

Cleveland State University
EngagedScholarship@CSU



ETD Archive

2013

Women Pursuing Nontraditional Careers : A Social Cognitive Career Theory Perspective

Julia A. Ericksen
Cleveland State University

Follow this and additional works at: <https://engagedscholarship.csuohio.edu/etdarchive>

 Part of the [Education Commons](#)

How does access to this work benefit you? Let us know!

Recommended Citation

Ericksen, Julia A., "Women Pursuing Nontraditional Careers : A Social Cognitive Career Theory Perspective" (2013). *ETD Archive*. 91.
<https://engagedscholarship.csuohio.edu/etdarchive/91>

This Dissertation is brought to you for free and open access by EngagedScholarship@CSU. It has been accepted for inclusion in ETD Archive by an authorized administrator of EngagedScholarship@CSU. For more information, please contact library.es@csuohio.edu.

WOMEN PURSUING NONTRADITIONAL CAREERS: A SOCIAL COGNITIVE CAREER
THEORY PERSPECTIVE

JULIA A. ERICKSEN

Bachelor of Arts in English
University of Illinois (Chicago)

Master of Arts in Psychology
Cleveland State University

May 2002

submitted in partial fulfillment of the requirements for the degree

DOCTOR OF PHILOSOPHY IN URBAN EDUCATION/COUNSELING

at the

CLEVELAND STATE UNIVERSITY

DECEMBER 2013

**We hereby approve Doctoral dissertation
of
Julia A. Ericksen
Candidate for the Doctor of Philosophy degree
This dissertation has been approved
For the Department of
Urban Education
and
CLEVELAND STATE UNIVERSITY
College of Graduate Studies by**

Donna E. Palladino Schultheiss PhD

Department and Date

Graham Stead PhD

Department and Date

Richard Rakos PhD

Department and Date

Elizabeth Welfel PhD

Department and Date

Justin Perry PhD

Department and Date

DEDICATION

“Go confidently in the direction of your dreams. Live the life you have imagined.”

Henry David Thoreau

This work is dedicated to my children, Paul, Gregory, Christopher, and Anne, who have provided me with the love, happiness, and encouragement that have always lifted me up and made my life a very rich and fulfilling one. May each of you live the life you have imagined.

ACKNOWLEDGMENT

I want to acknowledge the very accomplished members of my dissertation committee. Dr. Schultheiss, I am deeply grateful for your willingness to chair my committee. Your expertise, guidance, support, and patience have played a most significant part in the successful completion of this dissertation. I truly appreciate all of the ways you have supported and encouraged me in my educational and professional development. This experience has been a very rewarding one for me and I will always be grateful to you for all of the assistance you provided. Dr. Stead, I thank you so much for agreeing to be my methodologist and for providing understandable explanations for statistical procedures I had limited knowledge of. Dr. Rakos, I am grateful to you for participating in my committee and always challenging me to improve my writing style including writing with greater precision and parsimony. Dr. Welfel, I thank you for helping me more fully comprehend the breadth of experience that dissertation writing is and thereby preparing me for a sometimes daunting experience. Dr. Perry, thank you for agreeing to participate in my committee. I appreciate your extensive knowledge regarding my dissertation topic and your willingness to give of your time that I might accomplish this important goal. I would also like to thank my daughter, Anne, for her ongoing assistance particularly related to technological challenges. I am also deeply grateful to my friend, Linda, who provided untold hours of typing and patient support. I consider myself to be very fortunate to have had such a meaningful educational experience at Cleveland State University. The professors and fellow

students I have encountered over the course of many years have enriched my life. I would particularly like to remember a fellow student who is no longer with us but whose memory lingers on, Susan Sherman. Susan provided me with friendship and her generous spirit afforded me many important opportunities.

ABSTRACT

Women pursuing nontraditional careers face many obstacles and constraints that can limit or impede their career development. Those who wish to participate in trades and construction occupations must often overcome the absence of meaningful learning experiences and role models, weak self-efficacy beliefs, uncertain outcome expectations along with cultural and institutional barriers. Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994) provides a theoretical framework to study the career development of these women. The learning experiences, self-efficacy beliefs, and outcome expectations of 73 women with expressed Realistic interests were examined to further illuminate their career interest development. Results of this study demonstrated that some of the propositions suggested by SCCT (1994), particularly the positive and significant relations between learning experiences and interests, self-efficacy and interests, and, outcome expectations and interests, were supported for this sample of women. Recommendations for career counseling practice and research are offered.

TABLE OF CONTENTS

	PAGE
ABSTRACT.....	vi
LIST OF TABLES.....	x
LIST OF FIGURES.....	xi
CHAPTER	
I. INTRODUCTION AND STATEMENT OF PURPOSE.....	1
Historical Perspective.....	4
Workforce Statistics.....	5
Cultural Beliefs About Gender.....	6
Gender Construction.....	7
Bandura’s Social Learning Theory.....	9
Career Development and Efficacy Beliefs.....	12
Social Cognitive Career Theory.....	13
Self-efficacy Beliefs.....	14
Outcome Expectations.....	15
Person Inputs.....	16
Contextual Affordances.....	18
Interest Development.....	19
Conclusion and Research Hypothesis.....	20
II. REVIEW of LITERATURE	22
Self-efficacy Beliefs and Occupational Interests.....	24

Self-Efficacy Beliefs and Self-rated Abilities.....	34
Learning Experiences.....	36
Outcome Expectations.....	40
Role of Perceived Barriers in Career Development.....	46
Purpose of Study.....	49
III. METHODS.....	50
Participants.....	50
Pre-apprenticeship Training	52
Research Design.....	53
Instrumentation.....	54
Demographic Questionnaire.....	54
Learning Experiences Questionnaire.....	55
Self-efficacy Questionnaire.....	57
Occupational Self-efficacy Beliefs	59
Occupational Outcome Expectations.....	61
Realistic Interests Scale	62
Data Collection Procedures.....	63
Data Analysis.....	64
IV. RESULTS.....	65
Preliminary Analyses.....	65
Regression Analyses.....	66
A Test of the Significance of the Mediated Effect.....	69

V. DISCUSSION.....	73
Introduction.....	73
Relevant Studies.....	75
Practice Implications.....	76
Recommendations for Increasing Women’s Participation in Trades and Construction Occupations	82
Limitations of the Current Study	83
Recommendations for Future Research.....	84
Summary	85
REFERENCES.....	86
APPENDICES.....	101
A. Institutional Review Board Approval Letter.....	102
B. Informed Consent Form.....	103
C. Demographic/Descriptive Questionnaire.....	104
D. Learning Experiences Questionnaire.....	105
E. Self-efficacy Questionnaire.....	106
F. Occupational Self-efficacy Beliefs.....	107
G. Occupational Outcome Expectations.....	108
H. Realistic Interests Scale.....	109

LIST OF TABLES

	PAGE
Table 1. Pearson Product – Moment Correlation Coefficients.....	67
Table 2. Multiple Regressions Analyzing Mediated Effect.....	71-72

LIST OF FIGURES

	PAGE
Figure 1. Mediated model with self-efficacy as mediating variable.....	69
Figure 2. Mediated model with outcome expectations as mediating variable.....	69

CHAPTER I

INTRODUCTION AND STATEMENT OF PURPOSE

Women Pursuing Nontraditional Careers: A Social Cognitive Career Theory Perspective

Occupational segregation is a prime factor contributing to women's poverty and low earnings (Bayard, Hellerstein, Neumark, & Troske, 2003). Families maintained by single women with children under 18 years old had a working-poor rate of 28.2 % while similar men had a working-poor rate of 18 % (U.S. Bureau of Labor Statistics, 2012). The working poor includes individuals who spent at least 27 weeks in the labor force, either working or looking for work, but whose incomes still fell below the official poverty level. Furthermore, 60 % of the low-wage workers were women despite women's current total representation in the workforce being 47 % (U.S. Bureau of Labor Statistics, 2012). These women, who tended not to hold a college degree, were primarily concentrated in gender traditional clerical, service, and retail occupations often characterized by low wages, few benefits, and little occupational mobility (Mastracci, 2003). For example, 93 % of all receptionists and information clerks are females with median weekly earnings of \$520.00; 74 % of all cashiers are females with median weekly earnings of \$373.00; 88 % of all nursing and home health aides are female with median weekly earnings of \$446.00; lastly, 95 % of all childcare workers are female with average median weekly earnings of \$383.00 (U.S. Bureau of Labor Statistics, 2012). In contrast, jobs traditionally held by men that do not require a college degree (e.g. trades and construction occupations) yield significantly higher

wages ranging from \$700.00 to \$900.00 in median weekly earnings (U.S. Bureau of Labor Statistics, 2012). Gender nontraditional occupations for females are feasible pathways out of poverty for single mothers, female welfare recipients transitioning from welfare to work, and other working women (Mastracci, 2003; Padavic, 1991).

Women pursuing gender nontraditional careers, defined here as occupations with less than 25 % of membership being female such as construction, trades, and technical fields, have long been faced with challenges and obstacles that have impeded or deterred their career aspirations. Gender role socialization, stereotyping, discrimination, and sexual harassment are some of the cultural and institutional impediments to the choice of a nontraditional occupation for women. Adding to the cultural and institutional barriers that impede participation of women in nontraditional fields are individually perceived barriers. Albert and Luzzo (1999) described perceived barriers as those career-related barriers that an individual believes currently prevail or may be confronted in the future, which may or may not be realistic or factually supported. They argued that those perceived barriers can and do impact the career choice process and the career goal attainment of individuals. The combined effect of cultural, institutional, and individually perceived barriers to women's participation in the nontraditional workforce is daunting for those women possessing the interest and abilities necessary for these occupations. More knowledge of this population is needed in order to facilitate the career development of women and girls with expressed or inventoried interests, consistent with trades and construction jobs.

Interest and jobs in the trades and construction, referred to as Realistic in Holland's (1985) theory of person-environment fit proposes that career choice is an expression of one's personality and that individuals participating in an occupation have similar personalities. Holland described six personality types that characterize most individuals: realistic, investigative, artistic,

social, enterprising, and conventional (RIASEC). Each personality type reflects a set of attitudes, competencies, and preferences for vocational and leisure activities. Holland includes six types of work environments (RIASEC) in consonance with the six personality types, based on the underlying assumption that individuals prefer to group themselves with others who are similar to themselves. Specifically, a Realistic personality type would possess competencies related to mechanical ability, problem-solving with tools and/or psychomotor skills, and physical strength. Typical work activities include fixing, building, and repairing (Swanson & Fouad, 1999). Therefore, jobs in trades and construction would be considered related to Realistic interest occupations. Hence, the purpose of this study is to examine the relationship of self-efficacy beliefs, learning experiences, and outcome expectations to the development of Realistic interests for women pursuing trades and construction occupations.

The underutilization of women's abilities and talents and the underrepresentation of women in higher-paying nontraditional occupations are compelling reasons for career theorists and researchers to further examine the career development and choice patterns of this population of women. Further, the demand for an upgraded and more skilled workforce, by business and industry, should necessitate a more inclusionary and diverse workforce in order to capture and utilize women's talents along with men's. Women with nontraditional career aspirations that do not require the attainment of a college degree and which reflect their Realistic interests (Holland, 1970) merit the attention of career researchers. Empirical data derived from this study may help to address the career needs of these women, provide information for more effective advocacy for this population, and apply what is learned to the problems of recruitment and retention of women in trades and construction.

Historical Perspective

Despite federal legislation and public and private sector initiatives enacted in the 1970s, occupational segregation persists today. Increased nontraditional job training and work opportunities have been viewed as the means to attaining parity in gender representation across occupations. Legislative and educational antidotes have only marginally succeeded in advancing women's participation in nontraditional occupations. In fact, females in the construction and extraction occupations industry today account for only 2.6 % (U.S. Bureau of Labor Statistics, 2010) of this occupational group, the same % that existed 30 years ago.

The Women's Bureau of the Department of Labor (2010) projects that women will account for 51.2 % of the total labor force, with this increase occurring between 2008 and 2018. Employment in construction is expected to rise 33 % by 2020, adding about 1.7 million jobs. All areas of construction are expected to contribute to the rapid job growth. The construction industry was hit hard by the recession, losing 2.2 million jobs from 2006 to 2010. Despite the fast projected growth rate, employment in the industry is not expected to recover to its prerecession level by 2020 (U.S. Bureau of Labor Statistics, 2012).

Although women's participation in the workforce continues to increase, women's economic progress has not kept pace with men's. Mastracci (2003) presents evidence to support a link between holding a nontraditional occupation and earning higher wages. Although some nontraditional occupations require a 4-year college degree, many essential occupations, such as those in trades and construction, do not.

Public policies have focused much attention on making a college education more accessible to more individuals over time. Although the public policy assumption has been that most individuals want to attend college and that policy should reflect that educational goal,

almost 70 % of the United States population never obtains a college degree (Mastracci, 2003). In reality, there are many women who do not want to attend college, nor would such participation reflect their interests, abilities, and career aspirations. Often these women are forced to accept lower paying jobs with fewer opportunities for advancement that do not provide economic self-sufficiency for themselves and their children. In addition, for many women, these jobs do not elicit a sense of personal and work satisfaction. Training for many nontraditional occupations opens the door to higher-wage, high-skilled, non-college careers for women. Women who work in construction report choosing their careers because of higher wages, a variety of work schedules, and a greater sense of personal satisfaction (Goldennar, Swanson, Hurrell, Ruder, & Deddens, 1998).

Workforce Statistics

According to projections submitted by the United States Department of Labor in 2010, there will be a strong demand for workers in nontraditional occupations for women due to projected retirements or transfers of current workers to other occupations. The Department of Labor maintains that many jobs that were nontraditional for women in 1986 are no longer nontraditional in 2010, citing occupations such as physicians and surgeons (32.3 %), chemists (33.5 %), lawyers (31.5 %), judges and magistrates (36.4 %), and mail carriers (37.7 %). The status of jobs for women in trades and construction, however, remains nontraditional. Statistics compiled in 2010 by the Department of Labor reveal these percentages of women involved in various nontraditional trades and construction jobs:

Construction and maintenance painters	7.2 %
Welding, soldering, and brazing workers	5.4 %
Sheet metal workers	4.0 %
Construction laborers	2.7 %
Drywall installer, ceiling tile installers, and tapers	2.5 %

Electricians	1.5 %
Pipelayers, plumbers, pipefitters, and steamfitters	1.5 %
Operating engineers and other construction equipment operators	1.5 %
Carpenters	1.4 %
Brick layers, block masons, and stonemasons	.1 %

Higher paying nontraditional occupations for women continue to remain elusive, although more opportunities for learning experiences, more demonstrable positive outcomes, the diminishment of cultural and institutional barriers, and increases in self-efficacy could allow greater participation for women.

Cultural Beliefs About Gender

In some sociological theories, (e.g., Berger & Luckman, 1967; Connell, 1987; Lorber, 1994), the sources of gender differentiation are found in social and institutional practices rather than in the fixed attributes of the individual. The social construction and perpetuation of stereotypic gender differences, for example, shape the perception, evaluation, and treatment of men and women in gendered ways that produce the patterns of behavior that confirm initial stereotypes (Geis, 1993). For other sociologists, it is believed that social changes in opportunity structures have caused the differential treatment of males and females to decline (Eagly, 1987). However, in the arena of nontraditional educational and career pursuits, this perspective appears to be uninformed.

One factor affecting women's decisions to pursue or dismiss a nontraditional career path involves cultural beliefs about gender that differentially influence the career-relevant choices of both men and women. Correll (2001) argued that cultural beliefs about gender negatively influence individuals' perceptions of their competence at career-related tasks. The author examined how gendered beliefs about mathematics impacted individuals' assessments of their

own mathematical competence, leading to gendered differences in decisions to pursue a career in science, math, or engineering. Correll concluded that males do not pursue mathematical activities at a higher rate than females because they are more proficient in math but rather, at least partially, because they believe they are competent at math. Based on this understanding of self-perceptions of competence, relative to widely shared cultural beliefs about various tasks, it can be considered that individuals are not only channeled into particular career trajectories by others, but also self-select career paths predicated on judgments of competence.

Gender Construction

Social learning theory of gender role development and functioning, as described by Bandura (1986, 1997), is a fundamental perspective from which to discern and understand important aspects of people's lives, including concepts of self and others, talents that are cultivated, sociostructural opportunities and barriers that are encountered, and lifestyles and occupational paths that are pursued. Within the social learning framework, gender conceptions and gender role behavior are the results of a multifaceted network of social influences operating within the family and beyond the social system of the family. Bandura contends that although some gender differences are biologically derived, a preponderance of the stereotypic attributes and roles associated with gender develop more from cultural influence than from biology. Social learning theory of gender development, unlike other psychological theories, maintains that this development is negotiated throughout the lifespan rather than occurring only during childhood or only during adulthood. Along with the social and cognitive forces affecting gender development, affective, motivational, and environmental influences also are considered important. Bandura describes the malleability of environmental forces related to gender development and behavior by delineating three types of environmental structures: (a) the imposed environment involving

conditions that are forced on individuals; (b) the potential environment involving courses of action that individuals select and activate and as a result, experience differing rewards and punishments; and (c) the constructed environment involving, for example, children's symbolic play.

The imposed environment and the potential environment have relevance for the study of women and their career development. The impositions of the environment have constrained women from participation in certain social, educational, and occupational pursuits based on gender. Similarly, the selected environment, including the choice of associates, activities, and educational endeavors, affect gender development and gender roles (Bussey & Bandura, 1999).

Within social learning theory, gender-typed roles and behaviors are acquired through three streams of influence along with the individualized cognitive processing of that information. Much gender-linked information is derived from models in an individual's environment, including parents, peers, and important people in social, educational, and occupational contexts. Mass media also provides seemingly omnipresent modeling of gender roles and conduct. Secondly, enactive experiences involve outcomes that result from gender-typed actions that are evaluated and thereby provide more information for constructing gender beliefs. The third means of influence is through direct instruction whereby different types of conduct and their relationship to gender are explained (Bussey & Bandura, 1999).

Career pursuits are broadly gendered. Pervasive stereotypic conventions can impact women's beliefs about occupational efficacy. For example, female students in Betz and Hackett's 1981 study demonstrated greater efficacy for occupations traditionally held by women and weaker efficacy for mastering the educational requirements and job tasks of traditionally male-dominated occupations. Conversely, male students revealed comparable efficacy for

traditionally male-dominated and female-dominated occupations. Hence, on the basis of shaping perceived efficacy for different occupational goals, through socialization processes occurring from infancy through adolescence and, through the knowledge and experience of stereotypic behaviors, women tend to gravitate toward female-dominated occupations and avoid male-dominated ones. Further, gender role socialization, for females, partially influences women's career development due to limited opportunities for efficacy information relevant to traditionally male occupations (Betz, 2000).

Bandura's (1986) Social Learning Theory focuses on the means by which individuals use personal agency to control important aspects of their lives, including career choice. For Bandura, efficacy beliefs affect an individual's sense of personal agency related to significant life decisions and goals. These decisions and goals are also related to the attainment of desired outcomes. The concepts of self-efficacy and expected outcomes have explanatory importance regarding human beliefs about oneself and human motivation.

Bandura's Social Learning Theory

Individuals make purposeful contributions to their psychosocial functioning through mechanisms of personal agency. This striving to exercise some control over events in one's life enables an individual to realize desired outcomes and prevent undesired ones (Bandura, 1986). Bandura maintains that the inability to exert influence over circumstances that adversely affect individuals' lives produces apathy, fear, or despair. The ability to produce valued outcomes and avoid undesirable ones then becomes a powerful incentive for the development and exercise of personal agency. Self-efficacy has been identified as one of the most potent contributors to personal agency (Bandura, 2001). Self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action needed to manage future situations (Bandura, 1995). Efficacy

beliefs, to a great degree, can determine what challenges individuals choose to undertake, how much effort to expend on pursuit of a goal, how long to persevere in the face of obstacles and failures, and whether failures and setbacks are motivating or debilitating (Bandura, 2001).

As people form beliefs about what they can do and anticipate likely outcomes of future behaviors, they set goals for themselves and plan courses of action to realize those valued outcomes. Social learning theory maintains that goals play an important role in the self-regulation of behavior. This theory also proposes that significant reciprocal relations exist among self-efficacy beliefs, outcome expectations or beliefs about the consequences of performing particular behaviors, and goal systems (Bandura, 1995). Thus, strong efficacy beliefs foster approach behavior toward challenging goals along with enhancing the ability to maintain commitment to those goals in spite of difficulties. These beliefs can contribute greatly to human motivation and individuals' attainments. However, self-efficacy beliefs do not simply result from telling oneself that she is capable. Rather, self-efficacy beliefs are the product of "a complex process of self-persuasion that relies on cognitive processing of diverse sources of efficacy information conveyed enactively, vicariously, socially, and physiologically" (Bandura, 1995).

Bandura's (1977b, 1986) concept of self-efficacy proposes four sources of efficacy beliefs. Mastery experiences are considered the most potent contributor to personal self-efficacy. These mastery or performance accomplishments provide individuals with real evidence that they have the capability to succeed. Developing self-efficacy through mastery experiences involves acquiring the cognitive, behavioral, and self-regulating mechanisms for the creation and implementation of appropriate courses of action needed for success.

The second means of creating and strengthening efficacy beliefs is through the vicarious experiences rendered by models. Observing others who are perceived as similar to themselves

succeed, through persevering effort, increases individuals' beliefs in their own abilities to accomplish comparable activities. Conversely, observing similar others experience failure despite high levels of effort diminishes individuals' judgment of their own efficacy and frustrates their level of motivation.

Social persuasion is the third source of efficacy beliefs. When people are verbally persuaded that they possess the abilities needed to master particular activities, within the bounds of authenticity and realism, they are more likely to demonstrate greater effort and sustain that effort rather than succumb to self-doubts. In contrast, individuals who have been persuaded that they lack capabilities are more prone to avoiding challenging activities that could cultivate their potential abilities.

Finally, physiological and emotional states can influence individuals' judgments of their capabilities. Stress responses and tension can be interpreted as antecedents to poor performance, thereby undermining efficacy beliefs. Mood also influences people's judgments of personal efficacy, with positive mood enhancing judgments and depressed mood diminishing judgments of efficacy.

Perceived self-efficacy related to specific content domains of career choices has been a much studied and potent construct for understanding choice, performance, and persistence. Self-efficacy is believed to influence "approach" versus "avoidance" behavior, the range of career options considered, and domain-specific outcome expectations (Betz, 2000).

Bandura (1986) maintains that individuals' behaviors are influenced not only by their personal efficacy beliefs but also by their outcome expectations, beliefs about the likely results of various actions. He did, however, consider self-efficacy to be the more influential factor in determining behavior. In other words, although an individual may view an occupational choice

as having positive outcomes (i.e., high income or prestige), without the relevant efficacy beliefs, “approach” behavior would be unlikely. Outcome expectations related to career choices derive primarily from direct and observational learning experiences. Outcome expectations contribute to the self-regulation of motivation; however, the predictiveness of outcome expectations in determining levels of motivation is greatly enhanced by the influence of positive self-efficacy beliefs (Bandura, 1995).

Career development and efficacy beliefs. Occupations play a pivotal role in individuals’ everyday lives and provide an important source of personal identity and sense of self-worth. Personal efficacy beliefs are a significant determinant in career development and choice (Bandura, 1986, 1997). Efficacy beliefs determine the types of career options that are considered realizable and those that are foreclosed. Increased efficacy broadens individuals’ career options and contributes to their interest in those options. As a result, efficacy beliefs are partly responsible for the challenges people choose to undertake.

In a hallmark study by Betz and Hackett (1981), the authors proposed a “self-efficacy” approach to women’s career development that had applied utility. Their model emphasized the role of cognitive-mediational factors in behavior. In particular, the authors suggested that self-efficacy beliefs had important relevance for comprehending and facilitating women’s career development (Hackett & Betz, 1981). The results of their study demonstrated significant and consistent sex differences in self-efficacy beliefs regarding traditional and nontraditional occupations. Thus, the consideration of the “self-efficacy” approach to the career development of women was launched. Since that time, persuasive empirical evidence for the role of self-efficacy, in career choice and implementation, has accumulated. Hackett (1995) argued that women, particularly, need career assistance in developing stronger efficacy beliefs related to

nontraditional occupations, along with developing high career aspirations and a sense of agency in their career goals.

Social Cognitive Career Theory

Lent, Brown, and Hackett (1994) proposed a social cognitive framework for explaining three aspects of career development: the formation and explication of career-relevant interests, the selection of academic and career choice options, and performance and persistence in educational and occupational goals. This framework, derived primarily from Bandura's social learning theory, focuses on the means by which individuals use personal agency in the career development process and the ways in which extra-person factors enhance or inhibit personal agency. Social Cognitive Career Theory (SCCT) also focuses on an essential component of social learning theory, triadic reciprocal causality. Triadic reciprocal causality is an interactional model that acknowledges the interacting influences among individuals, their behavior and their environments. Within the model, personal attributes (including internal cognitive and affective states and physical characteristics), environmental factors, and overt behavior all act as interlocking mechanisms that influence each other bi-directionally. Bandura (1986) maintained that behavior is not simply the result of the interaction between person and environment but rather that behavior plays an interactive role by impacting situations thereby affecting the thoughts, feelings, and subsequent actions of individuals. Thus, Bandura stresses the dynamic interactions that take place between developing persons and their evolving contexts. Based on these interactions, the framers of SCCT focused their attention on the three social cognitive mechanisms that they deemed relevant to career development. They include self-efficacy beliefs, outcome expectations, and goal representations (Lent et al., 1994). The authors particularly emphasize the interrelationships among self-efficacy beliefs, expected outcomes, and goal

mechanisms and other person (e.g., gender), contextual (e.g., support system), and experiential/learning factors. The construct of self-efficacy has been shown to have considerable implications for the explication of the career development process and career counseling practices. It is one of the variables to be examined in this study.

Self-efficacy beliefs. The aspect of social learning theory that has received the greatest amount of attention in career research is self-efficacy beliefs. Interest in self-efficacy as a construct in career research was initiated by Hackett and Betz (1981) who understood the important potential for explaining some career development processes using this construct. Beyond Bandura's (1986) conceptualization of self-efficacy as the prime mechanism of personal agency, self-efficacy beliefs are postulated to be important determinants in individuals' choices of activities and environments. Self-efficacy beliefs further influence the degree of effort expended toward goal attainment, the persistence exhibited, and the thought patterns and emotional reactions experienced when met with obstacles.

As discussed previously, self-efficacy beliefs are informed and modified by four informational sources: performance accomplishments, vicarious learning, social persuasion, and physiological states. However, the way in which efficacy information is processed is an individualized one. Experiential or learning information may be processed through various cognitive filters, influencing the way such information is perceived, weighted, and incorporated into self-efficacy judgments. For example, some individuals may attend to failure information and diminish success information. These individuals may then underestimate their abilities and, as a result, distort their self-efficacy beliefs. These experiences, however, are unique to each individual and are further influenced by the opportunities to experience rewards and observe appropriate models (Lent et al., 1994). Self-efficacy has also been found to predict academic and

career choice performance markers, such as, specific performance attainments, job satisfaction, and job retention (Hackett & Lent, 1992; Lent, Lopez, & Bieschke, 1991; Multon, Brown, & Lent, 1991; Pajares & Miller, 1995; Sadri & Robertson, 1993). Thus, the examination of self-efficacy, as it relates to the development of career interests, may have importance in bolstering latent Realistic interests for women.

Outcome expectations. Outcome expectations are individual beliefs about probable consequences of performing particular actions. Bandura (1986) delineated three types of outcome expectations, physical (e.g., monetary), social (e.g., approval), and self-evaluative (e.g., self-satisfaction), that may foster interests and significantly influence career behavior. Within the SCCT framework, it is proposed that interest in a particular career-related activity relies, partly, on the outcomes that are anticipated as a result of participation in that activity, and the value placed on those outcomes by the individual. Interest development also depends on efficacy beliefs. Within the experience of interest formation, outcome expectations are partly determined by efficacy precepts. In other words, individuals tend to presume that desired outcomes are more obtainable when they view themselves to be efficacious. According to the SCCT model then, efficacy beliefs influence outcome expectations with efficacy and outcome beliefs both, with differential potency, affecting interests. Thus highly valued outcomes, anticipated for a particular course of action, will not likely be pursued if a person doubts her capability. Strong efficacious beliefs regarding a particular course of action, however, are likely to be derailed when negative outcomes are anticipated. For example, high efficacy for Realistic nontraditional occupations for women, with the anticipation of negative outcomes such as discriminatory hiring and/or promotion practices, or lack of support and approval from important others, may deter interest development and choice actions (Lent et. al., 1994). Thus, according to SCCT, outcome

expectations play a role in influencing career interest development. Efforts to provide more understanding of the relationship between outcome expectations and career interests, for this population, warrant attention.

Person inputs. Self-efficacy beliefs are a dynamic set of domain-specific beliefs that interact with other person, behavior, and contextual variables. Within SCCT, person variables include predispositions, gender, and race/ethnicity. Predispositions refer primarily to inherited attributes that have an influence on vocational interests. SCCT maintains that inherited characteristics are mediated, in part, through intervening learning experiences that shape career-relevant skills.

Gender and race/ethnicity, within the SCCT framework, are considered to be “socially constructed aspects of experience” (Lent et al., 1994 p.105). Both gender and race/ethnicity can shape the development of career interests, choices and performances. Gender role socialization, for example, may limit or promote girls and boys access to sources of information needed for the development of strong efficacy beliefs. Thus learning opportunities may be biased in such a way as to expose girls only to culturally sanctioned learning experiences. Similarly, for females, the nature of anticipated outcomes for performing certain activities may also be gender-biased. Positive outcome expectations may be forsaken in the service of gender-typical interests. Girls, for example, have few, if any, opportunities to learn about careers in trades and construction nor do they receive experience in skill practice. The development of a strong skill set, through relevant learning experiences, fosters a robust sense of efficacy which can give rise to positive outcome expectations and to interests according to SCCT (Lent et al., 1994). Betz (1989) maintains that an environment that provides little or no information about some nontraditional careers for females, and neither encourages nor discourages participation in these careers,

constitutes a null environment. Betz further contends that such a null environment is much less likely to foster interest development or nurture latent interest.

SCCT emphasizes the importance of gender and race/ethnicity on career choice and implementation. Lent et al., (1994) maintain that race and gender have relevance to career development not because they exist but rather because of the typical reactions they may elicit from the social/cultural environment. They also are important variables with relevance to careers due to their relation to the opportunity structure within which career behavior takes place. These socially conferred statuses, involving race and gender, can result in selective exposure to career-relevant experiences. The SCCT model proposes that the effects of gender and race/ethnicity on career interests, choices, and performances are partially mediated by the differential learning experiences and consequences that produce self-efficacy and outcome expectancies. The influence of gender on nontraditional career pursuits deserves closer examination.

In a similar fashion, sociocultural influences can serve to affect the development of career-related self-efficacy beliefs, outcome expectations, and interests for persons of particular race/ethnic groups. Disparities in educational access can affect the quality and types of learning experiences an individual receives. Profound poverty can seriously affect career choice options due to its impact on learning experiences. Particular cultures may also differentially reinforce certain occupationally relevant activities. Thus, gender and race/ethnicity are important shapers of the career development process as they can prescribe opportunities for learning experiences related to particular careers and thereby impact self-efficacy beliefs and outcome expectations. Gender and race/ethnicity issues are also tied to the existing opportunity structure which is more thoroughly addressed in the following section.

Contextual affordances. According to SCCT, contextual affordances refer to environmental influences. The authors of SCCT devised their idea of contextual affordances based on Vondracek, Lerner, and Schulenberg's (1986) concept of affordance which they described as "the idea that environments offer, provide, and/or furnish something to the organism as long as the organism can perceive "it" as such" (p. 38). The environment can be experienced as having objective aspects or as having subjectively perceived aspects. Gender role stereotyping, for example, may have measurable effects on career choice goals and actions whether or not an individual actively perceives those effects. As the authors of SCCT point out, the phenomenological experience of the individual does not diminish the negative impact of some objective aspects of the environment including injustices that may exist related to hiring and promotion practices that ultimately can affect career choice and career goal implementation (Lent, et al., 1994).

Contextual affordances include distal and proximal influences, within SCCT. Distal influences include differing opportunities for exposure to task practice and relevant role models, emotional and financial support for participating in goal oriented activities, and gender and cultural socialization processes. Proximal influences are those that occur closer in time to career decision-making junctures including child-care needs, discriminatory hiring practices, and economic trends in a particular occupational field. Contextual affordances then can shape the learning experiences to which an individual is exposed that influence interests and career choices. Contextual affordances present the real and perceived opportunity structures wherein career decision-making takes place and actions are pursued or eschewed. Social Cognitive Career Theory postulates that based on features of the opportunity structure or, contextual affordances, the decision to move from career interests to career goals and career goals to actions

will be strengthened for individuals who perceive positive environmental features such as economic and psychosocial support, along with few barriers. Conversely, for those who perceive less favorable conditions, movement from interests to goals and goals to action is weakened or dismissed. The authors of SCCT conclude that when educational or economic opportunities are limited or social support is weak or nonexistent, career choices are influenced more strongly by self-efficacy beliefs and outcome expectations than by interests or goals. SCCT suggests that for women interested in pursuing occupations in trades and construction, opportunities for strengthening self-efficacy beliefs through the experience of positive contextual affordances, then can have a potent effect on the career choice process.

Finally, conceptions of the environment involve differential emphasis on the objective features of the environment and perceptions or interpretations of environmental inputs. The effect of a particular environmental factor on career choice behavior may depend on the person's unique cognitive appraisal of the environmental input and her response to it. Consequently, the effects of supports, opportunities, and barriers related to career behavior are reliant on the personal perceptions of the individual and the appraisals of efficacy which she uses to guide her behavior.

Interest development. Another aspect of import for the study of career development within the SCCT framework is interest development. Lent et al. (1994) define vocational interests as “patterns of likes, dislikes, and indifferences regarding career-relevant activities and occupations” (p.88). SCCT contends that individuals are not only exposed in direct and vicarious ways to diverse activities, but also are differentially reinforced for pursuing certain activities and performing certain activities satisfactorily. Through their performance accomplishments, their experiences of modeling, and feedback from important others,

individuals refine their skills, develop efficacy related to particular tasks, and establish expectations about the outcomes of their performances. Perceptions of self-efficacy and outcome expectations impact the formation of interests. SCCT proposes that emergent interests lead to intentions or goals for more activity participation which increases the likelihood of subsequent task selection and practice. Activity practice produces performance attainments involving successes or failures, resulting in the revisions of self-efficacy and outcome perceptions. Positively revised self-efficacy beliefs and outcome expectations can serve to crystallize interests. The interplay of self-efficacy, outcome beliefs, and interests, therefore, produces self-set goals. A primary vocational choice goal leads to actions (e.g., enrollment in a job training program) that will implement the goal. Subsequent performance accomplishments will influence self-efficacy beliefs thereby creating a feedback loop which can ultimately affect future career actions (Lent et al., 1994). In other words, positive performance accomplishments, including goal attainment and enhanced skill development, can serve to further strengthen self-efficacy beliefs and, as a consequence, intensify interest in career goal fulfillment. Ultimately, this intensification of interest can impact goal persistence (Lent et al., 1994).

Conclusion and Research Hypothesis

Given the relative dearth of research with this population, the need to promote the inclusion of women in nontraditional careers, along with the necessity for facilitating the career development and choice process for girls and women with these interests, this study will examine antecedent factors which may be related to successful outcomes. Social Cognitive Career Theory (Lent et al., 1994) provides a sound theoretical foundation for the exploration of factors relevant to the choices and success of women in construction and the trades. Further, the SCCT framework provides the foundation to study the career needs of this population whose

work lives are seriously impacted by environmental constraints and personal characteristics such as gender. Lastly, SCCT includes constructs which are amenable to the change process, including more opportunity for exposure to educational and training changes and recommendations to implement systemic innovations. Thus, the present study investigated the self-efficacy beliefs, learning experiences, outcome expectations and interests of a sample of women with expressed interest in Realistic trades and construction occupations. The research hypothesis proposed for this study is that there will be a positive relation between occupationally relevant Realistic self-efficacy beliefs, outcome expectations, and learning experiences, and Realistic vocational interests. Moreover, it is hypothesized that self-efficacy and outcome expectations will mediate the relationship between learning experiences and interests.

CHAPTER II

REVIEW OF LITERATURE

SCCT (Lent et al., 1994) has been shown to have important potential for understanding, modifying, and predicting vocational interests. This comprehensive theoretical framework has contributed much to the knowledge base related to career interest formation, career choice, and career performance. SCCT was built on Bandura's work (1977a, 1977b, 1986) and on the original work of Hackett and Betz (1981), who realized that self-efficacy had important relevance to the comprehension of the career development of women, with particular emphasis on women's underrepresentation in scientific and technical careers, recognized as nontraditional careers for women. It is now widely acknowledged that SCCT has much to offer in regard to the understanding of the career behavior of women and diverse populations. As a result, much empirical study has been undertaken to examine the constructs and to test the hypotheses proposed by SCCT.

Persuasive empirical findings for the role of self-efficacy beliefs, outcome expectations, and learning experiences in the development of interests has particular import for women pursuing nontraditional careers. A direct relationship between gender differences in career self-efficacy and the percentages of males and females in various occupations has been established (Bores-Rangel, Church, Szendre, & Reeves, 1990; Church, Teresa, Rosebrook, & Szendre, 1992; Wheeler, 1983). Lent, Brown, and Larkin (1987) documented that both interests and self-efficacy

significantly predicted the range of career options considered by students causing the elimination of some gender-typed occupations for some individuals. Also, the empirical literature generally supports the positive relationship between outcome expectations (e.g. higher income) and interests (Lent, Brown, Brenner, Batra Chopa, & Davis, Talleyrand, R. et al., 2001; Lent et al., 1994; Lent, Brown, Nota, & Soresi, 2003; Lopez, Lent, Brown, & Gore, 1997; Smith & Fouad, 1999). Social Cognitive Career Theory (Lent et al., 1994) has spawned much empirical literature relevant to the theory's hypotheses. This literature review will describe some of those studies related to interest development, self-efficacy beliefs, outcome expectations, and learning experiences with various populations.

Bandura's (1977b, 1986) work along with Hackett's and Betz's (1981) notable study provided fertile ground for the development of the voluminous research that has accumulated over the past 26 years on self-efficacy and SCCT related to career development. The promise of the self-efficacy approach for the explication of the career development process of women continues to be realized. SCCT is a consequential example of the evolving nature of Bandura's (1977a, 1977b, 1986) early work. Women's underrepresentation in careers reflecting Holland's Realistic interests (activities involving working with one's hands, tools, machines to fix, build, or assemble things), along with the internal and external barriers frequently associated with these careers, requires a theoretical framework with applicability for this population. The application of SCCT to the career needs of women and diverse populations has been shown to be theoretically relevant (Betz, Harmon, & Borgen, 1996; Byars & Hackett, 1998; Conyers, Enright, & Strauser, 1998; Hackett & Betz, 1981; Hackett & Byars, 1996; Lindley, 2006; Morrow, Gore, & Campbell, 1996) and some of its benefits empirically documented (Betz & Schifano, 2000; Chartrand & Rose, 1996; Chronister & McWhirter, 2006; Lindley, 2006). SCCT's

comprehensive explanation of the dynamic processes and mechanisms through which career interests develop, career-relevant choices are determined and enacted, and performance outcomes are realized provides a viable framework suitable for the study of women pursuing nontraditional careers in construction and skilled trades fields.

The following literature review includes the relevant theoretical and empirical works addressing self-efficacy and the constructs and hypotheses proposed by SCCT. Although the focus of this study is to examine the interests, self-efficacy beliefs, outcome expectations, and learning experiences of women who have exhibited choice actions (pre-apprenticeship training) leading to Realistic careers, an exhaustive review of the literature produced only a few studies with this population of women (Greene & Stitt-Gohdes, 1997; Houser & Garvey, 1985; Mansfield, Koch, Henderson, Vicary et al., 1991; Monroe, Blalock, & Vlosky, 1999; Padavic, 1991; Swan, 2005).

Self-efficacy Beliefs and Occupational Interests

Bandura's (1977) construct of self-efficacy has been shown to have considerable implications for career theory and career counseling practice. It was Hackett and Betz (1981), however, who first explored the applicability of self-efficacy to career behavior. In their seminal study, Betz and Hackett (1981) developed their 20-item Occupational Self-efficacy Scale to measure students' perceptions of self-efficacy regarding the educational requirements and occupational duties of 20 well-known occupations. Based on the knowledge that women were consistently underrepresented in many traditional or male-dominated careers, Betz and Hackett designed their scale to include 10 occupations which were traditionally male-dominated. The authors hypothesized that women infrequently chose male-dominated occupations partly because of their diminished or nonexistent judgments of self-efficacy relevant to those careers. In fact,

women's self-efficacy beliefs were found to be significantly lower than men's for traditionally male occupations, and significantly higher for traditionally female occupations. Results of this study imply that efficacy beliefs about gender nontraditional careers limited the range of career options considered by women and men. The authors also found it likely that vocational interests were related to increased self-efficacy beliefs because they enhance the probability of successful performance accomplishments in the areas of interest. Betz and Hackett concluded that the concept of self-efficacy could prove to be a useful and beneficial construct for the study of the career development and assessment of women, with additional implications for successful career interventions.

Following Betz and Hackett's (1981) ground breaking study on the relationship between career-related self-efficacy beliefs and perceived career options, other researchers began to examine more closely the construct of self-efficacy as it related to career development. Lapan, Boggs, and Morrill (1989) examined the role of self-efficacy in mediating gender differences for the Realistic and Investigative General Occupational themes (GOT's) of the Strong-Campbell Interest Inventory (Campbell & Hansen, 1981). Participants included 77 male and 71 female college students. Additional measures were the Mathematics Self-efficacy Scale (Betz & Hackett, 1983) and the Mathematics Anxiety Scale (Betz, 1978). Results indicated that gender differences existed in efficacy beliefs regarding math-related activities. Women were less efficacious than men with regard to their ability to perform math tasks, math related college courses, and ordinary math problems, with competence. Lower standard scores for women on Realistic and Investigative GOT's were accounted for by lower efficacy beliefs and lower ACT math scores. Thus, the authors provided an empirical link between self-efficacy beliefs and occupational interests.

The relationship between self-efficacy beliefs and interests is a key mechanism of Social Cognitive Career Theory (Lent et al., 1994) and therefore deserves attention. Many studies that have examined the relationship between self-efficacy and expressed vocational interests have presumed a linear relationship between the two constructs (Campbell & Hackett, 1986; Hackett, Betz, O'Halloran, Brown, & Larkin, 1986). These studies found correlations between interests and self-efficacy ranging from .36 to .66. All of the authors, either explicitly or implicitly, concluded that a significant linear relationship existed between self-efficacy and inventoried vocational interests as measured by the Strong Interest Inventory (Hansen & Campbell, 1985) with science and engineering students.

The notion of a curvilinear relationship between self-efficacy and interests originated from Bandura's (1986) proposition that a threshold effect may exist within the interest and efficacy relation. Bandura (1986) suggested that moderate self-efficacy may be necessary to produce and sustain interest in an activity but that incremental increases in self-efficacy above the threshold would not generate further increases in interest. He extended this proposition by adding the idea that extreme confidence could rebound causing the individual to view certain activities as unchallenging and thereby uninteresting. Lenox and Subich (1994) sought to test Bandura's (1986) proposal regarding a threshold effect within the efficacy/interest relationship. The Strong Interest Inventory (Hansen & Campbell, 1985) was administered to 180 college students, using only the Realistic, Investigative, and Enterprising GOT scales, along with the Self-efficacy Questionnaire (Lenox & Subich, 1994) and its Realistic, Investigative, and Enterprising items. The interest and self-efficacy relationship was determined to be significantly curvilinear for the Realistic and Investigative Holland domains. However, the curvilinearity discovered in the Realistic and Investigative regressions occurred in a concave upward direction,

a finding in opposition to Bandura's suggestions of a convex downward direction. As the mean scores for Realistic self-efficacy increased from low to average levels there was little change in Realistic interest levels. However, as Realistic self-efficacy scores increase and interest scores increased as well. In other words, individuals' interests remained moderate at low to average levels of efficacy but then increased at higher levels of self-efficacy. Thus, it appears from these results that interests in Realistic activities, pertinent to the present study, increased rather than decreased beyond the threshold. Additionally, the authors partialled out the effects of gender for Realistic interests and self-efficacy and found the curvilinearity to be non-significant. Therefore, gender may contribute to curvilinearity for the relationship between interests and efficacy when interest levels have different distributions for men and women (e.g., Realistic) (Lenox & Subich, 1994).

The use of Holland's (1973, 1985) theory with its RIASEC model has guided individuals to careers in concert with their interests and personality types. Betz, Harmon, & Borgen (1996) proposed that the inclusion of beliefs of self-efficacy in regard to the Holland themes would be an important contribution to career theory explication and career counseling. As a result, Betz, Harmon, & Borgen (1996) sought to develop and validate a measure of self-efficacy with regard to the six Holland themes. They also wanted to analyze the relationships of RIASEC self-efficacy to gender, occupational membership, and RIASEC interests. Participants in the first of two studies included 1,147 employed adults and 706 college students. The Skills Confidence Inventory (SCI; Betz, Borgen, & Harmon, 1996) was administered along with the GOT scales of the Strong Interest Inventory (Hansen & Campbell, 1985). For the college sample, significant differences were revealed, with college men scoring higher on the Realistic, Investigative, Enterprising, and Conventional Confidence scales than the college women. College women

scored higher than men only on the Social Confidence scale. Within the adult employed sample, men scored higher confidence than women only on the Realistic and Enterprising scales. Based on all of the occupations included in the SCI, participants' scores demonstrated congruence between their highest confidence mean and the Holland interest code for the occupation. For example, the highest confidence scores of both male and female architects were Artistic, Realistic, and Investigative mirroring the Holland interest code of Artistic, Realistic, and Investigative for architects (Betz, Harmon, & Borgen, 1996).

In a second study Betz, Harmon, and Borgen (1996), 110 college undergraduates, 73 % women and 27 % men were administered a 60-item version of the Skills Confidence Inventory (Betz, Borgen, & Harmon, 1996) and the GOT scales were administered. Correlations between the SCI and the GOT scores from the 1994 SII were significant at $p < .001$ for all interest and confidence themes. Specifically, the correlation between Realistic confidence and Realistic interest was .53; the correlation between Investigative confidence and Investigative interest was .51; between Artistic confidence and Artistic interest was .69; between Social confidence and Social interest was .38; between Enterprising confidence and Enterprising interest was .49; and between Conventional confidence and Conventional interest was .59. For males in this study, significant correlations were found for the relationships between Artistic confidence and the Artistic interest (.51), Social confidence and Social interest correlation (.67), and Conventional confidence and Conventional interest (.52).

For both of these studies (Betz, Harmon, & Borgen, 1996), which included two college samples and one employed adult sample, significant gender differences in Realistic confidence were found. For the adult sample of employed individuals, there was a virtual absence of gender differences within occupational groups. Women successfully employed in an occupation

appeared to be very similar to men employed in the same occupation, in terms of efficacy patterns. The authors note, however, that this was a rather atypical sample since these employed adults were generally satisfied with their jobs and relatively experienced. Based on their findings, the authors concluded that a combined interpretation of interests and confidence is correlated with an increase in career options being considered and approach behavior regarding certain vocational activities.

Several researchers (Betz, Borgen, & Harmon, 1996; Campbell, 1992; Swanson, 1993) have constructed self-efficacy ratings that would parallel Holland's RIASEC scales and discovered that these scales correlate highly with the corresponding RIASEC scales from interest measures. Demonstrated results of similarity of RIASEC self-efficacy assessments and interests are seen as being an affirmation of the influence of self-efficacy on interests (Lent et al., 1994).

Tracey's (1997) study examined whether self-efficacy and interests share a common structure or whether the documented relationship between self-efficacy and interests is an artifact of restricted sampling of the self-efficacy percept to specific RIASEC types. Two different samples of college students were studied, with 258 and 162 participants in each. Instruments included the Inventory of Occupational Preferences-2 (Tracey & Rounds, 1996); the Preferences for Activities scale composed of 224 occupational activities derived from the DOT, a Self-efficacy Assessments scale using the same 224 occupational activities assessed in the Preferences for Activities scale with responses ranging from "unable to do" to "very competent." Other instruments were included in the study but are not relevant to the present study.

Results revealed the presence of a similar structure among activity, occupation, and self-efficacy item sets. These findings supported the usage of specific Holland-type self-efficacy scales (e.g., Skills Confidence Inventory (Betz, Borgen, & Harmon, 1996) since self-efficacy

items have the same structure as interest items and thus can be aggregated in similar ways. However, the author found this very similarity to be problematic since it was unclear whether self-efficacy was really providing information not already incorporated in interest data. The results then suggested that self-efficacy may not be a separate construct with college-age students. The authors acknowledge that since both Betz, Harmon, and Borgen, 1996 and Lent et al. (1994) focused on the development of interests for college students, it may be necessary to separate out self-efficacy and interests for younger individuals. However, the development of interest in Realistic vocations for women can be affected by the gender socialization process which can delay or prohibit the realization of a Realistic career.

Most of the studies examining the relationships among self-efficacy, outcome expectations, interests, and goals, as described by Social Cognitive Career Theory (Lent et al., 1994), have focused on the domains of math and science interests (Betz & Hackett, 1983; Lapan, Shaughnessy, & Boggs, 1996; Lent, Brown, & Gore, 1997; Lopez et al., 1997; Pajares & Miller, 1995). Smith and Fouad (1999) constructed a measure incorporating self-efficacy, outcome expectations, interests, and goals for the subjects of art, social studies, math/science, and English. Participants included 952 college students from two campuses. Scale construction adhered to Bandura's (1977b) model for self-efficacy scales. The results of this study suggested that the constructs of academic self-efficacy, interests, outcome expectations, and goals are subject-matter specific. These constructs demonstrated little generalization across subject-matter areas. Results showing that the constructs of self-efficacy, outcome expectations, interests, and goals are distinct have implications for researchers and practitioners. The authors suggest that these findings indicate that SCCT does apply to subject areas other than math and science and propose that this information mandates more research to extend these findings in still other domains.

Although Betz and Schifano (2000) were primarily interested in developing and evaluating a self-efficacy based intervention for women involving Holland's (1997) Realistic theme, their study also included two pertinent hypotheses. The authors hypothesized that increases in self-efficacy may generalize to other similar behavior domains, particularly those wherein self-efficacy increased following treatment. For example, an effective Realistic intervention should enhance Investigative efficacy along with Realistic efficacy due to their adjacency on Holland's (1985) hexagon. Secondly, it was hypothesized that increases in self-efficacy beliefs would correlate positively with interests in the same domain. Participants included 54 female college students who met the criteria of moderate interest and low efficacy for Realistic activities. Pre-and post-test scores for the Realistic, Investigative, and Social scales of the Skills Confidence Inventory (Betz, Borgen, & Harmon, 1996) were collected. The Occupational Self-efficacy Scale (Betz & Hackett, 1981) was also used, with two administrations. A 15-item measure of Realistic interests, constructed for this study, was included. Findings demonstrated that increases occurred in Realistic efficacy, following the intervention, along with increases in Investigative efficacy, although the increases were smaller than those for Realistic confidence. Thus, some evidence for the generalizability of self-efficacy interventions to related RIASEC themes was provided. In a similar fashion, there was no change in the unrelated Social domain as a result of the increase in Realistic efficacy, consistent with Holland's model. Increases in Realistic interests, as a function of treatment, only occurred for those items that were actually included in or related to the intervention, which were "Rewire a lamp," "Build a shelf," and "Build a picture frame." Since only participants with moderate or greater Realistic interests were selected, the authors suggested that greater increases in interest may have manifested if the sample included women having a total range of Realistic interests.

A central principle of SCCT (Lent et al., 1994) is that vocational interests develop over time, partly as a function of self-efficacy beliefs. Interests, then, influence both an individual's choice of a career and performance within that career. Nauta, Kahn, Angell, and Cantarelli, (2002) found the causal pathway advanced by the SCCT model, from efficacy beliefs to interests to career choice and performance, to be an equivocal supposition. Therefore, their study examined whether the relationship between self-efficacy beliefs and career interests was more reciprocal than suggested by SCCT (Lent et al., 1994). The authors maintained that determining the primary antecedent in the efficacy-interest relationship was of significant consequence for verification of SCCT (Lent et al., 1994) and they also believed that the determination would impact the nature of counseling interventions.

Nauta et al. (2002) wanted to test due to uncertainty about the direction of influence regarding self-efficacy and career interests, the possibility that interests may also predict changes in self-efficacy. The authors decided to use a three-wave longitudinal design for the study. When the same variables are measured at multiple points in time, temporal precedence can be established to some degree. Temporal precedence is a necessary but not sufficient condition of causality (Cook & Campbell, 1979). Participants were assessed over three different time periods, at 3 months, at 4 months, and at 7 months, with 104 college students participating in all three waves. The authors analyzed all of their data based on the sample of 104 students. Nauta et al. (2002) employed the six General Occupational Theme scores of the Strong Interest Inventory (Harmon, Hansen, Borgen, & Hammer, 1994) and the Skills Confidence Inventory (Betz, Borgen, & Harmon, 1996). Findings revealed that at the 3-month and 7-month time periods the relationship between interests and self-efficacy was bidirectional. At the 4-month lag period results demonstrated a significantly stronger interest-to-self-efficacy pathway; however, the

effect size was small. Since SCCT (Lent et al., 1994) does acknowledge the possibility of a reciprocal relationship between the two constructs, the authors conceded that their data supported SCCT, to a certain degree. However, they emphasized that to assume a fundamental efficacy-to-interest path is questionable. Additionally, four of the RIASEC types showed self-efficacy to be a significant predictor of interests 7 months later but not at the 3-month or the 4-month time periods. Nauta et al. (2002) proposed this could suggest that SCCT becomes a more accurate reflection of the efficacy-interest when considered over longer periods of time.

Bandura (1986) argued that interests are a result of self-efficacy beliefs because without a sense of efficacy, a person would experience little motivation to approach and persist in a particular task or career. Although Lent et al. (1994) acknowledge that most relationships in the SCCT are most likely bidirectional to some degree, those authors remain steadfast in stating that self-efficacy beliefs primarily influence career interests. Empirical support exists for the contention that self-efficacy is a source or predictor of interests (Fouad & Smith, 1996; Lapan et al., 1989; Lapan et al., 1994) Lapan et al., 1996; Lent et al., 1991.

Contrary to this evidence, however, Lent, Brown, Gover, and Nijjer (1996) asked college students to identify reasons for estimates of their mathematics competence and 74 % of the students identified their interest in math as the basis of their ability estimates. Lent and colleagues explained that students may judge their interest level as a motivational factor in estimating how well they are able to perform a task. Tracey (2002) determined that a reciprocal model regarding the relationship between career interests and self-efficacy fit his data best, empirical evidence again suggesting uncertainty regarding the direction of influence for these two constructs.

A meta-analysis conducted by Rottinghaus, Larson, and Borgen (2003) examined the relationship between self-efficacy and interests. The authors wanted to update the Lent et al. (1994) meta-analysis and compare those findings to the present ones. This analysis addressed the relationships between parallel measures of interests and self-efficacy for vocational interest areas only. A review of the literature yielded appropriate studies with 53 samples and 37,829 participants. The average weighted mean effect size for the correlation between self-efficacy and interests was .59. This effect size was marginally stronger than Lent et al.'s (1994) finding of .53. Among the RIASEC domains, Investigative revealed the strongest effect ($r = .68$), followed by Realistic ($r = .50$). For the domains of art, math, and science, math yielded the strongest effect ($r = .73$), followed by science ($r = .69$) and art ($r = .62$).

Rottinghaus et al.'s (2003) replication of Lent et al. (1994) also revealed a moderate relationship between self-efficacy and interests. Rottinghaus et al. found evidence that the self-efficacy-interest link is consistently strong across the RIASEC types, ranging from 25 to 40 % of the shared variance. Finally, the overlap that exists between these two constructs is substantial but small enough to demonstrate the distinctiveness of these concepts in accordance with Social Cognitive Career Theory (Lent et al., 1994).

Swan (2005) compared the vocational interests of female carpenters ($n = 411$), male carpenters ($n = 137$), a female normative sample ($n = 405$), and a male normative sample ($n = 251$). The Self-Directed Search (Holland, Fritzsche, & Powell, 1994) was administered. Results showed that the average Realistic score for female carpenters was more than two standard deviations higher than the mean for adult females, respectively 16.58 and 35.69. Both female and male carpenters exhibited high Realistic scores with Realistic being the predominant type. Male

carpenters' average score for the Realistic domain was only slightly more than one-half a standard deviation greater than the mean Realistic score for female carpenters.

Self-efficacy Beliefs and Self-Rated Abilities

At this point in the literature review it is important to consider the constructs of self-efficacy and self-rated abilities. This consideration may facilitate a better understanding of their relationship to each other, and elicit more clarity regarding which construct is more highly correlated with the development of vocational interests. Although these two constructs emanate from different theoretical treatises, social cognitive and trait-factor, and have been operationalized differently within their distinctive research milieus, there are theoretical and conceptual similarities (Brown, Lent, & Gore, 2000). Both constructs involve individuals' beliefs about their personal capabilities and their theoretical underpinnings make very similar predictions about their roles in the career development process. For example, both constructs are hypothesized to relate to occupational interests and performance and both have been shown to account for more variance in vocational interests and choices than indices of objective ability (Lent et al., 1994; Swanson, 1993; Swanson & Gore, 2000).

In spite of these similarities, self-efficacy beliefs and self-rated abilities are considered empirically distinct albeit related constructs. This consensus also maintains that their utility is different. One distinguishing feature is that self-rated abilities are indicative of normative judgments about a person's *current* work-related abilities. For assessments of self-rated abilities, respondents might be asked to compare themselves to others of the same age on scientific ability, for example, using a scale ranging from "low ability" to "high ability." In contrast, self-efficacy beliefs are understood to represent a person's expectations about his or her *future* performance in specific contexts that are partly founded on judgments of prevailing capabilities. When assessing

self-efficacy beliefs, respondents are asked to indicate their levels of confidence on a Likert-type scale with responses ranging from “no confidence” to complete confidence.” (Brown et al., 2000)

Brown et al. (2000) sought to determine if self-efficacy beliefs and self-rated abilities represented distinct concepts or if they could be used interchangeably. Their sample consisted of 51 college men and 178 college women. Their measures included the Self-Estimates portion of the Self-Directed Search (Holland, 1970) for the assessment of self-rated abilities. Also included were the Occupational Self-efficacy Beliefs scale and the Perceived Career Options scale from the Occupations section of the Self-Directed Search. Finally, the Occupations section of the Strong Interest Inventory (Hansen & Campbell, 1985) was used to measure occupational interests. Results of this research indicated that vocational self-efficacy beliefs and self-rated abilities are empirically distinct and differentially related to occupational interests and perceived options. The authors also examined the relationship among self-ratings, self-efficacy beliefs, and interests. Based on their data, the authors suggest that self-estimates of ability inform self-efficacy beliefs, which, in turn, advance interest in corresponding occupational fields. These findings support SCCT (Lent et al., 1994).

Learning Experiences

For SCCT, learning experiences are defined as experiential sources of self-efficacy and outcome expectations that are forged by person inputs and background contextual affordances (Lent et al., 1994). Learning experiences are believed to be a meaningful intervening construct between person inputs, including personality, gender, race/ethnicity, and abilities and the mechanisms of self-efficacy and outcome expectations, in the development of career interests, choices, and performance.

Schaub and Tokar (2005) investigated the hypothesized relationships of learning experiences with self-efficacy judgments and outcome expectations, employing measures that assess these constructs across Holland's typology. They also tested the mediational role of learning experiences, in combination with sociocognitive components, in the relation between personality and vocational interests. Lastly, the authors theorized that, for each Holland theme, relevant learning experiences derived from those experiences would, to some degree, partially mediate the expected relationship between personality and occupational interests. Their sample included 209 college women and 118 college men. Learning experiences were assessed with the Learning Experiences Questionnaire (Schaub, 2004) developed to measure individuals' learning experiences as derived from Bandura's (1986) four sources of self-efficacy information, performance accomplishments, vicarious learning, verbal persuasion, and physiological/emotional arousal. Self-efficacy beliefs were assessed with the Skills Confidence Inventory (Betz, Borgen, and Harmon, 1996). Outcome expectations were measured with the Occupational Outcome Expectations scale (Gore & Leuwerke, 2000) and vocational interests were estimated with the Strong Interest Inventory (Harmon et al., 1994). Lastly, personality was assessed with the NEO Five-Factor Inventory (Form S0; Costa & McCrae, 1992). Across all six Holland themes, learning experiences were a strong positive predictor of self-efficacy. The total R^2 value, representing the proportion of variance in self-efficacy accounted for by learning experiences was .56 for the Realistic theme. Path coefficients from learning experiences to outcome expectations were consistently smaller than paths from learning experiences to self-efficacy. Both paths, however, were significant for Realistic and Social themes. Learning experiences however had significant and substantial total effect directly and indirectly on outcome expectations via self-efficacy, for all six RIASEC domains.

Data from Schaub and Tokar (2005) generally confirmed that the relationship of personality to vocational interests is both direct and indirect, by way of learning experiences, self-efficacy beliefs, and outcome expectations. Also, results vigorously supported SCCT's proposition that learning experiences inform self-efficacy beliefs and outcome expectations. The effect of learning experiences on outcome expectations, however, was mediated primarily through self-efficacy. Consistent with the SCCT model, occupationally relevant learning experiences influence self-efficacy beliefs which in turn inform outcome expectations.

Williams and Subich (2006) provide a second relevant empirical investigation involving the influence of learning experiences on self-efficacy and outcome expectations. These authors examined the gendered nature of learning experiences and the resulting impact on efficacy beliefs, anticipated outcomes, interest development, and ultimately career choice. As previously reported in this review, women have consistently demonstrated lower levels of efficacy for traditionally male-dominated occupations, especially for those occupations related to math and science (e.g., Betz & Hackett's 1981 early work along with Betz & Gwilliam, (2002); Betz & Hackett, 1983; and Lindley & Borgen, 2002). Williams and Subich proposed that a possible point of origin for observed gender differences in self-efficacy, outcome expectations, and interests may be in different exposure to learning experiences. The authors further suggested that these differential learning experiences limit women's and men's range of potential career options and contribute to persistent patterns of occupational segregation based on gender. Their study examined the question of whether gender differences in learning experiences paralleled observed gender differences in career self-efficacy and interests. They further re-examined the Learning Experiences Questionnaire (Schaub & Tokar, 2005) to determine whether learning experiences for each Holland theme predict the corresponding efficacy beliefs and outcome expectations.

The sample of 350 college students included 206 females and 144 males. Instruments used were the Learning Experiences Questionnaire (Schaub & Tokar, 2005); the Self-efficacy Questionnaire (Lenox & Subich, 1994); and the Occupational Outcome Expectations scale (Gore, 2002a). A MANOVA revealed statistically significant gender differences in learning experiences for the Realistic, Investigative, and Social RIASEC themes. A univariate analysis demonstrated gender differences in the directions expected for the Realistic theme, for performance accomplishments, social persuasion, and physiological arousal, but not for vicarious learning. In regard to the relationship of learning experiences to self-efficacy and to outcome expectancies, within each RIASEC theme most learning experiences correlated significantly and in the expected direction with their consonant self-efficacy and expectancy scores. Separate regression analyses for men and women disclosed that learning experiences combined significantly predicted self-efficacy for both genders, accounting for 26-57 % of the variance. For women, 50 % of the variance in Realistic self-efficacy scores was accounted for by the combined effect of the learning experiences. Also, learning experiences as a group significantly predicted outcome expectations for males and females, accounting for 10-35 % the variance. The authors concluded that because their findings showed women to report significantly fewer learning experiences in the traditionally masculine Realistic and Investigative domains and men report significantly fewer learning experiences in the traditionally feminine Social domain, men's and women's learning experiences may indeed be related to differential self-efficacy beliefs and interests. Of added interest was the finding that within the Realistic domain, gender differences were not discovered for vicarious learning. The authors conjectured that women's vicarious learning experiences may primarily involve observations of male models. Modeling by

opposite sex individuals may have less influence on women because an individual's similarity to the model provides more potent influence (Bandura, 1986).

Outcome Expectations

Outcome expectations are another important constituent of social learning theory and therein have been defined as personal beliefs about the likely response consequences of performing particular behaviors. Outcome expectations are hypothesized to directly affect interests, goals, and actions (Lent, et al. 1994). Bandura (1986) delineated three classes of outcome expectations that affect career activities: physical (e.g., monetary); social (e.g., approval); and, self-evaluative (e.g., self-satisfaction).

Social learning theory (Bandura, 1986) also contends that individuals act not only on their judgments of their capabilities but on their beliefs about expected effects of varying actions. Bandura (1986) maintained that beliefs of self-efficacy and outcome expectations are differentially potent, with self-efficacy acting as a more influential antecedent of behavior. There are many examples of individuals anticipating valued outcomes from particular courses of actions but not pursuing those actions if they doubt their ability to succeed. Silvia (2003) argues that individuals have competencies that do not evoke vocational interests and he asks the question, why should self-efficacy make something interesting? From a social learning perspective, outcome expectations provide part of the answer. Realistic efficacy with relatively reasonable positive expectations would more likely produce interest in Realistic occupations, for example. Conversely, moderate to high personal efficacy in Realistic activities, with perceived negative outcomes, would likely provoke avoidance rather than approach behavior (Lent et al., 1994).

Lindley (2006) suggests that under discriminatory or oppressive conditions, such as those faced by women pursuing careers in trades or construction, outcome expectations may be lower despite personal efficacy as empirically tested by Chartrand and Rose (1996) and Morrow et al. (1996). Lent et al.'s (1994) meta-analysis of research conducted on self-efficacy beliefs, outcome expectations, interests, and goals garnered effect-size estimates of .52 for the relationship between outcome expectations and interests, and .42 between outcome expectations and choice goals.

Although Betz and Vuyten's (1997) study examined the influence of efficacy and outcome expectations on career exploration and career decidedness, a subject not entirely pertinent to the present study, it is somewhat fitting to consider their findings. The authors found that career outcome expectations accounted for 25 % of the variance for female college students ($n = 220$) and 29 % of the variance for male college students ($n = 125$) in intentions to explore careers. Avoidance of necessary career exploratory behaviors could be said to limit the range of one's career options and create foreclosure with regard to certain careers. The authors conclude that if weak outcome expectations lessen the probability of career exploratory behaviors, outcome beliefs will remain weak and vocational behaviors related to those beliefs will become nonexistent. These authors also found little evidence that outcome expectations generalized across subject-matter areas. In contrast, Smith and Fouad's 1999 study, described earlier, exhibited strong positive relationships between goal intentions and both outcome expectations and self-efficacy beliefs across subject areas including math/science, social studies, art, and English with their sample of 952 college students.

Gore and Leuwerke (2000) proposed that social cognitive variables may complement the predictive utility of person-environment congruence inherent in Holland's (1985) vocational

choice theory. The purpose of their study then became to explore the possible points of overlap between SCCT and Holland's theory. One of their hypotheses proposed that outcome expectations would account for unique variance in occupational considerations beyond that accounted for by the combined effect of self-efficacy beliefs and congruence of theories. Participants included 93 college students who completed the Strong Interest Inventory (Harmon, Hansen, Borgen, & Hammer, 1994); the Occupational Self-efficacy Beliefs scale (Gore, 2002b); and, an occupational card-sort which was developed for this study using the same 84 occupational titles used in the self-efficacy beliefs and outcome expectations measures. The categories for the card-sort included "Would Consider," "Might Consider," and "Would Not Consider."

Gore and Leuwerke (2000) found through regression analyses that self-efficacy beliefs and outcome expectations are more powerful predictors of occupational considerations than is person-environment fit, as determined by a congruence index. Interestingly, the findings of this study indicated that congruence alone is a weak predictor of occupational considerations ($R = .20$) and congruence accounted for essentially no variance in occupational considerations once self-efficacy beliefs and occupational considerations are entered into the analysis. In summary, the authors concluded that SCCT and Holland's (1973) theory are not complementary regarding the prediction of occupational considerations. Further, results of this study showed that congruence did not account for variability in occupational deliberations beyond that accounted for by self-efficacy and outcome expectations.

Diegelman and Subich (2001) examined whether increased outcome expectations related to an undergraduate degree in psychology correlated positively with greater interest in and desire to pursue that degree. They also sought to determine if the self-efficacy construct is independent

of the construct of outcome expectations as postulated by SCCT (Lent et al., 1994). In an effort to insure more variability in their efficacy beliefs, outcome expectations, choice goals, and levels of interest in a psychology degree, only non-psychology major students were selected rather than psychology majors.

Based on a measure developed by Fouad and Smith (1996) to assess math and science self-efficacy, outcome expectations, intentions, and goals, Diegelman and Subich (2001) changed the word stems from math and science to psychology related terms. Thus one of the self-efficacy items became “I believe I could get good grades in psychology courses.” In a similar fashion, the authors used an expected outcome scale developed by Riggs, Warka, Babasa, Betancourt, and Hooker (1994) and changed the word stems to reflect outcome expectations related to obtaining a B.A. in psychology. One item was altered in this way, “There are many benefits to having an undergraduate psychology degree.”

Diegelman and Subich (2001) administered pre-tests to assess self-efficacy beliefs, expectations, interests, and intentions related to the pursuit of that degree. An experimental manipulation followed involving group sessions for 5-15 participants with a presentation and discussion of career opportunities available to individuals with a psychology degree, their high rates of employability, positive public perceptions, and graduates’ satisfaction with their careers. Post-tests were administered following the intervention to determine if exposure to positive occupational outcomes related to an under-graduate degree in psychology increased relevant outcome expectations, interest in a psychology degree and intent to pursue that degree.

Results indicated that outcome expectations for the psychology degree increased significantly following the intervention while self-efficacy beliefs remained unchanged. Interest in and intent to pursue the degree increased at post-test. There was a significant positive relation

between self-efficacy for and level of interest at pre-test ($r = .54$) and post-test ($r = .55$). There was a significant positive relation between outcome expectations for and level of interest in the psychology degree at pre-test ($r = .52$) and post-test ($r = .61$). Lastly, outcome expectations for the degree were significantly and positively related to intent to pursue that degree.

As posited by SCCT, the unidirectional influence of self-efficacy on outcome expectations was also tested. Although the manipulation significantly enhanced outcome expectations from pre- to post-test, no change in self-efficacy occurred, leading the authors to suggest that outcome expectations and self-efficacy are independent constructs, lending some support for the independent function of these constructs. Finally, hierarchical regression analyses revealed that self-efficacy and outcome expectations each accounted for significant incremental variance in predicting interest in the psychology degree. The authors caution that although the intervention did seem to significantly increase outcome expectations, interests, and intentions, the overall magnitude of the intervention may have been too weak to determine definitively whether changes in expectations add significantly to interest prediction.

Lindley (2005) investigated relationships among self-efficacy, outcome expectations, and perceived barriers to career development, and their relationships to career choice. Lindley predicted that Holland theme self-efficacy scores and outcome expectation scores would correlate with career choice; and, that outcome expectation scores would be negatively related to perceived barriers. Participants were 111 college women and 112 college men. Measures for this study included the Perceptions of Barriers Scale (Luzzo & McWhirter, 2001), assessing the extent to which individuals perceive barriers to the attainment of their career and educational goals; the Occupational Self-efficacy Beliefs Scale (Gore, 2002b); and, the Occupational Outcome Expectations Scale (Gore, 2002a).

Testing Lindley's (2005) first hypothesis resulted in the demonstration of participants' primary career choice corresponding to their highest self-efficacy score in 41.5 % of cases and to their highest outcome expectation score in 45 % of cases providing some support for Lindley's (2005) hypothesis. Lindley's second hypothesis that outcome expectations would be negatively related to perceived barriers was not supported for either men or women. For the men, no significant relationships were found. For the women, perceptions of career and educational barriers were positively and significantly correlated with Realistic, Artistic, and Conventional outcome expectations. This finding can be interpreted as meaning that women who perceive more barriers to their career development have more positive outcome expectations, for the Holland domains mentioned, due perhaps to the notion that careers for women that are more difficult to attain are inherently better paying and more desirable. These unanticipated relations were thought to be the result of occupational choice as a confounding variable. In other words, the author suggests that perhaps women who have chosen male-dominated occupations may perceive positive rewards for those occupations but also perceive more barriers to their own nontraditional career development. The author further offers that these surprising findings may reflect a tendency to idealize outcomes that are considered unattainable. Women may also idealize male-dominated careers, many belonging to the Realistic domain that they view as highly unlikely career options due to gender-related obstacles.

Lindley (2005) offered another explication of her findings based on Lent et al.'s (2000) distinction between outcome expectations and barriers. Lent et al. proposed that perceptions of barriers involve individuals' expectations about the career development process, whereas outcome expectations reflect beliefs about the consequences of choosing a particular career. Lent et al., (1994) state that expectations related to the ultimate career choice were distal outcome

expectations and believed them to be distinct from proximal-process expectations, or situations that are anticipated to occur in route to a specific occupational goal. Lindley (2005) acknowledged that contextual barriers then may be synonymous with proximal-process outcome expectations, and distinguishable from distal outcome expectations. Lindley (2005) adds that her findings indicate that proximal outcome expectations for specific careers appear to have relevance for women but not for men. Lent, Brown, and Hackett (2000) explained that the existence of high self-efficacy for a particular career, positive outcome expectations for that career, and corresponding interests do not guarantee the concomitant career choice if one perceives sizable barriers to attainment. Based on this explanation, barriers perform as a separate component in the SCCT model represented as contextual factors. Swanson, Daniels, and Tokar (1996) argue that barriers do not entirely fit into any one specific mechanism of SCCT. Lent, et al.(2000) maintain that a relationship between outcome expectations and perception of barriers is implied in the SCCT model. To add to the controversy, some researchers (McWhirter, Torres, & Rasheed, 1998; Swanson et al., 1996; Swanson & Woitke, 1997) have conceptualized negative outcome expectations as barriers to career adjustment.

Role of Perceived Barriers in Career Development

Within the SCCT framework, person inputs, contextual or environmental factors, and social cognitive mechanisms mutually interact to influence the development of career interests, plans, and actions. Lent et al. (1994, 2000) purported that the particular effect that contextual features have on the career choices of individuals frequently depends on their personal appraisal of and response to those features. Brown and Lent (1996) stated that perceived career barriers can seriously inhibit the translation of interests into goals and goals into actions. They further contend that even when individuals possess well-developed interests in a specific career

trajectory, it is unlikely they will pursue such a path if they correctly or incorrectly perceive significant barriers to entering that career or seeking advancement in that particular work context. For Lent et al. (1994, 1996) then, barriers are viewed as negative contextual affordances that impact career development. Albert and Luzzo (1999) described environmental situations wherein people are not afforded the opportunity to make career choices under optimal conditions such as, limited financial and educational resources, lack of societal and family support, and gender constraints related to stereo-typing and discrimination. The perception of barriers to career fulfillment, inherent in a restricted opportunity structure and a systemic discriminatory practices paradigm, frequently associated with gender-non-typical occupations, appears to be one contributor to the very small representation of women in trades and construction occupations. Barriers as deficient contextual affordances continue to sustain gaps between ability and achievements for many women interested in pursuing a nontraditional career (McWhirter, 1997). It should be noted, however, that for some women, the perception of barriers can serve as a motivating force enacted to overcome the challenges and realize the successful attainment of a nontraditional occupational goal (Luzzo & Hutcheson, 1996).

Lent et al. (2000) examined SCCT's conceptualization of environmental variables, with focused attention on their objective versus subjective characteristics, their temporal nature, and their hypothesized causal pathways relative to career behavior. According to SCCT, career development is impacted by objective and perceived environmental elements. Objective factors consist of those previously mentioned such as the quality of individual educational experiences and financial support available to the person for the pursuit of necessary education or training. Lent et al. maintain, however, that, in part, the appraisal of these objective environmental factors lies with the beholder. This appraisal process transforms objective environmental circumstances

into subjective interpretations which can be positive or negative and unique to the individual. In concert with Bandura's (1986) notion of personal agency, SCCT views individuals as active responders to their environmental factors rather than passive recipients of past or present environmental influences. The authors advise that attention to the individual's active phenomenological role in interpreting both positive and negative aspects of the environment's press is important.

As previously discussed, contextual affordances are divided into two categories based on their relative proximity to important junctures in the career choice-making process. Distal contextual affordances refer to those environmental influences which occurred in the individual's past. Distal affordances could include exposure to a limited type of role model, the experience of support or discouragement for participating in particular academic or extracurricular activities and opportunities for skill development. Proximal contextual affordances occur close, in time, to active phases of educational or career decision-making. Proximal environmental influences could include career contacts that provide relevant career assistance or, discriminatory hiring practices related to a career choice (Lent et al., 2000).

Lent et al. (2000) take issue with previous researchers' (Luzzo, 1993; McWhirter, 1997) treatment of intrapersonal and contextual barriers as conceptually equal. The authors explain that this non differentiated view of barriers conceals the potentially different paths through which various factors hinder career development. They further contend that it is more advantageous to conceptually distinguish between person and contextual variables for a number of reasons. A conceptual distinction may clarify the processes through which contextual barriers become internalized, differential coping strategies may be devised based on the type of barrier, and

intervention targets may be identified which address societal change rather than only individual career counseling needs.

Although the concept of barriers, or person and environmental affordances, are not a direct component of the present study, the inherent nature of nontraditional careers with their potential for hindrances mandates an acknowledgement of this aspect of SCCT. Additionally, it is subscribed by SCCT and empirically supported that distal contextual affordances influence learning experiences along with the consequent self-efficacy beliefs and outcome expectations of individuals (Lent et al., 2000).

SCCT (Lent et al., 1994) has elicited an abundance of theoretical and empirical research discussing and testing the hypotheses proposed in the theory, examining its constructs, and studying the theory's description of the interlocking mechanisms at work within the career development process. Although an exhaustive review of the literature was undertaken, this review makes evident the need for more research involving women and Realistic nontraditional careers. The empirical testing of SCCT would benefit from the inclusion of more diverse populations, including women pursuing nontraditional careers that do not require college degrees. Hence this literature review highlights the need for more empirical data involving women and the pursuit of their desired careers.

Purpose of Study

The purpose of this study is to examine the learning experiences, self-efficacy beliefs, outcome expectations, and interests of a sample of women who have participated in a pre-apprenticeship training program for entry into trades and construction occupations. Because only Social Cognitive Career Theory constructs within the Realistic Holland (1985) type are of interest in this investigation, and the need to only make a modest request of participants' time,

only Realistic subscales will be used on each of the measures. The research hypothesis for this study is that self-efficacy and outcome expectations mediate the relationship between learning experiences and interests in a sample of women with expressed Realistic interests who completed an apprenticeship training program in construction and the trades.

CHAPTER III

METHODS

Participants

Participants in this study included 74 women who have completed a pre-apprenticeship training program in preparation for employment in construction, manufacturing, and trades occupations. Participants were solicited from women who have completed the training program. Approximately 400 women have successfully completed this program. Three hundred sixty-three women were sent the materials by mail. Approximately 48 % of the originally mailed packets were undeliverable due to changes of addresses and were returned unopened. Of the remaining 170 packets, 74 were returned for a response rate of 44 %. This pre-apprenticeship training program was conducted by a non-profit organization in a mid-size Midwestern city. The organization's mission was the financial empowerment of women through participation in nontraditional careers in trades, construction, and manufacturing occupations. The organization was also committed to the elimination of barriers that limit or discourage women's full participation in these nontraditional types of jobs, including discrimination and sexual harassment. This organization had been in existence since 1979 and the Pre-apprenticeship Training Program began in 1992.

The ages for this sample of 74 women ranged from 23 years to 63 years with a mean age of 43.58 years ($SD = 8.69$). Of the individuals participating in this study, 35.1 % were never

married, 18.9 % were married, 2.7 % were separated, 27 % were divorced, 1.4 % were widowed, and 14.9 % were living with a partner. The highest level of education completed was: 20.3% high school, 16.2 % technical school, 48.6 % some college, and 14.9 % college. The racial and ethnic backgrounds included 54.8 % of this sample identified themselves as White, 39.7 % as Black, 4.1 % as Hispanic, and 1.4 % as Asian or Pacific Islander. Number of children for this sample ranged from 0 – 4 children. The majority of the participants reported having one (18.9 %) or two (12.2%) children, 4.1 % reported having three children and 6.8 % reported having four children. Among the participants in this study, 15.1 % reported a total household yearly income of \$9,000 or below, 23.3 % reported a total household income of \$9,001 to \$20,000, 26 % reported a total household income of \$20,001 to \$40,000, 21.9 % reported a total household income of \$40,001 to \$60,000, and 13.7 % reported a total household income greater than \$60,000. Nine participants did not respond to the question regarding the number of years since their completion of the preapprenticeship training program. Based on 65 responses to this question, the mean number of years since program completion was 7.85 years ($SD = 4.57$).

Participants in this study were also asked to provide their current job titles. Responses to this question, for this sample, have been organized into occupational categories established by the U. S. Bureau of Labor Statistics (2012). Due to the wide variety of job titles stated, each job title was put into the appropriate occupational category for ease of reporting. Only those occupational categories with the greatest number of appropriate job title responses will be included. For this sample, 25 % of the participants identified a current job title that belongs to the occupational category, Construction and Extraction occupations. Ten % of the participants cited current job titles belonging to the Transportation and Material Moving occupational category. Eight % of the respondents named current job titles that belong to the Sales and Related

occupations category. Seven % identified job titles included in the Office and Administrative Support occupations category. Six % of the job titles named belong to the Healthcare Support occupations category. Lastly, six % of the participants identified job titles included in the Food Preparation and Serving Related occupational category. Additionally, 11 % of the participants identified themselves as unemployed at the time this study was being conducted. Twenty-seven % of the total number of job titles reported by this sample included various other job titles such as, teacher, cosmetologist, home helper, security guard, and inventory management specialist. Forty % of the job titles reported by these participants are considered to be nontraditional occupations for women (U.S. Bureau of Labor Statistics, 2010).

Pre-Apprenticeship Training

Women who were interested in participation in the Pre-apprenticeship Training Program were asked to attend a one-hour orientation meeting and a two-hour testing session. The testing session included the administration of The Adult Basic Education (TABE) test. This test assesses Math, Reading, Language, and Spelling skills with skill levels translated into grade levels. The Math and Reading scores were particularly important for acceptance into the program. For the most part, applicants must achieve an 8th grade Reading skill score and a 7th grade Math skill score. Those applicants who attain acceptable scores are invited to an interview lasting approximately 30 minutes. Within the course of the interview, candidates are asked about their reasons for wanting to participate in the program. A desire to explore the possibility of a nontraditional career is considered an acceptable reason for wanting to participate in the program. They are also asked if they have ever done any type of work that is related to trades or construction jobs. This query is used to determine if there has been some degree of exposure to manual types of work. This is not a defining question in terms of acceptance into the program but

does help to assess skill level. Finally, it is of interest to the interviewer to determine whether the candidate has attended many other training programs of various natures. Interestingly, it has been the program's experience that citing increased income as the sole reason for wanting to participate does not usually foretell a successful training experience and subsequent apprenticeship, for an applicant. Based on the results of these tests, and information derived from the interviews, approximately twenty women were chosen for enrollment in the program each spring and fall class. All women accepted into the program had to have a high school diploma or GED and possess a current and valid driver's license.

The Pre-apprenticeship Training Program consisted of ten weeks of in-class meetings and on-site hands-on experiences. The twice weekly four-hour class meetings included a physical exercise class, a math class, and various lectures on diverse subjects such as blue print reading, OSHA regulations, sexual harassment issues, and self-esteem. Resume writing was also addressed and practice interviews were conducted with male union member volunteers who role-play as interviewers. Women who were currently working in these nontraditional occupations serve as guest lecturers to share their experiences and provide first-hand information. The hands-on experiences took place each Saturday for seven hours.

Following the ten-week course, a graduation ceremony took place and certificates of completion were conferred. Apprenticeship procurement and job placement assistance are provided by the organization subsequent to successful completion of the program.

Research Design

The design of this study is correlational in nature. This correlational study will examine the degree of association between the independent variables, namely, learning experiences, self-efficacy beliefs, and outcome expectations and the dependent variable, namely, career interests,

relevant to a nontraditional career for females. Although this sample of women has demonstrated some degree of expressed Realistic interests related to trades and construction occupations, it has been documented that women also pursue these careers for other reasons. For example, Stringer and Duncan (1985) identified several categories of reasons women offered for choosing to pursue employment in the trades including: money and benefits, rejection of gender traditional work, learning and nature of the job market. Padavic's (1991) findings based on a sample of women employed at a large utility company revealed economic need as a primary motivating factor. Greene and Stitt-Gohdes (1997) provided evidence to suggest that perceived innate ability and robust economic independence were galvanizing factors. Thus, although there is the potential for a restricted range of interest scores for this sample other motivating factors can exist. Hypotheses in this study are theoretically-based and therefore the selection of the predictor variables and the criterion variable is based on the theoretical assumptions posited by SCCT.

Instrumentation

Readability grade levels for each instrument were identified using the Flesch-Kincaid grade level scale. Readability grade levels for all instruments, given the educational levels of this sample, were appropriate.

Demographic Questionnaire. Each participant was asked to provide her age, marital status, highest level of education attained, racial/ethnic background, and number of children under 18 years who are currently living with the participant. Further, the participants were asked to identify current job title with description of this job, along with other previous work experience. Participants were asked to provide total household income. Lastly, participants were asked about the number of years and months since completion of the pre-apprenticeship training

program. Participants were informed that all information derived from this demographic questionnaire would be considered confidential.

Learning Experiences Questionnaire (LEQ; Schaub, 2005). The *Learning Experiences Questionnaire* has a readability grade level of 5.4 as measured to the Flesch-Kincaid grade level scale. The *Learning Experiences Questionnaire* (Schaub, 2005) assesses Bandura's (1986, 1997) four sources of self-efficacy beliefs (i.e., performance accomplishments, vicarious learning, verbal persuasion, and affective responses) across Holland's (1997) six personality/interest domains. The *LEQ* is an instrument consisting of 120 Likert-type items derived from Bandura's four sources of self-efficacy beliefs, Lent et al.'s (1991) measure of perceived sources of mathematics self-efficacy beliefs, items from the *Self-Directed Search* (Holland et al., 1994), and Anderson and Betz's (2001) measure of sources of social self-efficacy expectations.

Five items were created for each of the four types of learning experiences, producing 20 items for each RIASEC category (120 items total). For the purpose of this study, the 20 items assessing the four sources of self-efficacy beliefs related to Holland's (1997) Realistic theme were used. Examples of these Realistic items include, "I have made repairs around the house" (performance accomplishment), "I observed people whom I respect repair mechanical things" (vicarious learning), "While growing up, adults I respected encouraged me to work with tools" (verbal persuasion), "I have felt uneasy while using tools to build something" (physiological arousal). The participant is asked to indicate the extent to which she agrees with the statement on a 6-point Likert-type scale ranging from *Strongly Disagree* (1) to *Strongly Agree* (6). Scores for each type of learning experiences are summed responses of the five items on that subscale. Additionally, a 20-item total scale score can be obtained for each RIASEC theme by summing

scores for the four types of learning experiences. The physiological arousal subscales are reverse-scored. Only the Realistic subscale scores will be used in this investigation.

Coefficient alphas for the Holland themes using the LEQ (Schaub, 2004) were .89 (Realistic), .84 (Investigative), .82 (Artistic), .80 (Social), .84 (Enterprising), and .73 (Conventional). Cronbach alpha for the current sample was .77 (Realistic). Results for the Investigative, Artistic, Social, and Enterprising LEQ scale scores revealed that the LEQ significantly predicted career goals, Wilks's Lambda = .79, $F(12, 677.6) = 5.42$. Due to small cell sizes, participants with Realistic and Conventional occupational aspirations were excluded from Schaub's analysis. These results demonstrated the concurrent validity of the LEQ for Investigative, Artistic, Social, and Enterprising learning experiences by predicting career aspirations for occupations represented by these Holland themes.

Schaub and Tokar (2005) performed a number of path analyses to test the degree to which their data fit a model consistent with SCCT's model, for each of the RIASEC types. Specifically, the authors sought to examine the effect of personality on interests through learning experiences and the relations of learning experiences to self-efficacy beliefs and outcome expectations for Holland's types. Across all six models tested (one for each of Holland's RIASEC themes), learning experiences were significant positive predictors of self-efficacy, with the following standardized path coefficients: .75 (Realistic), .76 (Investigative), .93 (Artistic), .77 (Social), .82 (Enterprising), and .49 (Conventional). Total R² values, demonstrating the proportion of variance in self-efficacy accounted for by learning experiences were .56 (Realistic), .58 (Investigative), .86 (Artistic), .60 (Social), .67 (Enterprising), and .49 (Conventional).

Williams and Subich (2006), in their sample of 350 college students, found the *LEQ* to have internal consistency reliability estimates of .90, .88, .86, .84, .84, and .78, respectively, for the six RIASEC scales. In this study, the authors found that Realistic learning experience scores correlated significantly and positively with their corresponding self-efficacy and outcome expectation scores. Using separate regression analyses for men and women, results of these analyses demonstrated that for all six themes, learning experiences as a group significantly predicted self-efficacy for men and women, with R^2 's at .57 (Realistic), .49 (Investigative), .34 (Artistic), .43 (Social), .48 (Enterprising), and .26 (Conventional). Again, using separate regression analyses for men and women, learning experiences as a group significantly predicted outcome expectation for men and women, accounting for 10-38 % of the explained variance. Finally, self-efficacy was shown to be a partial mediator of the relationship between learning experiences and outcome expectations, with self-efficacy contributing a unique variance of 2-17 % beyond the contribution of learning experiences and consistent with SCCT.

Self-efficacy Questionnaire (SEQ; Lenox & Subich, 1994). The *Self-efficacy Questionnaire* has a readability grade level of 9.8 as measured by the Flesch-Kincaid grade level scale. Although most studies have concluded that the relationship between self-efficacy and vocational interest is a positive linear one as postulated by the SCCT model, Lenox and Subich (1994) hypothesized that the relationship is significantly curvilinear. This hypothesis was based on Bandura's (1986) suggestion that a threshold effect occurs when, at the least, moderate self-efficacy is needed to produce and sustain interest in an activity but increases in self-efficacy beyond the moderate level would not generate further increases in interest, thereby creating a curvilinear relationship between efficacy and interest. The *SEQ* was developed to test whether a significant curvilinear relationship in a concave downward direction exists between self-efficacy

beliefs and vocational interests for each of the RIASEC types. The *SEQ* consists of 30 items, derived from the Competencies section of the *Self-Directed Search* (Holland, 1970). Five activity statements for each of the six Holland themes were included. Only the Realistic subscale will be used in this investigation. Examples of Realistic items include “Indicate your degree of confidence in completing activities that require you to operate power tools such as a drill press or grinder or sewing machine” and “Indicate your degree of confidence in completing activities that require you to change a car’s oil or tire.” Respondents are asked to rate their confidence in their ability to complete activities related to the Realistic Holland theme. Responses are indicated on a 10-point Likert-type response scale ranging from “Completely Unsure” (1) to “Completely Sure” (10). Subscales scores are obtained by summing the responses (1-10) for each RIASEC category, with higher scores demonstrating greater self-efficacy.

Lenox and Subich (1994) included the Strong Interest Inventory (Hansen & Campbell, 1985) to assess interests and the Self-efficacy Questionnaire (Lenox & Subich, 1994) to measure efficacious beliefs regarding RIASEC activities. Only the Realistic, Investigative, and Enterprising scales were used due to the wide distribution of self-efficacy scores for those themes. From an earlier pilot study, the authors reported internal consistency reliability data for the SEQ as .88 (Realistic), .79 (Investigative), and .80 (Enterprising). Validity results from Lenox and Subich’s (1994) study revealed Pearson product-moment correlations for Realistic GOT scores and Realistic self-efficacy scores at .68, for Investigative GOT scores and Investigative self-efficacy scores at .62 and, for Enterprising GOT scores and Enterprising self-efficacy scores at .62. The Cronbach alpha in the current sample for Realistic Self-efficacy was .83.

Regression analyses indicated a statistically significant but small curvilinear relationship for interest and self-efficacy for the Realistic and Investigative Holland themes, with no

significant curvilinearity for the Enterprising theme. This curvilinearity, however, occurred in a concave upward direction rather than a concave downward one as hypothesized by the authors (Lenox & Subich, 1994)

Betz and Gwilliam (2002) compared three self-efficacy inventories with respect to the six Holland themes in order to examine their construct validity. These measures included the *Skills Confidence Inventory (SCI)*, Betz, Borgen & Harmon, 1996), the *Self-efficacy Rating Scale (SERS)*; Lapan et al., 1989), and the *Self-efficacy Questionnaire (SEQ)*; Lenox and Subich, 1994). Coefficient alphas for the SEQ were .91 (Realistic), .82 (Investigative), .79 (Artistic), .86 (Enterprising), and .70 (Conventional). Convergent validity values between the SCI and the SEQ were .81 (Realistic), .72 (Investigative), .77 (Artistic), .74 (Social), .79 (Enterprising) and .59 (Conventional). Convergent validities between the SEQ and the SERS were .45 (Realistic), .54 (Investigative), .58 (Artistic), .39 (Social), .46 (Enterprising), and .38 (Conventional). The authors concluded that the SCI and the SEQ provided the most similar assessment. Williams and Subich (2006) sought to determine whether gender differences in learning histories were consistent with gender differences in occupational interests and self-efficacy. For this study, the Self-efficacy Questionnaire coefficient alphas were .90 (Realistic), .83 (Investigative), .73 (Artistic), .70 (Social), .76 (Enterprising) and .60 (Conventional). Williams and Subich's data supported the construct of self-efficacy as a partial mediator of the relationship between learning experiences and outcome expectations as posited by SCCT.

Occupational Self-efficacy Beliefs (OSB); Gore, 2002b). The *Occupational Self-efficacy Belief* scale has a readability grade level of 8.7 as measured by the Flesch-Kincaid grade level scale. The *Occupational Self-efficacy Belief* scale (Gore, 2002b) consists of 84 occupational titles with 14 occupations representing each of the six Holland themes. Respondents are asked to

indicate whether or not they believe they have the abilities to enter into each of the 84 occupations. Following a yes or no response, the strength of the belief is queried using a 9-point Likert-type scale ranging from “Completely Unsure” (1) to “Completely Sure” (9). Only those occupational titles representing the Realistic domain from this scale will be used in this study.

Brown, Lent, and Gore (2000) and Gore (1996) found high internal consistency reliability estimates for the six Holland categories of interests used in the *Occupational Self-efficacy Beliefs scale* (Gore and Leuwerke, 2002b). Gore and Leuwerke administered the Strong Interest Inventory (Harmon et al., 1994), the Occupational Outcome Expectations scale (Gore, 2002a), the Occupational Self-efficacy Beliefs scale (Gore, 2002b), and an occupational card sort to 93 undergraduates. Results revealed internal consistency reliability estimates ranging from .89 (Artistic) to .95 (Investigative). Self-efficacy beliefs were more strongly related to occupational consideration than was congruence with an average standardized beta of .32. Further, self-efficacy beliefs accounted for unique variance in occupational considerations in 85 % of the final regression analyses compared with 20 % for congruence.

Lindley (2005) sampled 225 students in a mid-size Southern university in order to examine the relationships among self-efficacy, outcome expectations, perceived barriers, and career choice. Lindley used the *Occupational Self-efficacy Beliefs scale* (Gore, 2002b) which yielded Cronbach’s alpha ranging from .95 for Realistic, Artistic, Social, and Enterprising to .96 for Investigative and Conventional. To determine whether self-efficacy and outcome expectations corresponded to career choice, four binomial tests were performed. The %age of cases in which participants’ first and second career choice corresponded to their highest self-efficacy scale score and their highest outcome expectation scale was tested against chance. Participants’ first career choice corresponded to their highest self-efficacy score in 41.5 % of

cases ($p < .001$) and to their highest outcome expectation score in 44.9 % of cases ($p < .001$). Participants' second career choice corresponded to their highest self-efficacy score in 35.5 % of cases ($p < .001$) and to their highest outcome expectation score in 42.5 % of cases ($p < .001$).

Occupational Outcome Expectations (OOE; Gore & Leuwerke, 2000). The *OOE* scale has a readability grade level of 10.8 as measured by the Flesch-Kincaid grade level scale. The *OOE* scale (Gore, 2002a) consists of the same 84 occupational titles contained in the *Occupational Self-efficacy Beliefs* (Gore, 2000b) measure described above. Respondents are given a description of outcome expectations as those beliefs that an individual holds about the probable outcomes of a particular action and then asked to imagine the possible consequences of choosing each of the occupational titles. Participants are then asked to rate the desirability of the consequences of choosing each of the 84 occupations, using a nine-point Likert-type scale ranging from "Not Very Desirable" (1) to "Very Desirable" (9). Only those occupational titles representing the Realistic domain from this scale will be used in this study. This instrument yields six scores, each score representing one of the RIASEC domains.

Gore and Leuwerke (2000) found internal consistency reliability coefficients for the *Occupational Outcome Expectations* scale (Gore, 2002a) across Holland's dimensions were high with values of .91 (Realistic), .94 (Investigative), .94 (Artistic), .95 (Social), .92 (Enterprising), and .96 (Conventional). Cronbach alpha for this sample was .82 (Realistic). In support of this scale's (OOE) validity, a regression analysis demonstrated that self-efficacy beliefs and outcome expectations were more powerful predictors of occupational considerations than was person-environment fit, measured by an index of congruence. Outcome expectations accounted for unique variance in occupational considerations in 99 % of the final regression equations.

Williams and Subich (2006) used the *Occupational Outcome Expectations scale* (Gore, 2002a) in their study of gender and career related learning experiences. The authors explored whether gender differences in learning histories are consistent with observed gender differences in occupational self-efficacy and interests. For this study, reliability estimates for the *Occupational Outcome Expectations scale* (Gore, 2002a) were found to be .93, .95, .95, .94, .94, and .95 respectively for the RIASEC themes. The Cronbach alpha in this sample for Realistic Interests and Outcome Expectations was .82. In support of the validity of the OOE, Gore and Leuwerke (2000), results demonstrated that learning experiences as a group predicted outcome expectations for both men and women across all six RIASEC themes as postulated in SCCT.

Realistic Interests Scale (RIS; Betz & Schifano, 2000). The *Realistic Interests Scale* has a readability grade level of 7.1 as measured by the Flesch-Kincaid grade level scale. The *Realistic Interests Scale* (Betz & Schifano, 2000) is a 15 Likert-type item measure of interests in Realistic activities, representing Holland's Realistic theme. This measure includes such items as "drive a race car" and "rewire a lamp" to which participants are asked to respond regarding their interest in performing the specific task with "Like" (3), "Indifferent" (2), or "Dislike" (1). The 15 items were designed to reflect activities related to Holland's Realistic domain and to represent some of the Realistic tasks included in the authors' intervention. Betz and Schifano (2000) developed this measure in order to evaluate a self-efficacy based intervention to increase confidence and interest in Realistic careers for women. They designed a study for college women who demonstrated moderate Realistic interests with low Realistic confidence wherein an intervention was used with their experimental group. Pre- and posttest measures included the Skills Confidence Inventory (Betz, Borgen, & Harmon, 1996), the Occupational Self-efficacy Scale (Betz & Hackett, 1981), and the Realistic Interest Scale (Betz & Schifano, 2000). An intervention was designed involving

building, repairing, and construction activities, for the experimental group. An internal consistency reliability coefficient of .76 was revealed for the Realistic activities items. The Cronbach alpha for Realistic Interests in this sample was .77. Results of the intervention revealed significant increases in Realistic confidence for the experimental group, with a pre-test mean of 2.73 (little confidence) and a post-test mean of 3.45 (moderate confidence), a mean change of .72. Control group pre- and post-test scores included a pre-test mean of 2.81 and a post-test mean of 3.05, a change of .24. Realistic self-efficacy increased as a result of the intervention. No significant treatment effects were found for Realistic interests.

Data Collection Procedures

Permission to collect data for this study was obtained from Cleveland State University's Institutional Review Board prior to initiation of the project. Participants were recruited from a data bank of past graduates of a pre-apprenticeship training program operated by a non-profit organization located in a mid-size Midwestern city. Respondents were asked to participate in a study about the relationship between learning experiences, self-efficacy, outcome expectations, and interests. Volunteers were encouraged to participate in a study involving women pursuing nontraditional careers in trades and construction which would add to the body of knowledge regarding a little studied population. Participants in the study were informed that their participation would be anonymous. Packets included an informed consent form, the measures, and a demographic questionnaire that were mailed to women who have previously completed the training program. The amount of time needed to complete the entire packet was approximately 45 minutes. A stamped self-addressed envelope was included for the return of the data. In an effort to encourage participation in this study and prompt return of data, \$5.00 was sent to each participant upon receipt of the completed measures. In order to acquire a sufficient sample, the

incentive for participation was increased to \$10.00 for the remaining 10 participants needed. Participants were advised of this incentive in the letter of informed consent.

Data Analysis

Although no direct relationship is predicted between Realistic learning experiences and Realistic interests (dependent variable), as illustrated by the SCCT model, SCCT does suggest that learning experiences are important in the development of interests because learning experiences increase self-efficacy beliefs and outcome expectations, which are thought to be related to interests. To determine if self-efficacy and outcome expectations mediate the relationship between learning experiences and interests, multiple regression analyses were used (Frazier, Tix, & Barron, 2004). Specifically, multiple regression was used to perform mediational analyses. The SPSS 11.0 program for Windows was used for the statistical analyses.

CHAPTER IV

RESULTS

The purpose of this study was to test some of the essential propositions offered by Lent, Brown & Hackett (1994) in their Social Cognitive Career Theory (SCCT), with a sample of women with expressed Realistic interests in nontraditional careers. More specifically, the aim of the present study was to examine the Realistic learning experiences, Realistic self-efficacy beliefs, Realistic outcome expectations, and Realistic interests of 73 women who had previously participated in a pre-apprenticeship training program for entry into trades and construction occupations.

SCCT's framers (Lent et al., 1994) have included in their theoretical approach to the career development process three separate but interconnected models. A particular focus of this research was SCCT's model of interest development, including the influential sociocognitive mechanisms of self-efficacy and outcome expectations, along with experiential sources of information (e.g., learning experiences) and the "person input" of gender in the development of career interests. Of further interest were the mediating roles of self-efficacy and outcome expectations in the relation between learning experiences and interests. Thus, the research hypothesis for this study was that Realistic self-efficacy and Realistic outcome expectations would mediate the relationship between Realistic learning experiences and Realistic interests for the current sample.

Preliminary Analyses

Internal consistency reliability for the scale scores obtained in this study demonstrated that all of the measures used met Nunnally and Bernstein's (1994) criterion of a minimum coefficient alpha of .70 for use in research. Means, standard deviations, and Pearson correlations for all scale scores are reported in Table 4.1.

Table 4.1

Pearson Product – Moment Correlation Coefficients

Scale	<i>M</i>	<i>SD</i>	1	2	3	
Criterion Variable						
1. Realistic Interests	37.23	5.07	-			
Predictor Variables						
2. Learning Experiences	88.67	13.73	.43**	-		
3. Self-efficacy	37.23	10.52	.44**	.47**	-	
4. Outcome Expectations	46.97	18.67	.30*	.40**	.54**	-

Note. * $p < .05$. ** $p < .01$.

Regression Analyses

Mediational analyses were performed using multiple regression to assess the hypotheses posed in this investigation. In research in which it is difficult to recruit a sufficiently large sample to perform SEM (Quintana & Maxell, 1999), it may be necessary to use multiple

regression analyses to assess meditational hypotheses (Frazier, Tix, Barron, 2004; Holmbeck, 1997). Such was the case with this investigation. Data from a nonexperimental design can only test whether the hypothesized mediated sequence is consistent or inconsistent with a specific causal model corresponding to a credible theoretical mechanism (Warner, 2013).

The use of multiple regression to determine the degree of mediation involves testing three equations with two mediating variables (i.e., Realistic scale of the *Self-efficacy Questionnaire* and the Realistic Scale of *Occupational Outcomes Expectations*).

For the first equation, the criterion variable (Realistic Interests) is regressed on the predictor variable (Realistic Learning Experiences) to demonstrate that there is an effect to mediate (see Path c in Figure 4.1 and Figure 4.2). Within the second set of equations, the mediator (Realistic Self-efficacy) and the mediator (Realistic Outcome Expectations) are each regressed on the predictor variable (Realistic Learning Experiences) to establish the path from the predictor variable to the mediator variable, in the meditational chain (see Path a in Figure 4.1 and Figure 4.2). For the third equation, the criterion variable (Realistic Interests) was regressed on both the predictor variable (Learning Experiences) and the mediator variables (Realistic Self-efficacy and Realistic Outcome Expectations) to determine whether the mediators are related to the criterion variable (Realistic Interests) (see Path b in Figure 4.1 and Figure 4.2), as well as to determine an estimate of the relation between the predictor variable (Realistic Learning Experiences) and the criterion variable (Realistic Interests) controlling for the mediators (see Path c' in Figure 4.1 and Figure 4.2). If the relation between the predictor variable and the criterion variable controlling for the mediators is zero, then the suggestion is that the mediator accounts completely for the relation between the predictor and the criterion. If the relation between the predictor variable and the criterion variable is significantly less when the mediator is

in the equation than when the mediator is not included in the equation, but is still greater than zero, then the suggestion is that partial mediation exists.

Additionally, testing the significance of the mediated effect is necessary. To test the significance of the mediated effect, the significance of the difference between the *total* effect of the predictor on the criterion variable and the *direct* effect of the predictor on the criterion variable must be analyzed. To accomplish this, the product of the path from the predictor

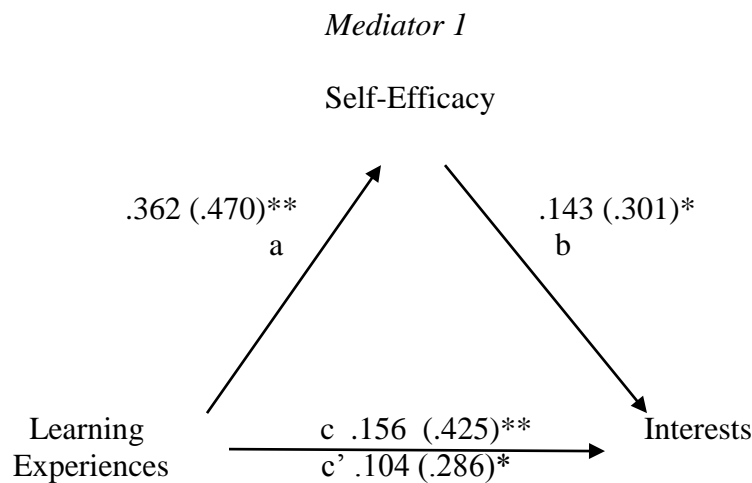


Figure 4.1. Mediated model with self-efficacy as the mediating variable.

Note. Unstandardized coefficients: no parentheses; standardized coefficients: parentheses.
* $p < .05$. ** $p < .01$

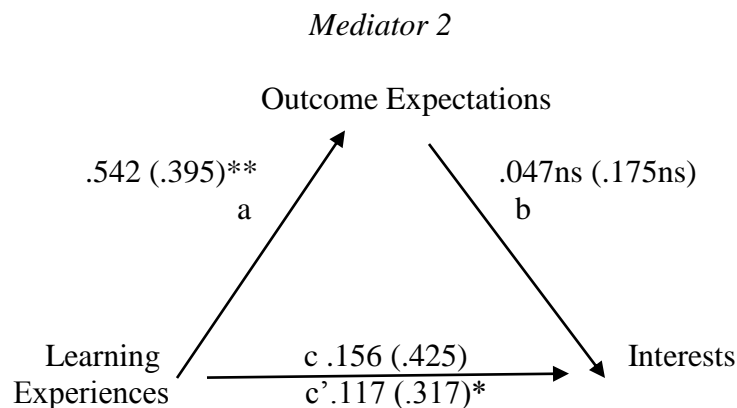


Figure 4.2 Mediated model with outcome expectations as the mediating variable.

Note. Unstandardized coefficients: no parentheses; standardized coefficients: parentheses.
* $p < .05$. ** $p < .01$

variable to the mediator variable and the path from the mediator variables to the criterion variable is divided by a standard error term. The mediated effect divided by its standard error provides a z score of the mediated effect. If the z score is greater than 1.96, the mediation effect is statistically significant at the .05 level (Frazier, Tix, & Barron, 2004).

Results from the Regression Analyses are available in Table 4.2. In the first regression, Realistic Interests was regressed on Realistic Learning Experiences (Fig. 4.1 and Fig. 4.2 (paths c)). This was statistically significant ($F=15.89, p<.000$). In the second and third regressions, the mediators (i.e., Realistic Self-efficacy and Realistic Outcome Expectations, respectively) were regressed onto Realistic Learning Experiences. These analyses were also statistically significant, (Realistic Self-efficacy (Fig. 4.1 (path a), $F = 20.14, p<.000$); Realistic Outcome Expectations (4.2 (path a), $F = 12.05, p<.001$). Finally, Realistic Interests was regressed onto both the predictor (Realistic Learning Experiences) and each mediator separately (Realistic Self-efficacy and Realistic Outcome Expectations). The analysis with Realistic Self-efficacy was statistically significant (fig. 4.1 (path c')), ($F = 11.88, p<.001$), and both Realistic Learning Experience and Realistic Self-efficacy were statistically significantly related to Realistic Interests. Therefore, because the relationship between the predictor variable, Realistic Learning Experiences, and the criterion variable, Realistic Interests, is statistically significantly less when the mediator, Realistic Self-efficacy, is in the equation rather than when the mediator is not included in the equation but is still greater than zero, the suggestion is that Realistic Self-efficacy partially mediates the relationship between Realistic Learning Experiences and Realistic Interests.

The analysis with Realistic Outcome Expectations was statistically significant (fig. 4.2 (path c')), ($F = 6.80, p<.002$); however, only Realistic Learning Experiences was statistically

significantly related to Realistic Interests ($t = 2.57, p < .013$), while Realistic Outcome Expectations was not statistically significantly related to Realistic Interests ($t = 1.42, p < .162$). Thus, Realistic Outcome Expectations does not mediate the relation between Realistic Learning Experiences and Realistic Interests.

A test of the significance of the mediated effect.

Mediation analyses were implemented using the Sobel (1982) test. The initial hypothesized sequence of variables for this data includes the effect of Realistic learning experiences on Realistic interests that may be partly or entirely mediated by Realistic self-efficacy or Realistic outcome expectations. Data from a nonexperimental design can only test whether the hypothesized mediated sequence is consistent or inconsistent with a specific causal model corresponding to a credible theoretical mechanism (Warner, 2013)

Table 4.2

Multiple Regressions Analyzing Mediated Effect

Model	Path	Sum of Square	df	Mean Square	F	Sig	Unstd. Coeff.B	Std. Error	Std. Coeff. B	t	Sig
1. Realistic Int. Regression	c	331.02	1	331.02	15.89	.000	.156	.039	.43	3.99	.000
	Learning Exp.										
2. Self-efficacy Regression	a	1779.76	1	1779.76	20.14	.000	.362	.081	.47	4.49	.000
	Learning Exp.										
3. Realistic Int. Regression		458.68	2	229.340	11.88	.000					
	Learning Exp. c'						.104	.043	.29	2.45	.017
	Self-efficacy b						.143	.055	.30	2.57	.012

4. Outcome Exp. a	3597.80	1	3597.80	12.05	.001	.542	.156	.40	3.47	.001
Regression										
Learning Exp.										
5. Realistic Interests	293.65	2	146.82	6.80	.002					
Regression										
Learning Exp. c'						.117	.046	.32	2.57	.013
Outcome Exp. b						.047	.033	.18	1.42	.16

Sobel's test (Frazier, Tix, & Barron, 2004) was performed to determine the significance in reduction between the predictor variable (Realistic learning experiences) and Realistic interests after individually including self-efficacy. Sobel's test was statistically significant, $z = 2.25$, $p = .025$. Therefore, Realistic self-efficacy was a statistically significant mediator between Realistic learning experiences and Realistic interests for this sample. Sobel's test was not conducted with Realistic outcome expectations because it was not found to be a significant mediator between Realistic learning experiences and Realistic interests.

Overall, the results of the present study confirm the relations among variables proposed by SCCT. The results further adhere to the suggested pathways between variables in the interest development model of SCCT. Following is a discussion comparing the current study's results with some previous relevant studies, along with a discussion of the implications for career counseling practice for women with nontraditional occupational interests. Finally, limitations of the current study are identified and suggestions for future research are presented.

CHAPTER V

DISCUSSION

Introduction

A fundamental part of individuals' daily lives consists of occupational activities. For many, these endeavors provide more than financial provisions for their survival. They provide an important source of personal identity, self-worth, social connectedness and self-fulfillment (Bandura, 2006). For others, due to economic, social, and cultural conditions that limit educational and occupational opportunities, the freedom to choose a desired occupation is constricted or denied. Positive outcomes provided by such desired occupations then are unrealized. As Lent et al. (1994) suggest, personal agency may be the preferred way of envisioning the choice of a career, however, the powerful role of contextual factors in restricting or eliminating personal volition in the career choice process cannot be overlooked. Females often experience the effects of poverty, discrimination, and differential socialization and reinforcement that can negatively impact their career development and disrupt preferred occupational choices.

The relative paucity of empirical literature on women pursuing nontraditional occupations, generally, and the even fewer existing studies with women interested in the trades and construction jobs were compelling reasons to undertake the present study. This understudied and underserved population warrants the identification of specific gaps in our knowledge of career development processes and the needs of women with interests in these occupations or,

those whose interests have not been fully explored, developed, and acted upon. Additionally, the ability-attainment gap in women's occupational choices needs to be addressed in order to capture the skills of women and provide more economic security and work satisfaction for these individuals.

Gender role norms have been shown to limit career-related learning experiences which subsequently influence relevant self-efficacy and relevant expectations (Tokar & Jome, 1998). Tokar, Thompson, Plaufcan, and Williams (2007) examined the precursors of learning experiences in their study and found that gender had a significant and negative (indicating greater endorsement by men) direct effect on Realistic learning experiences. Tokar et al.'s (2007) study also revealed that women reported significantly more Artistic and Social learning experiences while men reported significantly more Realistic, Investigative, and Enterprising learning experiences. These results support SCCT's premise that gender is a consequential person input that impacts the entire model.

A notable aspect of the current study is the participation of a diverse sample of women with expressed interests in Realistic type occupations. This racial, economic, and educational diversity provides a unique examination of some of the sociocognitive mechanisms proposed by SCCT (Lent et al., 1994), along with reported learning experiences related to Realistic interests, for the present sample.

The authors of SCCT had as their ultimate goal the presentation of a theory that would "contribute to a more comprehensive, cohesive understanding of career choice, development, and adjustment" (Lent et al., 1994, p.118). This perspective places singular emphasis on important learning and experiential processes. It also highlights the impact of environmental factors on career choice formation and realization. Extending Holland's (1973) theory of person-

environment fit, SCCT also elaborates on influential factors with distinct applicability to women's career development, not included in Holland's (1973) theory. These factors include person inputs (e.g. gender) and contextual features (e.g. opportunity structure) thereby theoretically encompassing the diverse influences on career development. Thus, SCCT has particular salience for enhancing our understanding of the career needs of women with nontraditional interests/careers in trades and construction.

The primary purpose of this study then was to extend the research on SCCT by examining the associations among variables as proposed by SCCT's model of interest formation with the current sample. Findings of the present study supported the posited relations among variables included in this model. Results of regression analyses further revealed that Realistic self-efficacy partially mediated the relationship between Realistic learning experiences and Realistic interests. However, contrary to theory, Realistic outcome expectations did not mediate the relationship between Realistic learning experiences and Realistic interests. This finding is consistent with others' assertions that outcome expectations are less predictive of interests than self-efficacy in discriminatory or oppressive situations (Chartrand & Rose, 1996; Morrow, Gore & Campbell, 1996). This particular result is consistent with Lent et al.'s (1994) contention that efficacy beliefs play a major role in helping to determine an individual's choice of activities and environments, along with determining one's expenditure of effort, persistence, cognitions, and emotional responses when met with obstacles and setbacks.

Relevant Studies

Previous meta-analytic studies (Lent et al., 1994; Rottinghaus et al., 2003; Sheu et al., 2010) also revealed theory-consistent relations between self-efficacy and interests (.53, .59, and .57, respectively). As Betz and Hackett (1981) found, in their early research, the role of self-

efficacy in interest development and ultimately, career choice, is an important one. However, neither interests nor self-efficacy alone is adequate to initiate career-related goals and actions. Additional research has demonstrated that both interests and self-efficacy must be present (Donnay & Borgen, 1999; Lent et al., 1994, 2000; Tracey, 2002).

The findings related to Realistic outcome expectations are not altogether consistent with previous studies in terms of the relationship between outcome expectations and interests. For example, Lent et al., (1994), in their meta-analysis, found a positive relation of .52 for expectations and interests. Sheu et al.'s (2010) meta-analysis revealed a positive relation of .48 for Realistic expectations and Realistic interests, specifically. However, the majority of the samples included in both of these meta-analyses consisted of college students.

As reported earlier, a positive relation between self-efficacy beliefs and outcome expectations was demonstrated in the current study. Previous studies' results are consistent with this finding. Lent et al.'s (1994) meta-analysis revealed a correlation coefficient of .49; Gore and Leuwerke's (2000) study found a correlation coefficient of .49; and, Shue et al.'s (2010) meta-analysis resulted in a correlation coefficient of .52 for Realistic self-efficacy and Realistic expectations.

A positive relation for Realistic learning experiences and Realistic self-efficacy was found in the present study, along with a positive relation for Realistic learning experiences and Realistic outcome expectations. These results are similar to the findings of other studies (with college samples) indicating that Realistic learning experiences are related to Realistic efficacy beliefs and Realistic outcome expectations (Schaub & Tokar, 2005; Thompson & Dahling, 2012; Williams & Subich, 2006).

Practice Implications

Results of the current study have meaningful implications for the practice of career counseling. Some important hypotheses proposed by SCCT (Lent et al., 1994) have been tested with the current sample and results indicated general consistency with the theory's relevant suppositions. SCCT's attention to a number of career development factors (e.g. person inputs and contextual factors), pertinent to women's occupational choices, warrants a more thoughtful consideration of the applicability of the theory's constructs, for women, generally, and for women with some interest in nontraditional occupations like trades and construction. Thus, SCCT appears to be a sound theoretical framework for deriving career interventions for this population of women.

Although SCCT has not been tested with women interested in pursuing trades and construction jobs until now, much empirical support for the theory has accumulated with other samples (e.g. Fouad & Smith, 1996; Lent, Brown, Nota, & Soresi, 2003; Nauta & Epperson, 2003; Tokar, Thompson, Plaufcan, & Williams, 2007). An increasing amount of empirical support for SCCT's posited influence of learning experiences on self-efficacy and outcome expectations has also accumulated (e.g. Schaub & Tokar, 2005; Williams & Subich, 2006).

SCCT also proposes that gender is a critical person input that influences the rest of the model. This proposition is based, to a great extent, on Hackett and Betz's (1981) early work on gender differences in career-related self-efficacy, with women typically having lower self-efficacy beliefs for traditionally masculine occupations; and, women typically having stronger occupational interests in traditional female occupations. Women have also reported more learning experiences in the Social realm while men have reported more learning experiences in the Realistic, Investigative, and Enterprising realms (Williams & Subich, 2006). Additionally,

Tokar, Thompson, Plaufcan, & Williams (2007) examined the precursors of learning experiences and their results revealed strong support for the proposition that gender contributes significantly to learning experiences. Based on the results of the current study and the results of the previously mentioned studies, SCCT appears to hold promise for the career counseling needs of women.

Personal efficacy, according to Bandura (1997), is more central to human agency than other mechanisms. Efficacy beliefs influence individuals' goals and aspirations, their degree of motivation, and their perseverance in the face of challenges and adversity. Efficacy beliefs also mold people's outcome expectations, and efficacy beliefs determine the choices individuals make and the accompanying choice behaviors they engage in. Self-efficacy then plays a significant role in occupational development and occupational pursuits (Bandura, 2006).

Self-efficacy is a key component of SCCT, with efficacy influencing interests. As such, efficacy beliefs need the consideration of the career counselor in order to assess and evaluate the client's efficacious beliefs related to occupational interests. Rottinghaus et al. (2003) found that in stereo-typical male domains, incongruence between interests and self-efficacy beliefs, with interests measuring higher in a specific domain than efficacy, is more common among women than men. Due to the influence of gender role socialization, it is believed that efficacy beliefs related to Realistic-type activities may be foreclosed, inaccurate, or distorted for females. Thus, efficacious beliefs may or may not be congruent with objective manifestations of abilities or reinforcers. Some individuals may prematurely eliminate rewarding career possibilities due to weak, flawed, or faulty efficacy beliefs. Accordingly, career counselors could initiate discussions with the client to identify foreclosed possibilities along with helping the client establish more accurate perceptions of her capabilities and her occupational expectations. Identifying discrepancies, for the client, between demonstrated skills and fragile self-efficacy beliefs may

further serve to facilitate interest exploration. This counseling strategy has important relevance for women with possible interest in nontraditional occupations given that different socialization experiences may have diminished exploration of these careers or reduced motivation to pursue these types of occupations. Foreclosed occupational possibilities warrant further discussion within the counseling context.

SCCT suggests that occupational interests develop fundamentally from efficacy beliefs and outcome expectations. Results of the present study did indicate a positive and significant relation ($p < .05$) for Realistic outcome expectations and Realistic interests; however, the relation was a weak one with Realistic outcome expectations only accounting for 9% of the variance in Realistic interests. Although much attention has been given to intervention strategies related to increasing efficacy beliefs, particularly in regard to nontraditional career consideration and crystallization of these interests for women, it may be beneficial to focus additionally on counseling efforts to identify outcome expectations. Addressing the salience of outcome expectations in the development of interests is another possible aim of career counseling that can be useful in order to determine if inaccurate or distorted expectations exist (Diegelman & Subich, 2001). Swanson and Woitke (1997) suggested that despite having elevated self-efficacy and interest, individuals may prematurely exclude potentially rewarding career paths if they foresee consequential barriers hampering efforts to attain valued outcomes. Bandura (1986) submits that outcome expectations are malleable through cognitive and experiential techniques in counseling. Specifically, Diegelman and Subich (2001) designed an intervention to raise outcome expectations for an undergraduate degree in psychology, involving verbal persuasion, one of the four key sources of efficacy information. Participants' outcome expectations for an undergraduate psychology degree increased significantly following the intervention. This study

provided some support for the usefulness of attending to outcome expectations in career counseling. The existence of barriers in the pursuit of a nontraditional career in trades and construction have been identified and validated. It has been conjectured that barriers affect the outcomes an individual expects of behaviors (Fouad & Guillen, 2006), such that the potential for experiencing stereotyping, discrimination, or sexual harassment may diminish an individual's outcome expectations.

Despite the fact that careers in the trades and construction are, generally, well-paying and provide personal satisfaction for those with Realistic interests, these occupations, for women, can include negative outcomes along with the positive ones. Menches and Abraham (2007) examined the relatively current status of women in the trades and construction and also identified the challenges women face in these occupations. Based on a review of the literature published between 1970 and 2007, the single largest contributor to women failing to choose construction as a feasible career or leaving the construction industry was the workplace culture. Another observer of the construction industry's workplace culture described the industry this way, "Within this apparently fortress-like setting outsiders seeking entrance appear to be either 'socialized' to conform, or are marginalized, discouraged or ejected" (Greed, 2000, p. 183).

Consequently, real and perceived outcome expectations justify the attention of the career counselor. As Ericksen and Schultheiss (2009) recommended, probing the client's beliefs about consequences associated with a trade or construction occupation could uncover negative thoughts amenable to intervention and subsequent change. Although the existence of some negative sociocultural outcomes involved in a trades or construction occupation for women appear resistant to change, cognitive restructuring that allows a stronger emphasis on positive outcomes that are valued by the client may be beneficial. Finally, in regard to counseling efforts

to strengthen outcome expectations, another area of intervention could involve endeavors to provide the client with opportunities for vicarious learning experiences and exposure to role models. Observing others benefitting from these types of occupations or, hearing from models themselves about the positive outcomes they have experienced may contribute to increases in outcome beliefs. Based on the results of their study, Gore and Leuwerke (2000) advise career counselors to not overlook the importance of the sociocognitive mechanism of outcome expectations when assisting clients in the selection and implementation of a potentially rewarding career choice.

SCCT posits that occupational interests derive, to a great extent, from self-efficacy beliefs and outcome expectations. These beliefs may or may not be congruent with objective manifestations of abilities or reinforcers. Thus, some individuals may prematurely eliminate rewarding career possibilities due to flawed or faulty efficacy beliefs and/or outcome expectations. Accordingly, career counselors could initiate discussions with the client to identify foreclosed possibilities along with helping the client establish more accurate perceptions of her capabilities and her occupational expectations. Identifying discrepancies, for the client, between demonstrated skills and related self-efficacy beliefs may further serve to facilitate interest exploration, by increasing exposure to relevant learning experiences. These counseling strategies have important relevance for women with possible interest in nontraditional occupations since different socialization experiences may have diminished further exploration of these careers or reduced motivation to pursue these types of jobs.

Another counseling intervention derived from the present study's results involves the influential role that learning experiences are proposed to play in the development of efficacy beliefs and outcome expectations (Lent et al., 1994). SCCT hypothesizes that person inputs and

contextual affordances influence efficacy and outcome expectations through learning experiences. Results of the current study lend support to SCCT's proposition that learning experiences contribute positively to efficacy beliefs and outcome expectancies. Based on these results and the work of Williams and Subich (2006), learning experiences could be an important focus of a counseling intervention as discussed next.

Williams and Subich (2006) have suggested that gender differences in learning experiences, based primarily on gender role socialization and reinforcement histories, may be the probable origin of noticeable gender differences in occupation-related self-efficacy, outcome expectations and interests. Therefore, gender differences in learning experiences could restrict the range of possible career considerations and contribute to tenacious patterns of occupational segregation through their influence on efficacy, expectations, and interests. These gender disparities may be addressed, individually by the career counselor or institutionally by schools or, within training programs sponsored by unions, companies, and nonprofit organizations. The counselor could encourage the client to look for learning experiences in career areas outside of traditional gender norms particularly involving experiences in unexplored areas. Schools could consider providing gender non-typical learning experiences, within the framework of career exploration, for children and adolescents. Training programs could provide hands-on experiences for adults.

A number of counseling interventions have been proposed to serve the career needs of women with trades and construction interests. It is of importance, however, to also note that even within the domain of Realistic interests, these women do not represent a homogeneous group. Age, race, ethnicity, sexual orientation, and ability are some of the factors included in with-in group differences. It is incumbent on the counselor to acknowledge these diverse

identities as they interact with contextual variables, including internal and external barriers, and sociocognitive mechanisms

Organizational implications

Further implications can be drawn from the results of this study related to the application of SCCT (Lent et al., 1994) proposals to organizational training programs for women interested in nontraditional careers. Because SCCT takes into account person inputs such as gender and race/ethnicity, along with contextual affordances or environmental influences in the career development process, it embodies a theoretical approach that has potential for practical applications within training or apprenticeship programs. Focusing on the theory's proposed relations among its variables, training programs could structure their curriculum with these empirically documented relations in mind. Addressing the gender role socialization process and sexism within some nontraditional work settings could serve to empower women to pursue nontraditional interests more confidently and with a better understanding of the challenges involved. Activities related to the sources of self-efficacy, including practice experiences leading to greater mastery, could be included in a training program in order to strengthen efficacy beliefs thereby fortifying interests and solidifying commitments to choice goals and actions. Mentoring programs could be established in order to attend to another source of self-efficacy, verbal persuasion. For similar purposes, outcome expectations could also be addressed with presentations by experienced and satisfied individuals with nontraditional occupations who could discuss, with credibility, the realization of valued outcomes.

Recommendations for increasing women's participation in trades and construction occupations

The prevailing image of trades and construction as male dominated industries has contributed to the limited number of females working in these industries. Increased efforts are

needed to attract and encourage young women to consider and prepare for these careers. Since learning experiences appear to be significant in the establishment of efficacy beliefs and positive outcomes, according to SCCT research, early exposure to Realistic type activities could begin to sow the seeds for change. Visits from models and discussions about these career opportunities, at middle schools and high schools, could also stimulate consideration and interest. Construction site visits for students, including college students, could pique their curiosity and induce further exploration of these careers. Additionally, internship opportunities for students on construction projects could furnish unique opportunities to experience the construction industry with its job opportunities and rewards.

For those women who have successfully embarked on trades or construction careers, retention continues to be a problem within those industries. Dainty, Neale, and Bagilhole (2000) relate that women were more likely than men to leave the construction industry within the first 10 years primarily because of slow career advancement and disillusionment with the culture. A strong support network, including mentors, can be an effective means of increasing retention for women by providing social persuasion to enhance self-efficacy thereby strengthening the ability to cope with obstacles and disappointments. Mentoring is a documented means of supporting retention of women at all levels of construction (Menches & Abraham, 2007). A zero tolerance policy for discrimination and sexual harassment that is consistently enforced can also improve the working conditions of women in these occupations and thereby encourage retention. According to SCCT, the elimination of barriers can act to increase outcome expectations and fortify more enduring interests.

Limitations of the current study

Although the present study included a sample of women with racial, educational, and economic diversity, the size of the sample warrants a tentative evaluation of the generalizability of the findings to this population of women. Further, since the present sample could be characterized as unique due to the inclusion of only women with demonstrated realistic interests, it is uncertain whether these results would generalize to a general sample of women who are not involved in a similar apprenticeship program or have not demonstrated an interest in trades or construction occupations. A second limitation of this study is the correlational nature of the research design. Although SCCT (Lent et al., 1994) posits causal pathways between variables, the present study cannot address causality. SCCT proposes that person inputs (e.g., race/ethnicity) and contextual affordances directly influence the formation of learning experiences and indirectly affect (through learning experiences) the establishment of self-efficacy and outcome expectations. This study only investigated one person input, gender. Further, the current study did not examine specific contextual affordances. Since African-American and Hispanic women's participation in these trades and construction occupations is almost nonexistent, additional research focus on these groups, within this study, would have further augmented the findings. Lastly, because the sample in this study was one of convenience, other limitations apply. Convenience sampling is a type of non-probability sampling in which the sample selected is based on ease of access to participants. Achieving a sample through convenience can be a relatively expedient and inexpensive means of collecting information of interest. Convenience sampling can also help in gathering useful data that may have been difficult or impossible to acquire using probability sampling techniques. Finally, convenience sampling can be useful in exploratory research where the goal is to begin to discover whether the

propositions of an established theory apply to an under-studied population where limited or no research exists. For these reasons, a convenience sample was chosen for this study. However, since a convenience sample is not chosen at random, the inherent problem in this type of sampling is that the sample may not be representative of the population of interest. Therefore, the degree to which the present sample actually represents the population cannot be known. Despite this limitation, even a sample of convenience can provide useful introductory information regarding a little explored phenomenon. (Babbie, 2001).

Recommendations for future research

Findings of the current study lend support to those SCCT's hypotheses that were tested in this research. These results beget many other research questions that deserve attention. As previously alluded to, experimental research is needed to determine causal relations between the variables with a sample of women interested in pursuing trades and construction occupations. Causality would then lend greater confidence in SCCT's proposed pathways between variables thereby enhancing the potential effectiveness of career interventions. Experimental research studies investigating the effectiveness of particular interventions including SCCT's constructs, with the inclusion of an alternate intervention condition and a control condition would advance career counseling practice with these clients.

A relatively recent study (Bonitz, Larson, & Armstrong, 2010), using an experimental design to determine whether vocational interests can be a precursor to the development of efficacy beliefs, was undertaken. Results revealed that changes in interests led to changes in self-efficacy, a finding inconsistent with SCCT's proposition regarding the unidirectional relation between efficacy and interests. This contribution to the literature needs replication with different populations and for differing occupational domains.

Another recommendation for future research involves the study of women pursuing trades and construction occupations and the administration of each of the measures used in the present study but including all of Holland's (1972) domains in order to compare results across RIASEC interests.

Finally, a potential topic for future research might include a study involving males pursuing nontraditional careers in historically female gender typical occupations. Nursing would be a particular occupation of interest for future study.

Summary

Women's career development is more complex, generally, than men's due to early gender role socialization, gender bias and discrimination, gender stereotyping, sexual harassment, the relative absence of mentoring opportunities, and family responsibilities (Hackett & Betz, 1981). When viewing the macrosystem related to the world of work, societal and economic pressure is needed to utilize the resources and skills available by drawing upon a more diverse workforce, one that is more reflective of the larger society. Socially constructed barriers have limited women's full participation in potentially desirable occupations. Barriers to women's inclusion and the workplace culture underlying them, along with negative societal messages regarding nontraditional occupations for women, are obstructing the many positive contributions that women can make. Changing the workplace culture from one of exclusion to a culture of gender inclusiveness deserves the application of best practices within trades and construction industries. Women with nontraditional interests in these types of jobs deserve the organizational and societal changes that will allow them to develop and use their talents, and perhaps bring satisfaction and economic security to themselves and their families. According to Arredondo (1996), gender is the personal dimension of career development that is the most neglected or

ignored. As a caring and equitable democratic society, fostering hope and reducing inequities are worthy of the attention and advocacy of career counselors and research

REFERENCES

- Albert, K. A., & Luzzo, D. A. (1999). The role of perceived barriers in career development: A social cognitive perspective. *Journal of Counseling and Development, 77*, 431-436.
- Anderson, S. L. & Betz, N. E. (2001). Sources of social self-efficacy expectations: Their measurement and relation to career development. *Journal of Vocational Behavior, 58*, 98-117.
- Arredondo, P. (1996). Operationalization of the multicultural counseling competencies. *Journal of Multicultural Counseling and Development, 24 (1)*, 42-78.
- Babbie, E. (2001). *The practice of social research (9th ed.)*. CA: Wadsworth/Thomson Learning.
- Bandura, A. (1977a). Self-efficacy: Toward a unifying theory of behavioral change. *Psychology Review, 84*, 191-215.
- Bandura, A. (1977b.). *Social learning theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (1986). *Social foundations of thought and Action: A social cognitive theory*. Englewood, NJ: Prentice-Hall.
- Bandura, A. (Ed.). (1995). *Self- efficacy in changing societies* (pp. 1-25). New York: Cambridge University Press.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.
- Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual review of psychology, 52*, 1-26.
- Bandura, A.(2006). *Toward a psychology of human agency*. *Perspectives on Psychology Science, 1 (2)*, 164-180.

- Bayard, K., Hellerstein, J., Neumark, D., Troske, K. R. (2003). *Journal of Labor Economics*, 21, 887-902.
- Berger, P. L. & Luckman, T. (1967). *The social construction of reality: A treatise in the sociology of knowledge*. London: The Penguin Press.
- Betz, N. E. (1978). Prevalence, distribution, and correlates of math anxiety in college students. *Journal of Counseling Psychology*, 25, 441-448.
- Betz, N. E. (1989). Implications of the null environment hypothesis for women's career development and for counseling psychology. *The Counseling Psychologist*, 17, 136-144.
- Betz, N. E. (2000). Self-efficacy as a basis for career assessment. *Journal of Career Assessment*, 8, 205-222.
- Betz, N. E., Borgen, F. H., & Harmon, L. W. (1996). *Skills Confidence Inventory applications and technical guide*. Palo Alto, CA: Consulting Psychologists Press.
- Betz, N. E., & Gwilliam, L. R. (2002). The utility of measures of self-efficacy for the Holland themes in African American and European American college students. *Journal of Career Assessment*, 10, 283-300.
- Betz, N. E., & Hackett, G. (1981). The relationship of career-related self-efficacy expectations to perceived career options in college women and men. *Journal of Counseling Psychology*, 28, 399-410.
- Betz, N. E., & Hackett, G. (1983). The relationship of mathematics self-efficacy expectations to the selection of science-based college majors. *Journal of Vocational Behavior*, 23, 329-345.
- Betz, N. E., Harmon, L., & Borgen, F. (1996). The relationships of self-efficacy for the Holland themes to gender, occupational group membership, and vocational interests. *Journal of*

- Counseling Psychology*, 43, 90-98.
- Betz, N. E., & Schifano, R. S. (2000). Evaluation of an intervention to increase Realistic self-efficacy and interest in college women. *Journal of Vocational Behavior*, 56, 35-52.
- Betz, N. E., & Voyten, K. K. (1997). Efficacy and outcome expectations and decidedness. *Career Development Quarterly*, 46, 179-189.
- Bonitz, V.S., Larson, L.M., & Armstrong, P.I. (2010). Interests, Self-efficacy, and choice goals: An experimental manipulation. *Journal of Vocational*, 76, 223-233.
- Bores-Rangel, E., Church, A. T., Szendre, D., & Reeves, C. (1990). Self-efficacy in relation to occupational consideration and academic performance in high school equivalency students. *Journal of Counseling Psychology*, 37, 407-418.
- Brown, S. D., & Lent, R. W. (1996). A social cognitive framework for career choice counseling. *The Career Development Quarterly*, 44, 354-366.
- Brown, S. D., Lent, R. W., & Gore, P. A. Jr. (2000). Self-rated abilities and self-efficacy beliefs: Are they empirically distinct? *Journal of Career Assessment*, 8, 223-235.
- Bussey, K., & Bandura, A. (1999). Social cognitive theory of gender development and differentiation. *Psychology Review*, 106, 676-713.
- Byars, A., & Hackett, G. (1998). Applications of social cognitive theory to the career development of women of color. *Applied and Preventive Psychology*, 7, 255-267.
- Campbell, D. (1992). *Campbell Interest and Skill Survey*. Minneapolis, MN: National Computer Systems.
- Campbell, N. K., & Hackett, G. (1986). The effects of mathematics task performance on math self-efficacy and task interest. *Journal of Vocational Behavior*, 28, 149-162.

- Campbell, D. P., & Hansen, J. C. (1981). *Manual for SVIB-SCII* (3rd ed.). Stanford CA: Stanford University Press.
- Chartrand, J. M., & Rose, M. L. (1996). Career interventions for at-risk populations: Incorporating social cognitive influences. *Career Development Quarterly*, 44, 341-354.
- Chronister, K. M., & McWhirter, E. H. (2006). An experimental examination of two career interventions for battered women. *Journal of Counseling Psychology*, 53, 151-164.
- Church, A. T., Teresa, J. S., Rosebrook, R., & Szendre, D. (1992). Self-efficacy for careers and occupational consideration in minority high school equivalency students. *Journal of Counseling Psychology*, 39, 498-508.
- Connell, R. W. (1987). *Gender and power: Society, the person and sexual politics*. Cambridge: Polity Press.
- Conyers, L., Enright, M. S., & Strauser, D. R. (1998). Applying self-efficacy theory to counseling college students with disabilities. *Journal of Applied Rehabilitation on Counseling*, 29, 25-30.
- Cook, T. D., & Campbell, D. T. (1979). *Quasi-experimentation: Design and analysis issues for field settings*. Boston: Houghton Mifflin.
- Correll, S. J. (2001). Gender and the career choice process: The role of biased self-assessments. *American Journal of Sociology* 106(6), 1691-1730.
- Costa, P. T., Jr., & McCrae, R. R. (1992). *Revised NEO personality inventory (NEO-PI-R) and NEO five-factor inventory (NEO-FFI) professional manual*. Odessa, FL: Psychological Assessment Resources.
- Dainty, A. R. J., Neale, R. H., & Bagilhole, B. M. (1999). Women's career in large construction companies: Expectations unfulfilled? *Development International*, 4/7, 353-357

- Diegelman, N. M., & Subich, L. M. (2001). Academic and vocational interests as a function of outcome expectations in Social Cognitive Career Theory. *Journal of Vocational Behavior, 59*, 394-405.
- Donnay, D. A. C. & Borgen, F. H. (1999). The incremental validity of vocational self-efficacy: An examination of interest, self-efficacy, and occupation. *Journal of Counseling Psychology, 46*, 432-447.
- Eagly, A. H. (1987). *Sex differences in social behavior: A social role interpretation*. Hillside, NJ: Erlbaum.
- Ericksen, J. A., & Schultheiss, D. P. (2009). Women pursuing careers in trades and construction. *Journal of Career Development, 36*, (1), 68-89.
- Fouad, N. A., & Smith, P. L. (1996). A test of a social cognitive model for middle school students: Math and science. *Journal of Counseling Psychology, 43*, 338-346.
- Fouad, N. A., & Guillen, A. (2006). Outcome expectations: Looking to the past and potential future. *Journal of Career Assessment, 14*, 130-142.
- Frazier, P. A., Tix, A. P., & Barron, K. E. (2004). Testing moderator and mediator effects in counseling psychology research. *Journal of Counseling Psychology, 51*, 115-134.
- Fullerton, H. N., Jr. (1999). Labor force participation: 75 years of change, 1950-1998 and 1998-2025. *Monthly Labor Review, 122*, 3-12.
- Furnham, A. (2002). Sex differences in self-rated ability. *Social Behavior and Personality, 30*(2), 185-194.
- Geis, F. L. (1993). Self-fulfilling prophecies: A social psychological view of gender. In A. E. Beall & R. J. Sternberg (Eds.). *The psychology of gender* (pp. 9-54). New York: Guilford.
- Goldenhar, L. M., Swanson, N. G., Hurrell, J. J., Ruder, A., & Deddens, J. (1998). Stressors and

- adverse outcomes for female construction workers. *Journal of Occupational Health Psychology*, 3, 19-32.
- Gore, P. A., Jr. (1996, August). A structural analysis of a Social Cognitive Career Theory. Poster session presented at the annual meeting of the American Psychological Association, Toronto, Ontario, Canada.
- Gore, P. A., Jr. (2002a). *Occupational Outcome Expectations Scale*. Unpublished manuscript, Southern Illinois University, Carbondale.
- Gore, P. A., Jr. (2002b). *Occupational Self-efficacy Beliefs Scale*. Unpublished manuscript, Southern Illinois University, Carbondale.
- Gore, P. A., Jr., & Leuwerke, W. C. (2000). Predicting occupational considerations: A comparison of self-efficacy beliefs, outcome expectations, and person-environment congruence. *Journal of Career Assessment*, 8, 237-250.
- Greed, C. (2000). Women in the construction professions: Achieving critical mass. *Gender, Work, and Organization*, 7 (3), 181-196.
- Greene, C. K., & Stitt-Gohdes, W. L. (1997). Factors that influence women's choices to work in the trades. *Journal of Career Development*, 23, 265-278.
- Hackett, G. (1995). Self-efficacy in career choices and development. In A. Bandura (Ed.), *Self-efficacy in changing societies*. New York: Cambridge University Press.
- Hackett, G., & Betz, N. E. (1981). A self-efficacy approach to the career development of women. *Journal of Vocational Behavior*, 18, 326-339.
- Hackett, G., & Byars, A. M. (1996). Social cognitive theory and the career development of African American women. *Career Development Quarterly*, 44, 322-340.

- Hackett, G., & Lent, R. W. (1992). Theoretical advances and current inquiry in career psychology. In *Handbook of counseling psychology* (2nd ed.) (p. 861). Oxford, England: John Wiley & Sons.
- Hansen, J. C., & Campbell, D. P. (1985). *Manual for the SYIB-SCII* (4th ed.). Palo Alto, CA: Stanford University Press.
- Harmon, L. W., Hansen, J. C., Borgen, F. H., & Hammer, A. L. (1994). *Strong Interest Inventory: Applications and Technical Guide*. Stanford, CA: Stanford University Press.
- Holland, J. L. (1970). *The Self-Directed Search*. Odessa, FL: Psychological Assessment Resources, Inc.
- Holland, J. L. (1973). *Making vocational choices: A theory of careers*. Englewood Cliffs, NJ: Prentice Hall.
- Holland, J. L. (1985). *Making vocational choices: A theory of vocational personality and work environment* (2nd ed.). Englewood Cliffs, NJ: Prentice Hall.
- Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Odessa, FL: Psychological Assessment Resources, Inc.
- Holland, J. L., Fritzsche, B. A., & Powell, A. B. (1994). *The Self-Directed Search Technical Manual*. Odessa, FL: Psychological Assessment Resources, Inc.
- Holmbeck, G. N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599-610.
- Houser, B. B., & Garvey, C. (1985). Factors that affect nontraditional vocational enrollment among women. *Psychology of Women Quarterly, 9*, 105-117.

- Lapan, R. T., Boggs, K. R., & Morrill, W. H. (1989). Self-efficacy as a mediator of investigative and realistic general occupational themes on the Strong-Campbell Interest Inventory. *Journal of Counseling Psychology, 36*(2), 176-182.
- Lapan, R. T., Shaughnessy, P., & Boggs, K. (1996). Efficacy expectations and vocational interests as mediators between sex and choice of math/science college majors: A longitudinal study. *Journal of Vocational Behavior, 49*, 277-291.
- Lenox, R. A., & Subich, L. M. (1994). The relationship between self-efficacy beliefs and inventoried vocational interests. *The Career Development Quarterly, 42*, 302-313
- Lent, R. W., Brown, S. D., Brenner, B., Batra Chopa, S., Davis, T., Talleyrand, R., et al. (2001). The role of contextual supports and barriers in the choice of math/science educational options: A test of social cognitive hypotheses. *Journal of Counseling Psychology, 48*, 474-483.
- Lent, R. W., Brown, S. D., & Gore, P. A., Jr. (1997). Discriminate and predictive validity of academic self-concept, academic self-efficacy, and mathematics-specific self-efficacy. *Journal of Counseling Psychology, 44*, 307-315.
- Lent, R. W., Brown, S. D., Gover, M. R., & Nijjer, S. K. (1996). Cognitive assessment of the sources of math self-efficacy: A thought listing analysis. *Journal of Career Assessment, 4*, 33-46.
- Lent R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance. *Journal of Vocational Behavior, 45*, 79-122.
- Lent, R. W., Brown, S. D., & Hackett, G. (2000). Contextual supports and barriers to career choice: A social cognitive analysis. *Journal of Counseling Psychology, 47*, 36-49.

- Lent, R. W., Brown, S. D., & Larkin, K. C. (1987). Comparison of three theoretically derived variables in predicting career and academic behavior: Self-efficacy, interests, congruence, and consequence thinking. *Journal of Counseling Psychology, 34*, 293-298.
- Lent, R. W., Brown, S. D., & Nota, L., & Soresi, S. (2003). Testing social cognitive interest and choice hypotheses across Holland types in Italian high school students. *Journal of Vocational Behavior, 62*, 101-118.
- Lent, R. W., Larkin, K. C., & Brown, S. D. (1989). Relation of self-efficacy to inventoried vocational interests. *Journal of Vocational Behavior, 34*, 279-288.
- Lent, R. W., Lopez, F. G., & Bieschke, K. J. (1991). Mathematics self-efficacy: Sources and relation to science-based career choice. *Journal of Counseling Psychology, 38*, 424-430.
- Lent, R., Lopez, F., Brown, S., & Gore, R., Jr. (1996). Latent structure of the sources of mathematics self-efficacy. *Journal of Vocational Behavior, 49*, 292-308.
- Lindley, L. D. (2005). Perceived barriers to career development in the context of social cognitive career theory. *Journal of Career Assessment, 13*(3), 271-287.
- Lindley, L. D. (2006). The paradox of self-efficacy: Research with diverse populations. *Journal of Career Assessment, 14*, 143-160.
- Lindley, L. D., & Borgen, F. H. (2002). Generalized self-efficacy, Holland theme self-efficacy, and academic performance. *Journal of Career Assessment, 10*, 301-314.
- Lopez, F. G., Lent, R. W., Brown, S. D., & Gore, P. A. Jr. (1997). Role of social-cognitive expectations in high school students' mathematics-related interest and performance. *Journal of Counseling Psychology, 44*, 44-52.
- Lorber, J. (1994). *Paradoxes of gender*. New Haven: Yale University Press.

- Luzzo, D. A. (1993). Value of career decision-making self-efficacy in predicting career decision making attitudes and skills. *Journal of Counseling Psychology, 40*(4), 194-199.
- Luzzo, D. A., & Hutcheson, K. G. (1996). Causal attributions and sex differences associated with perceptions of occupational barriers. *Journal of Counseling and Development, 75*, 124-130.
- Luzzo, D. A., & McWhirter, E. H. (2001). Sex and ethnic differences in the perception of educational/career-related barriers and levels of coping efficacy. *Journal of Counseling and Development, 79*, 61-67.
- Mansfield, P. K., Koch, P. B., Henderson, J., Vicary, J. R. et al. (1991). The climate for women in traditionally male blue-collar occupations. *Sex Roles, 25*, 63-79.
- Mastracci, S. H. (2003). Employment and training alternatives for non-college women: Do redistributive policies really redistribute? *Policy Studies Journal, 31*(4), 585-601.
- McWhirter, E. H. (1997). Perceived barriers to education and career: Ethnic and gender differences. *Journal of Vocational Behavior, 50*, 124-140.
- McWhirter, E. H., Torres, D., & Rasheed, S. (1998). Assessing barriers to women's career adjustment. *Journal of Career Assessment, 6*, 449-479.
- Monroe, P. A., Blalock, L. B., & Vlosky, R. P. (1999). Work opportunities in a nontraditional setting for women exiting welfare: A case study. *Journal of Family and Economic Issues, 20*, 35-60.
- Menches, C. L., & Abraham, D. M. (2007). Women in construction-Tapping the untapped resource to meet future demands. *Journal of Construction Engineering and Management, 133* (9), 701-707.
- Morrow, S. L., Gore, P. A., Jr., & Campbell, B. W. (1996). The application of a sociocognitive

- framework to the career development of lesbian women and gay men. *Journal of Vocational Behavior*, 48, 136-148.
- Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38, 30-38.
- Nauta, M. M., & Epperson, D. L. (2003). A longitudinal examination of the social-cognitive model applied to high school girls' choices of non-traditional college majors and aspirations. *Journal of Counseling Psychology*, 50, 448-457.
- Nauta, M., Kahn, J., Angell, J., & Cantarelli, E. (2002). Identifying the antecedent in the relation between career interests and self-efficacy: Is it one, the other, or both? *Journal of Counseling Psychology*, 49, 290-301.
- Nunnally, J., & Bernstein, I. (1994). *Psychometric theory*. New York: McGraw-Hill.
- Padavic, I. (1991). Attractions of male blue-collar jobs for Black and White women: Economic need, exposure, and attitudes. *Social Science Quarterly*, 72, 33-49.
- Pajares, F., & Kranzler, J. (1995). Self-efficacy beliefs and general mental ability in mathematical problem-solving. *Contemporary Educational Psychology*, 20, 426-443.
- Pajares, F., & Miller, M. D. (1995). Mathematics self-efficacy and mathematics performances: The need for specificity of assessment. *Journal of Counseling Psychology*, 42, 190-198.
- Petrocelli, J. V. (2003). Hierarchical multiple regression in counseling research: Common problems and possible remedies. *Measurement and Evaluation in Counseling and Development*, 51, 9-24.
- Quintana, S. M., & Maxwell, S. E. (1999). Implications of recent developments in structural equation modeling for counseling psychology. *The Counseling Psychologist*, 27, 485-527.

- Riggs, M. L., Warka, J., Babasa, B., Betancourt, R., & Hooker, S. (1994). Development and validation of self-efficacy and outcome expectancy scales for job-related applications. *Educational and Psychological Measurement, 54*, 793-802.
- Rottinghaus, P. J., Larson, L. M., & Borgen, F. H. (2003). The relation of self-efficacy and interests: A meta-analysis of 60 samples. *Journal of Vocational Behavior, 62*, 221-236.
- Sadri, G., & Robertson, I. T. (1993). Self-efficacy and work related behavior: A review and meta-analysis. *Applied Psychology: An International Review, 42*, 139-152.
- Schaub, M. (2004). Social cognitive career theory: Examining the mediating role of sociocognitive variables in the relation of personality to vocational interests. *Dissertation Abstracts International Section A.: Humanities and Social Sciences, 64* (7-A), 2463. (UMI No. AAT3098455).
- Schaub, M. (2005, August). *Psychometric Evaluation of the Learning Experiences Questionnaire*. Poster presented at annual meeting of the American Psychological Association, Washington, D. C.
- Schaub, M. & Tokar, D. M. (2005). The role of personality and learning experiences in social cognitive career theory. *Journal of Vocational Behavior, 66*, 304-325.
- Sheu, H.-B., Lent, R. W., Brown, S. D., Miller, M. J., Hennessy, K. D., & Duffy, R. D. (2010). Testing the choice model of social cognitive career theory across Holland themes: A meta-analytic path analysis. *Journal of Vocational Behavior, 76*, 252-264.
- Silvia, P. J. (2003). Self-efficacy and interest: Experimental studies of optimal incompetence. *Journal of Vocational Behavior, 62*, 237-249.
- Smith, P. L., & Fouad, N. A. (1999). Subject-matter specificity of self-efficacy, outcome expectancies, interests, and goals: Implications for the social-cognitive model. *Journal of*

- Counseling Psychology*, 46, 461-471.
- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation Models. In S. Leinhardt (Ed.), *Sociological Methodology*, 1982 (pp.290-312). Washington, DC. American Sociology Association.
- Sprinthall, R. C. (2000). *Basic statistical analysis*. (6th ed.). Boston: Allyn and Bacon.
- Stringer, D. M., & Duncan, E. (1985). Nontraditional occupations: A study of women who have made the choice. *Vocational Guidance Quarterly*, 33, 241-248.
- Swan, K. C. (2005). Vocational interests (The Self-Directed Search) of female carpenters. *Journal of Counseling Psychology*, 52, 655-657.
- Swanson, J. L. (1993). Integrated assessment of vocational interests and self-rated skills and abilities. *Journal of Career Assessment*, 1, 50-65.
- Swanson, J. L., Daniels, K. K., & Tokar, D. M. (1996). Assessing perceptions of career-related barriers: The Career Barriers Inventory. *Journal of Career Assessment*, 4, 219-244.
- Swanson, J. L. & Fouad, N. A. (1999). *Career Theory and Practice: Learning through case Studies* (p. 253). Thousand Oaks: Sage.
- Swanson, J. L., & Gore, P. A., Jr. (2000). Advances on vocational psychology theory and research. In S. D. Brown & R. W. Lent (Eds.), *Handbook of Counseling Psychology* (3rd ed.) (pp. 233-269). New York: Wiley.
- Swanson, J. L., & Woitke, M. B. (1997). Theory into practice in career assessment for women: Assessment and interventions regarding perceived career barriers. *Journal of Career Assessment*, 5, 443-462.
- Thompson, M. N., & Dahling, J. J. (2012). Perceived social status and learning experiences in Social Cognitive Career Theory. *Journal of Vocational Behavior*, 80 (2), 351-361.

- Tokar, D. M., & Jome, L. M. (1998). Masculinity, vocational interests, and career traditionality: Evidence for a fully mediated effect. *Journal of Counseling Psychology* 45 (4), 424-435.
- Tokar, D. M., Thompson, M. N., Plaufcan, M. R., & Williams, C. M. (2007). Precursors of learning experiences in Social Cognitive Career Theory. *Journal of Vocational Behavior*, 71 (3), 319-339.
- Tracey, T. J. G. (1997). The structure of interests and self-efficacy expectations: An expanded examination of the spherical model of interests. *Journal of Counseling Psychology*, 44, 32-43.
- Tracey, T. J. G. (2002). Development of interests and competency beliefs. *Journal of Counseling Psychology*, 49, 148-163.
- Tracey, T. J., & Rounds, J. (1996). Spherical representation of vocational interests. *Journal of Vocational Behavior*, 48, 3-41.
- U. S. Bureau of Labor Statistics (2012). *Labor statistics from the current population survey. A profile of the working poor, 2012*. Retrieved November 5, 2012, from <http://www.bls.gov/cps/cpswp2010.pdf>
- U. S. Bureau of Labor Statistics (2012). *Usual weekly earnings of wage and salary workers, 2012*. Retrieved November 2, 2012, from <http://www.bls.gov/news.release/wkyeng.htm>
- U. S. Department of Labor, Women's Bureau. (2010). *Nontraditional occupations of employed women in 2010, Washington, D. C.* Retrieved September 17, 2012, from http://www.dol.gov/wb/stats/NontraJobs_2010.htm
- Vondracek, F. W., Lerner, R. M., & Schuelenberg, J. E. (1986). *Career development: A lifespan developmental approach*. Hillsdale, NJ: Erlbaum.

Warner, R. M. (2013). *Applied statistics from bivariate through multivariate techniques*.

Thousand Oaks, CA: *Sage* pp. 645-685.

Wheeler, K. G. (1983). Comparisons of self-efficacy and expectancy models of occupational preferences for college males and females. *Journal of Occupational Psychology*, 56, 73-78.

Williams, C. M. & Subich, L. M. (2006). The gendered nature of career related learning experiences: A social cognitive career theory perspective. *Journal of Vocational Behavior*, 69, 262-275.

APPENDICES

APPENDIX A

REPORT FROM CLEVELAND STATE UNIVERSITY INSTITUTIONAL
REVIEW BOARD FOR THE PROTECTION OF HUMAN SUBJECTS

APPENDIX B
INFORMED CONSENT

CONSENT FORM

Women Pursuing Nontraditional Careers: A Social Cognitive Career Theory Perspective.

My name is **Julie Ericksen**. For many years I served as career counselor at **Hard Hatted Women**. I am currently a doctoral student at Cleveland State University and am writing a dissertation on the topic of women pursuing nontraditional careers in trades and construction. There is currently very little research on women who want to work in these types of jobs. I believe that women who have the interests and abilities to participate in these occupations should have that opportunity. However, a nontraditional career path for women can be a challenging one. I am hopeful that this study will serve to advance the cause of women and girls who want to have a job that provides a good income and work satisfaction in construction and trades.

Your participation in this study will involve the completion of the demographic questionnaire and the surveys enclosed. Approximate completion time is 45 minutes.

Your confidentiality will be protected throughout the study. Any data obtained from you through the questionnaire packet will be kept confidential and will not be viewed by anyone but myself and my advisor. All identifying information will be retained in a locked cabinet in my home. The data will be kept for three years and will be destroyed at completion of the project.

Participation is completely voluntary. There are no consequences for not participating. Participation in this study involves no risk to you. Your prompt reply **within two weeks** is most crucial to me and the completion of this project. **You will receive \$5.00 from me upon the receipt of your completed surveys.**

For further information regarding this research please contact Dr. Donna Schultheiss at 216-687-5063, e-mail: dschultheiss@csuohio.edu If you have any questions about your rights as a research participant you may contact the Cleveland State University Institutional Review Board at 216-687-3630.

There are two copies of this letter. Please sign one and return it with the surveys. The other copy is for your records. I would be most grateful if you would participate in this study and I thank you in advance for your time and support.

Julie Ericksen
330-242-1203

I am 18 years or older and have read and understood this consent form and agree to participate.

Signature: _____ Print name _____

Date: _____

APPENDIX C
DEMOGRAPHIC/DESCRIPTIVE INFORMATION

DEMOGRAPHIC/DESCRIPTIVE QUESTIONNAIRE

Please provide the following background information.

Your answers to the following questions are entirely confidential and will not identify individuals. All information will be coded and used for research purposes only.

1. What is your age? _____
2. What is your marital status?
Never Married_____ Married_____ Separated_____ Divorced_____ Widowed_____
Living Together_____
3. What is the highest grade level or college you have completed?
1-8th_____ junior high_____ highschool_____ technical school_____ some college_____
college degree_____ graduate degree_____
4. What is your race/ethnicity?
White, not of Hispanic Origin_____ Black, not of Hispanic Origin_____ Hispanic_____
American Indian or Alaskan Native_____ Asian or Pacific Islander_____
5. Number of children living with you under 18 years of age ?_____ Ages and
Gender?_____
6. What is your current job title?_____
7. Brief description of current job_____
8. Other work experience? Please list & describe_____
9. What is your total household income?
\$9,000 or below_____ \$9,001 to \$20,000_____ \$20,001 to \$40,000_____
\$40,001 to \$60,000_____ greater than \$60,001_____
10. Number of years & months since you completed the Hard Hatted Women Pre-
apprenticeship Training Program? Years_____ Months_____

APPENDIX D

LEARNING EXPERIENCE QUESTIONNAIRE
(Schaub, 2004)

Using the following scale, write the number corresponding to your response on the line next to the statement. Please respond to ALL of the statements.

1	2	3	4	5	6
Strongly Disagree	Disagree	Slightly Disagree	Slightly Agree	Agree	Strongly Agree

- _____ 1. I have made simple car repairs.
- _____ 2. I have become uptight while trying to repair something that was broken.
- _____ 3. People I respect have urged me to learn how to fix things that are broken.
- _____ 4. I have observed members of my family build things.
- _____ 5. I have made repairs around the house.
- _____ 6. I have become nervous when working on mechanical things (e.g., appliances).
- _____ 7. I have been successful when I used tools to work on things.
- _____ 8. I watched people whom I respect work in the outdoors.
- _____ 9. Teachers I admired encouraged me to take classes in which I can use my mechanical abilities.
- _____ 10. I have felt uneasy while using tools to build something.
- _____ 11. I observed people whom I respect repair mechanical things.
- _____ 12. While growing up, I watched adults whom I respect fix things.
- _____ 13. I have felt anxious while performing basic repairs on a car.
- _____ 14. I have done a good job at things that involved physical labor (e.g., landscaping).
- _____ 15. I remember feeling anxious while working on something that required manual labor.
- _____ 16. I observed people I admire work in a garden.
- _____ 17. While growing up, adults I respected encouraged me to work with tools.
- _____ 18. I have done well in building things.
- _____ 19. People whom I look up to have urged me to pursue activities that require manual dexterity.
- _____ 20. Family members have encouraged me to pursue activities that involve working outdoors.

APPENDIX F
OCCUPATIONAL SELF-EFFICACY BELIEFS

SELF-ESTIMATIONS
(Gore & Leuwerke, 2000)

Instructions: For each of the occupations listed below, please indicate whether or not you have the ABILITIES TO BECOME a(n)_____. For EACH YES ANSWER, indicate how sure you are on the 9-point scale.

Occupation	Could you become a(n)		If yes, how sure are you								
			Completely Unsure						Completely Sure		
Airplane Mechanic	Y	N	1	2	3	4	5	6	7	8	9
Firefighter	Y	N	1	2	3	4	5	6	7	8	9
Auto Mechanic	Y	N	1	2	3	4	5	6	7	8	9
Carpenter	Y	N	1	2	3	4	5	6	7	8	9
Fish and Wildlife Specialist	Y	N	1	2	3	4	5	6	7	8	9
Tree Surgeon	Y	N	1	2	3	4	5	6	7	8	9
Truck Driver	Y	N	1	2	3	4	5	6	7	8	9
Surveyor	Y	N	1	2	3	4	5	6	7	8	9
Construction Inspector	Y	N	1	2	3	4	5	6	7	8	9
Radio Operator	Y	N	1	2	3	4	5	6	7	8	9
Bus Driver	Y	N	1	2	3	4	5	6	7	8	9
Locomotive Engineer	Y	N	1	2	3	4	5	6	7	8	9
Machinist	Y	N	1	2	3	4	5	6	7	8	9
Electrician	Y	N	1	2	3	4	5	6	7	8	9

APPENDIX G
OCCUPATIONAL OUTCOME EXPECTATIONS

OUTCOME EXPECTATIONS
(Gore & Leuwerke, 2000)

Instructions: For each of the occupations listed below imagine what the consequences of becoming a(n)_____. For each occupation, indicate HOW DESIRABLE THOSE CONSEQUENCES ARE FOR YOU on the 9-point scale.

Occupation	How desirable are the Consequences of becoming a(n)								
	Not Very Desirable							Very Desirable	
Airplane Mechanic	1	2	3	4	5	6	7	8	9
Firefighter	1	2	3	4	5	6	7	8	9
Auto Mechanic	1	2	3	4	5	6	7	8	9
Carpenter	1	2	3	4	5	6	7	8	9
Fish and Wildlife Specialist	1	2	3	4	5	6	7	8	9
Truck Driver	1	2	3	4	5	6	7	8	9
Radio Operator	1	2	3	4	5	6	7	8	9
Bus Driver	1	2	3	4	5	6	7	8	9
Machinist	1	2	3	4	5	6	7	8	9
Electrician	1	2	3	4	5	6	7	8	9

APPENDIX H
REALISTIC INTERESTS SCALE

REALISTIC INTERESTS
(Betz & Schifano, 2000)

Using the following scale, write the number corresponding to your response on the line next to the statement. Please respond to ALL of the statements.

- | | 1 | 2 | 3 |
|-----------|---------|-------------|---|
| | Dislike | Indifferent | Like |
| _____ 1. | | | Take a course in self-defense |
| _____ 2. | | | Get a pilot's license |
| _____ 3. | | | Plant a vegetable garden |
| _____ 4. | | | Drive a race car |
| _____ 5. | | | Play an individual sport like tennis or golf |
| _____ 6. | | | Rewire a lamp |
| _____ 7. | | | Nature activities such as camping hiking |
| _____ 8. | | | Build a shelf |
| _____ 9. | | | Repair a bicycle |
| _____ 10. | | | Run an obstacle course |
| _____ 11. | | | Take a course in CPR or life-saving |
| _____ 12. | | | Play a team sport like volleyball or softball |
| _____ 13. | | | Mow the lawn |
| _____ 14. | | | Play water sports (e.g., swim, sail, canoe) |
| _____ 15. | | | Build a picture frame |