overall, the women in this sample appeared to rate their vocational self-efficacy in alignment with an occupation in the teaching or helping profession.

In this study, vocational interests were measured with both the traditional Holland
vocational inventory and the CogStyle scale. The CogStyle scale uses the six Holland scales as the base for identifying four core personality traits: *attitude* (extraversion-introversion); *approach* (data-ideas); *focus* (things-people); and *process* (detailed-contextual). Therefore, it is designed to elicit the underlying personality trait, differing from the traditional Holland interest inventory. Analysis revealed that there was a statistically significance difference in the congruent indices. The congruence of self-efficacy, with the CogStyle scale (Iachan index of 3.15) was higher than the congruence of self-efficacy with the traditional Holland scale using vocational stereotypes to assess vocational interests (Iachan index of 2.23). This study indicates that within a group of women pursuing a traditionally female career path, the interest scores based on personality preferences were more consistent with perceived self-efficacy than were the interest scores based on traditional occupational stereotypes.

The congruence between vocational interest as measured by traditional occupational stereotypes and self-efficacy was also examined to determine if there were significant differences in congruence associated with age. The analysis revealed no statistically significant differences. Mean congruence indices ranged from 2.01 for the youngest age group to 2.88 for the oldest.

If these differences had been statistically significant it could have been concluded that the age of the participant may mean that she has a better sense of her vocational self-efficacy and may gravitate more towards a career path that is in agreement with perceived self-efficacy. In contrast to the Wolfe and Betz (1981) study, these women were already pursuing a traditionally stereotypic career choice and yet, were making choices reflecting congruence between interests and self-efficacy.
In addition, some factors such as experience and changing college majors may come into play. In the follow-up questions, four out of five participants reported changing majors, and three reported having jobs in other disciplines. Whether life experiences or maturity levels impacted this result is not clear. It may be significant, however, to note the older participants’ congruence indices were toward the higher end.

Several factors impact how a person chooses a vocational path. Theorists have proposed that socialization experiences related to gender is an important component. Gottfredson (1981) posited that women and men progressively narrow their career choices based on society's expectations of what is considered to be appropriate and Holland (1997) suggested that women and men's socialization experiences facilitate their interest in some career choices and dissuade them from others. A central component of several career development theories is the recognition that men and women have different gender role socialization experiences (Mahalik, Perry, Coonerty-Femiano, Catraio, & Land, 2006). These differing experiences shape their perceived gender role norms and attitudes (Mahalik et al., 2006), or the beliefs and expectations about what is socially appropriate for women and men. Conformity to gender role norms has been demonstrated to regulate the relations between gender and career choices.

In a societal context that construes power hierarchically, prescriptive feminine norms serve to constrain and disempower women. Therefore, assessment of conformity to such norms is important for feminist research and practice with women. Researchers have studied conformity to feminine norms by using measures that approximate, but do not directly assess this construct (e.g., measures of instrumentality and expressiveness, measures of attitudes about appropriate rights and roles for women) or by using measures
that focus on specific norms without considering them as part of a broader set of interconnected norms that reflect societal construal of femininity. The CFNI (Mahalik et. Al, 2005) and the CFNI-45 (Parent & Moradi, 2010) were designed to assess conformity to feminine norms directly as well as on a multidimensional level.

The second major question of this study explored conformity to current feminine norms among women who choose a career path that has been defined as traditionally feminine. It was hypothesized that the younger college-aged women would be less inclined to conform to feminine norms. Given her age, it would be assumed that this woman would have had several opportunities to explore a variety of career choices throughout her educational years.

Analyses revealed that there was a statistically significant difference with the age of the participant and her conformity to feminine norms scores for the four age groups. Post hoc comparisons revealed that the youngest age group differed significantly from the oldest age group. And overall, the mean score for the oldest age group was lower than the other three. The CFNI-45 scores were designed to measure conformity to traditional gender role norms, so lower scores indicate a rejection of these norms. The finding that younger participants appeared more likely to conform to traditional norms was surprising and could have been a statistical artifact from the unequal number of participants in the age categories. And despite reaching statistical significance and a medium level effect size, the actual difference in mean scores between the groups was not large. However, the finding with these participants could also suggest that adhering to traditional feminine norms was a factor that led to selection of a traditional female career.
The results of this study were also examined from a feminist perspective. It is well documented that women are still heavily involved as a prominent force in the education field. Education has been criticized for becoming feminized. Instead of looking at how to move women away from the field, this study came from the viewpoint of women, knowingly making a choice to pursue a career in the educational field, and seeking to provide some insight to the factors involved in that choice. Research from a feminist perspective, seeks to add voice; beginning with the standpoints and experiences of women, where "research will proceed from a perspective that values women’s experiences, ideas and needs rather than assuming we should be more like men" (Weston, 1988, p. 148). This qualitative component sought to provide some insight into what, if any, barriers exist or are perceived to exist for the women in this sample.

The literature related to women’s career development focuses on several important themes that set women’s work experiences and career choices apart from those of men (Fassinger, 2000). When examining women’s career development these areas must be considered: the tension between work and family roles, discrimination in work and school settings, gender role, and the tendency for women to underutilize their talents and abilities (Hackett and Betz, 1981; Betz & Fitzgerald, 1987; Fassinger & O’Brien, 2000). In addition, women themselves often perceive barriers and role conflicts as obstacles in their career development process (Albert & Luzzo, 1999; Brown & Barbosa, 2001; Luzzo & McWhirter, 2001; Stitt-Gohdes, 1997). The follow-up questions sought to provide some answers. A total of five women agreed to be a part of a follow-up discourse on their rationale for their career path in education.
Since the majority of women with children now work outside of the home, role conflict has become a leading issue in the literature related to women’s career development. In the follow-up interviews only one woman made the remark that her choice to pursue an education degree had some basis in being able to balance a career and a family. Support of family has also been cited as a hindrance to women’s career development, and yet, with all but one woman, all reported strong family encouragement to continue their career trajectory. The one woman who said she did not have strong family support used this to her advantage, stating that it helped her want to be in a career that would help others, since she felt she did not receive the help she needed.

A third barrier is one of is discrimination (Betz & Fitzgerald, 1987). Two women talked about feelings of discrimination, one in the courses she took and the other in the actual workplace. As a student in the math and science disciplines, one participant felt that there still existed a stigma attached to a female in these disciplines. Another felt discrimination first hand, being passed over for a higher management position, with the job going to a male, whom she felt had less qualifications than her. However, instead of deterring these women, it pushed them further, one continues in the math and science disciplines and the other examined what she wanted from a career and determined education was a better fit.

Lastly, lack of confidence did not seem to be a factor with this small sample group. All five women are actively pursuing careers in teaching or counseling with enthusiasm. And each one cited that she was excited to continue on her career path.

Overall, this study does seem to indicate that the younger college female was more likely to endorse traditional gender stereotypes. Taken as a whole, the results of
this study indicate that the career development of women is still interwoven with societal concepts of gender.

**Limitations and Future Research**

The present investigation is limited in scope as it focused exclusively on women pursuing a career in education. According to the Census bureau (2009), women also heavily populate the health care field as well. As a recommendation for future research, it would interesting to note and compare the college woman in a healthcare major with the education one.

This study was limited by the somewhat homogeneous composition of the sample. The majority of the women who participated in this study were Caucasian. In addition, the participant population was limited to an urban Southwestern University. Given this composition, the generalizability of findings to women of color and women in non-university settings is limited. Further research should attempt to investigate the extent of the findings of this study apply to more racially, culturally, and geographically diverse samples.

Despite the apparent homogeneity of the sample, there was substantial diversity in age among the women who participated in this study. Furthermore, it was not restricted to undergraduate students, but also included graduate-level. Thus, evidence for generalizability of the results of the study to varied age groups is possible accounting for both the “traditionally-aged” college woman as well as the older or “non-traditionally-aged college student. Future research could target a specific age group, for example, either the emerging adult woman or the non-traditional older woman.
Measurement of how much a woman conforms to the cultural standard of feminine was determined through self-report on the Conformity to Feminine Norms Inventory, short version (CFNI-45). Gender is a multidimensional construct (Spence and Buckner 2000; Marsh and Bryne 1991; Spence 1993), whose dimensions include: gender-typed personality traits (Bem 1974, 1981), gender related interests (Lippa 2005), global sex role behaviors (Orlofsky and O'Heron 1987), masculinity ideology (Levant and Fischer 1998), gender role conflict (O'Neil et al. 1986), gender role stress (Brady & Eisler 1995), and gender role conformity (Mahalik et al. 2005). Although this study only used the CFNI-45, it would have created a more complete picture if the corresponding Conformity to Masculine Norms (CMNI; Mahalik, Locke, Diemer, Ludlow, Scott, Gottfried, & Freitas, 2003) was also included in this study.

The qualitative component added a layer of the personal to the study. A total of twenty-two women were contacted to participate. A limitation was only those who agreed by providing e-mail addresses were able to be contacted, as well as only those participants who responded to the request could even be considered a part of the follow-up investigation. Therefore, this component only had five participants. And of these five participants who agreed to be interviewed, none were in the youngest age group, which was also the largest age group in the study. It would have been most beneficial to be able to ask the follow-up questions of this age group as the statistics indicated the women 18 to 24 scored the higher numbers on the CFNI-45, suggesting a higher agreement with feminine norms. This would help shed some light on what has been defined as a backlash against feminism and feminist ideals. Future directions could be a study using
qualitative research methodology, focusing on women in the traditionally female career paths.

**Implications for Counselors**

Career self-efficacy can have implications for career counselors as well as school counselors of all grade levels. Borders and Archadel (1987) maintain that when counseling clients or students with career-related issues, counselors need to assess and identity career-related self-efficacy expectations and determine the accuracy of those expectations. This may be especially true for women. A study by Whiston (1993) found that women have higher self-efficacy concerning their capabilities to work with people as compared to working with things. This may indeed be the rationale why women still gravitate to those fields on the social scale of the vocational interest inventories. However, career counselors may need to consider the extent to which they examine self-efficacy expectations as well as explore the accuracy of women’s self-efficacy with their clients.

Jutunen (1996) noted that career counselors are in a unique position to help their female clients focus on sex-role socialization and to encourage women to actively assume responsibility for their own career development in spite of societal restrictions. Women may have inaccurate self-efficacy expectations due to the stereotyping of the task or activity, and therefore, may avoid occupations related to working with things (Hackett & Betz, 1981). Conformity to gender role norms has been shown to restrain the relationship between gender and several career constructs. Women may rule out options that seem incompatible with their sense of how or what she is supposed to do in relation to the norms of society. Therefore, counselors need to be cognizant of what messages are
being sent during career lessons or during counseling sessions that may support or reject gender conformity.

**Conclusions**

Over the course of the past fifty years, women’s career aspirations have evolved steadily. This is evident by the increase of women in the workforce. Several factors have influenced and inhibited women’s career aspirations and career development over the years. The types of careers women choose and the factors influencing their choices are relevant issues to examine. Although women may still gravitate towards those career paths marked traditionally female, it is important to understand the rationale for those decisions. Ongoing research on the lifelong processes of women’s career aspirations and career development will continue to provide a more complete picture of their unique occupational paths (Rainey & Borders, 1997; Schoon, 2001). Gaining insight into career aspirations and career interests will be useful in expanding career options available to young women. And as long as women remain a viable and important sector of America’s workforce, it will be necessary to continue studying the career interests and career development processes of women.
Table 1

*Congruence for Two-Letter Codes*

<table>
<thead>
<tr>
<th>CODE</th>
<th>FIRST LETTER</th>
<th>SECOND LETTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Letter</td>
<td>5</td>
<td>2</td>
</tr>
<tr>
<td>Second Letter</td>
<td>2</td>
<td>1</td>
</tr>
</tbody>
</table>
Table 2

*Modified Index for Two-Letter Codes*

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Example</th>
<th>Agreement Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1, 2)</td>
<td>RE, RE</td>
<td>$W(1, 1) + W(2, 2) = 6$</td>
</tr>
<tr>
<td>(1, 0)</td>
<td>RE, RI</td>
<td>$W(1, 1) = 5$</td>
</tr>
<tr>
<td>(2, 1)</td>
<td>RE, ER</td>
<td>$2W(1, 2) = 4$</td>
</tr>
<tr>
<td>(0, 1)</td>
<td>RE, IR</td>
<td>$W(1, 2) = 2$</td>
</tr>
<tr>
<td>(0, 2)</td>
<td>RE, IE</td>
<td>$W(2, 2) = 1$</td>
</tr>
</tbody>
</table>

Reprinted from Iachan, 1990.
Table 3

*Descriptions of Participants*

<table>
<thead>
<tr>
<th>Category</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18 – 24</td>
<td>82</td>
<td>52%</td>
</tr>
<tr>
<td>25 – 29</td>
<td>37</td>
<td>23%</td>
</tr>
<tr>
<td>30 – 39</td>
<td>22</td>
<td>13%</td>
</tr>
<tr>
<td>40+</td>
<td>17</td>
<td>19%</td>
</tr>
<tr>
<td><strong>Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>African American</td>
<td>8</td>
<td>5%</td>
</tr>
<tr>
<td>Asian</td>
<td>11</td>
<td>7%</td>
</tr>
<tr>
<td>Caucasian</td>
<td>96</td>
<td>61%</td>
</tr>
<tr>
<td>Hispanic</td>
<td>25</td>
<td>16%</td>
</tr>
<tr>
<td>Native American</td>
<td>1</td>
<td>&gt;1%</td>
</tr>
<tr>
<td>Pacific Islander</td>
<td>1</td>
<td>&gt;1%</td>
</tr>
<tr>
<td>Other</td>
<td>14</td>
<td>8%</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>&gt;1%</td>
</tr>
<tr>
<td><strong>Grade Point Average Range</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.0 - 2.4</td>
<td>4</td>
<td>3%</td>
</tr>
<tr>
<td>2.5 - 2.9</td>
<td>22</td>
<td>14%</td>
</tr>
<tr>
<td>3.0 - 3.4</td>
<td>43</td>
<td>27%</td>
</tr>
<tr>
<td>3.5 - 3.9</td>
<td>73</td>
<td>46%</td>
</tr>
<tr>
<td>4.0+</td>
<td>14</td>
<td>8%</td>
</tr>
<tr>
<td>No response</td>
<td>1</td>
<td>&gt;1%</td>
</tr>
<tr>
<td>Undergraduate Secondary Ed</td>
<td>33</td>
<td>21%</td>
</tr>
<tr>
<td>Undergraduate Special Ed</td>
<td>3</td>
<td>2%</td>
</tr>
</tbody>
</table>
Table 3

*Descriptions of Participants (cont.)*

<table>
<thead>
<tr>
<th>Degree Sought</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate Elementary Ed</td>
<td>40</td>
<td>25%</td>
</tr>
<tr>
<td>Undergraduate Secondary Ed</td>
<td>33</td>
<td>21%</td>
</tr>
<tr>
<td>Undergraduate Special Ed</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Graduate Elementary Ed</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Graduate Secondary Ed</td>
<td>3</td>
<td>2%</td>
</tr>
<tr>
<td>Graduate Special Ed</td>
<td>6</td>
<td>4%</td>
</tr>
<tr>
<td>Graduate Counseling</td>
<td>33</td>
<td>21%</td>
</tr>
<tr>
<td>Graduate Educational/School Psychology</td>
<td>5</td>
<td>3%</td>
</tr>
<tr>
<td>Undergraduate other</td>
<td>25</td>
<td>16%</td>
</tr>
<tr>
<td>Graduate other</td>
<td>6</td>
<td>4%</td>
</tr>
<tr>
<td>No current degree program</td>
<td>1</td>
<td>&gt;1%</td>
</tr>
<tr>
<td>No Response</td>
<td>2</td>
<td>1%</td>
</tr>
</tbody>
</table>
Table 4

*Descriptives: Age with Congruence Index VPI with VES*

<table>
<thead>
<tr>
<th>Age</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>82</td>
<td>2.01</td>
<td>1.696</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
<td>2.11</td>
<td>1.864</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>2.73</td>
<td>1.882</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>2.88</td>
<td>1.616</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>2.23</td>
<td>1.768</td>
</tr>
</tbody>
</table>
Table 5

*Analysis of Variance with Age*

<table>
<thead>
<tr>
<th>Source</th>
<th>Sum of Squares</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>17.074</td>
<td>3</td>
<td>5.691</td>
<td>1.850</td>
<td>.140</td>
</tr>
<tr>
<td>Within Groups</td>
<td>470.672</td>
<td>153</td>
<td>3.076</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>487.745</td>
<td>156</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05
Table 6

LSD Post Hoc Test – Age and Iachan Index between VPI and VES

<table>
<thead>
<tr>
<th>Age</th>
<th>Age</th>
<th>Means Difference</th>
<th>SD</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>-.099</td>
<td>.351</td>
<td>.778</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>-.715</td>
<td>.421</td>
<td>.092</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>-.870</td>
<td>.467</td>
<td>.065</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>.099</td>
<td>.351</td>
<td>.778</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>-.616</td>
<td>.475</td>
<td>.196</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>-.771</td>
<td>.516</td>
<td>.137</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>.715</td>
<td>.421</td>
<td>.092</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>.616</td>
<td>.475</td>
<td>.196</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>-.155</td>
<td>.566</td>
<td>.785</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>.870</td>
<td>.467</td>
<td>.065</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>.771</td>
<td>.516</td>
<td>.137</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>.155</td>
<td>.566</td>
<td>.785</td>
</tr>
</tbody>
</table>
Table 7

**Paired Sample T-Test**

<table>
<thead>
<tr>
<th>Congruence between VPI x VES</th>
<th>N</th>
<th>M</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>157</td>
<td>2.23</td>
<td>1.768</td>
</tr>
<tr>
<td>Congruence between CS x VES</td>
<td>157</td>
<td>3.15</td>
<td>1.887</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>T-Test</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>t</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>df</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sig.(2-tailed)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Index VPI x VES</td>
<td>4.473</td>
<td>157</td>
<td>.000</td>
</tr>
<tr>
<td>Index CS x VES</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05*
Table 8

*Descriptive Statistics of Age with CFNI-45 Scores*

<table>
<thead>
<tr>
<th>Age Group</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>82</td>
<td>87.71</td>
<td>11.672</td>
</tr>
<tr>
<td>2</td>
<td>36</td>
<td>82.89</td>
<td>9.936</td>
</tr>
<tr>
<td>3</td>
<td>22</td>
<td>82.09</td>
<td>9.581</td>
</tr>
<tr>
<td>4</td>
<td>17</td>
<td>80.88</td>
<td>8.703</td>
</tr>
<tr>
<td>Total</td>
<td>157</td>
<td>85.08</td>
<td>10.997</td>
</tr>
</tbody>
</table>
Table 9

*Analysis of Variance Age and CFNI-45 Score*

<table>
<thead>
<tr>
<th>Source</th>
<th>df</th>
<th>MS</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>3</td>
<td>411.656</td>
<td>3.572</td>
<td>.016</td>
</tr>
<tr>
<td>Within Groups</td>
<td>153</td>
<td>115.230</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>156</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p<.05*
Table 10

LSD Post Hoc Test – CFNI-45 Scores and Age

<table>
<thead>
<tr>
<th>Age</th>
<th>Age</th>
<th>Means Difference</th>
<th>SD</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>4.818*</td>
<td>2.146</td>
<td>.026</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>5.616*</td>
<td>2.577</td>
<td>.031</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>6.825*</td>
<td>2.861</td>
<td>.018</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>14.818*</td>
<td>2.146</td>
<td>.026</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>.798</td>
<td>2.905</td>
<td>.784</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>2.007</td>
<td>3.159</td>
<td>.526</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>-5.616*</td>
<td>2.577</td>
<td>.031</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>-.798</td>
<td>2.905</td>
<td>.784</td>
</tr>
<tr>
<td>4</td>
<td></td>
<td>1.209</td>
<td>3.466</td>
<td>.728</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>-6.825*</td>
<td>2.861</td>
<td>.018</td>
</tr>
<tr>
<td>2</td>
<td></td>
<td>-2.007</td>
<td>3.159</td>
<td>.526</td>
</tr>
<tr>
<td>3</td>
<td></td>
<td>-1.209</td>
<td>3.466</td>
<td>.728</td>
</tr>
</tbody>
</table>

*the mean difference is significant at the 0.05 level
Table 11

*Descriptive Statistics*

<table>
<thead>
<tr>
<th>Source</th>
<th>N</th>
<th>Mean</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CFNI-45</td>
<td>157</td>
<td>169.08</td>
<td>1055.994</td>
</tr>
<tr>
<td>VPI x VES Index</td>
<td>157</td>
<td>2.23</td>
<td>1.768</td>
</tr>
<tr>
<td>CS x VES Index</td>
<td>157</td>
<td>3.15</td>
<td>1.887</td>
</tr>
</tbody>
</table>
Table 12

*Correlations*

<table>
<thead>
<tr>
<th>CFNI-45 Score</th>
<th>Pearson Correlation</th>
<th>Sig (2-tailed)</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Index VPI x VES</td>
<td>.016</td>
<td>157</td>
</tr>
<tr>
<td></td>
<td>Index CS x VES</td>
<td>.056</td>
<td>.489</td>
</tr>
</tbody>
</table>
APPENDIX A

IRB APPROVAL FORM

Social/Behavioral IRB – Expedited Review Approval Notice

NOTICE TO ALL RESEARCHERS:
Please be aware that a protocol violation (e.g., failure to submit a modification for any change) of an
IRB approved protocol may result in mandatory remedial education, additional audits, re-consenting
subjects, researcher probation, suspension of any research protocol at issue, suspension of additional
existing research protocols, invalidation of all research conducted under the research protocol at
issue, and further appropriate consequences as determined by the IRB and the Institutional Officer.

DATE: May 26, 2011

TO: Dr. Paul Jones, Educational Psychology

FROM: Office of Research Integrity - Human Subjects

RE: Notification of IRB Action by /Charles Rasmussen/ Dr. Charles Rasmussen, Chair
Protocol Title: Concordance of Vocational Interests and Efficacy in Female Students
Pursuing a Traditional Career Path
Protocol #: 1104-3803
Expiration Date: May 25, 2012

This memorandum is notification that the project referenced above has been reviewed and approved by the
UNLV Social/Behavioral Institutional Review Board (IRB) as indicated in Federal regulatory statutes 45 CFR

The protocol is approved for a period of one year and expires May 25, 2012. If the above-referenced project
has not been completed by this date you must request renewal by submitting a Continuing Review Request form
30 days before the expiration date.

PLEASE NOTE:
Upon approval, the research team is responsible for conducting the research as stated in the protocol most
recently reviewed and approved by the IRB, which shall include using the most recently submitted Informed
Consent/Assent forms and recruitment materials. The official versions of these forms are indicated by footer
which contains approval and expiration dates.

Should there be any change to the protocol, it will be necessary to submit a Modification Form through ORI -
Human Subjects. No changes may be made to the existing protocol until modifications have been approved by
the IRB. Modified versions of protocol materials must be used upon review and approval. Unanticipated
problems, deviations to protocols, and adverse events must be reported to the ORI – HS within 10 days of
occurrence.

If you have questions or require any assistance, please contact the Office of Research Integrity - Human
Subjects at IRB@unlv.edu or call 895-2794.

Office of Research Integrity - Human Subjects
4505 Maryland Parkway • Box 451047 • Las Vegas, Nevada 89154-1047
(702) 895-2794 • FAX: (702) 895-0805
APPENDIX B

LICENSE AGREEMENT

THIS AGREEMENT, made this June 7, 2011, by and between Psychological Assessment Resources, Inc., a Florida Corporation, with its principal offices located at 16204 North Florida Avenue, Lutz, Florida 33549, hereinafter referred to as PAR, and Priscilla Walton, with her principal offices located at the University of Nevada, Las Vegas, Dept of Educational Psychology, 4505 S. Maryland Parkway, Las Vegas, NV 89154-3003, hereinafter referred to as Licensee.

1) RECITALS

PAR has developed and holds all copyrights and distribution rights to certain psychological tests and related materials as listed in Schedule A, hereinafter called "Test". The Test consists of PAR's items, scoring keys, scales, profiles, standard-score conversion tables, norms tables, interpretive information, and related materials created, prepared, devised, and combined by PAR for the administration, scoring, reporting, and analysis of the Test, and includes the words, symbols, numbers, and letters used to represent the Test. Licensee desires to develop automated procedures for the secure and encrypted administration of the Test through Licensee's secure internet assessment website. The access to Licensee's website will be by invitation only in connection with Licensee's research study titled, Concordance of Vocational Interests and Efficacy in Female College Students Pursuing a Traditional Career Path and to subjects for this research purpose only (the "Limited Purpose(s)"). Unless permitted to do so by a separate license agreement, Licensee only has the right to use the Test for the Limited Purpose described above.

In consideration of the mutual covenants and promises expressed herein and other good and valuable considerations, it is agreed as follows:

2) LICENSE

PAR hereby grants to Licensee, subject to the terms of this Agreement, a non-transferable, non-exclusive license to place the Test on Licensee's website for the Limited Purpose described in Section 1 above. Licensee
agrees to hold secure and treat as proprietary all information transferred to it from PAR. Licensee shall carefully control the use of the Test for the Limited Purpose described in this Agreement. Licensee's use of the Test will be under the supervision or in consultation with a qualified psychologist or other qualified individual and consistent with the then current edition of the Standards for Educational and Psychological Testing published by the American Psychological Association.

3) TERMS AND TERMINATION

The initial term of this Agreement shall extend from June 15, 2011 through December 15, 2011, and may be extended only by mutual agreement of the parties. Notwithstanding any other provision of this Agreement, this Agreement may be terminated if any of the following events occur:

(a) Termination is mutually agreed to by the parties.

(b) Licensee defaults in the performance of any of its duties hereunder.

On the effective date of expiration or termination of this Agreement pursuant to subsections (a) and (b) above, all rights in this Agreement revert to PAR. Computer software programs written by or for Licensee remain the property of Licensee. Licensee warrants that upon expiration or termination of this Agreement under subsections (a) and (b) above, and except as set forth in any separate license agreement relating thereto, all portions of the Test licensed hereunder shall be removed from Licensee's Website. Failure to cease all uses of the Test shall constitute copyright infringement.

4) TERMINATION RIGHTS

In the event of termination pursuant to paragraph 3 above for any reason, PAR shall not be liable to Licensee for compensation, reimbursement or damages for any purpose, on account of any expenditures, investments, leases or commitments made or for any other reason whatsoever based upon or growing out of this Agreement.
5) **CONDITIONS OF USE**

PAR shall have the right to review, test, and approve that portion of Licensee's Website which includes the Test. Following PAR's approval of that portion of Licensee's Website containing the Test, the manner in which the Test appears on such Website shall not be changed in any material way without prior approval of PAR.

The computer programs developed by Licensee and used in any phase of administration and scoring of the Test shall be fully tested by Licensee and shall be encrypted and reasonably protected from access, intrusion and changes by persons who are not authorized agents of Licensee. In addition to the foregoing, Licensee shall exert all reasonable commercial efforts to prevent the Programs, and any accompanying code for the administration of the Test from being accessed, viewed or copied by others. Licensee warrants the accuracy of such scoring and reporting.

6) **PROPRIETARY RIGHTS**

PAR is the owner of all right, title and interest in the Test. Licensee shall acquire no right or interest in the Test, by virtue of this Agreement or by virtue of the use of the Test, except the right to use the Test in accordance with the provisions of this Agreement. Licensee shall not modify or revise the Test in any manner without written approval by PAR. All uses of the Test by Licensee shall inure to the benefit of PAR. Licensee agrees not to challenge or otherwise interfere with the validity of the Test or PAR's ownership of them.

7) **ROYALTIES**

Licensee agrees to pay PAR a royalty fee for 200 administrations of the Test and copyrighted materials contained therein. Licensee will also provide PAR with an itemized accounting of all administrations of each Test administered by Licensee during the term of this agreement. Licensee shall pay to PAR Two Hundred Fifty Dollars ($250.00) as an initial license fee which is due and payable upon the signing of this License Agreement.
8) **ACCOUNTING**

Licensee shall develop secure computerized accounting methods acceptable to PAR. Such accounting methods must include an electronic counting mechanism which will accurately record the number of administrations of each Test used. Licensee will keep accurate financial records of all transactions relating to the use of the Test, and PAR shall have the right to examine the software and records of Licensee pertaining to the use of the Test. Licensee will make such software and records accessible to PAR or its nominee during normal working hours upon not less than five (5) business days’ prior written notice. Licensee shall retain such software and records for at least one year from the date this Agreement expires or the effective termination date.

The Website shall contain the following copyright notice:

"Adapted and reproduced by special permission of the Publisher, Psychological Assessment Resources, Inc., 16204 North Florida Avenue, Lutz, Florida 33549, from the Vocational Preference Inventory by John L. Holland, Ph.D., Copyright 1953, 1965, 1977, 1985, by PAR, Inc. Further reproduction is prohibited without permission of Psychological Assessment Resources, Inc."

9) **INDEMNITY**

Licensee agrees to indemnify PAR and hold PAR harmless against any claim or demand or against any recovery in any suit (including taxes of any kind, reasonable attorney’s fees, litigation costs, and other related expenses) that may be:

(a) brought by or against PAR, arising or alleged to have arisen out of the use of the Test by Licensee;

(b) sustained or incurred by PAR, arising or alleged to have arisen in any way from the breach of any of Licensee’s obligations hereunder; or
(c) incurred by PAR in any litigation to enforce this Agreement, including litigation against Licensee.

10) ASSIGNMENT

Licensee shall not assign this Agreement or any license, power, privilege, right, or immunity, or delegate any duty, responsibility, or obligation hereunder, without the prior written consent of PAR. Any assignment by PAR of its rights in the Test shall be made subject to this Agreement.

11) GOVERNING LAW

This Agreement shall be construed according to the laws of the State of Florida of the United States of America. Venue for any legal action relative to this Agreement shall be in the appropriate state court in Hillsborough County, Florida, or in the United States District Court for the Middle District of Florida, Tampa division. Licensee agrees that, in any action relating to this Agreement, the Circuit Court in Hillsborough County, Florida or the United States District Court for the Middle District of Florida, Tampa Division, has personal jurisdiction over Licensee, and that Licensee waives any argument it may otherwise have against the exercise of those courts' personal jurisdiction over Licensee.

12) SEVERABILITY

If any provision of this Agreement shall, to any extent, be invalid and unenforceable such provision shall be deemed not to be part of this Agreement, and the parties agree to remain bound by all remaining provisions.

13) EQUITABLE RELIEF

Licensee acknowledges that irreparable damage would result from unauthorized use of the Test and further agrees that PAR would have no adequate remedy at law to redress such a breach. Therefore, Licensee agrees that, in the event of such a breach, specific performance and/or injunctive relief, without the necessity of a bond, shall be awarded by a Court of competent jurisdiction.
14) **ENTIRE AGREEMENT OF THE PARTIES**

This instrument embodies the whole Agreement of the parties. There are no promises, terms, conditions, or obligations for the Test licensed hereunder other than those contained herein; and this Agreement shall supersede all previous communications, representations, or agreements, either written or verbal, between the parties hereto, with the exception of any prior agreements that have not previously been terminated by written consent of both parties or by one party if the terms of the agreement allow. This Agreement may be changed only by an agreement in writing signed by both parties.

15) **NOTICES AND MODIFICATIONS**

Any notice required or permitted to be given under this Agreement shall be sufficient if in writing and if sent by certified or registered mail postage prepaid to the addresses first herein above written or to such addresses as either party may from time to time amend in writing. No letter, telegram, or communication passing between the parties hereto covering any matter during this contract, or periods thereafter, shall be deemed a part of this Agreement unless it is distinctly stated in such letter, telegram, or communication that it is to constitute a part of this Agreement and is to be attached as a right to this Agreement and is signed by both parties hereto.

16) **SUCCESSORS AND ASSIGNS**

Subject to the limitations on assignments as provided in Section 10, this Agreement shall be binding on the successors and assigns of the parties hereto.

17) **PARAGRAPHS HEADINGS**

The paragraph headings contained in this Agreement are inserted only for convenience and they are not to be construed as part of this Agreement.

18) **AUTHORIZATION AND REPRESENTATION**

Each party represents to the others that it has been authorized to execute and deliver this Agreement through the persons signing on its behalf.
IN WITNESS WHEREOF, the parties have executed this Agreement in duplicate on the date first herein above written.

ACCEPTED AND AGREED:

BY: [Signature]
PRISCILLA WALTON
Title: [Title]
DATE: 4-8-11

ACCEPTED AND AGREED:

BY: [Signature]
R. BOB SMITH III, PH.D.
Title: CHAIRMAN AND CEO
DATE: 6-13-2011

PAYMENT RECEIVED: CC-MC
Cust # M1240

SIGNATURE OF PROFESSOR REQUIRED:

I hereby agree to supervise this student’s use of these materials. I also certify that I am qualified to use and interpret the results of these tests as recommended in the Standards for Educational and Psychological Testing, and I assume full responsibility for the proper use of all materials used per this Agreement.

BY: [Signature]

Printed Name: [Name]
SCHEDULE A

The Test licensed to Licensee pursuant to the above license consist of PAR's items, scoring keys, scales, profiles, standard-score conversion tables, norms tables, and related materials created, prepared, devised, and combined by PAR for the administration, scoring, reporting, and analysis of the Test, and include the words, symbols, numbers, and letters used to represent the Test. However, PAR and Licensee acknowledge and agree that Licensee may use only the PAR items and scoring information for the Test as appropriate for the Limited Purpose. The Test referred to in the body of this Agreement is defined as follows:

1) Vocational Preference Inventory (VPI)
   Research Form B
APPENDIX C
Scale Descriptions: CogStyle and Vocational Efficacy Scale

CogStyle Scale:

Instructions:
For these questions, you are given two words and asked to choose which of the two best describes you and things you like to do. For each of the comparisons, choose the word that usually fits you best. Don’t think too long about any question. Your first reaction is usually your best answer. If both seem correct, please “lean” one way or the other.

Example Questions
Are you more likely to be: efficient or curious
Do you usually prefer: organizing or persuading
(Total of 30 pairs)

-----------------------------------------------------------------------------------------------------------------------------

Vocational Efficacy Scale:

Instructions:
For these questions, you rate your skill in doing a number of different kinds of things. On this scale, the focus is not on whether you enjoy a task but on how well you think you can do the task described. You don’t need to be modest when you think you can do something well or embarrassed if you cannot. Be honest with yourself in the rating. Use the key below to respond the questions.

1= very difficult for me   2=usually difficult for me   3=usually easy for me   4=very easy for me

Example Questions:
1 2 3 4 Use power tools.
1 2 3 4 Act in a play.
1 2 3 4 Solve math problems.

(Total of 30 items)
APPENDIX D

Permission to Use the CFNI-45

Permission Form for Use of the Conformity to Masculine Norms Inventory - 46
and/or Conformity to Feminine Norms Inventory - 45 in Research

1. Contact Information
Name: Priscilla Walton
E-mail Address: waltonp@cox.net
Phone: -
Fax: -
Mailing Address: (home) Las Vegas NV 89147

2. Please briefly describe the research study: The purpose of this study is to examine the relationships among vocational interests, vocational efficacy and adherence to feminine norms in a participant sample comprised of women who have chosen a traditionally female career path.

3. Approximately how many participants will complete the CMNI-46 and/or CFNI-45? If you are using both measures specify number of participants by gender per measure:
Using the CFNI-45 — 50 to 200 participants

4. If this is a senior/honors thesis, master’s thesis, doctoral dissertation, or other student research, who is supervising the research (please provide faculty member’s name, mailing address, e-mail, and phone number):
Name: Dr. Paul Jones
Mailing Address: UNLV Educational Psychology Dept.
E-mail: paul.jones@unlv.edu
Phone: 702-895-3937
Please read the following conditions, sign and return to Mike C. Parent at the address, fax number, or e-mail below.

Conditions of Use

I certify that I (or my supervising professor) have an advanced professional degree in psychology, psychiatry, counseling, social work, or a closely related field AND relevant training in the use of assessment instruments.

I agree to use the CMNI-46 and/or CFNI-45 for research purposes only.

After completion of my research project, I will transmit to Mike C. Parent via email the following information for the CMNI-46 and/or CFNI-45, using data from the final sample used in my research (i.e. not including any participants removed prior to analysis for reasons such as missing data or random responding): the total number of participants who completed the CMNI-46 and/or CFNI-45, any specific population demographics that were requirements of participation in the study, and reliability coefficients for all subscales of the CMNI-46 and/or CFNI-45.
I agree not to change the inventories' instructions, items, or scaling; and agree to provide a copy to Mike C. Parent of any publications that may result from use of the CMNI-46 and/or CFNI-45 in my research.

I understand that permission to use/reproduce the measures will only be granted for the project that I described herein and that if I wish to use/reproduce the measures for other projects, I must obtain additional approval. I understand that I may not provide the inventories to others for their use but will direct them to Mike C. Parent.

I also agree that the CMNI-46 and/or CFNI-45 will not be appended to written materials (e.g., dissertations, theses, teaching/instructional handouts, workshop guides, manuscripts, etc.) that are circulated for general reading.

I understand that the CMNI-46 and/or CFNI-45 may not be published in a journal or online. I understand that the CMNI-46 and/or CFNI-45 may not be posted on the internet, and any internet surveys using the inventories must be secured such that the items' security are maintained and the content removed from the internet following completion of the survey.

[Signature] 5-1-11
Signature Date

[Signature of Supervising Professor (if applicable)] 3/28/11
Signature Date

Please retain a copy of this form, and return one to Mike C. Parent at Box 112250, Department of Psychology, University of Florida, 32611; e-mail at michael.parent@ufl.edu or fax at 352.392.7985.
REFERENCES


differences in career goal attainment. *Career Development Quarterly, 50*(2),
168-178.


reliability matrix for estimating adequacy of internal consistency coefficient with
psychological research measures. *Perceptual and Motor Skills, 105*(3, Pt1)

Post-Kammer, P., & Smith, P. L. (1986). Sex differences in math and science career self-
efficacy among disadvantaged students. *Journal of Vocational Behavior, 29*,
89-101.

consideration, and interest of eighth and ninth graders. *Journal of Counseling
Psychology, 32*, 551-559.

career aspiration of early adolescent girls. *Journal of Counseling Psychology, 44*,
160-172.

of college women: Implications for theory, research, and practice. *Journal of


VITA
Graduate College
University of Nevada, Las Vegas

Priscilla A. Walton

Academic History

Bachelor of Science, Education, 1978
University of South Dakota, Vermillion

Master of Arts, Counseling Psychology, 1980
University of South Dakota, Vermillion

Doctorate of Philosophy, Educational Psychology, 2012
University of Nevada, Las Vegas

Dissertation Title: Concordance of Vocational Interest and Efficacy in Female College Students Pursuing a Traditional Career Path

Dissertation Examination Committee

Co-Chairperson, W. Paul Jones, Ed. D.
Co-Chairperson, Wendy Hoskins, Ph.D.
Committee Member, Pamela Staples, Ph.D
Graduate Faculty Representative, Jesse Brinson, Ph.D

Professional Experience

August 1996 – Present
School Counselor K-12

Sept 1993 – April 1994
CCSD, Las Vegas, NV

Facilitate goal-oriented counseling sessions, individual and group. Coordinate and present developmental guidance classroom lessons. Provide resources to teachers and consult for parents. Provide orientation activities for the incoming students and/or new students. Guide students with the development of secondary school plans. Coordinate career interest assessment programs. Conduct faculty in-services. Consult with in-district and community service agencies. Assess and revise guidance curriculum annually. Supervise counseling interns and practicum students. Member of Crisis Management team. Section 504 liaison. Department Chair for the counseling department.

July 2000 – Dec 2006
Marriage and Family Therapist, Private Practice

Jan 1995 – Apr 1996
Adolescent Program Director

Marriage and Family Therapist
Harmony Counseling Center
Las Vegas, NV
Jan 1994 – Sept 1994  Marriage and Family Therapist
Feb 1991 – Sept 1993  Holman Family Counseling
                           Las Vegas, NV
Jan 1991 – Mar 1991  Marriage and Family Therapist Intern
                        Temporary Assistance for Domestic Crisis
                        Las Vegas, NV

Conducted psychotherapy with individuals, couples, and families, with a diversity of issues: crisis intervention, family role disruption, marital distress, sexual abuse, eating disorders, loss and grief, depression, addictive behaviors. Experienced in several therapeutic and intervention models; special focus on solution-focused brief therapy.
Conducted investigative intake interviews and diagnostic evaluations. Developed diagnostic profiles and treatment plans. Development and facilitation of groups. Clinical supervision of staff, MFT interns and graduate-level students. Professional consultation on case determination and management. Designed, implemented, and supervised program for adolescents. Member of Clinical Standards Committee developed to enforce quality assurance, adherence to treatment plans, and monitor peer review. Collaborated with UNLV in research and assessment for the Family Functional Therapy program. Worked conjointly with High Risk Youth Coordinator in assessment of adolescents for groups. Conducted and facilitated multi-family group sessions.

Licensure: Nevada, Marriage and Family Therapist, MFT #0581
               Nevada, School Counselor (K-12)

Teaching Experience

Adjunct Professor University of Nevada, Las Vegas

EPY 707  Adolescent Development  Spring 2008
EPY 452  Counseling/Consultation Skills for Classroom Teachers  Spring 2007
EPY 452  Counseling/Consultation Skills for Classroom Teachers  Spring 2006
COU 741 Practicum  Spring 2000
COU 741 Practicum  Fall 1999
COU 741 Practicum  Spring 1999

Professional Affiliations:
  American Association of Marriage and Family Therapists – Clinical Member
  American School Counselors Association
  Nevada School Counselors Association