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The effect of the Kuder Career Planning System used in a classroom setting on perceived career barriers, coping self-efficacy, career decidedness, and retention

Asha Stephen
Iowa State University

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Asha Stephen

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Major: Psychology (Counseling Psychology)

Program of Study Committee:
Lisa M. Larson, Major Professor
Patrick I. Armstrong
Mark R. Becker
Levon T. Esters
Loreto R. Prieto
Meifen Wei

Iowa State University

Ames, Iowa

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TABLE OF CONTENTS

LIST OF TABLES

CHAPTER ONE: INTRODUCTION

In a national survey, almost 50% of undergraduate freshmen reported not feeling adequately prepared to make career decisions and reported a desire for career-related guidance (Hannah & Robinson, 1990). Following the boom in information technology and widespread use of the computers, there has been an increasing trend in providers of career guidance to use computers in order to assist individuals with their career exploration process (Malone, Miller, & Hargraves, 2001). Computer-assisted career guidance systems (CACGS) are a category of career tools that assist individuals to engage in self-directed vocational exploration. Usually, CACG systems integrate various career guidance applications (e.g., self-assessments, occupation matching, occupational information databases) (Offer, 1997).

Through rapid technological innovations, and the boom in the accessibility and use of the internet, the use of CACGS has increased significantly both in the United States and in other countries (Harris-Bowlsbey & Sampson, 2001; Watts, 1993). In the U. S., various forms of CACGS are widely used within many K-12 institutions, colleges, and universities (Mariani, 1996). The extensive use of these CACGS for career guidance in educational institutions makes it important to study the effectiveness of these systems in providing career guidance services. However, while a considerable amount of research has been conducted on user satisfaction related to these CAGCS, very little research has examined the effectiveness of such systems (Bloch, 2006; Fowkes & McWhirter, 2007; Hughes & Karp, 2004; Sampson & Lumsden, 2000). Reile and Harris-Bowlsbey (2000) outlined the specific ways in which internet-based career guidance systems can be used to support planning. These included the use of vocational assessments to achieve a higher

degree of self-awareness, identification of occupational alternatives, online databases that provide occupational and labor market information, and job-search tools.

This study examined the use of one such CACGS: the Kuder Career Planning System (KCPS; Kuder Inc., 2007). In addition to the above-described functions, the KCPS also presents its users with additional career-planning tools such as scholarship search, online educational planners, resume builders, and links to state and national job banks.

The CACGS outcome research literature has been criticized for several weaknesses. Fowkes and McWhirter (2007) outline the various shortcomings of CACGS literature. Firstly, the CACGS literature has been dominated by studies focused on user satisfaction rather than examining career development outcomes. A second critical shortcoming of this area of research has been the volume of studies that employ single-group designs that assess change over time (e.g., Gati, Saka, & Krausz, 2001; Kivlighan, Johnston, Hogan, & Mauer, 1994), and don't allow for the examination of alternate explanations. Also, the majority of CACGS research findings are based on samples of individuals who are typically are not required to use the CACGS as part of a curriculum. All the above drawbacks are addressed by this study.

The purpose of this study was to assess the effect of the use of a CACGS in a classroom setting on the career decision making process of undergraduate students who are struggling with career indecision. Specifically, this study examined whether the use of the KCPS within a classroom setting significantly influences students' perceived career barriers, career choice status, coping self-efficacy, and retention compared to students who do not use the KCPS.

Fowkes & McWhirter (2007) outline guidelines in the selection of outcome variables used to evaluate CACGS literature. They recommend that the choice of outcome variables should be "(a) theoretically driven, (b) consistent with the explicit goals of the CACGS, (c) developmentally appropriate, (d) sensitive to the degree of change expected from the intervention, and finally should (e) target outcomes valued by the school administrators, staff, parents, and students" (Fowkes & McWhirter, 2007, pp. 396). The four outcomes examined in this study (i.e., career decidedness, perceived career barriers, coping self-efficacy, and retention) were selected with these criteria in mind. Detailed evidence as to the theoretical bases of selecting these outcomes will be presented in the next chapter. The goals of the KCPS are consistent with the selection of these outcomes and include providing individuals assistance with identifying their interests, exploring their vocational options, and planning for career success using interests, skills, and work values assessments, and comprehensive internet-based career exploration capabilities. The present study examined the facilitated use of the KCPS in conjunction with a career development course that also attends to the students' developmental needs. Finally, all the outcomes of interest, and especially university retention, are valued by university administrators and staff, as well as by parents and students. This study has a quasi-experimental pretest-posttest control group design. Furthermore, the intervention used requires the facilitated use of a CACGS in a classroom setting. In addition, this study examined the university retention of students who use the KCPS compared to students who do not.

Very little, if any research has examined the effect of a career intervention involving the facilitated use of a CACGS in a classroom setting. The results of this study

provide information about the effects of using such a multimodal career intervention. This study will be useful in providing university career services offices and the developers of career planning courses information about the effects of incorporating CACGS use in their services and classrooms. The implications of such an intervention for retention is of note for educational institutions as well as for students enrolled at these institutions. From a career counseling perspective, this study will be useful in terms of gaining insight into the facilitated use of a CACGS, and the implications of its use in group career counseling, or career development workshop settings.

CHAPTER TWO: LITERATURE REVIEW

This chapter outlines the major theories and discusses the empirical research findings relevant to this study. I will provide the conceptual foundation of the study including the SCCT (Lent et. al., 1994) with emphasis on the contextual factors that influence career choice. I will discuss vocational theories emphasizing the importance of considering the person-environment fit in career decision making. Also discussed are various career decision-making models. Next, I shall review the career outcomes that are examined in this study, namely career decidedness, perceived career barriers, coping self-efficacy, and retention. I will review the vocational literature associated with effective career interventions that have impacted career decidedness, perceived career barriers, coping self-efficacy, and retention. Finally, I will examine the use of computer assisted career guidance systems as a career intervention.

Conceptual Foundations

Social Cognitive Career Theory

The social cognitive theory, (SCT; Bandura, 1986) proposes that human behavior is a dynamic and reciprocal interaction of personal factors, behavior, and the environment. The SCT also posits that an individual's behavior is influenced by both personal and environmental factors. Also, SCT hypothesizes that people form outcome expectancies, i.e., expectations of the outcomes of their behavior, through the observation of the consequences of similar behavior in themselves and others.

The social cognitive career theory (SCCT; Lent, Brown, & Hackett, 1994) proposes that self-efficacy beliefs, vocational interests, performance goals, and outcome expectancies influence individuals' vocational choices and development. In addition,

other contextual factors (e.g., gender, race, ethnicity, physical health, disability, socio-economic status), also influence career development. The SCCT offers a unifying framework for several vocational theories (Lent et. al., 2002). The SCCT theorizes that the interaction between the individual and the environment is bidirectional and recognizes personal agency in career development. While most person-environment fit theories examine stable person- and environment- traits, the SCCT focuses on the dynamic aspects of the individual and the environment (Swanson & Gore, 2000).While this theory is widely supported in extant literature (e.g. Betz, Harmon, & Borgen, 1996; Betz & Hackett, 1997; Fouad & Smith, 1996; Lapan, Shaughnessy, & Boggs, 1996; Smith & Fouad, 1999). Lent, Brown, and Hackett (2000) argued that more research needs to focus on the contextual supports and barriers to vocational choice and development.

A considerable amount of vocational psychology research has focused on barriers to career development (e.g. Blustein et. al., 1997; Brownlow et. al., 2002; Creed & Patton, 2003; Creed, Prideaux, & Patton, 2005; Luzzo, 1993, 1995, 1996; McWhirter, 1997; McWhirter, Torres, & Rasheed, 1998; Swanson et. al., 1996; Swanson & Tokar, 1991a, 1991b). Lent and colleagues (2000) advanced challenges to the existing view of how career barriers were being researched and proposed that career barriers might be intrapersonal as well as environmental variables and that barriers might be task-specific as well as generalized. A

While the identification of career barriers for various populations and its effects of career development continues to be studied (e.g. Brownlow et. al., 2002; Creed & Patton, 2003; Creed, Prideaux, & Patton, 2005), there is very little research that examines the

impact of career interventions on the career barriers of individuals. Research on computer-based career interventions and their impact on career barriers is even scarcer.

Person-Environment Fit

One of the most widely researched and accepted vocational theories is Holland's theory of personality and vocational choices (Holland, 1985, 1997). Holland's theory proposes that people actively "seek" environments that are similar to their "adjustive orientations". Holland's theory describes individuals' dispositions in terms of six personality or interest types (realistic, investigative, artistic, social, enterprising, or conventional). Similarly, work environments are also classified on similar dimensions. The interaction of individual personality types with the kinds of environment is hypothesized to predict behavior.

The central tenet of Holland's theory is the idea of the person-environment fit (P-E fit). The concept of P-E fit is one of the most widely researched in the area of vocational psychology (Swanson & Gore, 2000). There has been much empirical evidence supporting the notion of the P-E fit. Hansen and Sackett (1993) reported that 70% of undergraduate students had high degrees of fit between their chosen major and reported interests. Also, the congruence between person and environment significantly impacts the success of college students (Feldman, Smart, & Ethington, 1999; Smart et. al., 2000).

A variety of career assessments such as the Strong Interest Inventory (SII; Donnay, Morris, Schaubhut, & Thompson, 2005), the Self-Directed Search (SDS; Holland, Fritzsche, & Powell, 1994), the Vocational Preference Inventory (VPI; Holland, 1985), the Position Clarification Inventory (PCI; Gottfredson & Holland, 1991), the

Kuder Career Search with Person Match (KCS; Zytowski, 2001), and various other measures have their developmental bases in the P-E fit theories. These assessments are directed at matching individual interest themes with corresponding occupational themes for optimal P-E fit.

From a counseling perspective, these inventories provide a helpful way of facilitating vocational self-exploration in individuals struggling with career indecision or dissatisfaction. Luzzo and Day (1999) found that undergraduate students who completed the SII and received social cognitive-based feedback and interpretation reported higher levels of career decision-making self-efficacy compared to students who did not. Holland's theory also emphasizes the importance of acquiring occupational information – "Persons with more information about occupational environments make more adequate choices than do persons with less information" (Holland, 1959, p. 40-41). Therefore, career interventions that provide self-exploration assessments as well as information about the occupational alternatives identified would likely enhance the career decision-making process.

Models of Career Decision-Making

Most career-related decisions made by an individual have significant, long-ranging implications for the individual (Gati & Asher, 2001). The SCCT states that a variety of individual and environmental factors are involved in this decision making process. Various theories that attempt to describe the process of career decision making have been proposed. These theories focus on various aspects of career decision-making such as the career decision-making style, decision-status, and the decision-making process.

Harren (1974) proposed a career decision-making model which categorized decision-making styles on the two dimensions of: degree of active occupational exploration, and the degree of reliance on cognitive or intuitive processes. Furthermore, Harren (1974) proposed the career decision-making styles of rational (logical and systematic information seeking), intuitive (not seeking information actively, but relying on self-awareness and emotional processes), and dependent (passive, making career decisions based on the opinions and expectations of others). Career decision making is influenced by vocational self-awareness as well as knowledge about the world of work (Gati & Saka, 2001).

A vocational decision-making model was proposed by Jones and Chenery (1980) based on the dimensions of decidedness and comfort level with indecision. This model classified individuals into four categories: decided-comfortable, undecided-comfortable, decided-uncomfortable, and undecided-uncomfortable. In a cluster-analysis of 390 undergraduate college students, Wanberg and Muchinsky (1992) found that compared to the other three clusters, students in the decided-comfortable cluster reported the highest self-esteem, sense of identity, self-clarity, and a sense on control over their lives. Also, compared to the other three clusters, the students in the undecided-uncomfortable cluster were most likely to report the lowest self-esteem, sense of identity, self-clarity, and a sense on control over their lives.

Central to the career decision-making process is the need to find occupational alternatives that are compatible with the individual's personality. However, there is an overwhelming abundance of occupational information available in today's world, making it impossible to explore all the available information about all the possible alternatives.

Gati and Asher (2001) proposed a career decision-making model that divides the process of making career decisions into three stages, each with separate goals.

The first stage of Gati and Asher's (2001) Prescreening – In-depth Exploration – Choice (PIC) model involves "prescreening" a set of potential alternatives systematically based on the individual's preferences. This reduces the possible occupational choices to a smaller set of "promising alternatives". The second stage of this model involves "in-depth exploration" of the promising alternatives using continued systematic exploration, and reducing them to a set of a few "suitable alternatives". The final stage of this model involves the actual "choice" of the "most suitable alternative" (Gati & Asher, 2001). Career interventions based on the PIC model would involve methodical and organized self-exploration as well as exploration of the world of work. The Kuder Career Planning System, an online career guidance system facilitates career exploration by providing online resources to assist with all three stages of this model.

Relevance to Study

Based on the above discussion, while developing a career intervention, it is important to consider social cognitive variables that influence vocational development, such as the individual's self-efficacy and contextual factors such as perceived career barriers. Also, such a career intervention would probably be more effective if the occupational information is delivered with a view towards determining person-environment fit. An individual's career development is a complex process. Any intervention that is designed to assist the career decision-making process would therefore need to consider multiple aspects of the individual and his/her environment. The various

career development theories and models discussed above provide a conceptual foundation for doing so.

Career Outcomes

Vocational psychology literature has focused on various aspects of the career decision-making process. The effectiveness of treatments and interventions has been studied for various career-related outcomes. Following is a discussion of the career outcomes of interest to this study.

Career Decidedness

The facet of an individual's career development that lends itself readily to research is perhaps the individual's career decidedness which describes the extent to which the individual feels resolved about his/her career choice. Specifically, career decidedness comprises two aspects: career certainty which focuses on commitment to a career; and career indecision which focuses on the difficulties experienced in making career choices (Osipow, Carney, Winer, Yanico, & Koschier, 1976). Osipow (1999) reviewed the career decision-making literature and described career indecision as a developmental phase in the context of varied life events and transitions, during which the individual expresses the inability to commit to a career choice.

Creed, Prideaux, and Patton (2005) surveyed 212 eighth grade students about their career decidedness, and again after two years in the 10th grade. They classified the students into four groups across the two times (decided/decided, undecided/undecided, undecided/decided, and decided/undecided), and found significant differences among the groups. There were more female students in the undecided/undecided group any of the other three groups. Also, girls reported higher levels of career development knowledge

than boys. Of the decided/decided group, nearly half of the students reported having previous paid work experience compared with the other three groups, and especially compared with the undecided/undecided group. Furthermore, the decided/decided group were found to have greater levels of career development attitude (calculated by summing the career planning attitudinal subscale and the career exploration attitudinal subscale of the Career Development Inventory [CDI; Super, Thompson, Lindeman, Jordaan & Meyers, 1981]) than the undecided/decided (p = .001) and the undecided/undecided groups (p < .001). Also, the decided/decided group were found to have greater levels of career decision-making self-efficacy than the undecided/decided (p = .04), and the undecided/undecided groups (p = .001). The decided/decided group had higher reported self-esteem than the undecided/undecided group (p = .02).

Betz and Voyten (1997) found in a sample of 350 college undergraduates that higher levels of career decision making self-efficacy were positively related to lower levels of career indecision for both men and women (p < .001). Higher levels of career indecision were also linked to higher levels of exploratory intentions in women, but not in men. Furthermore, career indecision, and career decision making self-efficacy accounted for 33% (women) – 34% (men) of the variance in reported intentions to engage in occupational exploration.

Various individual factors influence the degree of career decidedness of a person. Saunders, Peterson, Sampson, and Reardon (2000) found that in a sample of 215 undergraduate college students, vocational identity, state anxiety, trait anxiety, and perceived locus of control accounted for 59% of variation in career indecision. A further 10% of the variation was explained by depression and dysfunctional career thoughts

(such as “I can’t be satisfied unless I can find the perfect occupation for me.”). Self-oriented perfectionism and fear of commitment were significant predictors of career indecision (Leong & Chervinko, 1996).

The career decidedness of individuals has been of great interest to vocational psychologists, and various career assessments have been developed that focus on career decision status and factors that might influence certainty or indecision. Osipow (1999) provides a review of various assessments that attempt to measure career decidedness. The Career Decision Scale (CDS; Osipow et. al., 1976) is perhaps the most widely used of these. The CDS measures two facets of career decidedness: career certainty and career indecision. Another measure, the Career Factors Inventory (CFI: Chartrand, Robbins, Morrill, & Boggs, 1990), is a multidimensional scale with two information factors (occupational information, self-awareness), and two personal factors (general indecisiveness, and career choice anxiety).

While the majority of career decidedness research has been studied with predominantly Caucasian student populations (McWhirter, Rasheed, & Crothers, 2000), there has also been a lot of research that focuses on the career decidedness of diverse populations. Rojewski (1994) studied types of career indecision (undecided, undecided-anxious, and chronically indecisive), and found that in rural adolescents, sex and ethnicity were not significant factors in determining the career indecision type. Alston and McCowan (1998) studied the differences between the career decidedness of African American undergraduate women enrolled in historically Black colleges and universities, and those enrolled in predominantly White colleges and universities. They found that at the historically Black universities, there were no significant differences between the

career certainty of senior-year and freshman-year women. On the other hand, senior-year African American women enrolled at predominantly White universities reported significantly higher levels of career certainty than their freshman-year counterparts. The authors hypothesized that this difference might be because of the greater opportunities that participants had of finding positive mentors and role models at the predominantly white colleges and universities.

In career decidedness research with lesbian, gay, bisexual, and transgendered (LGBT) populations, Etringer, Hillerbrand, and Hetherington (1994) found that when comparing heterosexual and LGBT individuals, lesbian women reported the lowest and gay men reported the highest career uncertainty. Also, heterosexual women reported the highest career dissatisfaction, followed by gay men. The age of the vocational decision-maker also does not appear to be related to career indecision. No significant age-related differences were observed between the average career decidedness of 7th-grade, 10th-grade, and 12th-grade students (Lounsbury, Hutchens, & Loveland, 2005).

Reduction of Perceived Career Barriers

Career barriers are defined as "events or conditions either within the person or environment that make career progress difficult" (Swanson & Woitke, 1997, p. 446). London (1997) described a career barrier as comprising certain objectively defined characteristics of the barriers (e.g., lack of a positive role model), along with the contextual meaning an individual attaches to the barrier (e.g., the person variables such as low self-efficacy, and environmental factors such as disapproval of significant other, that determine how the individual reacts to the lack of role models). Due to the partly-subjective nature of such a contextual factor, research has focused on the role of

"perceived" barriers in career decision-making and choice. Thus, perceived career barriers are factors that the person believes currently exist or are likely to be encountered in the future. A factor might be a "perceived career barrier" whether or not it is factually a career-barrier (Luzzo, 1999). The existence of perceived career barriers cognitively, affectively, and behaviorally impacts career decision-making and development (London, 1997, 2001). Within the SCCT framework, it is possible for one or more cognitive-person variables to be perceived as barriers (e.g. low self-efficacy, negative outcome-expectancy) (Swanson et. al., 1996).

Ample empirical evidence exists to indicate that high-school and college students perceive several significant barriers to achieving their personal career goals such as social attitudes that are contrary to the individual's preferences (Brownlow et. al., 2002; Burlew & Johnson, 1992; Luzzo, 1995; Luzzo & McWhirter, 2001; McWhirter, Torres, & Rasheed, 1998; Swanson & Tokar, 1991a), low self-efficacy, (Luzzo, 1993; 1996), sexual discrimination (Burlew & Johnson, 1992; Luzzo & McWhirter, 2001; McWhirter, 1997), racial discrimination, (Burlew & Johnson, 1992; Luzzo, 1993; Luzzo & McWhirter, 2001; McWhirter, 1997; McWhirter, Torres, & Rasheed, 1998), and lack of social support (Burlew & Johnson, 1992; Swanson & Tokar, 1991a).

One of the prominent self-report inventories that measure perceived career barriers is the Career Barriers Inventory (CBI; Swanson & Tokar, 1991b). The CBI is a 102-item multidimensional self-report instrument that taps into a broad domain of perceived barriers over a broad range of career-related scenarios (e.g., picking a career, discrimination at work, family-work conflicts). The 102 CBI items form 18 factorially derived scales. The CBI was subsequently revised and shortened to create the Career

Barriers Inventory-Revised (CBI-R; Swanson, Daniels, & Tokar, 1996). The CBI-R identifies 13 categories of factors that may be perceived as barriers to career development and success (i.e., sex discrimination, lack of confidence, multiple-role conflict, conflict between children and career demands, racial discrimination, inadequate preparation, disapproval by significant others, decision-making difficulties, dissatisfaction with career, discouragement from choosing nontraditional careers, disability/health concerns, job market constraints, and difficulties with networking/socialization).

Another barrier to making informed career decisions is the lack of available information related to occupational alternatives (Gati, Saka, & Krausz, 2001). Harris and Dewdney (1994) identified various categories of barriers to information access: not knowing what information is needed, not knowing where to find information that is needed, and lack of awareness of the existence of sources of information. In a study with 699 Canadian high-school students, 59.7% of the participants reported that they found it difficult to gather all the information they needed to make a career decision, and 39.7% of the participants indicated that they had to access too many different sources of information in order to find the answers they needed. In addition 23.4% of the participants reported low confidence related to information seeking (Julien, 1999). Age was found to be a significant predictor of career decision making knowledge in Australian high school students with older students reporting higher amounts of knowledge about the world of work than younger students (Creed & Patton, 2003). In the same study, female students reported more career-related knowledge than male students (Creed & Patton, 2003).

Historically, women have encountered numerous educational and career-related barriers such as sex-role socialization, occupational segregation, sex discrimination at the workplace, perceived need to "prove themselves" or work harder in nontraditional fields, and lack of role models (Brownlow et. al., 2002; Jussim & Eccles, 1992; Nauta, Epperson, & Kahn, 1998). While Caucasian male and female college students perceived similar career barriers (e.g., choice of major, career-family balance), there exist gender differences in the relevance of the kinds of career barriers (Swanson & Tokar, 1991a, 1991b). Women reported greater concern about discrimination in the workplace, and the effect that raising children would have on their careers. On the other hand, men reported greater concern related to career barriers such as physical disabilities and sex-role conflicts (Swanson & Tokar, 1991a, 1991b).

In a study with 286 undergraduate students, Luzzo and McWhirter (2001) found that women reported more perceived career barriers than did men (d = .41), but did not report higher perceived educational barriers (d = .09). However, in the same study, students belonging to ethnic minority groups reported perceiving more career barriers (d = .90), and educational barriers (d = .50) than their Caucasian counterparts. Furthermore, students belonging to ethnic minority groups reported lower self-efficacy in coping with these perceived career barriers (d = .50), and educational barriers (d = .28) than did Caucasian students. No significant sex differences in coping self-efficacy for perceived career barriers (d = .10) or educational barriers (d = .03) were observed.

Burlew and Johnson (1992) in a study with 144 African American women in traditional and nontraditional occupations found that the women in the nontraditional career fields reported significantly less peer support than did the women in the traditional

career fields. Also, the women in the non traditional professions were also more likely than women in the traditional professions to mention limited access to political clout as a barrier to career success. Women in the nontraditional occupations cited family obligations as barriers to success more frequently than did women in the traditional occupations.

Luzzo (1993) found that perceived career barriers across several ethnicities included financial and study-skills related concerns. African-American students were most likely to perceive their ethnicity as a career barrier whereas Caucasian students were least likely to perceive ethnic identity as a career barrier (Luzzo, 1993). Latino(a) students were most likely to experience financial career-barriers whereas Asian-American students were most unlikely to have experienced financial career-barriers (Luzzo, 1993). Ali, McWhirter, and Chronister (2005) found that for high-school students from families of low socio-economic status (SES), higher social support (family and peers) was related to lower perception of barriers.

Very little research has been devoted to the study of the perceived career barriers of LGBT individuals. In a review of vocational psychology research with LGBT populations, Fassigner (1995) concluded that greater decisional difficulties may be anticipated for individuals of both genders when those people have less traditional gender-related attitudes and attributes. The perceived career barriers of LGBT individuals include non-traditional career-interests (e.g., fashion designer for gay men), and environmental factors (e.g., sexual discrimination at the workplace, homophobia) (Chung, 1995; Chung & Harmon, 1994; Etringer et. al., 1990).

Brown and Lent (1996) highlight the importance of the role that perceived barriers play in the career choice process by pointing out that despite high self-efficacy, congruent interests, and positive outcome expectancy, the perception of significant career barriers might hinder an individual from pursuing a specific career path. Albert and Luzzo (1999) found that perceived barriers impact career decision-making whether or not any factual basis for the perceived barrier exists. This highlights the importance of examining people's perceptions of career barriers and the role that they play in the formation of career decisions and pursuit of career goals.

Coping Self-Efficacy

The manner in which people deal with barriers to their career development might depend on their coping self-efficacy. Coping self-efficacy is the belief of an individual about his/her ability to effectively negotiate the obstacles that arise in the path of his/her career development (Bandura, 1986; Lent et. al., 1994). Vocational outcome expectations are influenced by coping self-efficacy beliefs, past career barrier experiences, and information about perceived barriers that has been obtained vicariously (Lent et. al., 2002). People who report high self-efficacy in a particular domain are less likely to perceive barriers within that domain, are more likely to perceive existing barriers as less daunting, and are less likely to be vulnerable to encountered barriers (Hackett & Byars, 1996). Also, individuals with high coping self-efficacy are more likely to view new situations as challenges while individuals with low coping self-efficacy are more likely to view the same situations as threats (Bandura, 1997).

Similar results were obtained by Lent and colleagues (2001) in a sample of 111 undergraduate students. They observed that coping self-efficacy was related negatively (*r*

= -.42) to perceived career barriers, and positively (r = .63) to career-related supports (e.g., peer approval, access to occupational information, encouragement from mentors). In addition, the researchers noted that coping self-efficacy predicted interests above and beyond task-specific self-efficacy. Ethnic minority undergraduate students, compared to their Caucasian counterparts reported lower coping self efficacy for career-related barriers (d = .50) (Luzzo & McWhirter, 2001).

In a qualitative study, 31 college students reported that participants reported a variety of ways in which they coped with the career barriers they encountered. These coping strategies included problem-focused methods, social support-seeking, cognitive restructuring/reframing, reliance on professional help, emotion-focused coping methods, and personal goal setting (Lent et. al., 2002).

Coping self-efficacy research is markedly scant. Lent and colleagues (2003) note that while much research has been devoted to perceived career barriers, most such research does not examine the coping self-efficacy related to these barriers. There is a need to understand the role that coping self-efficacy plays in the perception of career barriers (Hackett & Byars, 1996; Lent et. al., 2002; Luzzo & McWhirter, 2001; McWhirter et. al., 1998). Several researchers have suggested that given the pivotal role that coping self-efficacy plays in the career development process, it might be useful to develop career interventions targeted at strengthening coping self-efficacy beliefs (Albert & Luzzo, 1999; Lent et. al., 2005; Lent et. al., 2008; McWhirter et. al., 1998).

Also of particular note is a suggestion made by Lent, Brown, and Hackett (2000), that scales that measures of career barriers might be in part be measuring the coping self-efficacy of the responder, and have suggested that separate coping self-efficacy measures

be developed for use with barrier perception measures. Furthermore, Lent and colleagues (2000) also suggested that the use of such coping self-efficacy measures might afford a clearer understanding of the effect of perceived barriers on career choice by allowing the researcher to control for coping self-efficacy.

Student Retention

With student tuition and fees being a primary source of university funding, student retention has been a long-standing challenge that higher education institutions are continuously faced with (Braxton, Bray, & Berger, 2000). From 1983 to 2008, baccalaureate students have been retained in their first year at four-year universities at between 66.4% - 74% (ACT National Survey, 2008). Over the same period, the rate of completion of bachelor's degrees in five years or less has varied between 57.5% and 39.6%. In 2008, student retention (68%), and degree completion (40.3%) rates have been some of the lowest in the past few decades (ACT National Survey, 2008). Faced with such high rates of attrition, colleges and universities need to develop services for their students that would increase retention.

Student retention is dependent on the students' institutional experiences (Tinto, 1987). It follows that if dissatisfaction of students with the available resources (including career guidance programs) at a university influences the degree to which the university is able to retain its students. Sydow and Sandel (1998) suggested that retention programs at universities in addition to other strategies also employ programs that aim to help students develop attainable career goals. Very little research has investigated the effect of career-related interventions on student retention. Such research within the field of vocational

psychology is almost non-existent. The few studies located were published in journals of higher education and administration.

Coll and Stewart (2008) found that students who were considered at-risk for attrition (e.g., on academic probation, previously on academic suspension) reported significantly lower (d = .46) career decidedness than students who were not at risk. It has also been found that students who engage in career exploration are retained at higher rates that those who did not. Sidle and McReynolds (1999) studied a sample of 862 freshman undergraduate students who were enrolled in a freshman experience course. The curriculum of the course included such topics as planning a career, choosing a major, and learning skills to support academic success. Specifically, the course focused on values clarification, using career and personal interest inventories, and campus resources, in addition to learning academic skills. The researchers found that students who enrolled in such a course persisted to their second year of study, and were retained at a higher rate (p < .05) at the university than the students who did not enroll in the course. One year later, students who enrolled in this course were retained at a rate of 63%, compared with a 56% retention rate for students who did not enroll in this course.

While most universities incorporate career-related resources as part of the services provided to their students, the manner in which such support is given may vary (Swanson, 1995; Whiston et. al., 2003). While career counseling is useful, heavy case loads and the difficulty of identifying at-risk students makes it vital for universities to identify ways to collaborate with academic departments in increasing student retention (Archer & Cooper, 1999). Tinto (2002) recommended that as a strategy to increase retention, colleges and universities offer an introductory career exploration course for

students who are undecided about their college major. The use of computer assisted career guidance systems for career exploration is also recommended as a means of increasing retention (Flynn, 1990).

Interventions

Various kinds of career-related interventions have been employed to assist individuals in enhancing their career decidedness and reducing career indecision. These interventions may include career counseling, group counseling interventions, information-provision interventions, and other interventions that may or may not involve a career counselor (Swanson, 1995; Whiston et. al., 2003).

Effectiveness of Career Interventions

In general, research has found that career interventions are effective in yielding positive career decision outcomes (Whiston et. al., 2003). However, meta-analyses of career decision-making outcome research yield varying estimates about the extent of the effectiveness of career interventions. In an early meta-analysis of career intervention research (published between 1950 and 1982), Oliver and Spokane (1988) examined the outcome of career interventions on career-related outcomes such as career self-knowledge, career decision-making behaviors, and career decidedness, and found a large overall effect size of .82. Meta-analyses of studies published between 1983 and 1995 yielded a lower effect size of .45 (Whiston, Sexton, & Lasofff, 1998). More recent meta-analyses (including the studies from the two earlier meta-analyses) yielded only a low - medium effect size of .34 (Brown & Krane, 2000).

In a meta-analysis of career intervention research published between 1975 and 2000, Whiston, Brecheisen, and Stephens (2003) examined the effect of career

interventions on the same outcome variables as Oliver and Spokane (1988). In a comparison of effectiveness of various modalities of career interventions, they found that counselor-free career interventions were not as effective as those that included counselor-involvement such as individual test interpretation (d_+ = .27); group counseling (d_+ = .27); and group test-interpretation (d_+ = .31). Group interventions for career decision making were found to be more effective in structured workshop formats than in unstructured group career counseling formats (d_+ = .34). The efficacy of counselor involvement in career interventions is also demonstrated by the finding that interventions that employed the use of counselor involvement and computer applications were significantly more effective than those using computers alone (d_+ = .38).

Luzzo, Funk and Strang (1996) conducted an attributional retraining intervention which involved watching a videotape of individuals recounting the career development, the barriers they encountered, failures, persistence, and eventual successes. The researchers found that participants (60 undergraduate students) who participated in such an intervention, compared to a control group who did not participate in the intervention, reported significantly higher increases in their career decision making self-efficacy.

There is a remarkable dearth of research related to the effect of career interventions on perceived career barriers, and very few such interventions have been reported (Phillips & Imhoff, 1997). The literature about such interventions has mainly focused on the development of career interventions for women and for ethnic minority groups. Chartrand and Rose (1996) developed Project PROVE (Preventing Recidivism through Opportunities in Vocational Education; Chartrand & Rose, 1995), which is a 12-week career development program designed for female offenders scheduled to be

released into the community. Project PROVE focuses on two major career barriers encountered by this population: limited learning experiences and cognitive deficits (e.g., lack of social perspective, poor interpersonal problem solving skills). Specifically, Project PROVE focuses on enhancing occupational knowledge and vocational self-awareness in addition to decision-making and job-seeking skills. Discussions regarding the effectiveness of this intervention were not included by the researchers.

A successful intervention mirroring this was developed by Rea-Poteat and Martin (1991). In a two-week intensive summer program, adolescent girls were exposed nontraditional career fields, and underwent 80 hours of career-related and self-awareness building exercises (including counseling). At the completion of the program, 87% of the participants reported greater clarity about occupational alternatives, and 94% of the participants reported greater confidence in seeking information, and making a career decision.

Computer Assisted Career Guidance Systems (CACGS)

Over the past several decades, extensive use of computers, and increasingly the internet, has been made to assist individuals in self-directed vocational exploration (Behrens & Altman, 1998; Boyce & Raine, 2002; Malone et. al., 2001; Noll & Graves, 1996). The National Center for Education Statistics reported that between 1984 and 2002, the use of computer-based career resources increased from 27% to 57% among high school students (NCES, 2003). Boyce and Raine (2002) reported that career information is sought after via the internet by more than four million people each day. Furthermore, one in every five Americans reports having used the internet for researching occupational information (Boyce & Raine, 2002). Institutions of higher education have capitalized on

this trend by providing their students and distance learners with access to computer-based and internet-based career services (Djadali & Malone, 2004; Malone et. al., 2001).

For an undergraduate student, choosing a suitable major in college and charting a successful and rewarding career path involves considering various personal, societal, and environmental factors; and making a considered selection among the available options (Leppel, Williams, & Waldauer, 2001; Malgwi, Howe, & Burnaby, 2005; Maple & Stage, 1991). Orndorff and Herr (1996) reported that more than 50% of undergraduate college students change their major at least once. Hannah and Robinson (1990) reported that almost 50% of freshman undergraduates surveyed nationally reported not feeling adequately prepared to make career decisions and desiring career guidance. Also, more university students reported that they needed career development guidance than either academic or personal guidance (Weissberg, Berensten, Cote, Cravey, & Heath, 1982). Thus, it becomes of vital importance that colleges and universities provide their students with appropriate career guidance that they need through career-related resources such as career counseling, career development courses, career services offices, and advisors (Folsom & Reardon, 2003; Stevens & Lundberg, 1998; Yang, Wong, Hwang, & Heppner, 2002).

The sheer volume of the need for basic career guidance might makes it near impossible for universities and other educational institutions to provide all their students with individual career guidance. In order to provide their students easier access to career guidance resources, many educational institutions have increasingly turned to computer assisted assessment and exploration tools (Djadali & Malone, 2004; Malone et. al., 2001; Noll & Graves, 1996). Noll and Graves (1996) conducted a nationwide survey of career

centers, and found that 64% of the randomly sampled career centers reported using computerized career assessments and guidance.

Computer-assisted career guidance systems (CACGS) are interactive programs that individuals can autonomously use for purposes of career self-assessment and career exploration (Brown, 2003). Sampson (1997) classified a CACGS as a system of interrelated assessment, information, and option-generating subsystems which is often coupled with print and media-based support schemes. Offer (1997) described a CACGS as a "maxi" system that integrates one or more career guidance applications such as self-assessments, occupation matching, information dissemination, decision-making assistance, and resume-builders.

First developed in the 1960's, CACGS have evolved from stand-alone computer programs to highly interactive internet-based systems. Some of the well-known CACGS such as the System of Interactive Guidance and Information (SIGI; Educational Testing Service, 1985), the System of Interactive Guidance and Information Plus (SIGI PLUS; Educational Testing Service, 1986a), the DISCOVER program (American College Testing Program, 1995), and the Kuder Career Planning System (KCPS; Kuder Inc., 2007) provide individuals using them with detailed information about thousands of occupations including descriptions of the nature of training required for such occupations, potential ranges of income, work conditions, expected growth in job demand, and other relevant occupation-specific information. Such CACGS also often provide users with computerized assessment tools for identifying interests, skills, and values while categorizing these personal characteristics with clusters of occupations or career paths (Bloch, 2006).

The National Career Development Association (NCDA) (1997) has outlined four ways that the internet could be utilized in the provision of career services: to deliver detailed occupation-specific information (e.g., description of the nature of the occupation, employment outlook, job requirements, wages); to provide online searchable occupational databases in order to help identify possible vocational alternatives; to deliver interactive career counseling and career planning services; and to provide searchable databases for job-seeking purposes.

The use of internet-based CACGSs include: the ability to access huge amounts of information, the ability to take several vocational assessments and receive instant personalized results, interactive environments, ease of updating information, low costs and maintenance, and the availability of information in geographically remote areas and to individuals who are uncomfortable seeking career counseling (Davidson, 2001; Gore & Leuwerke, 2000; McCarthy, Moller, & Beard, 2003; Sampson & Lumsden, 2000). On the other hand, the limitations of internet-based CACGSs include the lack of information about the reliability and validity estimates of online assessments, issues related to the confidentiality of online career assessments, rapidity with which technological innovations might make such systems and research findings related to them obsolete, and the lack of information about the qualifications of the authors of such systems (Fowkes & McWhirter, 2007; Gore & Leuwerke, 2000; Sampson & Lumsden, 2000).

Effectiveness of CACGSs

A substantial amount of research devoted to CACGS-use has focused on the evaluation of users' expectations from, and satisfaction with various CACG systems (Fowkes & McWhirter, 2007; Offer & Sampson, 1999; Osborn, Peterson, Sampson, &

Reardon,, 2003). Overall, users of most CACGSs report satisfaction with these systems (Peterson et. al., 1994; Fowkes & McWhirter, 2007). A second, less-researched area of CACGS research is focused on the effectiveness of CACGS use on the career development and decision-making as described by career outcomes such as an individual's career decidedness, perceived career barriers, and coping self-efficacy.

Career decidedness: The effect of CACGS use on the career decidedness of users has been widely researched, and has generally been found to be effective. Niles and Garis (1990) examined the effect of the use of CACGSs (i.e., SIGI PLUS) with a career planning course. The researchers used the Self-Assessment of Confidence and Progress in Educational/Career Planning (SACP; Garis, 1982), a 10-item instrument that attempts to assess clients' confidence in clarity of self-information, decision-making ability, knowledge of career information, and present ability to choose appropriate majors or careers. They examined four conditions: CACGS and career planning course, CACGS only, career planning course only, and a no-treatment control group. Data analyses revealed a significant group effect, $F(1,60) = 5.63$, $p < .05$. Furthermore, the CACGS and career planning group reported greater confidence in their decision-making ability than the control group ($p < .05$). Use of a CACGS has also been linked to commitment to career choices made post CACGS use. Feduccia (2003) investigated changes in college major over a period of two years for 595 students in conjunction with their CACGS use. Students who had declared a college major upon entering the university, but did not use a CACGS, changed their college major significantly more times ($M = .81$, $SD = .87$), than students who were undecided about their college majors at the time of entering the university, but who did use a CACGS ($M = .52$, $SD = .72$) ($p = .001$).

While considerable CACGS research focuses on university undergraduates, the benefits of CACGS use on career decidedness have also been observed for other populations. Gati, Saka, and Krausz (2001) found that Israeli soldiers who used a CACGS reported a slight reduction (d = .29) in indecisiveness (perceived helplessness related to career decision-making). Marin and Splete (1991) studied CACGS-use with 188 auto workers going through a career transition (ages 23-42 years). They found that participants who used the CACGS reported higher career decidedness, and a higher degree of commitment to their chosen occupation compared to a wait-list control group.

In a meta-analysis, Brown and colleagues (2003) found that the career choice outcome effects are larger if CACGS users are required to use the system modules specifically designed to provide occupational information (d = 1.20) than if they are not required to do so (d = .45).

Perceived career barriers: Career barriers are defined as "events or conditions either within the person or environment that make career progress difficult" (Swanson & Woitke, 1997, pp. 446). Perceived career barriers are factors that the individual believes to be barriers to his/her vocational development (Albert & Luzzo, 1999). There is a considerable lack of research that has focused on the effect of non-CACGS career interventions on perceived career barriers (Phillips & Imhoff, 1997), and this lack is even more pronounced in the case of interventions based on CACGSs. I was able to identify only one empirical study that examined the effect of CACGS use on perceived career barriers. Gati, Saka, and Krausz (2001) examined the effect of the use of a comprehensive CACGS (comprising of three individual CACGSs) on the perceived career barriers of 417 Israeli soldiers (median age 21 years). They found that the

CACGSs contributed significantly to the reduction of the perceived career barriers related to lack of information about occupations (d = .91), lack of information about self (d = .54), and lack of information about the process (d = .39), The participants also reported no effect of CACGS use on barriers related to lack of motivation (d = .01).

As previously discussed, there is research evidence that suggests that perceived career barriers cognitively, affectively, and behaviorally impact career decision-making and development (Albert & Luzzo, 1999; Brownlow et. al., 2002; Chronister & McWhirter, 2003; Fassinger, 2000; London, 2001; Luzzo & McWhirter, 2001; McWhirter, 1997). However, there is a marked paucity of research that directly examines the effect of CACGS use upon perceived career barriers. Needless to say it is crucial that more empirical research be focused on the use of CACGS-based interventions upon this facet of career decision-making.

Other Vocational Factors: In addition to decidedness and perceived barriers, CACGS use impacts other aspects of an individual's career development, Mau (1999) examined the effect of CACGS use on vocational identity development. Holland, Johnston, and Asama (1993) define vocational identity as the possession of a clear and stable image of one's occupational interests, skills, and goals. Of the 108 undergraduate students who participated, a significant short-term (two week) gain on vocational identity was observed for CACGS users when compared with a wait-list control group (d = .28, p < .037), and a significant long-term (six month) gain on vocational identity was observed for CACGS users when compared with a no-treatment control group (d = .70, p < .017) (Mau, 1999).

Career maturity is defined as a person's "readiness to cope with vocational development tasks" (Savickas, 1984; p. 222). Luzzo and Pierce (1996) found that students who used the CACGS reported significantly higher career maturity scores than those who did not (d = .73, p < .05), thus concluding that the use of a CACGS (i.e., DISCOVER) increased the career maturity of middle-school students in that the attitudes of the middle school students towards coping with the career decision-making process became more age-appropriate.

Individual variables: Researchers examining the utility of CACGSs have highlighted the need to study the effect of individual variables on the helpfulness of CACGSs (Eveland, Conyne, & Blakney, 1998; Sampson, Reardon, & Lenz, 1991; Lenz, Reardon, & Sampson, 1993). Understandably, differences in CACGS effectiveness may arise from ease of the CACGS use. Gati (1994) suggested that technically inclined students may find it easier to navigate and use CACGSs independently than those students who are less technically inclined and might prefer face-to-face interaction with a career counselor. Eveland, Conyne, and Blakney (1998) examined the effect of CACGS use on the career decidedness of 90 undergraduate students. The participants were divided into two age groups, 24 years and below (n = 52), and 25 years and above (n = 38); and age effects were examined. However, no significant age effects were observed. The researchers also reported that the use of the CACGS was equally effective in increasing the career decidedness of the participants regardless of ethnicity or gender. Extant research has consistently found no significant gender differences in the effect of CACGS on career decidedness (Eveland et. al., 1998; Mau, 1999). However, differences have been noted in the exploratory behaviors of men and women while using CACGSs.

Men sought more sources of information than did women (d = .78), and sought information more frequently than did women (d = .71) (Mau, 1999).

Individual differences of the CACGS users might also impact differences between perceived effectiveness of individual CACGSs. Peterson and colleagues (1994) investigated three separate CACGSs, and found that participants rated their experiences with all three CACGSs positively. In another study, individuals with realistic and investigative Holland types reported greater acquisition of self- and occupation-related knowledge through a CACGS (SIGI PLUS) than did social and enterprising type individuals (Lenz, Reardon, & Sampson, 1993).

Multimodal career interventions: A significant amount of CACGS-related research has examined the effect of multi-modal career interventions where CACGSs are used in conjunction with other career interventions. Niles and Garis (1990) reported that students enrolled in a career development course in conjunction with CACGS use have shown significantly lower career indecision ($p < .05$), and significantly more effective career planning ($p < .01$) than those students using a CACGS alone. Effect sizes were not reported for this study. Meta-analyses of existing CACGS literature indicate that CACGSs are most effective when used in conjunction with career counseling (Palmer & Howland, 1997; Whiston, Brecheisen, & Stephens, 2003). Brown and Krane (2000) reviewed the career intervention outcome literature and concluded that career interventions are most effective when provided in conjunction with a combination of modeling, written exercises, individual interpretation and feedback of assessments, information about the world of work, and building support. A CACGS may provide

some, but not all, of these interventions. Thus the use of a CACGS along with individual career counseling or a career development course might prove more efficacious.

The Kuder Career Planning System

Over the past fifty years, several CACGSs have been developed. Some of the most widely researched CACGSs are DISCOVER (Eveland, et., al., 1998; Garis & Niles, 1990; Luzzo & Pierce, 1996; Marin & Splete, 1991; Peterson et. al., 1994; Taber & Luzzo, 1999), SIGI (Garis & Niles, 1990; Peterson et. al., 1994), and SIGI PLUS (Niles & Garis, 1990; Kivlighan et. al., 1994; Peterson et. al., 1994). However, not much research has focused on a comparatively newer CACGS – the KCPS.

First launched in 1999, the KCPS has undergone numerous revisions to date. Currently, the KCPS is a comprehensive internet-based CACG system of career planning tools targeted at various levels of career development, and for the use of varying levels of involvement – students (middle school, high school, postsecondary, college, and adults), educators, and parents. The KCPS is offered exclusively through the internet at www.kuder.com, and incorporates links to online searchable databases for occupational information; individual online portfolios; job-seeking tools; and interest, skills, and values assessments. This internet-based CACGS aims at offering self-directed assessment, educational planning, and career exploration tools and resources to individuals in order to assist with career decision-making.

In addition to occupational information, the KCPS offers its users three self-directed assessments to aid in self-exploration of vocational interests self-efficacy and work-related values. The Kuder Career Search (KCS; Zytowski, 2001), is a self-directed interest inventory that categorizes an individual's interests on six clusters that correspond

with Holland's six personality/interest types (Holland, 1992). The six clusters are: outdoor/mechanical (i.e., realistic), science/technical (i.e., investigative), arts/communication (i.e., artistic), social/personal services (i.e., social), sales/management (i.e., enterprising), and business operations (i.e., conventional).The Kuder Skills Assessment (KSA; Zytowski & Luzzo, 2002) is a self-directed measure of the individual's self-efficacy in the clusters corresponding to the KCS clusters. In addition to the KCS and the KSA, the KCPS also offers the Super's Work Value Inventory-Revised (SWVI-R; Zytowski, 2006), which is a self-directed assessment that assists users to identify their work-related values. The SWVI-R categorizes people's work-related values into twelve clusters: achievement, co-workers, creativity, income, independence, lifestyle, challenge, prestige, security, supervision, variety, and workplace. The KCS, KSA and SWVI can be used to gauge P-E fit between oneself and an area of potential vocational interest. The KCPS also provides its users the functionality to use the U.S. Department of Labor's Occupational Information Network (O*NET) system to search and identify occupational alternatives that have the potential to satisfy their vocational needs based on their interests, self-efficacy and work values profiles.

The KCPS facilitates career decision-making as proposed by Gati and Asher's (2001) pre-screening – in-depth exploration – choice assistance (PIC) model by providing career-person matching tools to identify alternatives compatible with the individual's preferences (*pre-screening*), extensive information about various careers from occupational databases (*in-depth exploration*); and tools to compare and contrast occupational alternatives (*choice assistance*).

While a few studies have reviewed the self-directed assessments available to KCPS users (Betz & Rottinghaus, 2006; Zytowski, 2004), there is little evidence for the effectiveness of the various KCPS tools in assisting with the career development of individuals. Offer and Sampson (1999) reported a decline in the number of studies investigating the evaluations of CACGSs. With the booming increase in technological advances, there has been a marked increase in the access and availability of online career resources. It can be easily concluded that the internet is well on the way to becoming the preferred source for occupational exploration. Therefore, it is of vital importance that more research be conducted to study the usefulness and value of career interventions using CACGSs in general, and the KCPS in particular.

This is a quasi-experimental pretest-posttest control group design study that assessed the effects of a career intervention using a CACGS on the career decidedness, perceived career barriers, coping self-efficacy, and retention of undergraduate college students who are undecided about their career path. The intervention used in this study was the counselor-facilitated use of the KCPS for occupational exploration and self-directed exploration of one's interests, skills confidence, and work values in a classroom setting. The purpose of this study was to assess whether such an intervention significantly affects career decidedness, perceived career barriers, and coping self-efficacy related to the perceived barriers. This study also attempted to gauge whether significant differences exist in the rates of retention of students who have experienced this career intervention compared with baseline university retention rates.

Counselor-facilitated use of CACGSs has been found to be effective in increasing career self-knowledge, and career decidedness (Oliver & Spokane, 1988; Whiston et. al.,

2003). The use of group interventions has also been found to be effective in increasing career decidedness (Mawson & Kahn, 1993). Because of these reasons, it was hypothesized that following the guided use of KCPS in a classroom setting, individuals who participate in this intervention would report greater career decidedness than individuals who did not participate in such an intervention. The lack of occupation-specific information and information about occupational alternatives has been often cited as a perceived career barrier (Gati, Saka, & Krausz, 2001; Julien, 1999). The KCPS provides users with resources that facilitate self-exploration and occupational exploration. The users of the KCPS can use their interests, self-efficacy and work-values profiles to obtain in-depth information about potential occupational alternatives through the exhaustive O*NET system. Therefore, it was hypothesized that this career intervention will help increase career decidedness, decrease perceived career barriers, and increase coping self-efficacy related to these barriers. Finally, the use of CACGSs and career exploration courses has been recommended as strategies to enhance retention (Flynn, 1990; Vinto, 2002). Since this intervention incorporated the use of a CACGS in a career exploratory course setting, it was hypothesized that retention rates of the students who experience this career intervention would be higher than the overall university retention rates.

CHAPTER THREE: METHODS

This section will be structured in the following manner. I will first describe the participants of this study, followed by a description of the procedures employed in the collection of the data that was used in this study. Then, I will describe the career intervention that was examined in this study. Next, I will discuss the instruments that were used to measure the various constructs of interest in this study. Following this, the hypotheses proposed in this study, and their rationale based on existing theoretical and empirical research will be discussed.

This research used archival data that was collected by the Career Exploration Service at a large Midwestern university from undergraduate students for three semesters between January 2006 and February 2008. The data was entered, checked, and de-identified by personnel at the Career Exploration Service.

Participants

The participants of this study are divided into three groups: one intervention group and two control groups. The intervention and control group-1 will be described first. Between January 2007 and February 2008, data was collected from a total of 373 undergraduate students at a large Midwestern university. Each semester, data was collected from participants during the first week of classes, and again during the sixth week of classes. Of these, 123 records were excluded from the dataset because the participants had completed only the pretest measures (n = 104) or only the posttest measures (n = 19), but not both. Of the remaining records, 72 were incomplete and were excluded from the data analysis. Those who were excluded from the analysis did not differ from those included with respect to age [$t(364) = .107$, $p < .05$], ethnicity [χ^2 (5,

N=373) = 6.898, $p > .05$], year in college [χ^2 (3, N=370) = .784, $p > .05$] and whether or not they had declared a major [χ^2 (2, N=365) = 1.560, $p > .05$]. The participants excluded from the final analysis differed with respect to their sex [χ^2 (1, N=373) = 9.044, $p < .05$]. More women (n = 147) than men (n = 103) completed both the pretest and posttest measures while more men (n = 71) than women (n = 52) did not complete both pretest and posttest measures.

The final dataset contained a total of 209 usable responses. Of the participants 61.2 percent (n = 128) were female, and 38.8 percent (n = 81) were male. These participants are classified into either an intervention group (n = 130) or control group-1 (n = 79). A description of these two groups by semester and gender is provided in Table 1.

Intervention Group

The intervention group of participants consisted of students enrolled in a semester-long 100-level undergraduate career development course. The class was designed to provide students with resources for vocational self-exploration and exploration of the world of work including use of a CACGS (i.e., KCPS). This was not a required course for any of the students enrolled. Students enrolled in this course did so because they were either undecided about their college major (open-option), or had a currently declared major that they were reportedly dissatisfied with and were considering opting out of. This was a semester-long course with students meeting each week for two 50-minute classes.

Over three semesters, data was collected from the students enrolled in the personal career development course. Table 2 describes the participants of the intervention

group across the three semesters. All students in the class were potential participants, and were offered the opportunity to complete the measures used in this study. The participation rate noted in Table 2 reflects only the participation of students who completed both the pretest and the posttest measures. In all, useable data from completed pretest and posttest measures was obtained from 130 participants (83 female and 47 male). Most participants were in their first or second year of study at the university. All participants were above 18 years of age (M = 19.32, SD = 1.56). Students in this course were offered extra-credit for their participation in this study. The measures were administered to the participants in classroom groupings.

Control Group - 1

The control group-1 of participants consisted of students enrolled in a semester-long 100-level undergraduate academic learning skills course. The class was designed to help students improve their study skills. Specifically, the class objectives included learning efficient ways to perform several learning tasks such as reading, note-taking, test-taking, and writing papers. In addition, individual and group activities in the class were designed to help enhance the students' time management, knowledge of university resources, and alleviate test-anxiety. This was not a required course for any of the students enrolled. Several students enrolled in this course were self-referred because they wished to learn better study skills. This course had also been recommended to several students by their academic advisors either because of low GPAs, or as a preparatory course for college. This was a semester-long course with students meeting each week for two 50-minute classes.

Over three semesters, data was collected from the students enrolled in the academic learning skills course. Table 3 describes the participants of the control group-1 across the three semesters. All students in the class were potential participants, and were offered the opportunity to complete the measures used in this study. The initial participant pool included students who completed measures at both pretest and posttest; as well as students who completed only the pretest measures, but not the posttest measures. However, these students were not included in the number of participants reported in this paper. The participation rate noted in Table 3 reflects only the participation of students who completed both the pretest and the posttest measures. In all, usable data from completed pretest and posttest measures was obtained from 79 participants (45 female and 34 male). Most participants were in their first or second year of study at the university. All participants were above 18 years of age (M = 18.78, SD = 1.79). Students in this course were offered extra-credit for their participation in this study.

Since participants in this group were not enrolled in a career-related course, dissatisfaction with the college-majors, and/or career-related issues were not overtly noted as primary concerns. However, as part of the survey, participants from both the intervention group and control group-1 reported their level of satisfaction with their current major, and their career choice status. The following variables collected at the time of pretest will be examined as per the compatibility of the two groups: gender, GPA, year in school, and reported satisfaction with college major.

Control Group - 2

The control group-2 is drawn from a set of all students who entered the university since Fall-semester 2005. In March 2009, data was obtained from the Department of

Institutional Research of the university, for a sample of 300 students (100 each of students who entered the university as freshman students in Fall 2005, Fall 2006, and Fall 2007). Data obtained reflects student persistence as of the Fall-semester 2008. This de-identified data includes demographic information including sex, age, ethnicity, year in college and whether or not they had declared a major when they enrolled at the university. Data describing the demographic variables for the intervention group, control group-1, and control group-2 is presented in Table 4. A description of the control group-2 classified according to the corresponding intervention group participants is provided in Table 5. Since most of the students in the intervention group were in their first or second year at college during the time of the intervention, the control group-2 selected reflects this.

Procedures

This study was a quasi-experimental pretest-posttest control group design. For three semesters, students from two different courses were recruited to be participants in this study. Following approval from the Institutional Review Board (IRB), the participants in the intervention and control conditions were recruited separately. The intervention group consisted of students enrolled in an undergraduate career development course. Participants of control group-1 were enrolled in an undergraduate learning skills course designed to provide students with academic skills training. Assignment of participant to intervention or control conditions was not randomized, and depended on the nature of the course they were enrolled in. Participation was completely voluntary, and students had no costs associated with the study. Students in both courses were offered extra-credit for their participation in this study. A comparable assignment (with

the same extra-credit value) was offered to those who did not wish to participate. Students in both classes could choose not to complete either of the extra credit opportunities without being penalized. Following is a description of the procedures employed to recruit students in each condition.

Intervention Group

Participants of the intervention group were enrolled in an undergraduate career development course. All participants of the intervention group were initially informed about the study during the first day of classes. This information was verbally conveyed by the course instructor as part of the course and extra-credit description. Pre-test data was collected from participants in this course during the second day of classes. The course instructors who were also staff members at the Career Exploration Service described the nature of the measures to all participants. Participants were also informed that no risks were anticipated as a result of completing the surveys. Following this, students were given the IRB-approved pretest surveys. Students read the informed consent statements (see Appendix A), and consent was obtained from all participants. The students then completed a set of measures consisting of a demographic questionnaire (see Appendix B); the Career Barriers Inventory - Revised (CBI-R; Swanson, Daniels, & Tokar, 1996); and the Coping Self-Efficacy measure based on the CBI-R (see Appendix C). Completion of the pretest measures took approximately 45 minutes in class. The five weeks following the pretest, students in the intervention group were involved in classroom activities that included the use of the KCPS. Specifically, the students of this class used the KCPS for self-guided assessments of vocational interests (i.e., KCS), self-efficacy (i.e., KSA), and work-related values (i.e., SWVI-R). Students also used the

KCPS for obtaining information about occupational alternatives. During this period, the students met each week for two 50-minute classes. All sections of the career development class followed identical schedules of study for the period of the intervention (see Appendix D). At the end of five weeks, the students who completed the pretest completed a posttest set of measures which consisted of the same measures completed during the pretest, and an additional brief questionnaire unrelated to this study. Data related to retention of these students at the college-level and university-level was obtained by the original researcher from the university's administrative information system in March 2009.

Control Group - 1

Participants of the control group-1 were enrolled in an undergraduate academic learning skills course. All control group-1 participants were initially informed about the study surveys during the first day of classes. With the permission of the course instructors, this information was verbally conveyed to the students by a staff member of the Career Exploration Service who was also the instructor of the career development course. Pre-test data was collected from participants in this course during the second day of classes. Participants were informed of the procedures that would be followed and the nature of the measures. They were also informed that no risks were anticipated as a result of completing the surveys. Following this, students were given the IRB-approved pretest surveys. Students read the informed consent statements (see Appendix E), and consent was obtained from all participants. The control group-1 participants then completed a set of measures identical to the intervention group pretest measures consisting of a demographic questionnaire, the CBI-R; and the Coping Self-Efficacy measure based on

the CBI-R. Completion of the pretest measures took approximately 45 minutes. The five weeks following the pretest, students in control group-1 were provided with resources regarding academic learning skills, and no career- or major-related information was provided to these students in class. Specifically, the class focused on learning study skills such as effective time management, reading, note-taking, and writing papers. Although the students in this group were not given training on the KCPS, there were informed at the time of the pretest that after the completion of the posttest, they would be given access codes to the KCPS, and offered a chance to meet with a career counselor, take the KCPS self-directed assessments, and learn about the occupational exploration resources provided by the KCPS. At the end of five weeks, the control group-1 participants who completed the pretest also completed a posttest packet which consisted of the same measures as the intervention posttest packets. After the completion of the posttest, the students in control group-1 were provided with the KCPS access codes, and offered an opportunity to meet with a career counselor to learn about the KCPS.

Control Group – 2

The Department of Institutional Research of the university was contacted for information related to student persistence and retention. Data for the control group-2 was subsequently obtained from this department in March 2009. This group consists of a sample of 300 students (100 each of students who entered the university as freshman students in Fall 2005, Fall 2006, and Fall 2007). A description of control group-2 is presented in Table 4 and Table 5. Data obtained reflects student persistence by year (2nd year to 4th year). This data includes demographic information including sex, age, ethnicity, year in college and whether or not they had declared a major when they

enrolled at the university; as well as university-level retention rates of students in the sample.

Intervention

The intervention group participants in this study were enrolled in an introductory career exploration course that met for two 50 minute classes each week. The class objectives included using the KCPS for self-guided assessments of vocational interests, self-efficacy, and work-related values. Students enrolled in this course also used the KCPS for learning about occupational information. Individual and group activities in the class attempted to enhance the students' vocational knowledge such as information about career-related resources, majors offered at the university, and informational interviews. In the five weeks following the pretest, students in the intervention group participated in guided use of the KCPS assessments (i.e., KCS, KSA, and SWVI-R). The instructor of each class facilitated group interpretations of the assessments. Students were also provided with training on how to use the KCPS for self- and occupational exploration. Several self-exploration exercises were facilitated by the instructor of the course. At the end of five weeks, the posttest was administered to the participants.

Outcomes

Measures

Career Barriers Inventory-Revised. (CBI-R; Swanson, Daniels & Tokar, 1996). The CBI-R is a 70-item measure divided into 13 subscales that assess perceived career barriers related to: Sex Discrimination (7 items), Lack of Confidence (4 items), Multiple-Role Conflict (8 items), Conflict Between Children and Career Demands (7 items), Racial Discrimination (6 items), Inadequate Preparation (5 items), Disapproval by

Significant Others (3 items), Decision-Making Difficulties (8 items), Dissatisfaction With Career (5 items), Discouraged From Choosing Nontraditional Careers (5 items), Disability/Health Concerns (3 items), Job Market Constraints (4 items), and Difficulties With Networking/Socialization (5 items). Each item (e.g. "changing my mind again and again about my career plans", "my parents/family don't approve of my choice of job/career", "unsure of what my career alternatives are") is reported on a seven-point Likert scale ranging from 1 (would not hinder at all) to 7 (would completely hinder). The CBI-R subscales are scored by averaging participants' responses to the items within each subscale. High scores on a subscale reflect an endorsement of perceived career barriers related to that subscale.

The CBI-R is a shortened and revised version of the Career Barriers Inventory (CBI; Swanson & Tokar, 1991b). The CBI is a 102-item scale with 18 subscales derived through factor analysis. In the process of revising the CBI, several items were discarded in order to reduce redundancy while still maintaining unique content. In order to expand the scope of the CBI-R, 12 new items were added to the scale. Also, while on the CBI, all items on a subscale were presented together, the presentation of items on the CBI-R is randomized. For information about specific changes to each subscale see Swanson, Daniels and Tokar (1996).

Swanson and colleagues (1996) looked at the CBI-R subscale scores across seven samples and noted that across all samples, there were striking similarities in the patterns of the 13 scale scores relative to one another. Furthermore, they found high correlations between the CBI-R and CBI. Table 6 presents the means and standard deviations for the

CBI-R scales, and the correlations between the CBI and the CBI-R scales which ranged from .72 for Inadequate Preparation to 1.0 for Significant Others (Swanson et. al., 1996).

The internal consistency reliability estimates of the subscales have been reported for a college student population (N = 100) and have been found to range from .64 (Disapproval by Significant Others and Difficulties with Networking/Socialization) to .86 (Sex Discrimination) (Swanson et. al., 1996). The scales with fewer items tended to have lower reliability than the scales with more items. Table 6 provides a sample from each CBI-R subscale and the internal consistency reliability estimates of each subscale. Internal consistency reliability estimates of the CBI-R subscales for this study are also described in Table 6 and ranged from .75 to .91. Estimates of this instrument's 6-week test-retest reliability for this study are presented in Table 7 and ranged from .54 to .72. All correlations, therefore, were significant ($p < .01$) and demonstrative of acceptable test-retest reliability.

Validity estimates of the CBI-R are deduced from the original CBI given the high correlation of the CBI-R and the CBI (Swanson & Daniels., 1995a). Construct validity estimates of the CBI were initially derived from a pool of 112 items following item analysis and principal components factor analysis (Swanson & Tokar, 1991b). The 102 items retained formed 18 factorially derived scales. The items of the CBI show high item-scale correlations. Of the 102 items comprising the CBI, 98 had their highest correlation with their assigned scale. Intracorrelations among the CBI scales were low to moderate ranging from .11 to .68 with a median of .32. The highest correlation was between Sex Discrimination and Racial Discrimination; and between Multiple-Role Conflict and Conflict between Children and Career Demands (Swanson & Tokar, 1991b).

Convergent validity estimates vary by sex (Swanson et. al., 1996). That is, the strength of correlation between the CBI subscales and related constructs (career indecision, vocational identity, self-esteem) was higher for men than for women (Swanson & Daniels, 1995a). Of 52 possible correlations between the CBI, the Career Decision Scale (CDS; Osipow, Carney, Winer, Yanico, & Koschier, 1979); and My Vocational Situation (MVS; Holland, Daiger, & Power, 1980), for men 10 correlations were in the .30s, and 16 were in the .20s. For women, only one correlation was in the .30s and two correlations were in the .20s. Except to mention that these differences existed, the strength of the correlations were not reported. For men, convergent validity was demonstrated by significant correlations between the CBI and the CDS and MVS. Also, for men, theoretically expected relations were also observed for vocational identity and self-esteem (Swanson et. al., 1996). For women, few relations were noted between the CBI subscales and the CDS and MVS scores. Career indecision was negatively associated with Sex Discrimination, self-efficacy was associated negatively to Discouragement from Choosing Nontraditional Careers, and external locus of control was positively related to Disapproval by Significant Others (Swanson & Daniels, 1995a).

Coping Self-Efficacy for Career Barriers. To measure the coping self-efficacy of the participants of the intervention group and control group-1, a series of items was developed based on the CBI-R (J. Swanson, personal communication, August 1, 2008). Like the CBI-R, this coping self-efficacy measure is also a 70-item measure divided into 13 subscales that assess self-efficacy beliefs about the ability to cope with barriers related to: Sex Discrimination (7 items), Lack of Confidence (4 items), Multiple-Role Conflict (8 items), Conflict Between Children and Career Demands (7 items), Racial Discrimination

(6 items), Inadequate Preparation (5 items), Disapproval by Significant Others (3 items), Decision-Making Difficulties (8 items), Dissatisfaction With Career (5 items), Discouraged From Choosing Nontraditional Careers (5 items), Disability/Health Concerns (3 items), Job Market Constraints (4 items), and Difficulties With Networking/Socialization (5 items). The 70 items of this coping self-efficacy scale are matched to the 70 CBI-R items. Through this measure, participants are asked to state how confident they feel about being able to overcome the perceived career barriers measured by the CBI-R. Participants are asked to respond to each barrier statement (e.g. "changing my mind again and again about my career plans", "my parents/family don't approve of my choice of job/career", "unsure of what my career alternatives are") on a seven-point Likert scale ranging from 1 (not at all confident) to 7 (completely confident). The coping self-efficacy subscales are scored by averaging participants' responses to the items within each subscale.

Table 8 provides a sample-items and the internal consistency reliability estimates of each of the 13 CSE subscales. The internal consistency estimates range from .75 to .90. Estimates of this instrument's 6-week test-retest reliability for this study are presented in Table 9 and range from. The correlations of the subscale scores at pretest and posttest ranged from .43 to .69. All correlations were significant ($p < .01$) and demonstrative of adequate test-retest reliability.

Career Decidedness. An individual's career decidedness is a measure of the extent to which the individual feels resolved about his/her career choice. In the current study, this construct was measured using a single item asking respondents to report their career

choice status. The possible responses are: "I am undecided about my career", "I am tentatively decided about my career", and "I have decided on a career".

Retention

Student retention in this study was examined for three time intervals (i.e. .5 years, 1 year, and 1.5 years) post-intervention. The retention of intervention group participants each semester was compared with retention of a comparable set of individuals from the control group-2. Table 5 describes the control group-2 with respect to the three semesters of intervention group participants. High rates of retention for the intervention group would reflect the effectiveness of the intervention in increasing career decidedness and persistence.

Demographic Questionnaire

Participants completed a questionnaire in which they indicated age, ethnicity, gender, year in college, career choice status, Grade Point Average (GPA), their American College Testing (ACT; ACT, Inc.) college entrance exam scores, and a few other items unrelated to this study.

Hypotheses

One of the main purposes of this study was to test the usefulness of a classroom-based CACGS career intervention on various career outcomes. To this end, the following hypotheses were proposed:

Perceived Career Barriers: Firstly, it was hypothesized that compared with the participants of control group-1, the participants of the intervention group would report significantly lower perceived career barriers as operationalized by significantly lower

means of the posttest subscales of the CBI-R after controlling for the variance in the pretest CBI-R subscales.

Coping Self-Efficacy: Secondly, it was hypothesized that compared with the participants of control group-1, the participants of the intervention group would report significantly higher coping self-efficacy related to the perceived career barriers as operationalized by significantly higher means of the posttest subscales of the CSE after controlling for the variance in the pretest CSE subscales.

Career Decidedness: Thirdly, it was hypothesized that compared to the participants of control group-1, the participants of the intervention group would report significantly higher career decidedness as operationalized by the single-item career choice status.

Retention: Fourthly, it was hypothesized that at various time-intervals after the career intervention, the proportion of intervention group participants retained at the university would be significantly higher than the proportion of individuals from the control group-2 retained at the university. Firstly, it was hypothesized that this difference between the proportions of students retained from the intervention group and control group-2 would be significant at 1.5 years after the intervention. Also, it was hypothesized that one academic year after the intervention, the proportion of intervention group participants retained at the university would be higher than the proportion of students from the control group-2 who were retained at the university. Finally, it was hypothesized that .5 academic years after the intervention, the proportion of participants of the intervention group who were retained would be significantly higher than the proportion of individuals from the control group-2 who were retained.

Rationale for Hypotheses

This research draws its rationale for the proposed hypotheses from existing theoretical and empirical research.

Perceived Career Barriers: The rationale for the first hypothesis is evidenced in studies that have found that career-related interventions significantly reduce perceived career barriers (Foss & Slaney, 1986; Rea-Poteat & Martin, 1991). Furthermore, the use of a CACGS has been shown to significantly reduce perceived career barriers (Gati, Saka, & Krausz, 2001). There is little research that examines the facilitated use of a CACGS intervention in a classroom setting in relation to perceived career barriers. However, due to the above empirical evidence, we hypothesized that the participants who use the multimodal career-intervention employed in this study would report significantly lower perceived career barriers than the individuals in control group-1 who do not receive the intervention.

Coping Self-Efficacy: The intervention used in this study provided students with several career supports. One such support included encouragement to engage in self-exploration and to identify a career that is a good fit with one's personality. Other career supports involved career goal setting, and access to the KCPS assessments and occupational information. Gati and colleagues (2001) identified the lack of information as a barrier to career decidedness. To counter this perceived career barrier, this intervention was aimed at offering participants career supports by providing participants a vast amount of career-related information through the KCPS. These interventions were geared towards bolstering the participants' coping self-efficacy. Research related to coping self-efficacy is very limited. No studies were identified that examined coping self-efficacy in

conjunction with a CACGS-based intervention. The rationale for the second hypothesis was drawn from the above empirical evidence and from literature that indicates that coping self-efficacy is positively related to career supports (Lent et. al., 2001).

Career Decidedness: There has been ample research that has found that career interventions including group interventions and information-provision interventions have led to greater career decidedness (Brown & Krane, 2000; Luzzo et. al., 1996; Mawson & Kahn, 1993; Oliver & Spokane, 1988; Swanson, 1995; Whiston et. al., 2003). No studies that employed an intervention pairing CACGS use with a career development course were identified, which directly examined career decidedness. However, compared to a control group, higher levels of confidence related to career decision-making ability were observed for individuals who used a CACGS with a career planning course. These findings provided the rationale for the third hypothesis.

Retention: Research has found that undergraduate students who engage in career exploration are retained at higher rates that those who did not (Sidle & McReynolds, 1999). Coll and Stewart (2008) found that students considered at-risk for attrition reported significantly lower career decidedness than students who were not at risk. Although interventions such as introductory career exploration course for students undecided about their major (Vinto, 2002), and the use of a CACGS for career exploration (Flynn, 1990) have been suggested as strategies to increase retention, few if any such studies have been published. These above findings and recommendations led to the speculation that the proportion of participants of the intervention group who use the CACGS-based career intervention would be retained at the university would be higher compared to the proportion of students from the control group-2 who were retained.

CHAPTER FOUR: RESULTS

The presentation of data analyses and results of this study will be structured in the following manner. I will first provide the descriptive statistics of the measures used in this study and describe the preliminary analyses conducted. Next, I will discuss the data analyses used to test the hypotheses proposed. For each of the hypotheses, I will present the results of the proposed data analyses. Finally, for each hypothesis I will report additional findings pertaining to the variables of interest.

Descriptive Statistics and Preliminary Analyses

Means, standard deviations, and zero-order correlations for the CBI-R subscales at pretest and posttest are shown in Table 10 and Table 11 respectively. All 13 CBI-R subscales were moderately to strongly correlated with each other both at pretest ($rs \geq .35$) and posttest ($rs \geq .37$). Intracorrelations between the subscales lie in the .35 - .80 range for pretest and .37 - .81 range for posttest. This indicates that the CBI-R subscales share a large amount of common variance. Given the high intracorrelations between the subscales, a composite perceived career barriers scale was computed. Correlations of the pretest and posttest CBI-R subscales with the CBI-R total scores are also reported in Table 10 and Table 11 respectively.

Means, standard deviations, and zero-order correlations for the CSE subscales at pretest and posttest are shown in Table 12 and Table 13 respectively. Similar to the CBI-R subscales, all 13 CSE subscales were also moderately to strongly correlated with each other both at pretest ($r \geq .42$) and posttest ($r \geq .47$). Intracorrelations between the subscales lie in the .42 - .80 range for pretest and .47 - .85 range for posttest. This indicates that the 13 CSE subscales share a large amount of common variance. Given the

high intracorrelations between the subscales, a composite coping self-efficacy scale was computed. Correlations of the pretest and posttest CSE subscales with the CSE total scores are also reported in Table 12 and Table 13 respectively.

The intercorrelations between the CBI-R and the CSE for the pretest are provided in Table 14. As expected, the perceived career barriers as operationalized by the CBI-R subscales and the coping self-efficacy as operationalized by the CSE subscales were negatively correlated with each other. In general, the intercorrelations between the subscales of the two measures were moderately correlated with each other, and not surprisingly 12 of the 13 CBI-R subscales were most strongly correlated with the corresponding CSE subscale. One exception was "Disability and Health Concerns" CBI-R subscale which was most strongly correlated with the "Lack of Confidence" CSE subscale. The intercorrelations between the CBI-R and the CSE for the posttest are shown in Table 15. As with the pretest, the CBI-R subscales and the CSE subscales were negatively correlated with each other. At posttest, the CBI-R subscales and CSE subscales were found to be more strongly correlated with each other than at pre-test. Also, as expected, each of the 13 CBI-R subscales was most strongly correlated with the corresponding CSE subscale. Intercorrelations between the CBI-R and the CSE subscales lie in the -.01 to -.67 range for pretest and -.14 to -.59 range for posttest.

Testing the Hypotheses

Perceived Career Barriers

In order to determine if the intervention group and the control group-1 were different initially as to the pretest CBI-R subscales, a 2 X 2 multivariate analysis of variance (MANOVA) was conducted with the dependent variables being the 13 pretest

CBI-R subscales; and the independent variables being the group status (intervention or control group-1) and sex (male, female). The multivariate tests yielded significant effects for group [$\Lambda = .829$, $F(13, 193) = 3.06$, $p < .001$] and sex [$\Lambda = .686$, $F(13, 193) = 6.793$, $p < .001$]. This was followed by 13 2 X 2 (group X sex) analyses of variance (ANOVAs), with the dependent variables being the 13 pretest CBI-R subscales (see Table 16). A Bonferroni adjustment was applied to control for multiple comparisons ($p < .05/13 = .004$). As shown in Table 17, this revealed that sex discrimination [$F(1, 205) = 40.94$, $p < .004$] yielded main effects for sex; and decision-making difficulties [$F(1, 205) = 23.16$, $p < .004$] and dissatisfaction with career [$F(1, 205) = 10.80$, $p < .004$] yielded main effects for group. Female participants ($M = 3.72$, $SD = 1.38$) perceived sex discrimination to be a greater barrier than male participants ($M = 2.40$, $SD = 1.24$).

In order to test the first hypothesis that compared with the participants of control group-1, the participants of the intervention group would report significantly lower perceived career barriers, a 2 X 2 multivariate analysis of covariance (MANCOVA) was conducted with the dependent variables being the 13 posttest CBI-R subscales; the independent variables being the group status (intervention or control group-1) and sex (male, female); and the covariates being the 13 pretest CBI-R subscales. The initial multivariate tests did not yield any significant main effects for group, sex, or group X sex interactions. As expected the 13 CBI-R pretest covariates yielded significant main effects. The results are presented in Table 18. The first hypothesis was not supported.

Because the CBI-R subscales were highly correlated with each other, a 2 X 2 analysis of covariance (ANCOVA) of the composite posttest CBI-R score was also conducted with group and sex as independent variables and the composite pretest CBI-R

score as the covariate. A significant main effect was observed for sex [$F(1, 204) = 4.701$, $p < .05$], indicating that female participants reported perceived greater career-related barriers than the male participants. Predictably, the covariate, the pretest CBI-R score also yielded a significant effect [$F(1, 204) = 164.42$, $p < .001$]. No significant main effects were noted for group or group X sex interactions.

A mixed-design analysis was conducted to test the effects of time (pretest, posttest), group status (intervention or control group-1), and sex (male, female) on perceived career barriers. The former is a within subject factor and the latter two are between subject factors. The multivariate tests did not yield any significant main effects for time [$\Lambda = .994$, $F(1, 205) = 1.25$, $p > .05$]. Also, no significant main effects were observed for the time X group [$\Lambda = 1.000$, $F(1, 205) = .01$, $p > .05$] and time X sex interactions [$\Lambda = .997$, $F(1, 205) = .61$, $p > .05$].

Other findings. Although the MANCOVA findings were null, follow up analyses were conducted for exploratory purposes for future studies. Thirteen 2 X 2 (group X sex) ANCOVAs were conducted with the dependent variables being the posttest CBI-R subscales; the covariate in each ANCOVA was the corresponding pretest CBI-R subscale. Again, a Bonferroni adjustment was applied to control for multiple comparisons ($p < .05/13 = .004$). As shown in Table 19, the only significant main effect observed was for Job Market Constraints [$F(1, 205) = 8.62$, $p < .004$] for sex. Female participants reported higher perceived career barriers related to Job Market Constraints than the male participants. No group or group X sex effects were noted.

Coping Self-Efficacy

In order to determine if the intervention group and the control group-1 was different initially as to the pretest CSE subscales, a 2 X 2 MANOVA was conducted with the dependent variables being the 13 pretest CSE subscales; and the independent variables being the group status (intervention or control group-1) and sex (male, female). The multivariate tests yielded significant effects for sex [$\Lambda = .871$, $F(13, 193) = 2.20$, $p < .05$]. No significant group or group X sex effects were noted. This was followed by 13 2 X 2 (group X sex) analyses of variance (ANOVAs), with the dependent variables being the 13 CSE subscales (see Table 16). Once again, a Bonferroni adjustment was applied to control for multiple comparisons ($p < .05/13 = .004$). As shown in Table 20, this revealed no main effects for group or sex.

To test the second hypothesis that compared with the participants of control group-1, the participants of the intervention group would report significantly lower perceived career barriers, a 2 X 2 MANCOVA was conducted with the dependent variables being the 13 posttest CSE subscales; the independent variables being the group status (intervention or control group-1) and sex (male, female); and the covariates being the 13 pretest CSE subscales. The initial multivariate tests did not yield any significant main effects for group, sex, or group X sex interactions. The second hypothesis was not supported. As expected, the 13 CSE pretest covariates yielded significant main effects. The results are presented in Table 21.

Since the CSE subscales were highly correlated with each other, a 2 X 2 ANCOVA of the composite posttest CSE score was also conducted with group and sex as independent variables and the composite pretest CSE score as the covariate. Predictably, the pretest CSE score also yielded a significant effect [$F(1, 204) = 183.27$, $p < .001$].

However, no significant main effects were noted for group, sex or group X sex interactions.

Other findings: Although the MANCOVA yielded null results, follow up analyses were conducted for exploratory purposes for future studies. Exploratory analyses were conducted to examine the CSE subscales individually. Thirteen 2 X 2 (group X sex) ANCOVAs were conducted with the dependent variables being the posttest CSE subscales; the covariate in each ANCOVA was the corresponding pretest CSE subscale. The Bonferroni adjustment was applied to control for multiple comparisons ($p < .05/13 = .004$). As shown in Table 22, this revealed no main effects for group, sex, or group X sex interaction.

A mixed-design analysis was conducted to test the effects of time (pretest, posttest), group status (intervention or control group-1), and sex (male, female) on coping self-efficacy. The former is a within subject factor and the latter two are between subject factors. The multivariate tests did not yield any significant main effects for time [$\Lambda = 1.000$, $F(1, 205) = .01$, $p > .05$],. Similarly, no significant main effects were observed for the time X group [$\Lambda = .995$, $F(1, 205) = 1.09$, $p > .05$] and time X sex interactions [$\Lambda = 1.000$, $F(1, 205) = .03$, $p > .05$].

Career Decidedness

In order to determine if the intervention group and the control group-1 was different initially with respect to their career decidedness at pretest, a 2 X 2 ANOVA was conducted with the dependent variable being the pretest "career choice status"; and the independent variables being the group status (intervention or control group-1) and sex (male, female). As shown in Table 23, this revealed main effects for group [$F(1, 201) =$

10.04, p = .002], and sex [F(1, 201) = 8.34, p = .004]. At pretest, participants of the intervention group reported lower career decidedness (M = 1.40, SD = .63) than participants of control group-1 (M = 1.74, SD = .76). Also, female participants (M = 1.40, SD = .62) reported lower career decidedness than male participants (M = 1.72, SD = .77). Means and standard deviations of each group by sex reported at pretest and posttest are shown in Table 24.

The third hypothesis posited that compared to the participants of control group-1, the participants of the intervention group would report significantly higher career decidedness as operationalized by the single-item career choice status. Prior to testing this hypothesis to assess for change in career decidedness, 23 participants who had reported at pretest that they were already decided regarding their career choice were excluded from this analysis. A 2 X 2 ANCOVA was used to test this hypothesis, with the dependent variable being the pretest "career choice status"; the independent variables being the group status (intervention or control group-1) and sex (male, female); and the covariate being the "career choice status" at posttest. No main effects were observed. This indicates that at posttest, the intervention group and control group-1 did not differ significantly in reported career decidedness. The results of the 2 X 2 ANCOVA are presented in Table 25. Means and standard deviations of each group by sex reported at pretest and posttest are shown in Table 24. A summary of reported career decidedness for the intervention group and control group-1 is presented in Table 26.

Retention

The fourth hypothesis proposed that at various time-intervals after the career intervention, the proportion of students retained at the university for participants of the

intervention group would be significantly higher than the proportion of retained individuals from the control group-2. To test this, chi-square tests of independence were used to compare the proportion of intervention group participants who were retained at the university with the proportion of control group-2 students who were retained at the university and determine whether there is a statistically significant difference in proportion between the two groups. These results are reported in Table 27.

It was observed that at 1.5 years after the intervention, the proportion of students from the intervention group who were retained at the university was .91 whereas the proportion from the control group-2 who was retained was .73. The difference in proportions is significant, $\chi^2(1, N = 260) = 9.167$, $p = .002$.

At 1 year after the intervention, the proportion of students from the intervention group who were retained at the university was .93 and the proportion from the control group-2 who were retained was .79. The difference in proportions was not significant, $\chi^2(1, N = 229) = 3.421$, $p = .064$.

Finally, at 0.5 years after the intervention, the proportion of students from the intervention group who were retained at the university was .85 whereas the proportion from the control group-2 who were retained was .79. The difference in proportions was not significant, $\chi^2(1, N = 241) = .990$, $p = .320$.

CHAPTER FIVE: DISCUSSION

In order to facilitate ease of comprehension, this section will be structured in the following manner. I will first discuss, interpret and evaluate the results of the present study according to the four hypotheses related to: perceived career barriers, coping self-efficacy, career decidedness, and retention. For each of these constructs, I will discuss the contextual factors that influence the variables of note in this study, namely sex and the presence or absence of the CACGS career intervention. Finally, I will examine the limitations of this study, offer recommendations for future research and review the implications that the results of this study have on vocational counseling.

Hypotheses

The intent of the present study was to assess the effects of a career intervention using a career intervention using a CACGS on perceived career barriers, coping self-efficacy, career decidedness, and retention. The hypotheses were based on existing theoretical and empirical research.

Perceived Career Barriers. The first hypothesis proposed that students who participated in a six-week classroom career intervention which involves the use of a CACGS (i.e., the KCPS), would report significantly lower perceived career barriers than students who had not participated in such an intervention. Contrary to expectations, results obtained revealed no significant differences between the two groups at posttest on their perceived career barriers as measured by the CBI-R subscales. This finding implies that the intervention used in this study was not more effective in diminishing perceived career barriers compared to not using the intervention. It is difficult to compare these results with existing research because no previous research was found which examined

the effect of a CACGS-based career intervention on perceived career barriers. While a section of extant vocational research has demonstrated that career interventions are effective (Foss & Slaney 1986; Luzzo, et. al., 1996; Oliver & Spokane, 1988; Whiston, et. al., 1998), there are few studies that examine the effects of career interventions on individuals' perceived career barriers. In fact, there is some evidence that participation in a career intervention might increase perceived career barriers. Schroer and Dorn (1986) found that a group career intervention for college students increased awareness of external career barriers and intrapersonal conflicts.

The data were examined as to the differences between the intervention and control group-1 on the pretest CBI-R subscales. Differences were found between the two groups on two of the 13 CBI-R subscales: Decision Making Difficulties and Dissatisfaction with Career. For both subscales, the intervention group reported greater perceived career barriers than the control group. This finding might be explained by the fact that unlike the students in the control group, the students in the intervention group were pursuing a course in personal career development since they were dissatisfied with their choice of college major, and were struggling with making a career-related decision.

Preliminary analyses also looked for sex differences in the participants with regard to their perceived career barriers. Predictably, a significant difference was observed between male and female students with respect to perceived career barriers related to sex discrimination. Female participants reported greater career barriers associated with sex discrimination than male participants. This finding is in accordance with extant research which similarly shows that women perceive greater sex

discrimination related barriers than do men (Luzzo & McWhirter, 2001; Swanson & Tokar, 1991a, 1991b).

The data were examined to ascertain if there was a difference in participants' perceived career barriers at pretest and at posttest. Results obtained revealed no significant differences over time on the perceived career barriers as measured by the CBI-R. No differences were observed between the intervention and control groups in the change of perceived career barriers over time. Also, no differences were noted between men and women in change of perceived career barriers over time.

Coping Self-efficacy. The second hypothesis proposed that students who participated in the CACGS-based career intervention would report significantly higher coping self-efficacy related to their perceived career barriers than the students who did not participate in such an intervention. This hypothesis was tested by looking for differences in coping self-efficacy between the groups at posttest when controlling for differences between them at pretest. Like the perceived career barriers, no significant differences were observed in coping self-efficacy between the intervention group and the control group-1. The implication of these findings is that the intervention used in this study does not increase participants' self-efficacy for coping with perceived career barriers compared to not participating in the intervention. As outlined in the literature review, no previous studies were found that examined coping self-efficacy or the effects of career interventions on it.

Coping self-efficacy has been theoretically posited to be related negatively to perceived career barriers (Bandura, 1997). There is also some empirical evidence that supports this (Lent, et. al., 2001). The findings of the current study provide further

empirical evidence of this theory. Coping self-efficacy as measured by each of the 13 CSE subscales were negatively associated with perceived career barriers as measured by the 13 CBI-R subscales (see Table 15).

The data were examined for any differences between the intervention and control group-1 on their coping self-efficacy as measured by the pretest CSE subscales. No significant differences were found between the two groups in this regard. Also, no differences were noted between men and women with respect to their self-reported pretest coping self-efficacy. This is an intriguing observation given that at pretest women had reported significantly higher career barriers related to sex discrimination. This indicates that although the female participants perceive greater barriers, they consider themselves as able to overcome such a barrier as do the male participants in this sample. It is to be noted that the CSE measure used in this study was developed by the original researcher to complement the CBI-R subscales. It is recommended for further research that other validated instruments be used to measure this career outcome. Another issue of note is that on the survey completed by the participants, the CBI-R and CSE measures were presented simultaneously and not completely distinguished from each other (see Appendix C). It is possible that the participants' self-report of perceived career barriers and the related coping self-efficacy might have been impacted due to measuring them in such a way.

The data were also examined as to the differences in participants' coping self-efficacy at the time of pretest and at posttest. Results obtained revealed no significant differences over time on the perceived career barriers as measured by the CSE questionnaire. Furthermore, no differences were observed between the intervention and

control groups in the change of coping self-efficacy over time. Also, no differences were noted between men and women in change over time of their coping self-efficacy.

Career Decidedness. The third hypothesis posited that compared to the participants of control group-1, the participants of the intervention group would report significantly higher career decidedness at posttest when controlling for their response at pretest. Data analyses revealed no significant differences between participants based on group (intervention group or control group-1). Also, no sex differences were observed amongst the participants with respect to career decidedness.

These findings imply that the career intervention was not effective in increasing career decidedness amongst the participants of the intervention group compared to the students who did not participate in the intervention. Perhaps this is due to the short duration of the intervention (six weeks) which might not have been enough time to affect a significant difference in career decidedness even amongst those students who were engaged in active vocational self-exploration. The CACGS-based career intervention used in this study focuses primarily on vocational self-exploration and exploration of the world of work with an aim towards increasing career certainty. However increasing career decidedness is not a primary goal of this intervention. This might be another reason that the career decidedness of participants was not found to have been significantly impacted.

Retention. Students in the intervention group were enrolled in a personal career development due to career or college-major related indecision. Such career development courses have been recommended as a means of increasing university retention (Tinto, 2002). Flynn (1990) recommended the use of CACGS to help increase retention. Also,

previous empirical research suggests that students who engage in career-related exploration are retained at higher rates in college than students who do not career exploration (Sidle & McReynolds, 1999). The fourth hypothesis proposed that after the career intervention, the proportion of participants of the intervention group who would be retained at the university, would be significantly higher than the proportion of individuals from the control group-2 who would be retained. It was proposed that this retention would be examined at three different time-points: 1.5 years after the intervention, 1 year after the intervention, and 0.5 years after the intervention.

Data analyses showed that at 1.5 years after the intervention, as expected, a significantly greater proportion of the intervention group participants were retained at the university compared to the control group-2. However, at 1 year post-intervention and 0.5 years post-intervention, no significant differences were observed in the proportion of retained individuals from the intervention group and the control group-2. This finding could be accounted for by the short time difference between the intervention and the measurement for retention. Students who have not engaged in career exploration for a longer period in college (1.5 years) might be at greater risk of attrition than students who have remained at school for shorter periods (1 year or 0.5 years) without similar career exploration.

Limitations and Recommendations

Limitations. This study has several limitations. A major limitation of this study lay in the differences between the intervention group and the control group-1. This research was conducted with a control group that was available and potentially differed from the intervention group in one prominent way. The participants may have differed in

their relative career indecision. The students in the intervention group were drawn from a personal career development class which they had enrolled in due to struggling with career indecision. On the other hand, the students in the control group-1 were drawn from an academic study skills class, and may or may not have been facing career indecision. A better examination of the effects of the intervention on perceived career barriers, coping self-efficacy and career decidedness might have been facilitated by selecting a control group that was more similar to the intervention group based on their career indecision. One possible group that might have offered itself to being a better control group could be students enrolled in an open-option major (students who are undecided about their college major), but are not engaged in active career exploration similar to the personal career development course described in this study.

A second major drawback of this study is that the specific career outcomes examined in this study do not gauge definitively whether or not the career intervention used had an impact on the participants' vocational decision-making process. One of the limitations incurred by the use of an archival dataset for this research was that it was not possible to choose to examine a career outcome that might have been more sensitive to the intervention used. As described before, the CACGS-based career intervention used in this study focused on helping students engage in self-exploration to increase awareness of their career-related interests, skills, and values. The intervention also focused on helping the students learn more about the world of work. While these activities may have an indirect impact on perceived career barriers, coping self-efficacy, and career decidedness, they are not directly focused on these three career outcomes. Specifically, several perceived career barriers measured by the CBI-R such as sex discrimination, racial

discrimination, disability/health concerns, and difficulties with networking and socialization were not addressed by the intervention used. An assessment of other career variables such as the participants' self-awareness related to their vocational interests, skills, and values might have yielded a more conclusive result.

Other career outcomes that might have been useful to study might be career maturity, awareness about career resources and self-efficacy related to career information seeking

Future Research. The results of this study suggest several interesting future directions for research. Results of this study imply that at 1.5 years after the intervention, students who participated in this intervention were retained at higher rates than those who did not. It would be extremely useful to educational institutions, parents and students to examine the effect of such CACGS-based career intervention on university retention rates at longer time intervals. Ongoing research to examine this is indicated. Finally, the examination of the various career outcomes studied in the present research could be extended to other groups such as employed individuals, or special populations.

This study yielded several non-significant results. One of the possible reasons for this might be that as mentioned above, one of the significant drawbacks of this study is the lack of a well-matched control group. Therefore, it would be of great importance to conduct this study with a well-matched control group to better examine the impact of a classroom-based CACGS career intervention on the various career outcomes of interest.

Another exciting idea for future research is to examine the impact of an intervention like the one used in this study on individuals' vocational self-awareness and awareness about the world of work. In addition, a more thorough assessment of career

decidedness in college-age students who are struggling with career indecision is recommended. This could also be used to develop specific career interventions that would address career indecision and its causes.

While this study only examined the impact of a CACGS-based career intervention, avenues of further research are manifold. There is a necessity for similar research using CACGS other than the KCPS, or non-CACGS interventions. Furthermore, this is one the very few studies that looked at interventions geared towards reducing perceived career barriers and increasing coping self-efficacy. There is need for much more extensive research in this area. In particular, additional research needs to be conducted to identify possible factors that might impact perceived career barriers and coping self-efficacy. Interventions based on these factors need to be developed and their efficacy studied. In particular, several of the barriers measured by the CBI-R subscales (e.g., sex discrimination, racial discrimination, disability/health concerns, and difficulties with networking and socialization) pose formidable threats to career decidedness. Interventions that attend to these specific barriers might be extremely useful in the career decision-making process.

Other measures that might be useful in measuring participants' career decidedness in the future include the Career Decision Scale (CDS; Osipow et. al., 1976), My Vocational Situation (MVS; Holland, Daiger & Power, 1980), and the Career Decision-Making Difficulties Questionnaire (CDDQ; Gati, Krausz & Osipow, 1996). Like in the current study, most such instruments measure career certainty by one-item (e.g., CDDQ) or two-item (e.g. CDS) measures. However, additional insight into career decidedness

may have been obtained through the measurement of the antecedents of career indecision (e.g. CDS, CDDQ) or vocational identity (e.g., MVS).

Implications. The findings of this study show that use of a classroom-based CACGS intervention might be useful in increasing university retention. A higher proportion of students who engaged in vocational exploration using the KCPS were retained at the university than students who did not. This indicates that increasing awareness about the world of work and of the individuals' vocational interests, skills, and values positively impacts persistence at university. Counselors and advisors working with students who are struggling with career indecision or questioning the choice to remain in college, could encourage these students to use CACGS such as the KCPS, and personal career development courses as a way of increasing awareness about career choices and their outcomes.

The intervention employed in this study, although addressing several factors impacting vocational indecision and exploration, might not have targeted the career outcomes of interest to this study. In particular, the study was focused to a greater extent of vocational self-exploration than on identifying and reducing perceived career-related barriers or coping self-efficacy. One of the implications of this study is that the intervention used may have targeted career outcomes not measured by this study. Further research is recommended to explore the career-related outcomes that may have been impacted by the use of this classroom-based CACGS intervention.

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.

American College Testing, Inc. (1995). *DISCOVER*. Hunt Valley, MD: Author.

American College Testing (2008). *National Collegiate Retention and Persistence to Degree Rates*. Iowa City, IA: Author.

Archer, J. J., & Cooper, (1999). An initiator-catalyst approach to college counseling outreach. *Journal of College Counseling, 2,* 76- 88.

Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Behrens, T., & Altman, B. (1998). Technology: Impact on and implications for college career centers. *Journal of Career Planning and Employment, 58,* 19-24.

Betz, N. E., & Hackett, G. (1997). Applications of self-efficacy theory to the career assessment of women. *Journal of Career Assessment, 5*, 383–402.

Betz, N. E., & Rottinghaus, P. J. (2006). Current research on parallel measures of interests and confidence for basic dimensions of vocational activity. *Journal of Career Assessment, 14*, 56-76.

Betz, N. E., Harmon, L. W., & Borgen, F. H. (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.

Bloch, D. P. (2006). Using information and technology in career counseling. In D. Capuzzi & M. Stauffer (Eds.), *Career and life style planning: Theory and application* (pp. 152-177). Boston: Allyn & Bacon.

Blustein, D. L., Phillips, S. D., Jobin-Davis, K., Finkelberg, S. L., & Roarke, A. E. (1997). A theory-building investigation of the school-to-work transition. *The Counseling Psychologist, 25,* 364-402.

Boyce, A., & Rainie, L. (2002). Online job hunting. Pew Internet Project Data Memo. Retrieved October 12, 2008. [WWW page]. URL http://www.pewinternet.org.

Braxton, J. M., Bray, N. J., & Berger, J. B. (2000). Faculty teaching skills and their influence on the college student departure process. *Journal of College Student Development, 41*, 215-224.

Brown, S. D., & Ryan Krane, N. E. (2000). Four (or five) sessions and a cloud of dust: Old assumptions and new observations about career counseling. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (3rd ed., pp. 740–766). New York: Wiley.

Brown, S. D., Ryan Krane, N. E., Brecheisen, J., Castelino, P., Budisn, I., Miller, M., et al. (2003). Critical ingredients of career choice interventions: More analyses and new hypotheses. *Journal of Vocational Behavior, 62*, 411-428.

Brown, D. (2003). *Career information, career counseling, and career development*. Boston: Allyn & Bacon.

Brownlow, S., Smith T. J., & Ellis, B. R. (2002). How interest in science negatively influences perceptions of women. *Journal of Science Education and Technology, 11(2)*, 135-144.

Burlew, A. K., & Johnson, J. L. (1992). Role conflict and career advancement among African American women in nontraditional professions. *The Career Development Quarterly, 40(4),* 302–312.

Chartrand, J. M., & Rose, M. L. (1995). *Project PROVE: Preventing recidivism through opportunities in vocal education*. Unpublished manuscript, Virginia Commonwealth University, Richmond, VA.

Chartrand, J. M., Robbins, S. B., Morrill, W. H., & Boggs, K. (1990). Development and validation of the Career Factors Inventory. *Journal of Counseling Psychology, 37,* 490–501.

Chronister, K. M., & McWhirter, E. H. (2003). Applying Social Cognitive Career Theory to the empowerment of battered women. *Journal of Counseling & Development, 81*, 418-425.

Chung, Y. B., & Harman, L. W. (1994). The career interests and aspirations of gay men: how sex-role orientation is related. *Journal of Vocational Behavior, 45*, 223 - 239.

Chung YB. (1995). Career decision making of lesbian, gay, and bisexual individuals. *The Career Development Quarterly, 44*, 178–190.

Coll, K. M., & Stewart, R. (2002). College Student Retention: Instrument Validation and Value for Partnering Between Academic and Counseling Services. *College Student Journal. 42(1),* 41-56.

Creed, P., & Patton, W. (2003). Differences in career attitude and career knowledge for high school students with and without paid work experience. *International Journal of Educational and Vocational Guidance, 3*, 21–33.

Creed, P. A., Prideaux, L., & Patton, W. (2005). Antecedents and consequences of career decisional states in adolescence. *Journal of Vocational Behavior, 67,* 397-412.

Davidson, M. M. (2001). The computerization of career services: Critical issues to consider. *Journal of Career Development, 27(3),* 217-228.

Djadali, Y., & Malone, J. F. (2004). Distance career counseling: A technology-assisted model for delivering career counseling services. In *CyberBytes: Highlighting compelling uses of technology in counseling.* (ERIC Document Reproduction Service No. ED478215)

Donnay, D. A. C., Morris, M. L., Schaubhut, N. A., & Thompson, R. C. (2005). *Strong Interest Inventory manual: Research, development, and strategies for interpretation*. Mountain View, CA: CPP.

Educational Testing Service. (1985). *System of Interactive Guidance and Information*. Princeton, NJ: Author.

Educational Testing Service. (1986a). *SIGI PLUS*. Princeton, NJ: Author.

Etringer, B. D., Hillerbrand, E., & Hetherington, C. (1990). The influence of sexual orientation on career decision making: A research note. *Journal of Homosexuality*, *19*, 103–111.

Eveland, A. P., Conyne, R. K., & Blakney, V. L. (1998). University students and career decidedness: Effects of two computer-based career guidance interventions. *Computers in Human Behavior, 14*, 531-541.

Fassinger, R. E. (2000). Gender and sexuality in human development: Implications for prevention and advocacy in counseling psychology. In S. D. Brown and R. W.

Lent (Eds.), *Handbook of counseling psychology*. (3rd ed., pp. 346-378). New York: Wiley.

Feduccia, M.D. (2003). Career counseling for college students: The influence of a computer-assisted career decision-making program on the stability of college major selection at a research-extensive university. Unpublished doctoral dissertation, Louisiana State University, Baton Rouge.

Feldman, K. A., Smart, J. C., & Ethington, C. (1999). Major field and person–environment fit: Using Holland's theory to study change and stability in college students. *Journal of Higher Education 70(6),* 642–669.

Flynn, M. (1990). The response of disadvantaged students to automated career information: A field trial. *Career Planning and Adult Development Journal, 6(2),* 48-52.

Folsom, B., & Reardon, R. (2003). College career courses: Design and accountability. *Journal of Career Assessment, 11(4),* 421-450.

Foss C. J., & Slaney R. B. (1986). Increasing nontraditional career choices in women: relation of attitudes toward women and responses to a career intervention. *Journal of Vocational Behavior, 28*, 191–202.

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.

Fowkes, K. M., & McWhirter, E. H. (2007). Evaluation of Computer-Assisted Career Guidance in Middle and Secondary Education Settings: Status, Obstacles, and Suggestions. *Journal of Career Assessment, 15(3),* 388-400.

Garis, J.W., & Niles, S.G. (1990). The separate and combined effects of SIGI or DISCOVER and a career planning course on undecided university students. *The Career Development Quarterly, 38,* 261-274.

Gati, I. (1994). Computer assisted career counseling: Challenges and prospects. In M.L. Savickas & W. B. Walsh (Eds.), *Handbook of Career Counseling Theory and Practice* (pp. 169-191). Palo Alto, CA: Davies-Black Publishing.

Gati, I., & Asher, I. (2001). The PIC model for career decision making: Prescreening, in-depth exploration, and choice. In F. T. L. Leong & A. Barak (Eds.), *Contemporary models in vocational psychology* (pp. 7-54). Mahwah. NJ: Lawrence Erlbaum.

Gati, I., Krausz, M., & Osipow, S. H. (1996). A taxonomy of difficulties in career decision making. *Journal of Counseling Psychology, 43*, 510–526.

Gati, I., & Saka, N. (2001). High school students' career-related decision-making difficulties. *Journal of Counseling and Development, 79,* 331-340.

Gati, I., Saka, N., & Krausz, M. (2001). "Should I use a computer-assisted career guidance system?" It depends on where your career decision-making difficulties lie. *British Journal of Counselling and Guidance, 29,* 301-321.

Gore, P. A., & 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.

Gottfredson, G. D., & Holland, J. L. (1991) *The Position Classification Inventory: Professional manual*. Odessa, FL: Psychological Assessment Resources.

Hackett, G., & Byars, A. M. (1996). Social cognitive theory and the career development of African American women. *Career Development Quarterly, 44*, 322-340.

Hannah, L. K., & Robinson, L. F. (1990). Survey report: How colleges help freshmen select courses and careers. *Journal of Career Planning and Employment, 1(4),* 53–57.

Harris-Bowlsbey, J., & Sampson, J. P. (2001). Computer-assisted career planning systems: Dreams and realities. *Career Development Quarterly, 49*, 250-260.

Holland, J. L. (1959). A theory of vocational choice. *Journal of Counseling Psychology, 6*, 35–45.

Holland, J. L. (1985). *Making vocational choices: A theory of vocational personalities and work environments.* Englewood Cliffs, NJ: Prentice–Hall.

Holland, J. L. (1992). *Making Vocational Choices: A Theory of Vocational Personalities and Work Environments.* Odessa, FL: Psychological Assessment Resources.

Holland, J. L. (1997). *Making vocational choices: A theory of vocational personalities and work environments* (3rd ed.). Odessa, FL: Psychological Assessment Resources.

Holland, J. L., Daiger, D. C., & Power, P. G. (1980). *My vocational situation: Description of an experimental diagnostic form for the selection of vocational assistance.* Palo Alto, CA: Consulting Psychologists Press.

Holland, J. L., Powell, A. B., & Fritzsche, B. A. (1994). *The Self Directed Search Professional User's Guide.* Odessa, FL: Psychological Assessment Resources.

Holland, J. H., Johnston, J. A., & Asama, N. F. (1993). The Vocational Identity Scale: A diagnostic and treatment tool. *Journal of Career Assessment, 1*, 1-12.

Hughes, K., & Karp, M. (2004). *School-based career development: A synthesis of the literature*. New York: Teachers College Columbia University, Institute on Education and the Economy.

Julien, H. (1999). Barriers to adolescents' information seeking for career decision making. *Journal of the American Society for Information Science, 50(1)*, 38–48.

Jussim, L., & Eccles, J. S. (1992). Teacher expectations 2: Construction and reflection of student achievement. *Journal of Personality and Social Psychology, 63*, 947–961.

Kivlighan, D. M., Johnston, J. A., Jr., Hogan, R. S., & Mauer, E. (1994). Who benefits from computerized career counseling? *Journal of Counseling and Development, 72,* 289-292.

Kuder Inc. (2007). *The Kuder Career Planning System*. Adel, IA: Author.

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.

Lent, R. W., Brown, S. D., Brenner, B., Chopra, S. B., Davis, T., Talleyrand, R. & Suthakaran, V. (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., & Hackett, G. (1996). Career development from a social cognitive perspective. In D. Brown & L. Brooks (Eds.), *Career choice and development* (pp. 373-422). San Francisco: Jossey-Bass.

Lent, R. W., Brown, S. D., Schmidt, J., Brenner, B., Lyons, H., & Treistman, D. (2003). Relation of contextual supports and barriers to choice behavior in engineering

majors: Test of alternative social cognitive models. *Journal of Counseling Psychology, 50,* 458–465.

Lent, R. W., Brown, S. D., Tallyrand, R., McPartland, E. B., Davis, T., Chopra, S. B., Alexander, M. S., Suthakaran, V., & Chai, C. M. (2002). Career choice barriers, supports, and coping strategies: College students' experiences. *Journal of Vocational Behavior, 60,* 61–72.

Lent, R. W., Singley, D., Sheu, H. B., Gainor, K. A., Brenner, B. R., Treistman, D., et al. (2005). Social cognitive predictors and life satisfaction: Exploring the theoretical precursors of subjective well-being. *Journal of Counseling Psychology, 52,* 429-442.

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.

Lenz, J. G., Reardon, R. C., & Sampson, J. P. (1993). Holland's theory and effective use of computer-assisted career guidance systems. *Journal of Career Development, 19,* 245-253.

Leong, F. T., & Chervinko, S. (1996). Construct validity of career indecision: Negative personality traits as predictors of career indecision. *Journal of Career Assessment, 4,* 315–329.

Leppel, K., Williams, M. L., & Waldauer, C. (2001). The impact of parental occupation and socioeconomic status on choice of college major. *Journal of Family and Economic issues, 22,* 373-394.

London, M. (1997). Overcoming Career Barriers: A model of cognitive and emotional processes for realistic appraisal and constructive coping, *Journal of Career Development, 24(1),* 25-38.

London, M. (2001). *Leadership development: Paths to self-insight and professional growth.* Mahwah, NJ: Lawrence Erlbaum Associates, Inc.

Lounsbury, J. W., Hutchens, T., & Loveland, J. (2005). An investigation of Big Five personality traits and career decidedness among early and middle adolescents. *Journal of Career Assessment, 13(1),* 25-39.

Luzzo, D. A., & Funk, D. P., & Strang, J. (1996). Attributional retraining increases career decision-making self-efficacy. *Career Development Quarterly, 44(4),* 378-397.

Luzzo, D.A., & McWhirter, E.H. (2001). Sex and ethnic differences in the perception of educational and career-related barriers and levels of coping efficacy. *Journal of Counseling and Development, 79,* 61-67.

Luzzo, D. A., & Pierce, G. (1996). Effects of DISCOVER on the career maturity of middle school students. *The Career Development Quarterly, 45(2),* 170-172.

Luzzo, D. A. (1993). Ethnic differences in college students' perceptions of barriers to career development. *Journal of Multicultural Counseling and Development, 21(4),* 227–236.

Luzzo, D. A. (1995). Gender differences in college students' career maturity and perceived barriers in career development. *Journal of Counseling and Development, 73*, 319-322.

Luzzo, D. A. (1996). Exploring the relationship between the perception of occupational barriers and career development. *Journal of Career Development, 22*, 239-248.

Luzzo, D. A. (1999). Identifying the career decision-making needs of nontraditional college students. *Journal of Counseling and Development, 77*, 135-140.

Malgwi, C., Howe, M., & Burnaby, P. (2005). Influence on students' choice of college major. *Journal of Education for Business, 80(5)*, 275-282.

Malone, J. F., Miller, R. M., & Hargraves, K. (2001, November). Using the internet to help college students with career planning. *USA Today*, p. 52-53.

Maple, S. A., & Stage, F. K. (1991). Influences on the choice of math/science major by gender and ethnicity. *American Educational Research Journal, 28*, 37-60.

Mariani, M. (1995/1996, Winter). Ride the rising tide: Counselors increasingly use computer-based tools to help career searchers sail for the land of work and money. *Occupational Outlook Quarterly*, 17-26.

Marin, P., & Splete, H. (1991). A comparison of the effects of two computer-based counseling interventions on the career decidedness of adults. *The Career Development Quarterly, 39*, 360–371.

Mau, W. C. (1999). Effects of computer-assisted career decision making on vocational identity and career exploratory behaviors. *Journal of Career Development, 25*, 261–274.

Mawson, D. L., & Kahn, S. E. (1993). Group process in a women's career intervention. *The Career Development Quarterly, 41*, 238–245

McCarthy, C. J., Moller, N., & Beard, L. M. (2003). Suggestions for training studentsusing the internet for career counseling. *The Career Development Quarterly, 51*, 368 – 380.

McWhirter, E. H. (1997). Perceived barriers to education and career: Ethnic and gender differences. *Journal of Vocational Behavior, 50*, 124-140.

McWhirter, E. H., Rasheed, S., & Crothers, M. (2000). The effects of high school career education on social-cognitive variables. *Journal of Counseling Psychology, 47*, 330-341.

McWhirter, E. H., Torres, D., & Rasheed, S. (1998). Assessing barriers to women's career adjustment. *Journal of Career Assessment, 6*, 449-479.

Nauta, M. M., Epperson, D. L., & Kahn, J. H. (1998). A multiple-groups analysis of predictors of higher level career aspirations among women in mathematics, science, and engineering majors. *Journal of Counseling Psychology, 45*, 483-496.

National Center for Education Statistics. (2003). *High school guidance counseling.* Washington, DC: U.S. Department of Education, National Center for Education Statistics.

Niles, S., & Garis, J. W. (1990). The effects of a career planning course and a computer-assisted career guidance program (SIGI PLUS) on undecided university students. *Journal of Career Development, 16*, 237–248.

Noll, C. L., & Graves, P. R. (1996). The impact of technology on career center practices. *Journal of Career Planning and Employment, 56*, 41–46.

Offer, M., & Sampson, J. P. (1999). Quality in the content and use of information and communications technology in guidance. *British Journal of Guidance and Counselling, 27(4),* 501-516

Offer, M. (1997). *Supporting career guidance in the information society: A review of the use of computer-assisted guidance and the Internet in Europe*. Unpublished manuscript, Advice Guidance and Training, Winchester, United Kingdom.

Oliver, L. W., & Spokane, A. R. (1988). Career-intervention outcome: What contributes to client gain? *Journal of Counseling Psychology, 35*, 447–462.

Orndorff, R. M., & Herr, E. L. (1996). A comparative study of declared and undeclared college students on career uncertainty and involvement in career development activities. *Journal of Counseling and Development, 74*, 632-639.

Osborn, D., Peterson, G., Sampson, J., & Reardon, R. (2003). Client anticipations of computer-assisted career guidance systems: A cognitive information processing perspective. *The Career Development Quarterly, 51,* 356-367.

Osipow, S. H., Carney, C., Winer, J. L., Yanico, B., & Koschier, M. (1976). *The Career Decision Scale.* Odessa, FL: Psychological Assessment Resources.

Palmer, R., & Howland, P. (1997). Computer-assisted career guidance systems and the new world of work: Practical and ethical dilemmas. Career Planning and *Adult Development Journal, 13*, 9-17.

Peterson, G. W., Ryan-Jones, R. E., Sampson, J. P., Jr., Reardon, R. C., & Shahnasarian, M. (1994). A comparison of the effectiveness of three computer-assisted career guidance systems: DISCOVER, SIGI, and SIGI-Plus. *Computers in Human Behavior, 10*, 189-198.

Philips, S. D. & Imhoff, A. (1997).Women and career development: A decade of research. *Annual Review of Psychology, 48,* 31–59.

Rea-Poteat, M. B., & Martin, P. F., (1991). Taking your place: A summer program to encourage non-traditional career choices for adolescent girls. *The Career Development Quarterly, 40,* 182 –188.

Reile, D., & Harris-Bowlsbey, J. (2000). Using the internet in career planning and assessment. *Journal of Career Assessment, 8*, 69-84.

Sampson, J. P., & Lumsden, J. A. (2000). Ethical issues in the design and use of Internet-based career assessment. *Journal of Career Assessment, 8*, 21-35.

Sampson, J. P. (1999). Integrating Internet-based distance guidance with services provided in career centers. *The Career Development Quarterly, 47*, 243-254.

Sampson, J. P., Peterson, G. W., Reardon, R. C., & Lenz, J. G. (1999). *Improving career services through readiness assessment: A cognitive information processing approach*. Center for the Study of Technology in Counseling and Career Development, Florida State University, Tallahassee, FL.

Savickas, M. L. (1984). Career maturity: The construct and its measurement. *Vocational Guidance Quarterly, 32*, 222-231.

Schroer, A. C. P., & Dorn, F. J. (1986). Enhancing the career and personal development of gifted college students. *Journal of Counseling and Development, 64*, 567–571.

Sidle, M. W., & McReynolds, J. (1999). The freshman year experience: Student retention and success. *NASPA Journal, 36 (4),* 288-300.

Smart, J. C., Feldman, K. A., and Ethington, C. A. (2000). *Academic Disciplines: Holland's Theory and the Study of College Students and Faculty.* Nashville, TN: Vanderbilt University Press.

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.

Stevens, D. T., & Lundberg, D. J. (1998). The emergence of the Internet: Enhancing career counseling education and services. *Journal of Career Development, 24(3),* 195-208.

Super, D. E. (1992). Toward a comprehensive theory of career development. In D. Montross & C. Shinkman (Eds.), *Career development: Theory and practice* (pp. 35-64). Springfield, IL: Thomas

Super, D.E, Thompson, A., Lindeman, H., Jordaan, J., & Meyers, R. (1981). *Career Development Inventory.* Palo Alto: Consulting Psychologists Press.

Swanson, J. L. (1995). The process and outcome of career counseling. In W. B. Walsh & S. H. Osipow (Eds.), *The handbook of vocational psychology* (pp. 217–259). Mahwah, NJ: Erlbaum.

Swanson, J.L., & Daniels, K.K. (1995a). [Evaluation of the Career Barriers Inventory—Revised]. Unpublished raw data, Southern Illinois University, Carbondale, IL.

Swanson, J. L., & Gore, P. A. (2000). Advances in 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., & Tokar, D. M. (1991a). College students' perceptions of barriers to career development. *Journal of Vocational Behavior, 38*, 92–106.

Swanson, J. L., & Tokar, D. M. (1991b). Development and initial validation of the Career Barriers Inventory. *Journal of Vocational Behavior, 39*, 344–361.

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(4),* 431-450.

Swanson, J. L., Daniels, K. K., & Tokar, D. M. (1996). Measuring perceptions of career-related barriers: The Career Barriers Inventory. *Journal of Career Assessment, 4*, 219-244.

Taber, B. J., & Luzzo, D. A. (1999). A comprehensive review of research evaluating the effectiveness of DISCOVER in promoting career development (ACT Research Report 99.3). Iowa City, IA: American College Testing Program.

Tinto, V. (1987). *Leaving college: Rethinking the causes and cures of student attrition*. Chicago: University of Chicago Press.

Tinto, V. (2002). *Establishing Conditions for Student Success*. Address to the 11th Annual Conference of the European Access Network, Monash University, Prato, Italy, June.

Watts, A. G. (1993). The politics and economics of computer-aided careers guidance systems. *British Journal of Guidance and Counselling, 21(2),* 175-188.

Weissberg, M., Berentsen, M., Cote, A., Carvey, B., & Health, K. (1982). An assessment of the personal, career and academic needs of undergraduate students. *Journal of College Student Personnel, 23*, 115-122.

Whitson, S. C., Brecheisen, B. K., & Stephens, J. (2003). Does treatment modality affect career counseling effectiveness? Journal *of Vocational Behavior, 62,* 390-410.

Whiston, S. C., Sexton, T. L., & Lasoff, D. L. (1998). Career-intervention outcome: A replication and extension of Oliver and Spokane (1988). *Journal of Counseling Psychology, 45(2),* 150-165.

Yang, E., Wong, S.C., Hwang, M, & Heppner, M. (2002). Widening our global view: The development of career counseling services for international students. *Journal of Career Development, 28*, 203-213.

Zytowski, D. G. & Luzzo, D. A. (2002). Developing the Kuder Skills Assessment. *Journal of Career Assessment, 10*, 190-199.

Zytowski, D. G. (2001). Kuder Career Search with person match: Career assessment for the 21st century. *Journal of Career Assessment, 9*, 229-241.

Zytowski, D. G. (2001). *Kuder career search: User's manual*. Adel, IA: National Career Assessment Services.

Zytowski, D. G. (2004). *Kuder Career Search user manual*. Adel, IA: National Career Assessment Services, Inc.

Zytowski, D. (2006). Super Work Values Inventory–Revised: Users' manual [Technical Manual]. URL http://www.kuder.com/downloads/SWV-Tech-Manual.pdf

Table 1. Description of participants of the Intervention Group and Control Group-1

	Intervention Group			Control Group-1		
Semester	M	F	Total	M	F	Total
Spring 2007	24	36	160	18	15	13
Fall 2007	10	19	129	15	30	45
Spring 2008	13	28	141	11	10	21
Total	47	83	130	34	45	79

* *Note:* M = Male, F = Female*; N* = 209

Table 2. Description of the Intervention Group

Semester	*N* = 130	Particip. Rate*	% 1st yr	% 2nd yr	% 3rd yr	% 4th yr
Spring 2007	60	67.4	70.0	20.0	5.0	5.0
Fall 2007	29	70.7	17.2	48.3	20.7	13.8
Spring 2008	41	74.6	53.7	26.8	0.0	19.5
TOTAL	130					

* *Note:* Participation rate only includes students who have completed both pretest and posttest measures. Participants who completed only pretest measures are not included.

Table 3. Description of the Control Group - 1

Semester	*N* = 79	Particip. Rate*	% 1st yr	% 2nd yr	% 3rd yr	% 4th yr
Spring 2007	13	68.4	53.8	15.4	23.1	7.7
Fall 2007	45	70.3	97.8	2.2	0.0	0.0
Spring 2008	21	72.4	71.4	19.1	9.5	0.0
TOTAL	79					

* *Note:* Participation rate only includes students who have completed both pretest and posttest measures. Participants who completed only pretest measures are not included.

Table 4. Frequencies and Percentages on Demographic Variables for the Intervention Group, Control Group-1, and Control Group-2

Variable		Int. Group (*N* = 130)		Ctrl Gp-1 (*N* = 130)		Ctrl Gp-2 (*N* = 130)	
		Freq	%	Freq	%	Freq	%
Gender							
	Male	47	36.2	34	43.0	152	50.7
	Female	83	63.8	45	57.0	149	49.3
Race/Ethnicity							
	Caucasian/White	112	86.2	71	89.9	270	90.0
	African-American	7	5.4	2	2.5	4	1.3
	Hispanic/Latino(a)	4	3.1	3	3.8	5	1.7
	Asian-American	3	2.3	1	1.3	11	3.7
	Native American	1	.8	0	.0	1	.3
	Other	3	2.3	2	2.5	9	3.0
College Year							
	Freshman	69	53.1	66	83.5	110	36.7
	Sophomore	37	28.5	7	8.9	103	34.3
	Junior	9	6.9	5	6.3	84	28.0
	Senior	15	11.5	1	1.3	3	1.0
Major Declared at Pretest							
	No	73	56.2	27	34.2	N/A	N/A
	Yes	57	43.8	52	65.8	N/A	N/A
Major Declared at Posttest							
	No	77	59.2	26	32.9	N/A	N/A
	Yes	53	40.8	53	67.1	N/A	N/A

* *Note:* Int. Group = Intervention Group; Ctrl Gp-1 = Control Group-1; Ctrl Gp-2 = Control Group-2.

Table 5. Description of Control Group-2

Semester	Intervention Group		Control Group – 2	Time Interval (at Fall 2008)	
			(year entered college)	Since entering college (yrs)	Since intervention (yrs)
Spring 2007	1st year	68.2%	Fall 2006	2	1.5
	2nd year	24.2%	Fall 2005	3	1.5
Fall 2007	1st year	35.3%	Fall 2007	2	1
	2nd year	44.1%	Fall 2006	3	1
Spring 2008	1st year	52.2%	Fall 2007	2	0.5
	2nd year	26.1%	Fall 2006	3	0.5

Table 6. Characteristics of the CBI-R Subscales

Subscale	Sample Item	No. of items	α Current Study Pretest (*N*=209)	α Current Study Posttest (*N*=209)	Swanson et. al. (1996) α (*N*=100)	Swanson et. al. (1996) Corr. with CBI
Sex Discrimination	"experiencing sex discrimination in hiring for a job"	7	.91	.91	.86	.96
Lack of Confidence	"not feeling confident about my ability on the job"	4	.79	.85	.77	.93
Multiple-Role Conflict	"stress at work affecting my life at home"	8	.87	.88	.78	.95
Conflict Between Children and Career Demands	"feeling guilty about working when my children are young"	7	.85	.88	.75	.97
Racial Discrimination	"experiencing racial harassment on the job"	6	.90	.91	.84	.84
Inadequate Preparation	"lacking the required skill for my job"	5	.84	.86	.85	.72
Disapproval by Significant Others	"my parents/family don't approve of my choice of job/career"	3	.79	.82	.64	1.00

Table 6. (continued)

Subscale	Sample Item	No. of items	**α** Current Study Pretest (*N*=209)	**α** Current Study Posttest (*N*=209)	Swanson et. al. (1996) **α** (*N*=100)	Swanson et. al. (1996) Corr. with CBI
Decision-Making Difficulties	"not being sure how to choose a career direction"	8	.87	.89	.83	.83
Dissatisfaction With Career	"being dissatisfied with my job/career"	5	.82	.83	.79	.91
Discouraged From Choosing Nontraditional Careers	"being discourage from pursuing fields which are nontraditional for my sex"	5	.86	.85	.75	.88
Disability/Health Concerns	"having a disability which limits my choice of careers"	3	.75	.78	.76	.95
Job Market Constraints	"no demand for my area of training"	4	.79	.85	.68	(new scale)
Difficulties With Networking/Socialization	"unsure of how to advance in my career"	5	.80	.80	.64	(new scale)
Total CBI-R		70	.98	.98		

* *Note:* CBI-R = Career Barriers Inventory – Revised (Swanson, Daniels, & Tokar, 1996); CBI = Career Barriers Inventory (Swanson & Tokar, 1991b).

Table 7. Six-week Test-Retest Reliability of the CBI-R subscales for this Study

	Time 1		Time 2		*r*
Subscale	*Mean*	*SD*	*Mean*	*SD*	
Sex Discrimination	3.21	1.47	3.19	1.38	.72
Lack of Confidence	3.36	1.37	3.30	1.37	.66
Multiple-Role Conflict	3.89	1.19	3.75	1.16	.64
Conflict Between Children and Career Demands	3.47	1.20	3.52	1.26	.67
Racial Discrimination	2.71	1.45	2.75	1.42	.64
Inadequate Preparation	3.48	1.30	3.47	1.28	.56
Disapproval by Significant Others	2.63	1.44	2.69	1.43	.57
Decision-Making Difficulties	4.16	1.20	3.89	1.22	.64
Dissatisfaction With Career	3.98	1.25	3.77	1.89	.62
Discouraged From Choosing Nontraditional Careers	2.68	1.36	2.71	1.21	.54
Disability/Health Concerns	2.83	1.44	2.94	1.47	.57
Job Market Constraints	3.72	1.31	3.64	1.36	.62
Difficulties With Networking/Socialization	3.69	1.22	3.60	1.14	.62
Total CBI-R	3.45	1.07	3.39	1.05	.70

Note: CBI-R = Career Barriers Inventory – Revised; *N* = 209

Table 8. Characteristics of the CSE Subscales

Subscale	Sample Item	No. of items	**α** Current Study Pretest (*N*=209)	**α** Current Study Posttest (*N*=209)
Sex Discrimination	"experiencing sex discrimination in hiring for a job"	7	.89	.91
Lack of Confidence	"not feeling confident about my ability on the job"	4	.78	.83
Multiple-Role Conflict	"stress at work affecting my life at home"	8	.83	.86
Conflict Between Children and Career Demands	"feeling guilty about working when my children are young"	7	.85	.86
Racial Discrimination	"experiencing racial harassment on the job"	6	.89	.91
Inadequate Preparation	"lacking the required skill for my job"	5	.82	.85
Disapproval by Significant Others	"my parents/family don't approve of my choice of job/career"	3	.81	.81

Table 8. (continued)

Subscale	Sample Item	No. of items	**α** Current Study Pretest (*N*=209)	**α** Current Study Posttest (*N*=209)
Decision-Making Difficulties	"not being sure how to choose a career direction"	8	.88	.90
Dissatisfaction With Career	"being dissatisfied with my job/career"	5	.75	.80
Discouraged From Choosing Nontraditional Careers	"being discouraged from pursuing fields which are nontraditional for my sex"	5	.86	.88
Disability/Health Concerns	"having a disability which limits my choice of careers"	3	.75	.79
Job Market Constraints	"no demand for my area of training"	4	.79	.84
Difficulties With Networking/Socialization	"unsure of how to advance in my career"	5	.77	.79
Total CSE Scale		70	.98	.98

* *Note:* CSE = Coping Self-Efficacy Scale

Table 9. Six-week Test-Retest Reliability of the CSE subscales for this Study

	Time 1		Time 2		*r*
Subscale	*Mean*	*SD*	*Mean*	*SD*	
Sex Discrimination	5.54	1.09	5.50	1.17	.66
Lack of Confidence	5.41	1.06	5.38	1.14	.51
Multiple-Role Conflict	5.21	.91	5.23	.97	.65
Conflict Between Children and Career Demands	5.43	.96	5.37	.97	.60
Racial Discrimination	5.62	1.18	5.60	1.19	.59
Inadequate Preparation	5.35	1.02	5.27	1.08	.56
Disapproval by Significant Others	5.81	1.18	5.73	1.18	.51
Decision-Making Difficulties	5.04	1.07	5.18	1.07	.65
Dissatisfaction With Career	5.04	.97	5.09	1.01	.59
Discouraged From Choosing Nontraditional Careers	5.78	1.05	5.66	1.12	.60
Disability/Health Concerns	5.48	1.24	5.48	1.21	.43
Job Market Constraints	5.05	1.13	5.10	1.17	.63
Difficulties With Networking/Socialization	5.19	.96	5.17	1.01	.60
Total CSE	5.36	.86	5.35	.93	.69

Note: CSE = Coping Self-Efficacy Scale; *N* = 209

Table 10. Means, Standard Deviations, and Intracorrelations for Pretest CBI-R Variables

	M	*SD*	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sex Discrimination	3.21	1.47	.64	.72	.71	.69	.66	.63	.53	.62	.77	.59	.63	.67	.85
2. Lack of Confidence	3.36	1.38	--	.68	.64	.57	.76	.66	.60	.65	.59	.47	.65	.69	.80
3. Multiple Role Conflict	3.89	1.19		--	.79	.61	.75	.69	.64	.79	.62	.57	.74	.76	.89
4. Conflict btw. Children and Career Demands	3.47	1.20			--	.60	.68	.61	.57	.69	.64	.52	.68	.66	.84
5. Racial Discrimination	2.72	1.46				--	.65	.68	.35	.46	.70	.70	.56	.52	.76
6. Inadequate Preparation	3.48	1.30					--	.70	.68	.75	.66	.54	.75	.79	.88
7. Disapproval by Significant Others	2.63	1.44						--	.48	.61	.71	.59	.58	.58	.79
8. Decision Making Difficulties	4.17	1.20							--	.72	.49	.26	.67	.76	.75
9. Dissatisfaction with Career	3.98	1.25								--	.57	.41	.74	.76	.83
10. Discouraged from Choosing Nontrad. Career	2.68	1.36									--	.52	.58	.62	.80
11. Disability/ Health Concerns	2.83	1.44										--	.47	.47	.65
12. Job Market Constraints	3.72	1.31											--	.80	.83
13. Difficuties with Networking/ Socialization	3.69	1.22												--	.85
14. TOTAL CBI-R	3.45	1.07													--

* *Note:* CBI-R = Career Barriers Inventory – Revised; $N = 209$; All correlations are significant at the $p < .001$ level.

Table 11. Means, Standard Deviations, and Intracorrelations for Posttest CBI-R Variables

	M	*SD*	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sex Discrimination	3.19	1.38	.72	.73	.73	.67	.67	.62	.57	.66	.77	.66	.71	.68	.87
2. Lack of Confidence	3.30	1.38	--	.69	.63	.58	.77	.61	.69	.70	.65	.57	.74	.76	.85
3. Multiple Role Conflict	3.75	1.16		--	.81	.59	.76	.61	.66	.71	.61	.57	.73	.75	.89
4. Conflict btw. Children and Career Demands	3.52	1.26			--	.50	.68	.52	.56	.66	.62	.54	.74	.68	.83
5. Racial Discrimination	2.76	1.42				--	.54	.66	.37	.50	.69	.75	.50	.49	.73
6. Inadequate Preparation	3.47	1.29					--	.60	.70	.78	.62	.54	.77	.79	.86
7. Disapproval by Significant Others	2.69	1.43						--	.49	.52	.72	.59	.49	.56	.73
8. Decision Making Difficulties	3.89	1.22							--	.77	.48	.35	.69	.75	.77
9. Dissatisfaction with Career	3.78	1.19								--	.54	.53	.75	.76	.84
10. Discouraged from Choosing Nontrad. Career	2.71	1.21									--	.57	.59	.61	.79
11. Disability/ Health Concerns	2.94	1.47										--	.57	.50	.71
12. Job Market Constraints	3.64	1.36											--	.78	.85
13. Difficuties with Networking/ Socialization	3.60	1.14												--	.86
14. TOTAL CBI-R	3.39	1.05													--

* *Note:* CBI-R = Career Barriers Inventory – Revised; $N = 209$; All correlations are significant at the $p < .001$ level.

Table 12. Means, Standard Deviations, and Intracorrelations for Pretest CSE Variables

	M	*SD*	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sex Discrimination	5.54	1.09	.60	.69	.71	.78	.65	.70	.53	.59	.80	.64	.64	.62	.85
2. Lack of Confidence	5.41	1.06	--	.69	.58	.52	.72	.55	.68	.67	.59	.51	.68	.74	.80
3. Multiple Role Conflict	5.21	.91		--	.73	.61	.72	.68	.69	.72	.66	.56	.68	.69	.87
4. Conflict btw. Children and Career Demands	5.43	.96			--	.73	.60	.64	.59	.62	.69	.62	.63	.59	.84
5. Racial Discrimination	5.62	1.18				--	.63	.70	.49	.50	.79	.72	.58	.54	.82
6. Inadequate Preparation	5.35	1.02					--	.58	.67	.72	.69	.48	.73	.75	.84
7. Disapproval by Significant Others	5.81	1.18						--	.51	.47	.73	.62	.53	.51	.76
8. Decision Making Difficulties	5.04	1.07							--	.75	.53	.44	.73	.72	.80
9. Dissatisfaction with Career	5.04	.97								--	.57	.42	.74	.74	.80
10. Discouraged from Choosing Nontrad. Career	5.78	1.05									--	.65	.62	.62	.84
11. Disability/ Health Concerns	5.48	1.24										--	.50	.50	.71
12. Job Market Constraints	5.05	1.13											--	.73	.83
13. Difficuties with Networking/ Socialization	5.19	.96												--	.82
14. TOTAL CSE	5.36	.86													--

* *Note:* CSE = Coping Self-Efficacy Scale; $N = 209$; All correlations are significant at the $p < .001$ level.

Table 13. Means, Standard Deviations, and Intracorrelations for Posttest CSE Variables

	M	*SD*	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Sex Discrimination	5.50	1.17	.73	.77	.79	.78	.73	.71	.56	.65	.79	.70	.73	.71	.88
2. Lack of Confidence	5.38	1.44	--	.76	.71	.71	.79	.66	.72	.73	.72	.63	.76	.77	.87
3. Multiple Role Conflict	5.23	.97		--	.85	.70	.78	.70	.69	.77	.71	.63	.74	.78	.90
4. Conflict btw. Children and Career Demands	5.37	.97			--	.71	.73	.72	.62	.67	.75	.65	.70	.73	.88
5. Racial Discrimination	5.60	1.19				--	.69	.76	.57	.62	.80	.78	.64	.68	.85
6. Inadequate Preparation	5.27	1.08					--	.70	.76	.80	.72	.62	.79	.83	.89
7. Disapproval by Significant Others	5.73	1.18						--	.56	.61	.79	.65	.58	.65	.81
8. Decision Making Difficulties	5.17	1.07							--	.78	.62	.47	.73	.78	.81
9. Dissatisfaction with Career	5.09	1.01								--	.64	.53	.78	.78	.84
10. Discouraged from Choosing Nontrad. Career	5.66	1.12									--	.70	.66	.71	.86
11. Disability/ Health Concerns	5.48	1.21										--	.58	.59	.75
12. Job Market Constraints	5.10	1.17											--	.80	.84
13. Difficuties with Networking/ Socialization	5.17	1.01												--	.88
14. TOTAL CSE	5.34	.93													--

* *Note:* CSE = Coping Self-Efficacy Scale; $N = 209$; All correlations are significant at the $p < .001$ level.

Table 14. Means, Standard Deviations, and Intercorrelations for Pretest CBI-R and CSE Variables (N = 209)

Career Barriers Inventory - Revised	Coping Self-Efficacy Scale												
	1	2	3	4	5	6	7	8	9	10	11	12	13
1 = Sex Discrimination	**-.43**	**-.26**	**-.22**	**-.28**	**-.30**	**-.28**	**-.30**	-.14	-.16	**-.29**	**-.22**	**-.25**	**-.27**
2 = Lack of Confidence	**-.30**	**-.51**	**-.26**	**-.25**	**-.28**	**-.39**	**-.30**	**-.29**	**-.22**	**-.26**	**-.19**	**-.35**	**-.35**
3 = Multiple Role Conflict	**-.28**	-.18	**-.29**	**-.22**	**-.22**	**-.25**	**-.27**	-.13	-.15	**-.19**	-.15	**-.25**	**-.21**
4 = Child/Career Conflict	**-.27**	-.15	-.18	**-.30**	**-.20**	**-.21**	**-.19**	-.14	-.12	**-.18**	-.11	-.16	-.18
5 = Racial Discrimination	**-.32**	**-.19**	**-.25**	**-.25**	**-.37**	**-.28**	**-.32**	-.11	-.10	**-.35**	**-.22**	**-.21**	**-.20**
6 = Inadequate Preparation	**-.31**	**-.31**	**-.25**	**-.23**	**-.29**	**-.45**	**-.33**	**-.25**	**-.19**	**-.28**	-.16	**-.34**	**-.29**
7 = Disapproval by Significant Others	**-.31**	**-.24**	**-.31**	**-.23**	**-.28**	**-.29**	**-.48**	-.16	-.12	**-.32**	**-.22**	-.17	**-.20**
8 = Decision Making Difficulties	**-.26**	**-.29**	**-.22**	**-.22**	**-.21**	**-.34**	**-.23**	**-.44**	**-.31**	**-.18**	-.11	**-.35**	**-.33**
9 = Dissatisfaction with Career	**-.30**	**-.27**	**-.26**	**-.24**	**-.23**	**-.34**	**-.27**	**-.29**	**-.36**	**-.23**	**-.20**	**-.32**	**-.31**
10 = Nontraditional Career	**-.37**	**-.23**	**-.23**	**-.26**	**-.32**	**-.24**	**-.31**	-.15	-.15	**-.42**	**-.20**	**-.21**	**-.24**
11 = Disability/ Health Concerns	**-.22**	**-.67**	**-.18**	-.13	**-.18**	**-.20**	**-.26**	-.03	-.01	**-.21**	**-.31**	-.13	-.18
12 = Job Market Constraints	**-.27**	**-.22**	**-.19**	-.16	**-.21**	**-.31**	**-.19**	**-.23**	**-.22**	**-.19**	-.15	**-.41**	**-.32**
13 = Networking/ Socialization	**-.33**	**-.33**	**-.26**	**-.24**	**-.27**	**-.37**	**-.28**	**-.34**	**-.27**	**-.28**	**-.21**	**-.39**	**-.46**

* *Note:* CBI-R = Career Barriers Inventory – Revised; CSE = Coping Self-Efficacy Scale; Bold indicates significance at the $p < .01$ level.

Table 15. Means, Standard Deviations, and Intracorrelations for Posttest CBI-R and CSE Variables (N = 209)

	Coping Self-Efficacy Scale												
Career Barriers Inventory - Revised	1	2	3	4	5	6	7	8	9	10	11	12	13
1 = Sex Discrimination	**-.49**	**-.37**	**-.35**	**-.37**	**-.38**	**-.30**	**-.38**	**-.20**	**-.24**	**-.37**	**-.35**	**-.32**	**-.30**
2 = Lack of Confidence	**-.41**	**-.57**	**-.43**	**-.39**	**-.39**	**-.48**	**-.37**	**-.40**	**-.38**	**-.36**	**-.32**	**-.45**	**-.46**
3 = Multiple Role Conflict	**-.40**	**-.36**	**-.48**	**-.46**	**-.39**	**-.35**	**-.40**	**-.26**	**-.30**	**-.31**	**-.35**	**-.38**	**-.34**
4 = Child/Career Conflict	**-.34**	**-.25**	**-.35**	**-.45**	**-.32**	**-.25**	**-.31**	**-.20**	**-.20**	**-.27**	**-.26**	**-.28**	**-.26**
5 = Racial Discrimination	**-.40**	**-.37**	**-.40**	**-.40**	**-.53**	**-.33**	**-.42**	**-.22**	**-.24**	**-.41**	**-.46**	**-.28**	**-.30**
6 = Inadequate Preparation	**-.33**	**-.38**	**-.41**	**-.37**	**-.31**	**-.44**	**-.32**	**-.34**	**-.34**	**-.27**	**-.26**	**-.38**	**-.40**
7 = Disapproval by Significant Others	**-.40**	**-.35**	**-.46**	**-.44**	**-.41**	**-.37**	**-.59**	**-.30**	**-.28**	**-.41**	**-.34**	**-.28**	**-.32**
8 = Decision Making Difficulties	**-.34**	**-.39**	**-.36**	**-.28**	**-.30**	**-.41**	**-.30**	**-.51**	**-.42**	**-.24**	**-.21**	**-.41**	**-.40**
9 = Dissatisfaction with Career	**-.31**	**-.33**	**-.37**	**-.29**	**-.28**	**-.34**	**-.28**	**-.35**	**-.42**	**-.22**	**-.25**	**-.39**	**-.34**
10 = Nontraditional Career	**-.52**	**-.45**	**-.46**	**-.50**	**-.50**	**-.41**	**-.51**	**-.34**	**-.31**	**-.57**	**-.41**	**-.36**	**-.42**
11 = Disability/ Health Concerns	**-.35**	**-.30**	**-.32**	**-.34**	**-.37**	**-.28**	**-.35**	-.14	-.18	**-.30**	**-.54**	**-.27**	**-.23**
12 = Job Market Constraints	**-.33**	**-.35**	**-.36**	**-.33**	**-.28**	**-.35**	**-.26**	**-.32**	**-.34**	**-.22**	**-.23**	**-.46**	**-.37**
13 = Networking/ Socialization	**-.38**	**-.44**	**-.43**	**-.39**	**-.33**	**-.43**	**-.32**	**-.41**	**-.42**	**-.31**	**-.30**	**-.44**	**-.49**

* *Note:* CBI-R = Career Barriers Inventory – Revised; CSE = Coping Self-Efficacy Scale; Bold indicates significance at the $p < .01$ level.

Table 16. 2 X 2 (Group X Sex) ANOVAs for Pretest for the CBI-R and CSE.

	Group		Sex		Group X Sex	
	CBI-R	CSE	CBI-R	CSE	CBI-R	CSE
	F (1, 205)	*F* (1, 205)	*F* (1, 205)	*F* (1, 205)	*F* (1, 205)	*F* (1, 205)
1. Sex Discrimination	.01	.25	**40.94**	2.32	3.09	1.26
2. Lack of Confidence	.14	.06	4.02	.31	1.12	1.37
3. Multiple Role Conflict	3.91	.01	3.43	.31	1.10	.25
4. Conflict btw. Children and Career Demands	3.12	.08	6.04	.04	.32	.92
5. Racial Discrimination	.56	.14	2.83	.15	.28	1.46
6. Inadequate Preparation	2.97	.09	1.34	.08	2.30	5.40
7. Disapproval by Significant Others	.11	.01	.38	2.27	.52	2.15
8. Decision Making Difficulties	**23.16**	2.87	6.28	.02	1.45	.91
9. Dissatisfaction with Career	**10.80**	3.94	3.86	.31	.87	1.09
10. Discouraged from Choosing Nontrad. Career	.09	.03	7.03	1.21	1.75	1.24
11. Disability/ Health Concerns	1.08	.19	.85	1.06	.25	.52
12. Job Market Constraints	4.88	1.39	1.53	.04	.62	2.01
13. Difficuties with Networking/ Socialization	5.08	.03	2.10	.01	2.06	3.38

* *Note:* Underlines indicate significance at $p < .05$; Bold indicates significance at $p < .004$; $N = 209$; CBI-R = Career Barriers Inventory – Revised; CSE = Coping Self-Efficacy Scale.

Table 17. Means and Standard Deviations of Pretest CBI-R by Group and Sex

CBI-R Subscales		Intervention Group		Control Group – 1		Total	
		M	*SD*	*M*	*SD*	*M*	*SD*
Sex Discrimination	M	2.27	1.10	2.59	1.41	**2.40**	1.24
	F	3.84	1.44	3.48	1.25	**3.72**	1.38
	T	3.27	1.52	3.10	1.39	3.21	1.47
Lack of Confidence	M	3.02	1.18	3.16	1.22	3.08	1.19
	F	3.63	1.55	3.35	1.30	3.53	1.46
	T	3.41	1.45	3.27	1.26	3.36	1.38
Multiple Role Conflict	M	3.72	0.94	3.57	1.03	3.66	0.97
	F	4.22	1.33	3.70	1.15	4.04	1.29
	T	4.04	1.22	3.64	1.10	3.89	1.19
Child/Career Conflict	M	3.28	1.16	3.07	0.92	3.19	1.06
	F	3.79	1.23	3.39	1.27	3.65	1.25
	T	3.61	1.22	3.25	1.14	3.47	1.20
Racial Discrimination	M	2.38	1.38	2.65	1.28	2.49	1.34
	F	2.84	1.59	2.89	1.38	2.86	1.51
	T	2.68	1.53	2.79	1.33	2.72	1.46
Inadequate Preparation	M	3.31	1.21	3.27	1.21	3.30	1.20
	F	3.81	1.33	3.21	1.33	3.60	1.36
	T	3.63	1.31	3.24	1.27	3.48	1.30
Disapproval by Sig. Others	M	2.50	1.24	2.58	1.37	2.53	1.29
	F	2.78	1.52	2.56	1.55	2.70	1.53
	T	2.68	1.43	2.57	1.47	2.63	1.44
Decision Making Difficulties	M	4.10	1.30	3.52	0.85	3.86	1.17
	F	4.70	1.03	3.73	1.20	4.36	1.19
	T	4.49	1.17	3.64	1.06	4.17	1.20
Dissatisfaction with Career	M	3.90	1.21	3.49	1.04	3.73	1.15
	F	4.40	1.24	3.67	1.23	4.15	1.28
	T	4.22	1.25	3.59	1.15	3.98	1.25
Nontraditional Career	M	2.25	1.15	2.45	1.42	2.33	1.27
	F	3.02	1.41	2.70	1.27	2.91	1.37
	T	2.74	1.37	2.59	1.33	2.68	1.36

Table 17. (continued)

CBI-R Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group – 1 *M*	Control Group – 1 *SD*	Total *M*	Total *SD*
Disability/ Health Concerns	M	2.57	1.27	2.89	1.29	2.71	1.28
	F	2.87	1.62	2.98	1.38	2.91	1.53
	T	2.76	1.50	2.94	1.34	2.83	1.44
Job Market Constraints	M	3.65	1.33	3.38	1.06	3.54	1.22
	F	4.03	1.38	3.47	1.22	3.83	1.35
	T	3.89	1.37	3.43	1.15	3.72	1.31
Networking/ Socialization	M	3.55	1.15	3.41	1.10	3.49	1.13
	F	4.05	1.23	3.41	1.21	3.82	1.26
	T	3.87	1.22	3.41	1.16	3.69	1.22

* *Note.* Numbers in bold indicate significant mean differences by sex at the $p < .004$ level Numbers that are underlined indicate significant mean differences by group at the $p < .004$ level. M = male students; F = female students; T = all students (male + female). N =209.

Table 18. 2 X 2 (group X sex) MANCOVA (Wilk's Lambda) for Posttest CBI-R subscales controlling for Pretest CBI-R subscales.

Effect	Λ	*F*	Hypothesis *df*	Error *df*	η^2
Sex Discrimination	.658	**7.21**	13	180	.342
Lack of Confidence	.734	**5.01**	13	180	.266
Multiple Role Conflict	.807	**3.31**	13	180	.193
Conflict between Children and Career Demands	.621	**8.46**	13	180	.379
Racial Discrimination	.698	**5.98**	13	180	.302
Inadequate Preparation	.833	**2.77**	13	180	.167
Disapproval by Significant Others	.738	**4.92**	13	180	.262
Decision Making Difficulties	.778	**3.95**	13	180	.222
Dissatisfaction with Career	.806	**3.34**	13	180	.194
Discouraged from Choosing Nontraditional Career	689	**6.26**	13	180	.311
Disability/ Health Concerns	.741	**4.85**	13	180	.259
Job Market Constraints	.861	**2.23**	13	180	.139
Difficuties with Networking/ Socialization	.792	**3.64**	13	180	.208
Group	.924	1.14	13	180	.076
Sex	.898	1.58	13	180	.102
Group X Sex	.899	1.56	13	180	.101

* *Note:* CBI-R = Career Barriers Inventory – Revised; $N = 209$; Numbers in bold indicate significant effects at the $p < .005$ level.

Table 19. Means and Standard Deviations of Posttest CBI-R by Group and Sex

CBI-R Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group - 1 *M*	Control Group - 1 *SD*	Total *M*	Total *SD*
Sex Discrimination	M	2.29	1.10	2.66	1.19	2.44	1.15
	F	3.86	1.30	3.33	1.27	3.67	1.31
	T	3.29	1.44	3.04	1.28	3.19	1.38
Lack of Confidence	M	2.98	1.23	2.94	1.32	2.96	1.26
	F	3.64	1.35	3.29	1.51	3.52	1.41
	T	3.40	1.34	3.14	1.43	3.30	1.38
Multiple Role Conflict	M	3.59	1.03	3.29	1.12	3.46	1.07
	F	4.10	1.14	3.60	1.20	3.93	1.18
	T	3.92	1.13	3.46	1.17	3.75	1.16
Child/Career Conflict	M	3.17	1.14	3.11	1.12	3.15	1.13
	F	3.92	1.21	3.47	1.36	3.76	1.28
	T	3.65	1.23	3.31	1.27	3.52	1.26
Racial Discrimination	M	2.40	1.41	2.81	1.41	2.57	1.41
	F	2.85	1.44	2.91	1.41	2.87	1.42
	T	2.69	1.44	2.87	1.40	2.76	1.42
Inadequate Preparation	M	3.31	1.21	3.09	1.20	3.21	1.20
	F	3.74	1.25	3.45	1.42	3.64	1.31
	T	3.58	1.25	3.29	1.33	3.47	1.29
Disapproval by Sig. Others	M	2.67	1.33	2.43	1.07	2.57	1.23
	F	2.79	1.45	2.74	1.71	2.77	1.54
	T	2.75	1.41	2.61	1.47	2.69	1.43
Decision Making Difficulties	M	3.71	1.27	3.28	1.13	3.53	1.22
	F	4.44	0.98	3.55	1.28	4.12	1.17
	T	4.17	1.14	3.43	1.22	3.89	1.22
Dissatisfaction with Career	M	3.54	1.22	3.30	1.05	3.44	1.15
	F	4.15	1.08	3.68	1.27	3.99	1.17
	T	3.93	1.16	3.52	1.19	3.78	1.19
Nontraditional Career	M	2.30	1.22	2.41	1.12	2.35	1.17
	F	2.99	1.19	2.85	1.16	2.94	1.18
	T	2.74	1.24	2.66	1.16	2.71	1.21

Table 19. (continued)

CBI-R Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group - 1 *M*	Control Group - 1 *SD*	Total *M*	Total *SD*
Disability/ Health Concerns	M	2.61	1.42	2.96	1.37	2.76	1.40
	F	3.08	1.50	3.01	1.53	3.06	1.50
	T	2.91	1.48	2.99	1.45	2.94	1.47
Job Market Constraints	M	3.43	1.28	2.99	1.11	**3.25**	1.22
	F	4.09	1.25	3.51	1.55	**3.89**	1.38
	T	3.85	1.29	3.29	1.39	3.64	1.36
Networking/ Socialization	M	3.42	1.15	3.08	1.11	3.28	1.14
	F	3.98	1.03	3.50	1.15	3.81	1.09
	T	3.78	1.10	3.32	1.15	3.60	1.14

* *Note.* Numbers in bold indicate significant mean differences by sex at the $p < .004$ level Numbers that are underlined indicate significant mean differences by group at the $p < .004$ level. M = male students; F = female students; T = all students (male + female). N =209.

Table 20. Means and Standard Deviations of Pretest CSE by Group and Sex

CSE Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group - 1 *M*	Control Group - 1 *SD*	Total *M*	Total *SD*
Sex Discrimination	M	5.82	1.26	5.56	1.31	5.71	1.28
	F	5.40	0.96	5.50	0.88	5.43	0.93
	T	5.55	1.09	5.52	1.08	5.54	1.09
Lack of Confidence	M	5.58	1.04	5.36	1.13	5.49	1.08
	F	5.32	1.11	5.46	0.96	5.37	1.06
	T	5.41	1.09	5.42	1.03	5.41	1.06
Multiple Role Conflict	M	5.20	0.98	5.14	0.89	5.17	0.94
	F	5.21	0.95	5.28	0.81	5.24	0.90
	T	5.21	0.96	5.22	0.84	5.21	0.91
Child/Career Conflict	M	5.51	1.06	5.42	0.98	5.47	1.02
	F	5.35	0.90	5.52	0.97	5.41	0.93
	T	5.41	0.96	5.48	0.97	5.43	0.96
Racial Discrimination	M	5.79	1.34	5.52	1.01	5.68	1.21
	F	5.53	1.22	5.67	1.05	5.58	1.16
	T	5.63	1.27	5.61	1.03	5.62	1.18
Inadequate Preparation	M	5.50	0.98	5.20	1.05	5.37	1.01
	F	5.20	1.01	5.58	1.01	5.33	1.02
	T	5.31	1.01	5.42	1.04	5.35	1.02
Disapproval by Sig. Others	M	5.82	1.13	5.56	1.39	5.71	1.24
	F	5.79	1.18	6.03	1.04	5.87	1.13
	T	5.80	1.16	5.83	1.22	5.81	1.18
Decision Making Difficulties	M	5.01	1.19	5.13	1.03	5.06	1.12
	F	4.88	1.02	5.29	1.05	5.03	1.05
	T	4.93	1.08	5.22	1.04	5.04	1.07
Dissatisfaction with Career	M	5.07	0.97	5.20	0.88	5.13	0.93
	F	4.84	0.98	5.27	0.96	4.99	0.99
	T	4.93	0.98	5.24	0.92	5.04	0.97
Nontraditional Career	M	5.77	1.19	5.63	1.31	5.71	1.24
	F	5.76	0.95	5.96	0.87	5.83	0.92
	T	5.76	1.04	5.82	1.09	5.78	1.05

Table 20. (continued)

CSE Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group - 1 *M*	Control Group - 1 *SD*	Total *M*	Total *SD*
Disability/ Health Concerns	M	5.49	1.51	5.28	1.08	5.40	1.34
	F	5.51	1.27	5.56	0.94	5.53	1.16
	T	5.50	1.36	5.44	1.01	5.48	1.24
Job Market Constraints	M	5.09	1.18	5.05	1.09	5.07	1.14
	F	4.89	1.11	5.31	1.10	5.04	1.12
	T	4.96	1.14	5.20	1.10	5.05	1.13
Networking/ Socialization	M	5.33	1.05	5.10	0.97	5.24	1.02
	F	5.07	0.92	5.35	0.93	5.16	0.93
	T	5.16	0.97	5.24	0.95	5.19	0.96

* *Note.* No significant differences noted. M = male students; F = female students; T = all students (male + female). *N* = 209.

Table 21. 2 X 2 (group X sex) MANCOVA (Wilk's Lambda) for Posttest CSE subscales controlling for Pretest CSE subscales.

Effect	Λ	*F*	Hypothesis *df*	Error *df*	η^2
Sex Discrimination	.804	3.37	13	180	.196
Lack of Confidence	.915	1.29	13	180	.085
Multiple Role Conflict	.814	3.16	13	180	.186
Conflict between Children and Career Demands	.746	4.72	13	180	.254
Racial Discrimination	.834	2.75	13	180	.166
Inadequate Preparation	.859	2.28	13	180	.141
Disapproval by Significant Others	.807	3.32	13	180	.193
Decision Making Difficulties	.771	4.12	13	180	.229
Dissatisfaction with Career	.835	2.74	13	180	.165
Discouraged from Choosing Nontraditional Career	.848	2.49	13	180	.152
Disability/ Health Concerns	.841	2.62	13	180	.159
Job Market Constraints	.786	3.78	13	180	.214
Difficuties with Networking/ Socialization	.915	1.28	13	180	.085
Group	.939	0.89	13	180	.061
Sex	.897	1.59	13	180	.103
Group X Sex	.934	0.98	13	180	.066

* *Note:* CSE = Coping Self-Efficacy Scale; *N* = 209.

Table 22. Means and Standard Deviations of Posttest CSE by Group and Sex

CSE Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group - 1 *M*	Control Group - 1 *SD*	Total *M*	Total *SD*
Sex Discrimination	M	5.73	1.22	5.76	1.22	5.74	1.21
	F	5.31	1.08	5.40	1.19	5.34	1.12
	T	5.46	1.15	5.56	1.21	5.50	1.17
Lack of Confidence	M	5.37	1.10	5.40	1.30	5.38	1.18
	F	5.27	1.08	5.57	1.19	5.38	1.13
	T	5.31	1.09	5.50	1.23	5.38	1.14
Multiple Role Conflict	M	5.10	0.98	5.35	1.04	5.20	1.01
	F	5.25	0.88	5.25	1.08	5.25	0.95
	T	5.20	0.91	5.29	1.06	5.23	0.97
Child/Career Conflict	M	5.28	1.13	5.37	0.98	5.32	1.07
	F	5.40	0.83	5.41	1.05	5.41	0.91
	T	5.36	0.95	5.39	1.01	5.37	0.97
Racial Discrimination	M	5.61	1.29	5.59	1.18	5.60	1.24
	F	5.58	1.20	5.63	1.11	5.59	1.17
	T	5.59	1.23	5.61	1.13	5.60	1.19
Inadequate Preparation	M	5.20	1.05	5.38	1.21	5.27	1.12
	F	5.19	0.99	5.41	1.17	5.27	1.06
	T	5.19	1.01	5.40	1.18	5.27	1.08
Disapproval by Sig. Others	M	5.63	1.29	5.83	1.23	5.72	1.26
	F	5.68	1.13	5.87	1.11	5.75	1.13
	T	5.66	1.19	5.85	1.16	5.73	1.18
Decision Making Difficulties	M	5.02	1.14	5.34	1.08	5.15	1.12
	F	5.07	0.95	5.43	1.15	5.20	1.04
	T	5.05	1.02	5.39	1.12	5.18	1.07
Dissatisfaction with Career	M	4.91	1.12	5.31	1.06	5.08	1.11
	F	5.03	0.86	5.23	1.08	5.10	0.94
	T	4.99	0.96	5.26	1.06	5.09	1.01

Table 22. (continued)

CSE Subscales		Intervention Group *M*	Intervention Group *SD*	Control Group - 1 *M*	Control Group - 1 *SD*	Total *M*	Total *SD*
Nontraditional Career	M	5.68	1.28	5.75	1.31	5.71	1.28
	F	5.59	1.01	5.71	0.98	5.63	1.00
	T	5.62	1.11	5.73	1.13	5.66	1.12
Disability/ Health Concerns	M	5.52	1.29	5.37	1.08	5.46	1.20
	F	5.41	1.26	5.63	1.14	5.49	1.22
	T	5.45	1.27	5.52	1.11	5.48	1.21
Job Market Constraints	M	5.00	1.25	5.39	1.14	5.16	1.21
	F	4.90	1.01	5.36	1.35	5.06	1.15
	T	4.94	1.10	5.37	1.25	5.10	1.17
Networking/ Socialization	M	5.09	1.04	5.25	1.22	5.16	1.12
	F	5.12	0.87	5.26	1.05	5.17	0.93
	T	5.11	0.93	5.26	1.12	5.17	1.01

* *Note.* No significant differences noted. F = female students; T = all students (male + female). N = 209.

Table 23. 2 X 2 (group X sex) ANOVA for Pretest Career Decidedness.

	F	Hypothesis *df*	Error *df*	Sig.	η^2
Group	10.040	1	201	.002	.048
Sex	8.342	1	201	.004	.040
Group X Sex	.222	1	201	.638	.001

* *Note: N* = 205

Table 24. Means and Standard Deviations of Pretest and Posttest Career Decidedness by Group, Sex

		Intervention Group		Control Group - 1		Total	
		M	*SD*	*M*	*SD*	*M*	*SD*
Career Decidedness at Pretest	M	1.61	.802	1.88	.707	**1.72**	.771
(*N* = 205)	F	1.28	.477	1.68	.780	**1.40**	.621
	T	1.40	.630	1.74	.755	1.52	.697
Career Decidedness at Posttest*	M	1.61	.784	2.00	.683	1.77	.764
(*N* = 197)	F	1.35	.578	1.65	.813	1.46	.682
	T	1.45	.668	1.80	.776	1.58	.729

Note. Numbers in bold indicate significant mean differences by sex at the $p < .05$ level Numbers that are underlined indicate significant mean differences by group at the $p < .05$ level. M = male students; F = female students; T = all students (male + female).

* Significance indicated after controlling for variance due to pretest Career Decidedness

Table 25. 2 X 2 (group X sex) ANCOVA for Posttest Career Decidedness controlling for Pretest Career Decidedness.

	F	Hypothesis *df*	Error *df*	Sig.	η^2
Pretest Career Decidedness	250.07	1	192	.000	.566
Group	2.727	1	192	.100	.014
Sex	1.043	1	192	.308	.005
Group X Sex	1.670	1	192	.198	.009

* *Note: N* = 197

Table 26. Career Decidedness at Pretest and Posttest for Intervention Group and Control Group-1.

	Career Decidedness at Posttest			
Career Decidedness at Pretest	Undecided	Tentatively Decided	Decided	Total
Intervention Group				
Undecided	71	14	0	85
Tentatively Decided	9	16	3	28
Total	80	30	3	113
Control Group - 1				
Undecided	28	6	0	34
Tentatively Decided	3	18	7	28
Total	31	24	7	62

* *Note: N* = 175.

Table 27. Retention for Intervention Group and Control Group-2

	Not Retained	%	Retained	%	χ^2	*p*
1.5 years						
Intervention Group	5	8.33	55	91.67	9.167	.002
Control Group-2	54	27.00	146	73.00		
1.0 years						
Intervention Group	2	6.90	27	93.10	3.421	.064
Control Group-2	43	21.50	157	78.50		
0.5 years						
Intervention Group	6	14.63	35	85.37	0.990	.320
Control Group-2	43	21.50	157	78.50		

APPENDIX A: Informed Consent (Intervention Group)

INFORMED CONSENT DOCUMENT

Title of Study: Career Decision-Making: Can a Career Exploration Program really Guide the Undecided?
Investigator: Mark Becker, Ph.D.
Student Services Building, 3rd Floor
(515) 294-5056
mrbecker@iastate.edu

This is a research study. Please take your time in deciding if you would like to participate and please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to learn about how different class activities help you learn more about your career path, and gain confidence in your ability to make career decisions.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will last for approximately 45 minutes during today's class period and another 45 minutes of class time at the end of the first 6 weeks of class. During the study you may expect the following procedures to be followed: 1) You will be asked to complete a few questionnaires that ask questions about your confidence and other variables that may affect your career decision; 2) You will be asked to complete similar questionnaires in 6 weeks after you have completed the first unit of the class; and, 3) At the end of each week (for the first six weeks of class) you will be asked to complete a one page questionnaire about your use of the career exploration system that you will use during class. *You may skip any question that you do not wish to answer or that makes you feel uncomfortable.*

RISKS

While participating in this study you may experience the following risks: because you are answering questions about yourself and your career choice, you could experience some discomfort if questions cause you to reflect on facets of yourself that are unpleasant to you. There are no anticipated physical risks.

BENEFITS

If you decide to participate in this study there may be no direct benefit to you. However, it is hoped that the information gained in this study will benefit future students by helping us better understand how to effectively teach career decision making skills.

COSTS AND COMPENSATION

You will not have any costs from participating in this study. You will be compensated by receiving 30 extra credit points for this class by participating in this study. If you choose not

to participate, your instructor will offer you alternative ways to earn the same amount of extra credit.

PARTICIPANT RIGHTS

Your participation in this study is *completely voluntary* and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled. Participation or lack of participation will in no way impact your grade in this class.

CONFIDENTIALITY

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

To ensure confidentiality to the extent permitted by law, the following measures will be taken: no names will be attached to any data, and you will be identified only by a randomly selected number. Although signed informed consent is being obtained, this form and your questionnaires will be collected and stored separately, and the two cannot be paired. The primary investigator (Mark Becker, Ph.D.) will be the only person with access to the raw data. The instructors in this course will have access to these data but only after it has been entered, identifying information is removed, and your grades have been turned-in. If the results are published, your identity will remain confidential.

QUESTIONS OR PROBLEMS

You are encouraged to ask questions at any time during this study. For further information about the study please contact Mark Becker, Ph.D., Student Services Building, 3rd Floor, (515) 294-5056; mrbecker@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, Office of Research Assurances, (515) 294-3115, 1138 Pearson Hall, Ames, IA 50011.

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PARTICIPANT SIGNATURE

Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant's Name (printed) _____

_____ _____

(Participant's Signature) (Date)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

(Signature of Person Obtaining Informed Consent)	(Date)

APPENDIX B: Demographic Questionnaire

Demographic Questionnaire

1. **Gender**:
   - ☐ Male
   - ☐ Female

2. **Age:** _____

3. **What is your current college status? (Choose one):**
   - ☐ Freshman
   - ☐ Sophomore
   - ☐ Junior
   - ☐ Senior
   - ☐ Graduate Student
   - ☐ Other: _____

4. **Have You Declared A Major?**
   - ☐ Yes If Yes, please list your **Major(s)**: _____
   - ☐ No If No, please list majors you are considering:
     - 1st Choice: _____
     - 2nd Choice: _____
     - Other Choices (if applicable): _____

5. **How satisfied are you in your current major?**
   - ☐ Very satisfied
   - ☐ Satisfied
   - ☐ Dissatisfied
   - ☐ Very Dissatisfied
   - ☐ I do not have a major

6. **Race/Ethnicity (Choose all that apply):**
   - ☐ African-American/Black
   - ☐ Asian-American/Asian
   - ☐ Hawaiian/Pacific Islander
   - ☐ European-American/White
   - ☐ Hispanic-American/Latino(a)
   - ☐ Native American
   - ☐ Other: _____

7. **Are you an International Student?**
   - ☐ No
   - ☐ Yes, from: _____

8. Highest degree you expect to receive:

- ☐ High school diploma/GED
- ☐ Vocational or Technical School Certificate
- ☐ Associate's Degree (2-year AA)
- ☐ Bachelor's Degree (4-year BA/BS)
- ☐ Master's Degree (MA/MS)
- ☐ Law Degree (JD)
- ☐ Medical Degree (e.g., MD, DDS, DVM)
- ☐ Doctorate (e.g., PhD, EdD)

9. What was your overall ACT score? _____

10. What is your current GPA? _____

11. Career Choice Status (Choose only one):

- ☐ I am undecided about a career
- ☐ I am tentatively decided about my career
- ☐ I have decided on a career

12. List the future career choices you are considering:

1st Choice: _____

2nd Choice: _____

3rd Choice: _____

4th Choice: _____

Other Choices (if applicable): _____

13. <u>Check all</u> of the following career or personal concerns that apply to you:

- ☐ Underestimate my abilities
- ☐ Overestimate my abilities
- ☐ Need more information about jobs
- ☐ Concerned that I will be unable to make a career choice
- ☐ Feeling off schedule in my academic/career progress
- ☐ Need help with test anxiety
- ☐ Anxiety/fears
- ☐ Depression
- ☐ Mood swings
- ☐ Stress
- ☐ Sleep problems
- ☐ Self-confidence problems
- ☐ None of the above

APPENDIX C: Measures: CBI-R And Coping Self Efficacy Scale

CAREER BARRIERS INVENTORY

A "barrier" is a factor that interferes with progress in your job or career plans. Barriers can be "external" or "internal." External barriers are found in the environment -- for example, job discrimination or low salary. Internal barriers are more psychological in nature -- for example, low self-esteem. These barriers may occur regarding your choice of career, in finding a job, while you are working in your job or career, or in how you balance your career with other aspects of your life.

Make two ratings for each of the common barriers listed below. First, think about how likely it is that the barrier will happen to you. Then, think about how much the barrier would hinder or interfere with your career progress.

In the first column, circle a number that corresponds to how likely you think the barrier is to happen:

Would not hinder at all			Would hinder somewhat			Would completely hinder
1	2	3	4	5	6	7

In the second column, circle a number that corresponds to how confident you feel about being able to overcome the barrier:

Not at all confident			Somewhat confident			Completely confident
1	2	3	4	5	6	7

1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unsure of my career goals
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Needing to take time off work when children are sick or on school breaks
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing racial discrimination in hiring for a job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Needing to relocate because of my spouse' s/partner's job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Changing my mind again and again about my career plans
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Having a disability which limits my choice of careers
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Discrimination by employer because I have, or plan to have, children
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unsure of how to "sell myself" to an employer

1 2 3 4 5 6 7	1 2 3 4 5 6 7	Becoming bored with my job /career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Being discouraged from pursuing fields nontraditional for my sex (e.g., engineering for women , nursing for men)
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Feeling a conflict between my job and my family (spouse and/or children)
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Having a boss or supervisor who is biased against people of my racial/ethnic group
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing problems with my health that interfere with my job/career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unsure of my work- related values
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Allowing my spouse' s desire for children to take precedence over my career goals
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Difficulty in finding a job due to a tight job market
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Feeling pressure to "do it all " - expected to do well as parent, spouse, career person, etc.
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not feeling confident about my ability on the job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not being able to find good day-care services for my children
1 2 3 4 5 6 7	1 2 3 4 5 6 7	My spouse/partner doesn’t approve of my job/career choice
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not feeling confident about myself in general
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not wanting to relocate for my job/career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Feeling guilty about working while my children are young
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing racial harassment on the job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing discrimination in hiring for a job because I have a disability
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not being paid as much as coworkers of the opposite sex
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Being undecided about what job/career I would like
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Stress at home (spouse or children) affecting performance at work
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lacking the required personality traits for nay job (e.g. assertiveness)
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Disappointed in my career progress (e.g., not receiving promotions as often as I would like)
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Other people's beliefs that certain careers are not appropriate for people of my sex

1 2 3 4 5 6 7	1 2 3 4 5 6 7	Losing interest in nay job/career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Difficulty in re-entering job market after taking time off to care for my children
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Difficulty planning my career due to changes in the economy
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lacking the required skills for my job (e.g., communication, leadership, decision-making)
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing racial discrimination in promotions in job or career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Difficulty in maintaining the ground gained at my job after having children
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not being sure how to choose a career direction
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unsure of what my career alternatives are
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Conflict between marriage/family plans and my career plans
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lack of maturity interferes with my career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not having a role model or mentor at work
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing sex discrimination in hiring for a job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not receiving support from my spouse/partner
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Having low self-esteem
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Discrimination due to my marital status
1 2 3 4 5 6 7	1 2 3 4 5 6 7	My parents/family don't approve of my choice of job/career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Having a boss or supervisor who is biased against people of my sex
1 2 3 4 5 6 7	1 2 3 4 5 6 7	People of the opposite sex receive promotions more often than people of nay sex
1 2 3 4 5 6 7	1 2 3 4 5 6 7	No opportunities for advancement in my career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not being paid as much as coworkers of another racial/ethnic group
1 2 3 4 5 6 7	1 2 3 4 5 6 7	My belief that certain careers are not appropriate for me because of my sex
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Having children at a "bad time" in my career plans
1 2 3 4 5 6 7	1 2 3 4 5 6 7	People of other racial/ethnic groups receive promotions more often than people of my racial/ethnic group
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lacking information about possible jobs/careers

1 2 3 4 5 6 7	1 2 3 4 5 6 7	The outlook for future employment in my field is not promising
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Being dissatisfied with my job/career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unable to deal with physical/emotional demands of my job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unsure of what I want out of life
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Having an inflexible work schedule that interferes with my family responsibilities
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Unsure of how to advance in my career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lacking necessary educational background for the job I want
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Experiencing sexual harassment on the job
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Fear that people will consider me "unfeminine"/ "unmasculine" because my job/career is nontraditional for my sex
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Not knowing the "right people" to get ahead in my career
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lacking the necessary hands-on experience for the job I want
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Lack of opportunities for people of my sex in nontraditional fields
1 2 3 4 5 6 7	1 2 3 4 5 6 7	No demand for my area of training/education
1 2 3 4 5 6 7	1 2 3 4 5 6 7	Stress at work affecting my life at home
1 2 3 4 5 6 7	1 2 3 4 5 6 7	My friends don't approve of my choice of job/career

APPENDIX D: Intervention Schedule for Intervention Group

Week 1	Class 1	Introduction to the class and class objectives
	Class 2	Completion of pretest measures
Week 2	Class 1	Career decision-making and Career goals
	Class 2	Introduction to the KCPS and learning about P-E fit
Week 3	Class 1	Learning about interests - self-exploration exercises
	Class 2	Interactive group interpretation of interest assessment (KCS)
Week 4	Class 1	Learning about skills - self-exploration exercises
	Class 2	Interactive group interpretation of skills assessment (KSA)
Week 5	Class 1	Learning about work-values - self-exploration exercises
	Class 2	Interactive group interpretation of values assessment (SWVI-R)
Week 6	Class 1	Occupational exploration and identifying alternatives using the KCPS
	Class 2	Completion of posttest measures

APPENDIX E: Informed Consent (Control Group - 1)

INFORMED CONSENT DOCUMENT

Title of Study: Career Decision-Making: Can a Career Exploration Program Really Guide the Undecided?

Investigator: Mark Becker, Ph.D.
Student Services Building, 3rd Floor
(515) 294-5056; mrbecker@iastate.edu

This is a research study. Please take your time in deciding if you would like to participate and please feel free to ask questions at any time.

INTRODUCTION

The purpose of this study is to learn about how different activities help you learn more about your career path, and gain confidence in your ability to make career decisions.

DESCRIPTION OF PROCEDURES

If you agree to participate in this study, your participation will last for approximately 45 minutes during today's meeting and another 45 minutes in 6 more weeks. During the study you may expect the following procedures to be followed: 1) You will be asked to complete a few questionnaires that ask questions about your confidence and other variables that may affect your career decision during today's meeting; 2) You will be asked to complete similar questionnaires in 6 weeks. The results of these questionnaires will be interpreted to you in greater detail by a career counselor if you wish to do so. *You may skip any questions that you do not wish to answer or that makes you feel uncomfortable.*

RISKS

While participating in this study you may experience the following risks: because you are answering questions about yourself and your career choice, you could experience some discomfort if questions cause you to reflect on facets of yourself that are unpleasant to you. There are no anticipated physical risks.

BENEFITS

If you decide to participate in this study, the benefit to you will be some assistance in making your career choice. It is hoped that the information gained in this study will benefit future students by helping us better understand how to effectively teach career decision making skills.

COSTS AND COMPENSATION

You will not have any costs from participating in this study.

PARTICIPANT RIGHTS

Your participation in this study is *completely voluntary* and you may refuse to participate or leave the study at any time. If you decide to not participate in the study or leave the study early, it will not result in any penalty or loss of benefits to which you are otherwise entitled.

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

To ensure confidentiality to the extent permitted by law, the following measures will be taken: no names will be attached to any data, and you will be identified only by a randomly selected number. Although signed informed consent is being obtained, this form and your questionnaires will be collected and stored separately, and the two cannot be paired. The primary investigator (Mark Becker, Ph.D.) will be the only person with access to the raw data. If the results are published, your identity will remain confidential.

QUESTIONS OR PROBLEMS
You are encouraged to ask questions at any time during this study. For further information about the study please contact Mark Becker, Ph.D., Student Services Building, 3rd Floor, (515) 294-5056; mrbecker@iastate.edu. If you have any questions about the rights of research subjects or research-related injury, please contact the IRB Administrator, (515) 294-4566, IRB@iastate.edu, or Director, Office of Research Assurances, (515) 294-3115, 1138 Pearson Hall, Ames, IA 50011.

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PARTICIPANT SIGNATURE
Your signature indicates that you voluntarily agree to participate in this study, that the study has been explained to you, that you have been given the time to read the document and that your questions have been satisfactorily answered. You will receive a copy of the written informed consent prior to your participation in the study.

Participant's Name (printed) _____

_____ _____
(Participant's Signature) (Date)

INVESTIGATOR STATEMENT

I certify that the participant has been given adequate time to read and learn about the study and all of their questions have been answered. It is my opinion that the participant understands the purpose, risks, benefits and the procedures that will be followed in this study and has voluntarily agreed to participate.

_____ _____
(Signature of Person Obtaining Informed Consent) (Date)