ABSTRACT

KELLY, ROSEMARY RITTER. The Relationship Between Career Decision-Making Self-Efficacy and Perceived Career Barriers in the Career Decision Making of Selected Community College Students. (Under the direction of Dr. Timothy Hatcher).

This study explored the differences between career decision-making self-efficacy (CDMSE) and perceived career barriers of students enrolled in the applied technology program compared to those enrolled in a college transfer program at a southeastern urban community college.

Participants in the ex-post facto cross-sectional survey included 787 full and part-time students at the community college. There were three research questions: (1) Are there differences in mean scores of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs by demographic characteristics (gender, ethnicity, age, first-generational, employment, full and part-time student status)? (2) What is the predictive value of these demographic variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs? (3) Is there a relationship between CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs? The Career Decision Self-Efficacy-Short Form and Career Barriers Inventory-Revised were administered to participants and data were analyzed using two sample t-tests, ANOVA and multiple regression models.

There were significant differences between applied technology and college transfer students in terms of perception of career barriers and career decision-making self-efficacy. The applied technology students, who tended to be older, had higher career decision-making self-efficacy scores than the college transfer students and that did not change across the other demographic variables (gender, etc). The college transfer students, who tended to be younger, had higher perception of career barriers scores, and this did not change across demographic variables.

Future research using a qualitative method of the factors of CDMSE and perception of career barriers of the older applied technology and younger college transfer student populations is recommended to gain more specific information regarding the demographics within these two groups.

The Relationship between Career Decision-Making Self-Efficacy and Perceived Career Barriers in the Career Decision Making of Selected Community College Students

by
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A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Education

Adult and Community College Education

Raleigh, North Carolina

2010

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DEDICATION

This work is dedicated to my parents, especially my late father, a quiet, gentle man, with a genuine smile, who supported me and was so very proud of his daughter. He is sorely missed.

BIOGRAPHY

Rosemary Ritter Kelly grew up in Waterloo, New York. She earned her Associate degree in Hotel and Restaurant Management from St. Petersburg Junior College in 1981. She went on to earn a Bachelor's degree in Hotel and Restaurant Management from Rochester Institute of Technology in 1985.

She worked as a hotel manager for nearly five years with the Marriott Corporation. She left the corporate world in 1989 to teach and administer for Katharine Gibbs in Montclair, New Jersey in their hotel program. She earned a Masters degree in Administration with a concentration in education and training from Montclair State University in 1992.

She and her husband John moved to North Carolina in 1992, where she began her career with the North Carolina Community College System. Rosemary was an instructional supervisor in continuing education for over six years. She became the Director of the College Transfer Advising Center in 1999. In 2003, she moved to the registrar's office as an assistant and within one year was promoted to associate. In 2008, she was promoted to Dean of Enrollment and Records/College Registrar.

Rosemary has been recognized twice as the staff member of the year at Wake Technical Community College. She is active in the community participating in the Raleigh Concert Band for five years and the Holly Springs Community Band.

She and her husband, John, currently live in Fuquay-Varina, North Carolina, with their two dogs.

ACKNOWLEDGEMENTS

The author wishes to express her sincere thanks to the many individuals who assisted with her efforts in preparation of this dissertation. Special thanks are extended to Dr. Timothy Hatcher, Chairman of the author's Graduate Advisory Committee, for his guidance with this research. Thanks are also extended to the other committee members: Dr. Leila Gonzalez-Sullivan, Dr. James Bartlett, and Dr. Kimberly Weems for their review of the manuscript and their thoughtful suggestions.

The author wishes to thank her husband, John, for all of his patience, love and sacrifice that he provided to me throughout the many years of course work as well as nights and weekends of seemingly endless writing and editing. Thank you, John, for your support.

On a personal note, the author would also like to extend her utmost appreciation and gratitude to her dearest friend Joan Totten for the many hours of detailed work, dedication and assistance that went into completing this project. I am extremely grateful for her guidance and thankful for her expertise. She has stood out among all of the people helping me as my most constant and avid supporter. She consistently placed my needs above her own and provided me with the fortitude to finish this project with her belief in my ability to accomplish this goal.

The author also wishes to thank her family, friends, staff and coworkers for their encouragement during this dissertation process.

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CHAPTER ONE INTRODUCTION

Selecting a career path or making a career change in today's changing work environment requires the ability to make an informed career decision. According to the United States Bureau of Labor Statistics (2005), in a lifetime, baby-boomers aged 18-40 average 10.5 different jobs and most Americans will have four different careers. Due to the number of career changes individuals make, career decision-making research could not be more timely (Blustein & Noumair, 1996).

Career development is no longer simply matching jobs to people who stay in the same profession for 40 years or until retirement. Dramatic changes that have taken place in the workplace and society. Career and adult development have converged, broadening the concept of careers and career development to span a lifetime. The economy has become global, corporations have restructured, and in many occupations, robots have replaced workers. Demographics in the work place have changed to include more women, multiple ethnicities, and workers with a need to balance their time between work and family responsibilities (Hansen, 2001).

The continuous changes in employment trends are due to consumer demands and innovations in technology. It is expected the economy will continue to shift from a goods-producing economy to a service providing economy (Walker, 1985). The Bureau of Labor Statistics projects the number of workers in education, health, professional careers, business, financial and informational services, leisure, hospitality, retail trades, transportation and utility occupations will increase by more than 10% by the year 2014

(United States Bureau of Labor Statistics, 2005). The complex job market in the United States, and the demand for workers with technical skills, and the ability to manage information, make career decision-making more complex than ever before (Brown & Lent, 1996; Hansen, 2001; Wise, Charner, & Randour, 1976). The community college is responding to this complex job market by providing open door access to higher education and job-training. Programs that meet the employment demands of the local community have been shown to increase career mobility and the overall standard of living (Cohen & Brawer, 2003).

Changes in society and demographics, and the shift to a service providing work force make career decision-making a lifetime challenge and, in turn, makes the role of the community college more important than ever before. Therefore, it is important to know the factors that influence career decision-making. The present research studied the differences between career decision-making self-efficacy and perceived career barriers of students enrolled in an applied technology program compared to those enrolled in a college transfer program at a southeastern urban community college.

Attending a community college can provide students with numerous career options. One of the missions of the community college is to provide vocational training and offer individuals options during economic downturns. More middle-class students are attending the community college as a result of changes in economic conditions and rising costs of higher education. Enrollments of women, minorities and under-prepared students have also increased (Cohen & Brawer, 2003). According to Kingan and Alfred (1993), middle-class high school graduates are seeing the community college as a low-cost

alternative to higher priced universities. Yet, these community college students are rarely studied especially in the areas of how confident they are about their career choice and the perceptions they may have that keep them from making an informed career decision.

When students enter college, particularly the community college, they may or may not have a definite career goal in mind. Some enroll in general course work and expect to make a career decision later. Others believe they have decided on a definite career and enroll in the major courses during their first semester or year in college (Laanan, 2003). Vocational or applied technology education as defined by Cohen and Brawer (2003) is a term to describe education that teaches technical skills beyond what is traditionally taught in high schools and prepares students for an occupation. Academic or college transfer curriculums, according to Cohen and Brawer (2003), include general education courses such as history, social science courses, foreign languages, as well as natural science and mathematics courses that fulfill academic requirements at a university. Students that choose vocational or applied technology majors, as described by Bailey, Leinbach, Scott, Alfonso, Kienzl, and Kennedy (2004), are often interested in occupational certificate and degree programs that include but are not limited to agriculture, business, communications, computer and information technology, engineering, health professions, home economics, mechanics, precision production, protective services, science technologies or transportation. According to Kasper (2002-03) in the *Occupational Outlook Quarterly*, Winter issue, community colleges offer vocational training in an effort to train the workforce for their local communities. Corporations such as Microsoft Corporation and Novell Incorporated, in partnership with

Lawson State Community College in Birmingham, Alabama, are examples of industries partnering with a community college. The 2.5 million dollar agreement between the Maricopa Community College District in Arizona and the International Genomics Consortium (IGC) is another example of a partnership. Partnerships with corporations provide opportunities for workforce training, enhance employee skills, and offer the opportunity for community colleges to expand their offerings.

Vocational training that leads to careers in healthcare as well as homeland security is also prevalent at community colleges. According to the American Association of Community Colleges (2009), 50% of nurses, and nearly 80% of firefighters, and law enforcement and emergency medical workers complete their training at community colleges. Meeting local job market demands is central to the community college's mission. Grubb (2002) states reputation and local connection with employers as a benefit of the community college pre-baccalaureate vocational training. This connection has a profound impact on students' career choices, especially if they are unsure about their choice or if they have a desire to stay close to home. Do students who are in a vocational or applied technology educational training program have the same level of confidence about their choice of career when compared to academic or college transfer students? A review of the research literature found few studies that looked at the differences between applied technology and college transfer community college students. This study helps fill this literature gap in order to expand the understanding of community college students.

Academic or college transfer students usually are working toward a baccalaureate degree and plan to transfer their community college credits to a four-year institution

(Laanan, 2003). According to Bailey et al. (2004), vocational or applied technology students are less prepared academically and comprise 51% of the community college student population. They are more likely to be male, from a minority population, and older. They are typically economically disadvantaged and when compared to academic or college transfer students, are twice as likely to attend college to learn job skills (Bailey et al.). Providing educational opportunities to applied technology and college transfer students on the same campus opens doors for research to make comparisons and observe differences between these two groups.

The decisions that community college students make regarding their major, which may involve a college transfer route or an applied technology focus, ultimately affects their career choice. These choices are often influenced by cognitive motivational factors. One of these cognitive motivational factors is career decision-making self-efficacy (CDMSE) and has been shown to be influential when making career decisions. If the community college is going to be able to supply the job market with trained and educated workers, it needs to investigate the CDMSE of its students, namely their self-efficacy in choosing a career path, as well as their perceived career barriers.

This study begins with a description of the community college population in general, and examines career decision-making self-efficacy, perceived career barriers and the demographic variables of gender, age, ethnicity, first generational, employment, full and part-time student status of applied technology and college transfer students. A statement of the problem, the theoretical framework on which this study was based, the

purpose of the study, the research questions and hypotheses, significance of the problem, definitions, delimitations and limitations of the study follow.

The literature review shows studies of the effects of career decision-making self-efficacy and perceived career barriers on university and community college students and includes the demographics of gender, age, ethnicity, employment, first generational, full and part-time student status. This research determined if the population being studied supports the previous findings on university and community college students.

Global economic demands and the changing labor market require more workers with post-secondary education (American Association of Community Colleges, 2009). The community college has a rich history of providing access to post-secondary education and assistance with matching skills to occupations (Cohen & Brawer, 2003). For instance, the North Carolina community college system has an open-door policy that focuses on workforce development through programs geared toward occupational development (North Carolina Community College System, 2004). Levin's (2000) research found community colleges are concerned with serving a global economy by meeting the needs of industry and providing curriculums that prepares students for employment. According to Cohen and Brawer (2003), the community college offers hope to many students, due to its more affordable tuition cost, close proximity to home, and equal access. Students can not only aspire to four-year degrees, but they can also learn job skills and improve job marketability. This alternative to welfare is a community service and an asset to society because many students who attend a community college are from an ethnic minority group, have working-class parents, and often are first-

generational college students (Cohen & Brawer, 2003; Dougherty, 1987; Dowd, 2003; Levin, 2000). A study of the career decisions of the varied population of students who attend the community college is warranted in order to fill the gap that currently exists in the literature.

Bandura's (1977) theory of self-efficacy is widely used as a foundation for behavioral studies, which include career decision-making (Betz, 2000; Betz & Hackett, 1981; Foltz & Luzzo, 1998; Peterson & delMas, 1996; Quimby & O'Brien, 2004; Ryan, Solberg, & Brown, 1996; Taylor & Betz, 1983; Tien, Lin & Chen, 2005; Zeldin & Pajares, 2000). Bandura's (1977) theory focuses on the personal belief or level of self-confidence that a course of action will lead to the mastery of a task or behavior. He asserted that self-efficacy is dynamic and can be developed. Bandura (1977) states, "cognitive processes play a prominent role in the acquisition and retention of new behavior patterns" (p. 192). Bandura (1977) believes individuals high in self-efficacy will persist in an activity or move toward a goal such as earning a degree even when the outcome is uncertain. Research has shown that when high standards were set, individuals with high levels of self-efficacy increased their efforts to meet and/or exceed set standards (Bandura & Cervone, 1986). Empowerment and self-leadership are also associated with self-efficacy and it has been found that individuals with high levels of self-leadership and self-efficacy seek work that is enriching and enjoyable and ultimately perform their jobs better (Prussia, Anderson & Manz, 1998).

After Bandura (1977) introduced the concept of self-efficacy, researchers began to study and apply it to career assessment and development. Betz and Hackett (1981)

studied traditional and nontraditional career options and applied the theory of self-efficacy to a more specific process of career decision, calling it career decision-making self-efficacy (CDMSE). Taylor and Betz (1983) deduced that individuals with low levels of CDMSE experience challenges when making career decisions and are less confident about their vocational choice. Betz and Hackett (1981) originally applied Bandura's (1977) self-efficacy theory to career decision-making of women, and it quickly developed into a field of study for all college students in general. Zeldin and Pajares (2000) and Zeldin, Britner and Pajares (2007) found that men and women who possessed high levels of CDMSE showed more perseverance and resiliency when it came to overcoming academic and career obstacles. Research has shown gender and ethnicity to be key factors in CDMSE (Luzzo, 1995; Quimby & O'Brien, 2004; Rivera, Chen Flores, Blumerg & Ponterotto, 2007).

Perceived barriers (Albert & Luzzo, 1999; Luzzo, 1993b, 1995, 1996; O'Leary, 1974; Ryan et al., 1996; Swanson & Woitke, 1997) have been researched and identified in the literature as having an effect on career decision-making. Swanson and Woitke defined career barriers as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (p. 446). Their study examined perceived career barriers instead of actual barriers. The perception of a barrier, regardless of what the barrier actually is, has a great deal of influence on career decision-making. Swanson, Daniels and Tokar (1996) assessed the perceptions of career barriers and how individuals respond to the likelihood of a barrier as well as how the barrier will hinder

their career progress. The authors assessed perceptions of the likelihood of a barrier occurring, and if encountered, would it be a hindrance and ultimately overcome.

Byars (1997) and Smith (2004) studied career barriers of university students and the degree to which these barriers hindered a student's progress. They measured perceptions of potential career barriers, which included choosing a career, finding a job, performing a job and balancing a career with other aspects of life. They also used the two-step process of posing questions about the likelihood of the barrier happening and how much it would hinder career progress. The authors discussed the complexity involved with barriers and how ethnicity and gender can greatly influence a student's ability to cope with perceived career barriers. They found that gender and race played a significant role in an individual's perception of career barriers. Once again, perceptions of career barriers of university students were studied. Similar studies of community college students are needed.

Albert and Luzzo (1999) theorized that perceived barriers can be internalized by individuals and have an effect on the development of the individual's skills, level of self-efficacy and outcome expectations. Internalized thoughts could lead to career options that seem unattainable.

Some studies have explored career decision-making self-efficacy (CDMSE) and the relationship between CDMSE and perceived barriers (Nauta & Kahn, 2007; Sandler, 2000; Taylor & Popma, 1990). Their studies of university students found those who possessed high levels of achievement (Nauta & Kahn) and high levels of CDMSE (Sandler; Taylor & Popma) were more decisive and more likely to overcome perceived

barriers and persist in their studies. With these studies in mind, the current research of this study involving the measurement of perceived career barriers of community college students will help show the overall relevance in career decision-making and whether the results are similar to studies with university students.

This study also examined the significance of certain demographic variables on CDMSE in relation to perception of career barriers, but within a community college population. Although studies of first-generational students and the influence of age on career decision-making exist at the university level, the literature concerning community college students is lacking. Whiston and Keller (2004) reviewed over thirty-nine studies on the influences of family background including first generational student status and the relationships these had on career decisions. Only one was conducted using community college students and the results revealed a difference between in how men and women perceive family dysfunction as a predictor of career decision-making self-efficacy beliefs. Other studies conducted over fifteen years ago compared the career needs of younger community college students to older community college students and found older students may be more mature, but they still have career development needs (Haviland & Mahaffy, 1985; Healy & Reilly, 1989; Luzzo, 1993a). In addition, Luzzo (1999) also studied nontraditional students, defined as over the age of 25, to see if their career development needs are much different than those of traditional age and found their needs to be similar. Luzzo (1993a) also studied the differences in career decision-making of traditional compared to non-traditional students in a university setting and noted as they

age, their decision-making becomes more mature and they define their needs more clearly.

Luzzo (1993b) studied perceptions of barriers among undergraduate university students in relation to ethnicity and found differences in study skills, financial and ethnic identity perceptions. Laanan (2000) examined ethnicity and community college students' career and educational goals, attitudes and perceptions as they related to ethnicity and found nonwhite students were more influenced by external factors regarding their career and educational goals. The external factors were not specifically identified in the study. An analysis of studies by Lent, Brown and Hackett (2000) of high school and college students in the areas of gender, ethnicity and family constraints found perceptions of barriers played a significant role in decision-making; however, when these perceptions were measured, they showed only modest relationships to career decisions. Therefore, there is a need for further research to examine the relationships of CDMSE and perception of barriers in career decision-making as they relate to a diverse community college population.

First-generational college students are those students whose parents did not attend higher education beyond high school (Pascarella, Pierson, Wolniak, & Terenzini, 2004). Their numbers are growing, especially at the community college (Choy, 2001). Pascarella et al. (2004) found first-generational students to be at a disadvantage compared to traditional student peers because they tended to be employed, attended college part-time and were more likely to commute to school. Students who work and attend school part-time often have conflicting demands. The reasons why students work can be varied yet

can have an influence on their career decision-making ability as well as their level of self-efficacy (Hammer, Grigsby, & Woods, 1998; Luzzo, McWhirter, & Hutcheson, 1997; Nonis & Hudson, 2006).

Researchers, such as Luzzo and McWhirter (2001) have discussed the need for a comprehensive examination of self-efficacy and perceived career barriers among a diverse population; therefore, further study of career decision-making self-efficacy and perceived career barriers as they relate to gender, age, ethnicity, employment, first generational, full and part-time student status between applied technology and college transfer community college students is needed.

Problem Statement

There is an abundance of research literature on career decision-making self-efficacy, perceived career barriers and demographic variables of university students; however, studies of the community college student population are limited. Taylor and Betz (1983) studied career indecision of university students. They found that students who were less confident when it came to career decision-making tasks were also less confident about their career choice. Studies of university students by Mau (2000), Gloria and Hird (1999) and Peterson and delMas (1998), to name a few, supported the findings of Taylor and Betz (1983); however, once again, none of these studies was conducted using a diverse, community college population.

Research on community college students' career decision-making has included modest attention to the measurement of CDMSE (Luzzo, 1996; Rivera et al., 2007). The Luzzo (1996) study is over ten years old and the Rivera et al. (2007) study was limited to

Hispanic women. Numerous studies of university students have been conducted (Blustein & Noumair, 1996; Downes & Kroeck, 1996; Gati, Krausz, & Osipow, 1996; Gottfredson, 1981; Hall, 2003; Home, 1998; Luzzo, 1996; Nauta & Kahn, 2007; Peterson, 1993; Quimby & O'Brien, 2004; Reardon, Bullock, & Meyer, 2007; Velez, 1985; however, there is an unsupported assumption that the variables that affect career decisions of university students will have the same impact on community college students. Thus, there is a gap in the research literature about career decision-making of community college students and the relationship between CDMSE and perceived career barriers.

Lent, Brown, Talleyrand, McPartland, Davis, Chopra, Alexander, Suthakaran and Chai (2002) discuss, in their qualitative study of university students, the need for more research concerning the barriers that students identify as relevant in their pursuit of a career. The authors emphasized that groups who are ethnically different need to be studied. Creed, Patton and Bartrum (2004) studied internal and external barriers and found that they had an influence on CDMSE, yet their study involved high school students in their senior year. Results of research on first generational (Inman & Mayes, 1999; Peterson, 1993) traditional and non-traditional students (Foltz & Luzzo, 1998), gender (Betz & Hackett, 1981), ethnic and cultural barriers (Mau, 2000; Rivera, Chen, Flores, Blumberg, & Ponterotto, 2007), and the factors that contribute to levels of CDMSE are available, as well as studies that discuss barriers of high school students (Gushue, Clarke, Pantzer, & Scanlan, 2006).

Simon and Tovar (2004) studied the career development needs of community college students in a large urban community college in California. They concluded that

many students attending a community college are undecided regarding careers and that more research was needed for this population. More recently, Tansley, Jome, Haase and Martens (2007) conducted a study of community college students in an effort to extend the literature on social cognitive career theory and career decision-making; their findings were limited to career decision-making behavior.

Exploring CDMSE and perceived career barriers of applied technology and college transfer students attending a community college will reveal any relationships that exist between CDMSE and perceived career barriers. This study sought to investigate and quantify the differences between applied technology and college transfer students measuring CDMSE and perceived career barriers and the demographic variables of gender, age, ethnicity, employment, first generational, full and part-time students in both groups. Researchers have defined two groups of students in the community college as applied technology and college transfer (Cohen & Brawer, 2003). These two groups have different goals in mind, yet they are both attending the community college. Alfonso, Bailey and Scott (2005) analyzed academic or college transfer students and occupational or applied technology students, but their study concerned educational outcomes. Studies of various demographic variables of community college students have been conducted, but none examined any differences between the applied technology and college transfer groups with respect to CDMSE and perception of barriers. Therefore, there is a gap in the literature regarding the study of significant differences between these two groups of community college students based on the demographic characteristics of gender, age,

ethnicity, employment, first generational, full and part-time student status and whether these characteristics have any influence on CDMSE and the perception of career barriers.

Theoretical Framework

The theories that support the research variables under study were based primarily on those of Taylor and Betz (1983) and Lent, Brown and Hackett (1994). The framework of Taylor and Betz based on Bandura's (1977) self-efficacy theory and Social Cognitive Career Theory (SCCT) of Lent et al. (1994) provided the theoretical framework for studying the differences of CDMSE and perceived career barriers of the applied technology and college transfer student groups.

Self-efficacy, defined by Bandura (1977), is an individual's belief in his or her capabilities to successfully achieve a goal or an outcome and focuses on the importance of coping behaviors and how long they can be sustained in the face of obstacles. Self-efficacy according to Bandura (1977) can greatly influence behavior. Further, he states that one's self-efficacy may change depending on the situation. Thus, individuals with low self-efficacy may give up on a difficult task if they believe they are unable to perform it well, if they are discouraged based on past performance or simply overwhelmed by the task. However, individuals with high self-efficacy may pursue a task despite adversity.

One of the primary variables studied in career development research is career decision-making self-efficacy (Betz & Hackett, 2006; Nauta & Kahn, 2007; Peterson, 1993; Taylor & Betz, 1983; Taylor & Popma, 1990). Career decision-making self-efficacy, according to Taylor and Betz (1983), is an application of the concept of self-

efficacy and the confidence needed to make career decisions. Using the theory of self-efficacy, Taylor and Betz deduced that university students with low levels of self-efficacy experience challenges when it comes to making career decisions and are less confident about their vocational choice. Their study revealed a negative relationship between CDMSE and career indecision.

Going beyond career decision-making self-efficacy, Lent et al. (1994) developed a career development framework known as the social cognitive career theory (SCCT). This theory includes the concepts of both self-efficacy and career barriers. It states the relationships of self-efficacy, satisfaction and stability to interests, abilities and expected outcomes are integral to career development. Outcomes within their theory can and do include barrier perceptions. They studied the processes by which an individual develops interests, chooses a career based upon those interests, and how career choice performance outcomes are achieved. While conceptualizing their framework, Lent et al. (1994) realized career development and academic development are related. They believe the mechanisms that take place during career development also take place academically. Lent et al. (1994) discussed an application of their framework by describing how an individual with high self-efficacy in science avoids the arts and anticipates negative outcomes based on prior experiences or because of anticipated negative views from family or significant others. The authors posit that career interests develop from self-efficacy beliefs and those beliefs shape outcome expectations, which are influenced by barrier perceptions. Thus, Lent et al.'s (1994) Social Cognitive Career Theory was an integral part of the foundational framework for this study. The SCCT includes three

social cognitive factors: self-efficacy, outcome expectations and goals. They define career development as a process by which individuals develop interests, make choices based upon those interests, and then act upon those choices resulting in specific outcomes. These initial interests can be forged in childhood and throughout life. Interests can be developed from activities that increase self-confidence or the level of self-efficacy. This leads to the anticipation of positive outcomes and a higher level of CDMSE.

Lent et al. (1994) suggest perceived barriers can have a strong influence on an individual's career choice. Contextual factors are viewed as barriers and those barriers can inhibit career decision-making. According to Betz (2000), the approach toward, as well as the avoidance of, career decision-making has an effect on an individual's attempt at educational majors and career exploration. Lent et al.'s (1994) theory of career development includes the concept of self-efficacy and, additionally, considers perceived career barriers. How career-related choices are developed and acted upon, together with performance outcomes, are part of Lent et al.'s (1994) career and academic interest framework. Their social cognitive career theory (Lent et al., 1994) takes self-efficacy one step further and asks, "Can I do this task?" and "If I do this task, what will occur?" Their theory focuses on an individual's self-esteem and beliefs. Lent et al. (1994) also suggest career interests develop over time.

Perceived career barriers can have an effect on career decision-making (Byars, 1997; Swanson et al., 1996). Swanson et al. (1996) in their study of perceived career barriers, used SCCT as a foundation for their research. They examined events that could

be perceived as barriers to career decision-making including but not limited to, the birth of a child, a job layoff or illness (Swanson et al., 1996). According to Albert and Luzzo (1999), there is an interaction between the three components of SCCT (self-efficacy, outcome expectations, and goal setting), and they do not occur in isolation. Career goals and outcomes are embodied within the context of an individual's own environment and include barriers, perceived or real.

This study researched the relationship between CDMSE and perceived career barriers among full and part-time applied technology and college transfer community college students. Taylor and Betz's (1983) career decision-making self efficacy theory based upon Bandura's (1977) self-efficacy theory, and Lent et al.'s (1994) SCCT are significant theories that support the process of career decision-making and, therefore, serve as a theoretical framework for this study. A more detailed discussion of these theories is found in chapter 2.

Figure 1 illustrates the relationships of gender, age, ethnicity, employment, first generational, full and part-time student status of the applied technology and college transfer groups to CDMSE and perceived career barriers. It also illustrates the link between CDMSE and perceived career barriers and how these relationships result in such outcomes as goal clarification and an increased awareness of both CDMSE and perception of career barriers as illustrated in research by Lent et al., (1994) and Swanson et al., (1996). These outcomes are from the findings of this study, not factors that were actually measured. Finally, Figure 1 shows the relationship between the two groups.

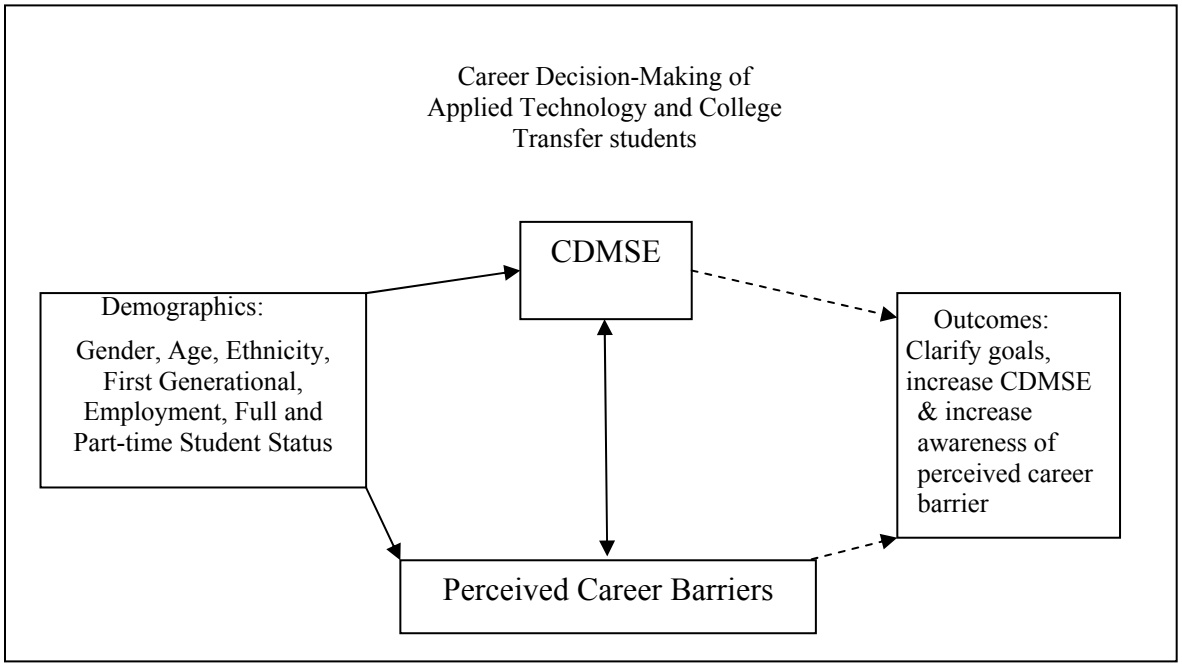

Figure 1. Model of the relationships.

Purpose

The purpose of this study was to examine the relationship between CDMSE, perceived career barriers and the demographics (gender, ethnicity, age, first- generational, employment, full and part-time student status) among applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

Research Questions and Corresponding Hypotheses

The following research questions and corresponding hypotheses were proposed for this study.

1. Are there differences in mean scores of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs by demographic characteristics (gender, ethnicity, age, first-generational, employment, full and part-time student status)?

H_0: There will be no significant differences in mean scores of CDMSE and perception of career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by gender, age, ethnicity, first-generational employment, and full and part-time student status.

2. What is the predictive value of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no effect of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

3. Is there a relationship between CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no correlation between CDMSE and CBI-R scores of college transfer and applied technology community college students pursuing associate degree, diploma or certificate programs.

Significance of the Problem

The mission of the community college, especially in the present recession, is to put people to work or back to work and to promote individual as well as economic development (Wake Technical Community College Catalog, 2009).

Research on the career decision-making of applied technology and college transfer community college students and the variables that affect their career planning is needed in order to help guide them into the workforce, thus stimulating economic stability. Results of this study of relationships between career decision-making self-efficacy and perceived career barriers can help the community college in adjusting programming and developing services that will raise students' level of career decision-making self-efficacy, help them overcome perceived career barriers, assist them in career decision-making and ultimately help them complete a degree, certificate or diploma. In

addition to improving persistence at the institutional level, career counselors will become better equipped to help students achieve an awareness of the factors that contribute to career choice indecision and the role self-efficacy plays in career decision-making. Interventions geared toward specific ethnic groups or genders can be developed. Students who make informed decisions will be able to save time and money, ultimately saving financial aid dollars. And finally, research on career decision-making of community college students fills a gap in the literature.

Definitions

Applied Technology Major: Vocational or applied technology education, according to Cohen and Brawer (2003) is a term used to describe education that teaches technical skills beyond what is traditionally taught in high schools and prepares students for an occupation. For the purpose of this study, students enrolled in a major that prepares for a specific career, other than Associate of Arts, Science or General Education degrees, are in programs such as accounting, computer information technology, nursing, or welding. Applied technology students are also referred to as occupational sub-baccalaureate students in the literature (Alfonso et al., 2005).

Career: the stages and changes over time that represent individual needs, motivations and aspirations, expectations of society, and constraints of organizations and often result in a consecutive set of related occupations throughout a lifetime (Cooper, Argyris, & Channon, 1998).

Career Barrier: Swanson and Woitke (1997) defined career barriers as "events or conditions, either within the person or in his or her environment, that make career progress difficult" (p. 446).

Career Decision-Making: A decision or choice about which line of work or profession to pursue.

Career Decision-Making Self-Efficacy (CDMSE): The level of confidence a person has while engaging in career-decision tasks. For example, someone with low levels of self-efficacy may experience challenges in the career decision-making process and would be less confident about vocational choice (Taylor & Betz, 1983).

CBI-R: Career barriers inventory, revised. The instrument used in this study to measure perceived career barriers.

CDSE-SF: Career decision-making self–efficacy-short form. The instrument used in this study to measure CDMSE.

College Transfer Student: Academic or college transfer curricula, according to Cohen and Brawer (2003), are the general education components such as history, social science courses, foreign languages as well as natural science and mathematics courses that fulfill academic requirements at a university. For this purpose of this study, college transfer students are enrolled in a non-career program seeking a general degree or diploma in Associate of Arts, Associate of Science, or Associate of General Education.

Credit hour: Earned academic credit based upon one week of instruction in a sixteen week semester.

Developmental Course: A course taken in preparation to enter college level courses. Developmental course credit is not included in a student's overall GPA. It does not result in credits toward program completion or transfer.

Full-Time Employment: Students employed for 40 hours or more.

First-generational Student: A student who is the first in his/her family to attend post-secondary education whose parents do not have any education beyond high school.

Full-time Student: A student enrolled for 12 or more credit hours in a semester.

GPA: Grade Point Average based upon a four-point scale.

Non-traditional Student: A student who is 25 years or older (Luzzo, 1999).

Open-enrollment: The policy of a community college to allow a student to attend and take courses at a community college without stringent admission policies.

Part-time employment: Students working less than 40 hours a week.

Part-time student: A student enrolled for 11 or less credit hours in a semester.

Perceived Career Barrier: The result of a series of events, beginning with an individual encountering a thwarting condition of either internal or external origin, necessitating an adjustment response or coping mechanism to relieve the stress. If the individual is able to cope effectively, stress can be reduced and thus satisfaction and success follow (Crites, 1969). Albert and Luzzo (1999) theorized that perceived barriers can be internalized by individuals and have an effect on the development of individual's skills, their level of self-efficacy and their outcome expectations. These internalized thoughts can lead to career options that seem unattainable. An example of a perceived career barrier could be the fear of math because of failing a test and therefore not

majoring in engineering because of a fear of failure based on the perception that he/she cannot do math.

Persistence: The decision of a student to remain in a course of study through completion.

Major: The track, outline or program of study that a student is following to complete an associate's degree, diploma or certificate.

Semester: Sixteen weeks of instruction during an academic year.

Self-efficacy: The level of confidence one has in his/her abilities to engage in tasks (Bandura, 1977).

Traditional Student: A student who attends college immediately after completing high school [usually 24 years of age or younger] (Luzzo, 1999).

Social Cognitive Career Theory: The relationship of self-efficacy, satisfaction and stability to interests, abilities and expected outcomes. It includes the process of developing interests, choosing a career based upon those interests, and determining how performance outcomes are achieved based upon career choice (Lent, Brown and Hackett, 1994).

Under-prepared: A student who is taking at least one course that prepares a student for college level work. The subjects are usually in English, Reading and/or Mathematics. These courses do not count toward degree, diploma or certificate completion.

Delimitations

This study explored the relationship between the variables of career decision-making self-efficacy and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs and included the demographics of gender, ethnicity, age, first-generational, employment, full and part-time student status. Demographic characteristics were chosen based on availability of data from admissions applications and related research that discussed first-generational status, as well as employment trends of students that attend community colleges. This study was delimited to the use of the career-barriers inventory revised version and career decision-making self-efficacy short form. And, it was delimited to an email survey at a large southeastern urban community college.

Limitations

This study was conducted at one North Carolina community college and the findings were limited to that specific population. Continuing education students, students without majors and dual enrolled high school students were not a part of this study. The collection of historical data was limited to what was available through the Office of Institutional Effectiveness and Enrollment and Records. Due to constant demographic changes, information obtained was a snapshot of the population being studied at the time of the research.

This study measured perceived career barriers by computing one composite score. Specific barrier perception sub-factors that were contained in the Career Barrier Inventory-Revised survey instrument used in this study included choice of career, finding

a job, performing your job and balancing your job with other aspects of your life; these were not individually analyzed.

Students were encouraged to participate in the study via an email invitation. A limitation of the study is that it used a self-selected population. Because of this self-selection, it is not known if those who chose not to participate might have substantially changed the results of the data collected. For instance, students who already felt more confident about their career decisions or who perceived fewer career barriers might have been more willing to participate in the study. Also, students who did not have valid email addresses or have access to a computer or who did not report an email address upon admission to the college were not part of the study. Results of the study should not be generalized to other community colleges as their student demographic characteristics might have had a different effect on college transfer versus applied technology student populations. The overall demographic characteristics of community colleges nationwide according to the American Association of Community Colleges (2009) reports that 47% of students are 21 or younger, students 22-39 comprise 40% and 13% of the student population nationwide is 40 or older. Minorities make up 36% and women are 58% of the total community college population yet the sample being tested was comprised of 67% females, 28.7 % minorities and 42% of students aged 31 and older. However, it should be noted that the demographics of the sample were consistent with the overall population of the community college being tested as noted in Table 4.9.

Due to the number of demographic variables being tested, the sample size within specific demographics decreased; for example, the number of Native Americans was 6

respondents and the number of students who self-reported that they were Asians was 38. The number of self-reported laid-off and retired students was below 40. Increased numbers within each of these demographic categories in the study might have changed the relationships. In addition, the socioeconomic status of the student was not one of the demographic characteristics studied. Many students may have chosen to attend the community college because of the current economic climate. This was not part of the study.

CHAPTER TWO LITERATURE REVIEW

This study examined the career decision-making self-efficacy and perceived career barriers of applied technology and college transfer community college students with reference to the variables of gender, age, ethnicity, first generational, employment and full and part-time student status. It should be noted as described earlier, that college transfer students may expect to earn a general education/academic Associate degree and /or plan to transfer to a four-year institution. The review of literature includes a discussion of the community college, career decision-making, the foundational theory behind career development, and the examination of career decision-making self efficacy and perceived career barriers with respect to the demographic variables of gender, age, ethnicity, first generational, employment, full and part-time status of community college students.

The Community College

Community college doors have been open to all members of the communities they serve since the early 1900s. The community college open door policy draws people of diverse backgrounds who seek an education leading to a variety of career opportunities.

History

The community college concept grew out of what was known as the junior college, providing the first two years of a baccalaureate degree to be completed later at a university. Segner (1974) notes the earliest institutions said to be junior colleges were Decator Baptist College in Texas established in 1897 and Joliet Junior College in Illinois

established in 1902. Joliet is generally credited with being the first public junior college and oldest continuously operating college. Previous similar institutions had been private academies. Economic issues fueled the growing number of junior colleges. The country's population was growing and there was a need for a trained work force. Traditional universities could not handle the large number of individuals, adding to the increased need for technical training (Segner, 1974). Junior colleges had been preparing students to become teachers, but the future of higher education was about to change. With the country's shift from a primarily rural, farming economy to one of industry and urbanization, the junior college movement grew to include vocational training (Segner), thus fueling the need for career development as vocational choices were many.

In 1947, Truman's Commission on Higher Education addressed the evolution of junior colleges to community colleges. The commission recommended that community colleges survey the surrounding community to determine the educational needs of its service area. It stated community colleges should serve a cross-section of the population, prepare students to earn a living, or prepare them for transfer to four-year institutions (President's Commission, 1947 as cited by Gleazer, 1994). Since the 1947 Truman Commission report, the community college has increased in popularity, experiencing its largest growth in the 1960s and 70s and attracting individuals from varied backgrounds with career development needs (Cohen & Brawer, 2003).

Recently, the American Association of Community Colleges (2009) was encouraged when President Obama spoke about placing an emphasis on the role community colleges play in a challenging economy. He recommended a ten year plan to

increase graduation rates by increasing funding for workplace training, facility construction and renovation, and to award grants for the development of free career oriented courses. The community college plays an important role in training and retraining workers for employment and aid in stimulating economic development.

Equal Access

Access to education has been the cornerstone of community colleges. According to Phelan (2000), the community college is the only choice for some students and a gateway to careers that previously seemed out of reach. Students have the option of the academic route by earning credits for transfer to a university, or to earn an applied technology degree that trains them for specific job skills. Students who would not necessarily consider college or who are academically unprepared or financially strapped or displaced because of job lay-offs have access to higher education due in large part to community colleges (Cohen & Brawer, 2003). According to Cohen and Brawer (2003), access is linked to location. In areas where a community college is located, the number of students who attend college increases dramatically. “During the 1950s and 1960s, whenever a community college was established in a locale where there had been no publicly supported college, the proportion of high school graduates in that area who began college immediately increased, sometimes by as much as 50%” (Cohen & Brawer, p. 16). The trend continues today because students are interested in the career options that lead to economic benefits that attendance at a community college can provide. According to Grubb (2002), the occupational purpose of community colleges is central to their missions and serves students’ goals of enhancing career options by going directly into a

career after graduation or by transferring to a four-year institution. He states, "those with some college earn 14% more among men and 17% more among women, suggesting that relative demand for pre-baccalaureate education has increased over the past three decades" (Grubb, p. 300). Thus, equal access has made a higher standard of living possible for many who attend the community college.

One of the many missions of the community college is to provide students the opportunity to transfer to four-year institutions. As described by Kasper (2002-03), community colleges that have transfer agreements with four-year colleges and universities provide the first two years of coursework that will lead to a baccalaureate degree. According to Dougherty and Kienzl (2006), use of the community college transfer function has increased. Universities are encouraging students to begin their postsecondary studies at the community college due to their own increasing enrollments and costs. Research reports that the average baccalaureate degree recipient's earnings are 30-40% more than the individuals with a terminal associate degree or certificate (Grubb, 2002). In a study of community college students' career and educational goals, Laanan (2000) found that 25% of nonwhite and 33% of white students aspired to earn a baccalaureate degree. A third of both groups were planning to pursue the master's degree. There were even students that set the doctorate as their highest degree and ultimate goal. Although many students have high aspirations, this diverse community college population, regardless of background, often arrives at the college with a need for career direction.

A study of community college students by Bers (1988) found younger students were uncertain about their career choice and changed majors far more frequently than older students. They concluded that younger students attend a community college because they may not necessarily be committed to a specific major. Cuseo (2005) believes students often make premature career decisions because of a lack of planning and forethought and, therefore, are unrealistic and uninformed. Many students base their choice of major on an insufficient understanding of academic majors and their relationship to future careers. Cuseo suggests that decisions about majors and careers are often made due to family pressure, stress from having no choice and awareness of lucrative careers that boast high salaries.

Alfonso et al. (2005) studied the educational outcomes of occupational sub-baccalaureate students and found, depending on the student's goal, the effect of having attended a community college differed between students who were seeking a certificate or diploma for a specific vocation and those in an associate degree program. Occupational students in an associate degree program were less likely to persist than occupational students enrolled in a certificate or diploma program. Alfonso et al. attempted to explain this by suggesting that associate degree occupational students' academic skills were weaker when they entered the community college, and they may not have been as motivated as the occupational certificate and diploma students. According to the authors, the community colleges they studied did not have the appropriate programs in place to assist occupational students with completion of their goals. Unfortunately, the authors' suggestions were not measurable and while they are

plausible, the authors themselves recognized that much more research is necessary to explain the achievement gap between certificate/diploma seekers and associate degree students.

Fredrickson (1998), in a study of North Carolina community college students who were enrolled as transfer students, found that seven out of 10 students surveyed who had successfully transferred to a public North Carolina university had come from a community college transfer program. She also found that the majority of students who had attended the community college part-time became full-time students after transferring to the university. In addition, a study by Laanan (2003) revealed that variables such as gender, age, parent's educational background, and a student's ethnic heritage were significant predictors of educational aspirations.

The faces on community college campuses have changed dramatically through the years. According to Paradise and Long (1981), the majority of community college students demographically reflected their local communities during the 1970s. The students were primarily from lower-middle class society and came from homes where parents were skilled laborers. There were more male students than female students and the minority student enrollment was at a minimum. Maxwell, Hagedorn, Cypers, Moon, Brocato, Wahl, and Prather (2003) now report female enrollment exceeds male enrollments and that females constitute around 58% of the community college student population.

Another demographic change in the past 30 years occurred in the average age of students. "In 1970, 53% of two-year college students were under 20 years of age"

(Paradise & Long, 1981, p. 39). Maxwell et al. (2003) reported "[w]hile 50% of the students in community colleges are less than 25 years of age, those aged 40 and above represent about 16% of the enrollments" (p. 23). According to Keller (2001), the American population is aging due to more elderly individuals who are pursuing some type of higher education. This older population is living longer, working longer and requiring lifelong education.

Whether an individual is attending a community college to transfer or to learn a vocation, a career decision must be made. This career decision is often more difficult than one might expect.

Career Decision-Making

According to Cooper et al. (1998), career decision-making is a decision or choice about which line of work to pursue. An individual's career decision represents the stages and changes of needs, motivations and aspirations, expectations of society, and constraints of organizations and often results in a consecutive set of related occupations throughout a lifetime (Cooper et al.). A major theme that surfaces when studying career decision-making is the concept of knowing oneself. Lack of maturity as well as not recognizing personal likes and dislikes can lead to unhappiness, confusion and a lack of fulfillment when making a career decision. According to Super (1955), vocational maturity is a vital component in the career selection process and consists of five parts: orientation to vocational choice, information and planning about a preferred occupation, consistency of vocational preference, crystallization of traits and the wisdom of vocational preferences. In other words, in making a career decision one must ask, "Do I

have all of the necessary occupational information; am I willing to seek information, if necessary; is the occupational choice under consideration stable; will I maintain a positive attitude toward the work chosen; and does the choice match my abilities, activities and interests?" With all of these factors under consideration, it is easy to see why making a career decision can be a challenge. Thus, the field of career development has emerged as a result of career decision-making research.

Foundations of Career Development Theories

Career development had its beginnings with practical guidance from Parsons (1909). He was interested in giving practical advice that was scientific in nature. Parsons' approach simply matched individual characteristics to job requirements.

Parsons (1909) understood the importance of self-examination coupled with a thorough understanding of the job market when considering different types of available career options. He emphasized the importance of self-examination to assess an individual's traits. This was the beginning of using assessment instruments for measuring aptitude and interests and matching them to a career. His approach was linear in nature, yet useful for the time period in which he lived. In 1909, Parsons characterized the choice of vocation as the "greatest decision" (p. 5) a person can make in life. He introduced the concept of individuals making their own career decisions. Parsons' career development theory of the relationship between cognitive thought processes and intuition evolved into the trait and factor theory. He writes: "In the wise choice of a vocation there are three broad factors: (1) a clear understanding of yourself, your aptitudes, abilities, interests, ambitions, resources, limitations, and their causes; (2) a knowledge of the requirements

and conditions of success, advantages and disadvantages, compensation, opportunities, and prospects in different lines of work; (3) true reasoning on the relations of these two groups of facts" (Parsons, p. 5). Although Parsons' theory was developed nearly a hundred years ago, its elements are still valid today. A clear understanding of self in making career decisions is central to the theory that Bandura (1977) developed.

Self-Efficacy

The self-efficacy theory, introduced by Bandura (1977), focuses on the importance of coping behaviors, whether or not they will be initiated, and how long they can be sustained in the face of obstacles. This is instrumental in students' persistence and success. Bandura (1977), who viewed self-efficacy behaviors through a cognitive lens, believed the thought processes leading to a certain action could have more influence over someone than the actual action itself. In other words, if one believes a task cannot be accomplished, this negative thought is a more powerful determinant to overcome than the actual task. He saw motivation as being rooted cognitively. As one thinks about future rewards or consequences, motivation is either strengthened or decreased based upon that person's thought process. Bandura's self-efficacy theory (1977) is also grounded in the concept that people who are afraid of certain threatening situations will avoid them because they believe their coping skills are not sufficient to address difficult situations. In contrast, those who are self-assured and believe they are capable will involve themselves in activities and not be fearful. The latter have a strong sense of self-efficacy because of beliefs and self-assuredness. Bandura (1977), however, stresses that belief or high levels of self-efficacy alone will not always produce a desired outcome. The appropriate skill

set and level of self-efficacy allows an individual to persist and work through challenging situations; however, the capability to actually perform a task is necessary.

Bandura (1977) bases his theory of self-efficacy on four sources of information: performance accomplishments, vicarious experience, verbal persuasion and emotional arousal. Performance accomplishments stem from successful mastery of a behavior. Thus, self-efficacy beliefs are strengthened by successfully repeating a behavior and discovering that obstacles can be overcome by persisting. For example, self-efficacy can increase if a student is successful in solving specific types of math problems. This mastery can then transfer to coping skills in other classes and generally reduce any fears of not being successful in college level work. According to Bandura (1977), once an individual's level of self-efficacy has increased due to repeated successes, the effects of failure are often reduced.

Vicarious experiences also contribute to a person's level of self-efficacy. Observing others succeeding in a perceived threatening activity will reinforce positive expectations and persistence without adverse consequences. People can learn to model their behaviors and enhance their own thought processes and level of self-efficacy. However, Bandura (1977) notes that observation of others is not likely to be a dependable source of action in an attempt to increase an individual's capabilities.

Verbal persuasion also can strengthen a person's self-efficacy. The power of suggestion can be very persuasive. If a person is given verbal encouragement and praise for performing well, self-efficacy will likely be enhanced. Once again, Bandura (1977) states that verbal persuasion alone is not the best way to enhance an individual's level of

self-efficacy. Simply telling an individual a task can be completed is not as powerful as actually experiencing the accomplishment.

The fourth area of self-efficacy information comes from emotional arousal. If thinking about a situation produces anxiety and fear, one is likely to avoid the task or behavior. By reducing the perception of a threatening situation, the level of fear and anxiety will be reduced and the level of self-efficacy will be heightened.

In order to increase an individual's level of self-efficacy that will lead to persistence in activities that would have previously been abandoned, all four sources of information must work in unison. By experiencing the four sources of performance accomplishments, vicarious experience, verbal persuasion and emotional arousal, the level of self-efficacy can be increased and result in persistence toward goals. Based on Bandura's (1977) theory, it is easy to see these four sources of information can easily be applied to the career decision-making process.

Bandura, Adams and Beyer (1977) found the effects of changing an individual's behavior in a positive fashion can improve self-efficacy levels. They discovered participants sometimes experienced positive consequences in conditions where they had anticipated negative consequences, and when these positive experiences were repeated their self-efficacy increased. Participants felt more confident and in control of their fears by being actively involved in a once feared experience. Their perception of a negative environment was altered through modeling a desired behavior in a non-threatening environment. Bandura understood that individuals do not live in isolation, but are part of a social system that includes education, athletics, politics, neighborhoods, businesses, and

churches. Being part of these social systems aids in the development of individual personalities. Bandura's self-efficacy theory was developed and shaped even further by Lent, Brown and Hackett (1994).

Social Cognitive Career Theory

Lent et al.'s (1994) theoretical framework was based on Bandura's general social cognitive and self-efficacy theories. Bandura's (1989) general social cognitive theory focused on the interaction between people, their cognitive processes, and their environment, which includes perceived barriers, emotional and financial support, role models, family support and the behaviors associated with each. Lent et al.'s social cognitive career theory focuses on self-efficacy, outcome expectations and goals. It is useful in understanding the cognitive process in career decision-making. Using Bandura's (1989) interlocking system as a guide, Lent et al. developed a framework centered on career development that states there is a relationship between self-efficacy, satisfaction and stability to interests, abilities and expected outcomes. They studied the process of developing interests, choosing a career based upon those interests, and determining how performance outcomes are achieved based upon that career choice. Social cognitive career theory (Lent et al.) requires cognitive thought processes. The authors place an emphasis on learning and thought processes and their linkage to self-efficacy. In addition, they agree with Bandura that an individual's belief will influence the actual performance of a given task.

Lent et al. (1994) posit that career interests develop from self-efficacy beliefs and those beliefs shape outcome expectations. In addition, they stress that exposure to

different activities in one's youth can be related to potential careers. A sense of self-efficacy is formed through repeated modeling behaviors and, therefore, an individual begins to form certain interests. Interests lead to intentions or goals, which lead to activities toward the goal, which lead to successes or failures, resulting in a certain expected outcome.

The SCCT examines cognitive thought processes, self-efficacy, and setting personal goals as well as environmental variables such as the atmosphere in which one grows up. The types of learning experiences or role models influence how these variables interact with behavior variables. Lent et al.'s (1994) theory hypothesizes that all three variables are linked and have reciprocal effects on each other. They believe that personal, contextual and experiential factors work together to shape self-efficacy, outcome expectations and goals. Researchers use contextual factors within SCCT when examining barrier perceptions in a theoretical context. Swanson and Woitke (1997) applied SCCT to their construct of barrier perceptions. They found the perception of barriers fit very well within the SCCT construct in a number of ways. Barrier perceptions overlap with levels of self-efficacy within individuals and can be directly linked to outcome expectations. In addition, barrier perceptions can also be linked to cognitive thought processes, interests, and expected outcomes by contributing, resulting from or representing beliefs, fears, events and/or other contextual factors that are hypothesized in Lent et al.'s SCCT. For example, Swanson and Woitke believe barrier perceptions can have a direct influence on an individual's level of self-efficacy. Expectations about accomplishing career-related tasks can be influenced by perceived barriers that inhibit the process of accomplishing a

goal. A female student that receives a failing grade on a science test may develop a perceived barrier about women not being able to excel in science because of one experience. The perception of a gender role stereotype could be compounded even further by family responsibilities and interfere with choosing a career in science. The impact of a perceived barrier can have an ever increasing influence depending on the level of perception.

A study of community college students by Ryan, Solberg and Brown (1996) examined the barriers of family dysfunction and parental attachment (environmental factors) on the level of career search self-efficacy (cognitive variable) possessed by the students. Their research showed that when students have a positive relationship with parents and a secure relationship with family, their level of career search self-efficacy is high. This type of environmental factor or barrier demonstrates that when barriers can be minimized, self-efficacy can be increased or improved upon. Their research also reflected a distinct difference between men and women and how they perceive a barrier such as family dysfunction. Women had a much higher barrier perception than men as well as a lower level of CDMSE suggesting family relationships are more complex for women and their career development.

Tansley, Jome, Haase and Martens (2007) applied SCCT to a group of community college students in an effort to determine the effects written persuasive messages had on career decision-making self efficacy, as well as outcome expectations and career-related behaviors. The results of their study showed that written persuasive messages had a significant effect on students' career decision-making and outcome expectations,

supporting the tenets of the social cognitive career theory (Lent et al., 1994). Interestingly, students who received negatively stated messages such as “the less one puts into a career the less one will gain” or “one should not be lazy,” showed significant gains in their career decision-making outcomes, intentions and behaviors. The participants who received positive messages such as “it is vital to believe in oneself” and “putting forth effort results in success” participated in fewer career related activities following the study. The community college students received messages from peers, instructors, family members, and co-workers, as well as the messages they perceived through their own thought processes. According to this research, how messages are framed can have an effect on career decision-making.

Lent et al. (1994) also studied goal setting and found it important in sustaining behavior over a significant period of time, without the benefits of external reinforcement. Central to Lent et al.’s framework is the linkage of goals to values. How much one values the potential outcome is important. The authors believe goals are regarded as regulators for motivation and outcome expectations are a reflection of a person’s level of self-efficacy. People with a high degree of self-efficacy are more likely to set goals and see them through to the expected outcome.

Lent et al. (1994) believe an individual’s self-efficacy beliefs can be developed over time and could be inaccurate due to barriers such as stereotyping careers, family pressures, socioeconomic conditions or poor prior performance in the field. Some career options might be eliminated because of inaccurate self-efficacy beliefs unless self-

efficacy can be enhanced. Nevertheless, inaccurate self-efficacy beliefs can be changed through interventions and counseling.

SCCT has also been applied to the community college environment. Williams and Subich (2006) studied SCCT and its relationship to gender, learning experiences and outcomes. Gender differences were seen within certain career related areas. Their study supported the possibility that gender stereotyping of certain careers originating from different learning experiences could shape attitudes and behaviors about those careers. Williams and Subich's study also revealed subtleties between SCCT and career related learning experiences. The more experiences an individual has in a certain career area, such as the arts or business, the higher the levels of self-efficacy and outcome expectations.

Rivera, Chen, Flores, Blumberg, and Ponterotto (2007) examined the validity of social cognitive career theory for a group of Hispanic women attending a community college. They discovered that if the perception of barriers was high, Hispanic women were apt to choose traditionally female dominated occupations such as teaching and nursing. The authors also concluded that Hispanic women need to be exposed to a broader range of career choices.

As suggested by these researchers, if career advisors were able to gain insight about parental attachment, family dysfunctions, gender roles, and areas inhibiting goal attainment, they might be able to encourage students and guide them in career search activities and, ultimately, help them overcome some of their fears.

Theoretical research on career development and the needs of a diverse population is needed at the community college level. Many foundational theories were developed over fifty years ago, yet can still be applied to career decision-making today. Given the community college mission to train workers and address the demands of the global economy, expanding the institutional role of helping students make appropriate career choices seems only natural.

Career Decision-Making Self-Efficacy Research

Taylor and Betz (1983) applied Bandura's (1977) self-efficacy theory to develop their theory of career decision-making self-efficacy (CDMSE). They proposed that a low level of self-efficacy challenges the career decision-making process and results in a lack of confidence in vocational choice. Their study revealed a negative relationship between CDMSE and career indecision. Betz and Hackett (1981) originally applied Bandura's self-efficacy theory to the process of career decisions as it related to women's career development. This approach has continued to grow in popularity and is now applied to various ethnicities, different age groups, and both genders. In addition, the career decision-making self-efficacy (CDSE) instrument, designed in 1983 by Taylor and Betz, and was originally composed of 50 items. It was used to investigate the usefulness of Bandura's self-efficacy theory of belief in the capability to attain goals and accomplish desired tasks. The instrument was created to show that self-efficacy can be measured and the results would show an effect on career decision-making. It was initially administered to 346 people, 154 who attended a private liberal arts college and 193 enrolled at a large state university. It became a popular assessment tool for use in career decision-making. In

1996, Betz, Klein and Taylor developed a short form of the popular CDSE for ease in research. The original CDSE instrument consisted of five competency factors with ten items per factor. The five factors were (1) accurate self-appraisal, (2) gathering occupational information, (3) goal selection, (4) planning for the future, and (5) problem-solving (Betz et al., 1996). The authors removed five of the ten items by identifying four criteria (1) substantive generality, (2) item scale correlation equal to or above .50, (3) loading on appropriate factor analysis and (4) recommendation for retention based upon split-scale analysis conducted by Gati, Osipow and Fassa (1994, as cited in Betz et al.), thus creating a 25 item assessment consisting of five items per factor. The participants were students in an introductory psychology course at a large Midwestern university consisting of 103 female and 81 male students. The rating scale consisted of a 5-level confidence continuum using 1 to indicate no confidence at all to 5, with complete confidence. Scores were calculated by summing the 25 items resulting in a maximum total score of 125. A higher total score indicated a greater level of confidence a respondent has in career decisions.

The CDSE-SF instrument was developed around the career maturity theory posited by Crites (1976) that includes (1) accurate self-appraisal, (2) gathering occupational information, (3) goal selection, (4) making plans for the future, and (5) problem-solving. Taylor and Betz (1983) performed a principal components factor analysis and their five factor theoretical basis of 1) accurate self-appraisal, (2) gathering occupational information, (3) goal selection, (4) making plans for the future, and (5) problem-solving for the CDSE-SF was marginally supported by factor analysis. Total

scores on the instrument were found to be related to career indecision and supported construct validity. Students who completed the assessment were more likely to report that they were undecided in their vocational choice. Goal selection and occupational information proved to be strong, with both factors including planning items. A factor analysis was repeated on the instrument by Taylor and Popma (1990), and it revealed a slightly clearer factor structure for the five factors. Overall, total scores on the CDSE-SF emerged as the only significant predictor of vocational indecision as opposed to using factor scores. Gati, Osipow and Fassa (1994) in their research showed a five factor structure when performing cluster analysis. Peterson and delMas (1998) performed a components factor analysis, and their study of underprepared college students completing the CDSE-SF revealed two major factors consisting of decision-making and information gathering. They also concluded that sub-factor scores were not useful in identifying certain aspects of career decision-making self-efficacy and that total scores representing a general factor of CDSE-SF are recommended. Robbins (1985) supported the use of overall scores rather than factor scores as the CDSE-SF is a generalized measure of career decision-making self-efficacy. Betz et al. (1996) reported concurrent validity correlations when using the CDSE-SF and concluded, based upon numerous studies of the CDSE and CDSE-SF, that stronger perceptions of career decision-making self-efficacy are linked to lower levels of career indecision. Luzzo (1993c) conducted reliability and validity studies of the CDSE-SF on a community college population, looking for relationships between CDMSE and student demographics of age, GPA and gender. A group of 230 community college students completed the CDSE-SF, and a

second sample of 44 students completed the CDSE-SF for a test-retest comparison. Luzzo (1993c) conducted concurrent validity measures using the Pearson product-moment correlations and a stepwise multiple regression analysis. He found that CDSE-SF scores are positively related to student age, but not related to GPA. Differences on scores based upon gender were not significant in his study. In a summary of criterion-related and construct validity by Betz and Luzzo (1996), the CDSE-SF demonstrated stronger correlations between self-perceptions of career decision-making and decisional certainty among women than for men. Robbins (1985), when researching construct validity, separated two groups based upon scores on the My Vocational Situation (MVS) and scores on the CDSE-SF differed significantly between the two groups that were studied.

Betz et al. (1996) reported internal consistency reliability scores of .73 to .83 for the subscales and .94 overall. Using a sample of 347 college students, Betz and Luzzo (1996) reported reliabilities of .69 to .83 for the subscales and a total alpha of .93. Three different studies (Gushue et al., 2006; Mau, 2000; Nauta & Kahn, 2007) reported internal consistency reliability scores ranging from .89 to .94 for the total score. In a study of influences of ethnic and non-ethnic variables on the career decision-making of college students, Gloria and Hird (1999) reported an alpha score of .95 for the white students and .97 for the racial and ethnic minority students. Luzzo (1993c) conducted a test-retest with a group of 44 community college participants from an original group of 230 and the test-retest reliability was .83. Results of his study found high internal consistency reliability, with an alpha coefficient of .93. Tansley et al. (2007) used the CDSE-SF in a study of

message framing on community college students' career decision-making and found internal consistency to be reliable, with their study resulting in an alpha score of .91.

CDMSE has been widely studied and measured by researchers. Taylor and Popma (1990), in their study of university students, found students who have control over their efforts or talents that affect behavioral outcomes also possess high levels of CDMSE. They note having an understanding of a person's CDMSE can help in predicting the level of career indecision and, thus, provide assistance in developing career decision interventions. Taylor and Popma used the original long form scale to assess students' career decision-making self-efficacy and found that CDMSE was the only significant predictor of vocational indecision. They noted having an understanding of a student's CDMSE helps predict the level of career indecision and could help to provide assistance in developing career decision interventions. In a study of university students, Nauta and Kahn (2007) found a positive level of CDMSE when students were engaged in exploration and were committed to a career field. Confidence in one's ability to engage in career decision-making tasks results in high levels of CDMSE.

Robbins (1985) also found that CDMSE is a generalized measure of career-decision-making self-efficacy. Later, Betz and Luzzo (1996) concluded, based upon numerous studies using the long and short forms, that stronger perceptions of career decision-making self-efficacy are linked to lower levels of career indecision.

Quimby and O'Brien (2004) studied the career decision-making self-efficacy of nontraditional college women. Often, this complex group has to balance college classes with one or more of the multiple roles of being a mother, spouse, student, or care giver

for an elderly parent and is usually over 25 years of age. Caring for young children demands time and energy and can have a considerable influence on the level of confidence in enrolling in higher education. The authors based their study on Bandura's (1977) theory of self-efficacy and the belief that one has the capabilities to persist in an activity or certain environment toward a goal even when faced with obstacles. Multiple role conflict was found to be one of the obstacles leading to women's lack of confidence in succeeding in school, resulting in their pursuit of less prestigious careers. Traditional female careers such as nursing or education are perceived to balance work and family more easily (Quimby & O'Brien). Interestingly, the study showed that nontraditional women without children viewed motherhood and childcare as perceived barriers to career advancement more than the women who actually had children. The researchers concluded that this finding was the result of anticipated future conflicts compared to actual events. Social support emerged as the significant predictive variable in CDMSE among nontraditional women with children. In the Quimby and O'Brien study, women who felt they had a strong network of social support and few barriers to career success had a greater sense of self confidence when asked about managing educational responsibilities and career development tasks.

According to Quimby and O'Brien (1994), men and women differ in their self-efficacy beliefs. Women rely on relationships, while men rely on mastery of experiences or interpretations from past successful events giving them a stronger sense of self-efficacy (Zeldin et al., 2007). Men tend to develop science and mathematical mastery early in life. Due to gender socialization, men's sense of confidence in traditionally male

dominated occupations, characteristically mechanical, technical and scientific in nature, is developed early and repeatedly reinforced throughout their early development (Betz & Hackett, 1981 as cited by Zeldin et al., 2007). Career choices, in the Zeldin et al. study, showed men to be influenced by role models, who were often family members such as fathers. The men interviewed in the study noted that the information they absorbed was passive in nature. Simply having a father in a certain field had an influence on their career choice; however, unlike men, women needed verbal encouragement, not only from family members but also from peers and teachers. Men in the study tended to be more resilient and rarely considered whether they would be successful in their choices. They were likely to have a foundation already built that supported their level of confidence. The fact that the participants were white men was noted as a limitation of the study. Men from different racial and ethnic backgrounds might not have had the same level of confidence or self-efficacy development. In a review of several studies, Whiston and Keller (2004) found that women were influenced by the support of their mothers, especially when they were entering career fields dominated by men. When studying levels of self-efficacy exhibited by women, Betz and Hackett (1981) discovered that women reported high levels of self-efficacy if they were interested in pursuing traditional careers, such as dental hygienist, social worker or secretary, and low levels of self-efficacy if interested in nontraditional occupations such as engineer, mathematician or highway patrol officer. The lower self-efficacy scores with regard to nontraditional careers may be due to a lack of successful experiences or to exposure to certain fields or

to a lack of encouragement from teachers, parents or society. Not only are there studies of CDMSE and gender in regard to career decision-making, age has also been researched.

In a study of non-traditional students or students older than 25 years of age, Luzzo (1993a), found the older community college students possessed more clearly defined career goals; however, research revealed no relationship between being traditional or non-traditional and CDMSE. His findings showed that age was not a factor in terms of self-efficacy levels or confidence in their ability to make career decisions. Despite having more clearly defined goals or being more mature because of age, the non-traditional students still displayed a lower level of CDMSE and also exhibited low-level skills when asked to solve possible future career related decision dilemmas.

A study by Gianakos (1996) discovered that adult students, when compared to traditional aged (younger) students, had higher levels of CDMSE and were more confident in the sub-factors of goal setting, obtaining occupational information, problem solving, making plans for the future and self appraisal. These adult learners were attending college more for personal enrichment than simply to obtain a degree or diploma which should lead to a job. The research revealed that 56% of the traditional aged students attended college in order to obtain a degree, with only 13% of the adult learners reporting the need to obtain a degree. The researcher in this study found traditional aged or younger students to be less focused regarding their ultimate career decisions and possessing limited self-reflection skills. Spitzer (2000) reported similar results in her study of traditional and nontraditional students by finding that traditional students had greater career indecision than their nontraditional counterparts. Traditional students in the

Spitzer study were conflicted between social goals and career goals. It seemed that traditional aged students were more concerned about their social lives than their career goals.

Foltz and Luzzo (1998) continued to study non-traditional or older students by having them participate in a career counseling workshop to improve their levels of CDMSE. They found the non-traditional or older students who participated in the workshop increased their levels of CDMSE. Results of their study showed participation in a workshop and the use of interventions could change levels of CDMSE. In addition to studying the variables of gender and age, ethnicity is another variable explored in relationship to CDMSE.

Luzzo (1993b) studied CDMSE and ethnicity and found African American, Asian American, Hispanic, and Filipino college students, when compared to European American students, had differences in CDMSE. In his study, the European American or White students had a higher level of CDMSE. Similarly, Gloria and Hird (1999) also found White students possessed higher levels of CDMSE when compared to minority students. Racial status within society influenced these ethnic minority students and, subsequently, their level of CDMSE.

Gushe et al. (2006) examined the relation of ethnic identity, specifically, Latinos/as identity, and engagement in career exploration behavior. They found that self-efficacy was impacted by ethnic identity. Students that were more confident with their ethnic identity were found also to be more confident in their ability to navigate career decision-making tasks. These results did not take into account discriminatory practices;

however, one can hope that students who possess a fully developed ethnic identity would have the ability to better cope with racist actions in the employment arena.

Rivera et al. (2007) studied Hispanic women in an urban community college and framed their study on Lent et al.'s (1994) SCCT and Betz and Hackett's (1981) CDMSE theory. Their findings showed that CDMSE was influenced by male and female dominated career considerations. The researchers suggested the development of interventions aimed at enhancing Hispanic women's self-efficacy levels for considering careers in math and science when it is observed that they possess high levels of math and science ability. Encouraging students to seek role models and careers that are outside of gender norms, such as nurse or teacher for females was also suggested.

In contrast, Lopez and Yi (2006), in their study of African American, Hispanic and White female undergraduate students, found no difference in CDMSE when measured. The researchers accounted for this lack of difference among groups due to the sample being tested. The sample participants under investigation were in their third and fourth years of college and had persisted to the level that the group itself, despite being ethnically different, was very similar regarding career decision-making experiences.
In addition to ethnicity, first generational students have also been studied regarding self-confidence or self-efficacy.

Inman and Mayes (1999) looked at the unique characteristics of first generation community college students. Students in their study were likely to be from low-income families, female, older and had children. Also, results showed these students were likely to be attending a community college in order to increase their level of self-confidence and

improve their academic skills. In addition, a study by Arbona and Nora (2007) found the parents of their Hispanic students who possessed a college degree were a mere 16%. Peterson (1993) studied the CDMSE of first generation students who lacked college level reading, writing, and/or math skills. The first generation students in the study also had a low-socioeconomic status and were often minorities. Using the CDMSE scale developed by Taylor and Betz (1983, as cited by Peterson, 1993), the study showed students who aspired to doctoral, masters or bachelor degree levels had higher CDMSE scores than those who had pre-baccalaureate aspirations and that students with lower grade point averages (GPA) had low CDMSE scores. Findings suggest students could benefit from interventions aimed at increasing their confidence levels regarding career information gathering, occupational goal planning and, ultimately, career decision making.

Employment status of students who attended college part or full-time also had an affect on CDMSE. The majority of the literature examined these factors in relation to how they impact retention and goal attainment. Studies by Luzzo and Ward (1995), Luzzo et al. (1997) as well as Nonis and Hudson (2006) found there were positive aspects when students were employed while attending college. Luzzo and Ward hypothesized that college students who are employed in occupations aligned with their career interests should exhibit more confidence and hence have a higher level of CDMSE. The authors also hypothesized that employment opportunities should enhance opportunities to learn about the job market and allow students to make more informed career decisions. The results of their research, however, did not find any significant relationship between employment while in college and CDMSE. They concluded that it was a challenge for

students to find part-time jobs in the same area as their career interests. Also, they deduced that college students tend to over estimate their ability to actually engage in career decision-making activities. Students may have high levels of CDMSE, yet actually lack the particular skill set to make an effective career decision.

In addition, Luzzo et al. (1997) studied traditional aged students in their first year of college and their investigation supported the tenets of SCCT and CDMSE. Participants in their study scored relatively high when CDMSE was measured whether they were working while attending college or not. It was interesting to note that CDMSE was not affected by being employed in jobs that lined up with students' career interests. These students felt more in control of their career decisions, yet career decisiveness was not significantly associated with working. Additionally, they had higher levels of academic performance. It was concluded that student affairs professionals should measure CDMSE despite the assumption that students who are working in their selected field may not need assessment measures at it pertains to CDMSE.

Nonis and Hudson's (2006) research discovered time spent working did not have a negative effect on academic performance and had no direct influence on a student's grade point average. They suggested that students who earn higher grades might be more motivated and better able to balance academic responsibility and work commitments. These students may already have had a more fully developed sense of self and high levels of self-efficacy. The authors realized that their findings may have been unique and should not be used to generalize across different student populations, yet these findings can be

encouraging based upon the vast majority of students who work while attending college, especially community colleges.

Attending college as a part or a full-time student is another variable that was included in this study. The majority of the studies concerning part-time and full-time enrollment are limited and most are directed at persistence. Part-time enrollments, as reported by O'Toole, Stratton and Wetzel (2003), have increased substantially since the 1970s. Their research revealed that 40-50% of all college students attend part-time at least one semester within a five-year period. Attending part-time has increased dramatically for both genders. Males have increased their part-time enrollments by 59%, but that is not as impressive as the increase of 190% of women's part-time enrollment (O'Toole et al., 2003). Traditional aged students are also attending part-time and 36% of nontraditional students attend part-time. Twenty eight percent of minorities are attending part-time. Graduations rates for all these groups are substantially lower (6-16%) if attending college part-time. In a study of Hispanic students attending community colleges, Arbona and Nora (2007) discovered that full-time students were 50-55% more likely to complete their goal of degree completion when compared to students who attended the institution part-time. The authors observed that students who attended part-time tended to stop-out with the idea that they could return at anytime and easily pick up their studies where they left off and subsequently did not reach their goal. These findings have implications for policy makers at colleges. Self-efficacy levels of these part-time students, especially in the area of goal attainment should be assessed. Further, these lower graduation rates may impact the employment needs of the community. Some students

may have more difficulty making career decisions because of the extended time it takes to graduate due to part-time attendance. Research literature on the CDMSE of part-time versus full-time students is lacking, especially for students attending a community college part-time.

Research on Perceived Barriers in Career Decision-making

Bandura's (1989) general social cognitive theory links an individual's cognitive processes with the environmental influences of perceived barriers, such as emotional and financial support, attention to role models, and level of family support. Bandura refers to this interaction between people, cognitive processes and the environment as a triadic reciprocal interaction system. In this system, thought processes and perceptions are developed, and behavior is determined. The interaction between these factors does not necessarily occur at the same time or in equal intervals. Behaviors may develop over time. Individuals are complex beings with different thought processes, social interactions, and environmental conditions. Bandura (1989) believes behavior has a direct effect on potential environments becoming actual environments. For example, material taught in a class does not influence students until they actually attend class, bosses do not reward employees until they do something to merit a reward. Individuals choose situations and create environments in which to participate based upon past experiences.

Lent et al. (1994) believe factors such as socioeconomic conditions and the lack of exposure to learning opportunities can have an effect on career choice options. They also theorize that interests and competencies develop over time and eventually crystallize.

It may take a major life change or circumstance such as the birth of a child, a job layoff or illness to alter interests or require a change in one's career decision.

Crites (1969) was one of the first researchers to explore the role of barriers in the career decision-making process. He understood career barriers to be the result of a series of events beginning with an individual encountering a thwarting condition of either internal or external origin, necessitating an adjustment response or coping mechanism to relieve the stress. And, according to Crites (1969), if an individual is able to cope effectively, stress can be reduced and, thus, satisfaction and success follow. Coping can be influenced by perceptions and these perceptions can greatly influence career decision-making. Swanson et al. (1996) believe the depth of an individual's perceptions often results in compromising career aspirations, whether internally or externally motivated. Brown and Lent (1996) understood that career choices may be compromised due to barrier perceptions held by individuals and noted that these individuals must be able to identify barriers, analyze them and prepare for them. Luzzo's (1995) study discovered role conflict and the challenges involved with motherhood and childrearing were perceived career barriers for women. Their concerns were finding an occupation that would allow them the flexibility of being a career woman and a mother. These perceptions seemed to act as a source of motivation as the study revealed that women were much more organized and had a career plan and were more committed to the process when compared to men. Cardoso and Marques (2008) also found that women expect or perceive career barriers to include sexual discrimination and role conflict. The researchers attribute this perception to societal and cultural expectations of traditional

family and work roles being the responsibility of women. Luzzo and McWhirter (2001) discovered in their research of students at a small southern university, women perceived significantly more career-related barriers than their male colleagues. The perceived barriers that women expected to experience included negative comments about being a female, discrimination due to being female and experiencing difficulty in being hired due to their sex.

The literature is not centered solely on career development of women; it includes career decision-making of ethnic minorities. Ethnic differences also contribute to barriers that affect career decision-making. People of different ethnic backgrounds perceive barriers differently. In a report by Luzzo (1993b) of undergraduates attending a large California state university, African Americans perceived barriers to choices of careers differently than their Caucasian counterparts. African Americans cite racial discrimination, financial difficulties and academic concerns as barriers to career success more often than Caucasians. The most prominent career barrier was the perception of barriers related to ethnicity, especially for African Americans. Forty percent reported the perception of ethnic identity barriers in their past having affected their career decisions. Twenty-five percent of Asian Americans, 22% of Hispanics and 15% of Filipinos reported past experiences of perceptions of ethnic identity barriers influencing their career decisions. Luzzo's (1993b) study reported that one of every five Hispanics and one of every three African Americans expected to be faced with ethnic identity barriers in the future. Thus, the perception of ethnic barriers continues to be an area that demands

further research to help construct interventions that address the needs of an increasingly diverse community college student population.

Gushe et al. (2006) studied perceptions of barriers on a sample of Latino high school students. The authors used the My Vocational Situation (MVS) survey developed by Holland, Daiger and Power (1980, as cited in Gush et al., 2006). The MVS barriers subscale is composed of four yes/no questions and was developed to measure an individual's perception of external barriers to pursuing occupational goals. Individuals who answered with more "no" responses perceived more barriers than persons with more "yes" responses. Students in this study who had a less defined career identity perceived a greater number of obstacles. The authors stated that the variables of perception of barriers and level of self-efficacy could be influential in the premature elimination of certain career fields. Gushe et al. also found perceptions of barriers to be positively correlated with vocational identity. Holland et al. (1980, as cited in Gushe et al., 2006), noted that the barriers subscale was similar to a checklist and, due to the low numbers of items (4), may have adversely affected the subscale's reliability. However, in this study, the internal consistency coefficient of the sample measured .42 and indicated it was useful in measuring perception of barriers.

Swanson et al. (1996) were interested in developing an assessment that would measure career barriers and created the Career Barriers Inventory (M-CBI), a 70-item assessment consisting of 13 sub-factors. The factors are representative of potential barriers to career choice and implementation perceived by college students. Assessment of these perception of barriers include: 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). A 7-point Likert scale (1=would not hinder at all; 7= would completely hinder) measures responses. This instrument is hailed as "the most relevant measurement instrument" (Murtagh, Lopes, & Lyons, 2007, p. 332). Internal consistency reliability measures ranged from .64 to .86 with a median score of .77. According to McWhirter, Torres, and Rasheed (1998) the "measure incorporates an assessment of both structural (environmental) and internalized impediments to career adjustment and success" (p. 466).

Byars-Winston and Fouad (2008) studied perceived barriers at a large mid-western public university. Their research surveyed 213 students using a modified version of Swanson et al.'s (1996) original Career Barriers Inventory (CBI: 112 items), using three sub-factors: (1) choice of career, (2) finding a job and (3) performing your job. The authors selected these three subscales based on their applicability and preparation toward a career decision. This modified measure was administered to determine if students perceived any barriers that would impede their career decision-making process. Byers-Winston and Fouad conducted a path analysis and reported scores to be greater than .90 on the total 28-item measure. In their study of math and science social cognitive variables in college students, "the negative correlation between barrier perceptions and coping

efficacy provided an index of construct validity" (Byars-Winston & Fouad, p. 9). The purpose of the study was to determine the influence of these factors in relation to math and science goals. They studied a group of students with varied majors to determine if choice of career, finding a job and ultimately performing that job were (a) likely to be a hindrance and (b) whether the barrier actually hindered their career goal. Byars et al. (2008) found that men when compared to women were more likely to perceive fewer barriers and those barriers were less likely to hinder them. Results also showed an indirect relationship between perceived barriers and goals and that parental influence had an effect on career interests and goals.

Byars (1997) studied career self-efficacy of African American college women and attempted to measure career barriers with a revised version of Swanson et al.'s CBI. She used four sub-factors from the original version: (1) choice of career, (2) finding a job, (3) performing your job and (4) balancing your job with other aspects of your life. Her results did not find a significant predictor of perceived barriers, possibly because the content of the inventory needed to be more race-specific. Results of the study suggest the perception of career barriers may be influenced by more indirect factors. Byars' findings support the need for further research on the relationship between self-efficacy and perceived career barriers.

Smith (2004) studied perceived career barriers of undergraduate information technology majors from two large Midwestern universities. She used the same version of the 34 item modified version of Swanson et al.'s (1996) CBI that Byars (1997) developed to examine the perceived likelihood and hindrance of career barriers. In her study of

undergraduate information and business technology majors, Smith examined the likelihood of encountering certain perceived career barriers and the degree to which the barrier would be a hindrance to career progress. She conducted a series of factor models to determine validity on Byars' CBI-R. Factor analysis was conducted and used to test validity. Factor scores range from 0 to 1; the closer a variable score is to 1, the more closely the variables are associated to that corresponding factor or sub-factor (O'Sullivan et al., 2003). Smith reported scores for the sub-factors equal to .93 for career choice, .86 for finding a job, .70 for job performance, and .80 for career balance when measuring the likelihood of encountering certain career barriers. The scores for the sub-factors were equal to .91 for career choice, .82 for finding a job, .70 for job performance and .85 for career balance when measuring hindrance to career progress. In general, the study revealed that women were more likely than men to perceive career barriers and that those perceptions were likely to be a hindrance to their career goals. Not only were women's perceptions of career barriers greater than men's, but they felt there was a lack of career information, as well as career options, and that they had been discouraged from pursuing certain careers. Students of different ethnic backgrounds also indicated differences in their perceptions of the likelihood of a career barrier occurring and its hindrance in pursuing a career goal. The research also found that ethnic minority students did not feel family and children posed a barrier as much as was indicated by non-minority students. Further, non-minority students in this study considered finding a job and performing it well a greater obstacle than getting married and having children. The greatest hindrance

for ethnic minorities in the study was the perceived career barrier of racial discrimination in the category of job performance and a lack of respect on the job.

Healy and Reilly (1989) studied the career needs of community college students. They found many community college students were older adults recycling through earlier career stages as part of their continuous career growth. Students who were 40 to 50 years of age had a need to explore new careers related to their interests and abilities. Healy and Reilly's study found younger students had greater needs to know about their abilities, to understand how to decide on a career goal, to be more certain in their vocational plans, to explore careers and select courses relevant to career goals, and finally, to develop job search skills in order to obtain a job.

Employment statuses as well as full and part-time enrollment status are variables that have been studied; however, these variables are usually linked to academic factors such as degree attainment and transfer success rates as well as environmental factors. Academic factors such as these could be easily associated with perception of career barriers. Wassmer, Moore and Shulock (2004) discussed factors such as being enrolled part-time, entering a term late or taking breaks between semesters as influencing goal attainment. This was especially true for Latino and African American students. These factors could easily be viewed as barriers not only to goal attainment but to career attainment as well. Hammer et al. (1998) studied older students who attended school part-time and worked and the role conflict that developed from being a student and an employee. Students in their study were better able to cope with their perceptions by

utilizing support programs sponsored by their university aimed at stress management and career counseling aimed at coping with the stressors of work, family and school.

First generational students also experience career barrier perceptions, based upon results from the National Center for Education Statistics Beginning Postsecondary Students Longitudinal Study. Choy (2001) reported they are more likely to be older, have lower incomes, have dependents and be enrolled in a community college. They are also likely to need remedial courses to prepare them for college level work. These students generally need financial aid, want to complete coursework close to home, and need to work while attending school. This longitudinal study showed first generation students did not persist or attain their goals as often when compared to their non-first generational peers. Although the study did not measure for perceptions of career barriers, it can be presumed that the characteristics of first-generational students, based on findings from previous researchers (Gushue et al., 2006; Luzzo, 1993a) contribute to perceptions of career barriers regarding their goal attainment.

Summary

The CDMSE and perception of career barrier research reflected in the literature covers a spectrum of demographic variables. Career decision-making self-efficacy and perception of career barriers are significant variables within the vast area of career development research. Much has been written on the levels of CDMSE of university students and the differences found in relation to ethnicity, gender, age to name a few. Career barrier perception research has also concentrated on university students in relation to ethnicity, gender, traditional and nontraditional students. Literature on the levels of

CDMSE and perceived career barriers of community college students was minimal. Cognitive process theories and the integration of thoughts, personalities and behavior all influence career choices of community college students. For most people, careers become part of a person's identity. A good career choice is crucial since a vast amount of a person's life is spent working. It is essential, then, for institutions of higher education to research and understand the career decision-making process of not only university students, but community college students as well. Pinpointing the levels of career decision-making self-efficacy and targeting specific perceived career barriers can be important factors in the process of assisting community college students with career decision-making.

As seen in the literature review, the effects of self-efficacy and perceived career barriers on the career decision-making process has been researched and found to have an influence. This study looked at the differences, if any, between the applied technology and college transfer student groups.

CHAPTER THREE METHODS

The purpose of this study was to examine the relationship between CDMSE, perceived career barriers and the demographic variables gender, ethnicity, age, first-generational, employment, full and part-time student status among applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

This chapter discusses the research design used in the present study, including methods, design, population and sample, instrumentation and, finally, a description of the procedures used for data collection, and methods used in the analysis of the data.

Design of the Study

An *ex post facto* cross-sectional survey design was used to examine the relationships among career decision-making self-efficacy (CDMSE), perceived career barriers and demographics of associate, diploma and certificate degree seeking community college students. Quantitative research methods were used to aid in understanding the career decision-making process employed by community college students. Multiple regression statistics were used to analyze relationships involving more than two variables (Triola, 2001). Descriptive and inferential statistics were also used. O'Sullivan et al. (2003) explain the difference between cross-sectional studies and quasi-experimental designs. Surveys that examine and analyze variables, as well as relationships between variables, are associated with cross-sectional designs while quasi-experimental designs commonly include comparison groups, pretest/posttest designs, and

interrupted time series designs with controlling for threats to internal validity. This study falls under the definition of cross-sectional survey design rather than quasi-experimental design because there were no pre- and post-tests taken from the sample being studied.

Population and Sample

The population for this study was 13,288 students who were enrolled full or part-time at a southeastern urban community college. Any student enrolled in a degree, diploma or certificate program during the spring 2009 semester (January 2009 thru May 2009) was eligible to participate. Continuing education students, those without majors, and dual enrolled high school students were not included. The sample design consisted of a convenience sample from the community college population being studied; due to access to the students by the researcher. According to McMillan (1992), a sample of convenience is appropriate for studies where the primary purpose is to understand possible relationships between variables. The sample consisted of 33% males, 67% females. In regards to ethnicity, the sample consisted of 70% Caucasians, 13.7% African American, 4.8% Asian, 4.8 Hispanic and 4.6% Other which was consistent, except for Caucasians, with the overall student population of the community college being studied (males comprised 43.7, females, 56.3, African Americans 21.8, Asians 4.9, Hispanics 4.5, American Indian .8 and Other Ethnicities 13.1 at the community college being studied). Caucasians at the community college comprised 54.9% of the population; however, the study sample percentage was much higher (Wake Technical Community 2008 Fact Book). The age ranges of the sample were also consistent with the community college

population being studied. Students ranging in age from 17-21 year olds comprised 28%, 22-25 year olds 15%, 26-30 year olds 15% and 31 and older 42% as compared with the community college being studies comprised of 28.2% for 17-21 year olds, 18.6% for 22-25 year olds, 18% for 26-30 year olds and 35.2 for students 31 and older (Wake Technical Community College 2008 Fact Book). Therefore, participant's characteristics in the study were consistent with the community college population being studied in terms of gender, ethnicity and age.

Due to the large number of variables being used in the study (gender, age, major, ethnicity, employment status, first generational, full or part-time status, career decision-making self-efficacy and perceived career barriers) and the complex multivariate methods used, a large sample was necessary for adequate analysis of the data. In order to have a probability of .95, with a margin of error not to exceed 4, the required sample size was at least 564 from a population of 10,000 students (Agresti & Finlay, 1999). The actual sample was comprised of 787 full and part-time students attending the southeastern urban community college during the study period yielding 606 fully completed useable surveys.

Informed consent was obtained from each student by their willingness to complete the survey. A copy of the consent notice is located in Appendix A. The study was reviewed and approved by the Institutional Review Boards of North Carolina State University and the community college where the study was conducted. Participants could request a copy of the final report at the conclusion of the study.

Instrumentation

Measures used in the present study included a demographic data questionnaire that collected the following information: gender, age, ethnicity, program of study (to determine college transfer or applied technology status), first generation, full or part-time student and employment status. In addition, the career decision self-efficacy scale-short form (CDSE-SF) and the career barriers inventory–revised (CBI-R) were used (sample copies of the surveys are located in Appendix B and C). Permission was granted by the authors/researchers to use both of these instruments (see Appendix D).

Career Decision-Making Self-Efficacy Scale-Short Form (CDSE-SF)

Taylor and Betz (1983) developed the original 50-item career decision-making self-efficacy scale. This long form used a scale that asked questions relating to behaviors and tasks involved with career decision-making. Later, the scale was shortened to a 25-item form containing five items for each of the following domains: accurate self-appraisal, gathering occupational information, goal selection, making plans for the future and problem solving (Betz, 2000). The scale assesses levels of self-efficacy related to career decision-making and was used as a measure of CDMSE for this study.

A sample question from the instrument is: How much confidence do you have that you could determine what your ideal job would be? (Entire instrument is located in Appendix B).

Validity of the CDSE-SF Scale

Construct and content validity are important aspects when measuring concepts using assessment instruments. Construct validity refers to whether the assessment instrument measures a theoretical construct or the "validity of the definitions and existence of a concept as well as the means of measuring it" (O'Sullivan et al., 2003, p.484). The theoretical construct for this research study is career decision-making self-efficacy. Content validity refers to the "type of validity in which the items included in a measuring instrument or test adequately represents the content or the property that the investigator wishes to measure" (O'Sullivan et. al., 2003, p.484). According to Betz and Luzzo (1996), the construct of self-efficacy refers to the belief that one has capabilities that are linked to a specific domain of behavior; therefore, adequate specification of that domain is a precondition for content validity.

A popular analysis approach in educational testing situations is Exploratory Factor Analysis (EFA), and it is often used to measure construct validity. EFA was used in this particular research in order to test whether the same number of factors would be revealed as in prior research. With confirmatory factor analysis, the research was confirming the number of factors. EFA was used to determine if the same number of factors would be revealed as in previous research. To assess construct validity, the researcher wants to determine whether or not the survey is measuring what it was designed to measure. For example, if a survey was designed to measure a single

objective, it would be expected that all of the questions in the survey be focused on that particular objective (Agresti & Finlay, 1999).

EFA is a data reduction technique. It is used when a large number of variables (or questions on a survey) are observed and the researcher wishes to reduce these variables (questions) to a smaller number of unobserved common components or factors that will account for most of the observed variation between answers to the questions. For instance, for the CDSE-SF, in attempting to measure a single construct (level of CDMSE) with a total of 25 variables/questions, it would be expected that the 25 questions could be reduced to a single component which can be attributed to CDMSE level. According to Agresti and Finaly (1999), EFA is used to determine how many underlying factors are present; if it is found that only a single factor is present, then there is evidence that the survey is reliable, and it measures only what it was designed to measure.

Prior to performing EFA, the number of factors needs to be determined. According to O'Rourke et al. (2005), eigenvalues of the correlation matrix (correlations between the questions) are used. These eigenvalues measure the amount of observed variation in scores that can be attributed to a particular factor. To begin, the same number of factors as there are questions is used, and those factors with the largest eigenvalues explain the most variation, and should be retained. Any factor that has an eigenvalue greater than one is typically retained. For example, if the eigenvalues are ordered for all factors from largest to smallest and the first three are greater than one, then the factors

one through three should be retained. This is evidence that three factors are present in the survey.

Taylor and Betz (1983), Taylor and Popma (1990), Peterson and delMas (1998) and Robbins (1985) conducted factor analysis on the CDSE-SF and found the instrument to be valid when measuring the factor of CDMSE. The results of their factor analysis revealed more than one factor or sub-factors; however, using total scores on the CDSE emerged as the only significant predictor of vocational indecision, as opposed to using sub-factor scores. This study used the same scale. EFA was performed using SPSS software prior to the study in order to confirm the use of total scores as a measure of CDMSE.

Reliability of the CDSE-SF Scale

In an assessment of career decision-making, the questions should measure an individual's self-efficacy for decision-making. The measurement should also be reliable. This means "[t]he ability of a measure to yield the same results time after time, if and only if [,] what is being measured has not changed" (O'Sullivan et al., 2003, p.492). When measuring reliability, the closer alpha is to 1.0 the more reliable the measure is considered (O'Sullivan et al., 2003; Taylor & Betz, 1983). Cronbach's Alpha, α, is a measure of reliability. Here is the formula:

$$\alpha = \frac{Nc}{v + (N-1)c}$$

where N is the number of observed variables (questions), c is the average covariance between variables, and v is the average variance of observed variables. Here α quantifies

how well a set of observed variables, or survey questions, measure one underlying factor (Cronbach, 1951). According to Cronbach, a value of 0 strongly indicates that more than one factor is present, while a value of 1 strongly indicates that only one factor is present. Cronbach's Alpha is an appropriate tool for this study because the researcher was interested in whether or not the survey was reliable and measured a single component.

The reliability of the CDMSE-SF scale has been determined by several researchers. Betz, Klein and Taylor (1996) reported internal consistency reliability scores of .73 to .83 for the subscales and .94 overall for the short form. Betz and Luzzo (1996), in a sample of 347 college students, reported reliability scores ranging from .69 to .83 for the short form. Three different studies, one by Nauta and Kahn (2007), another by Gushue, Clarke, Pantzer, and Scanlan (2006) and one by Mau (2000), reported internal consistency reliability scores ranging from .89 to .94 for the short form. The reliability of the short form scale has been repeatedly demonstrated since its inception in 1996.

Career Barriers Inventory-Revised (CBI-R)

The CBI-R (Byars, 1997) is a 34 item instrument consisting of four factors. These factors are representative of barriers that college students could perceive as potential deterrents to career choice and implementation. The factors are career choice (6 items), job search (8 items), job performance (14 items) and job balance (6 items). A 7-point Likert scale (0=would not hinder at all; 6= would completely hinder) was used to record responses. Students are asked to make two responses to each item: the first response assesses the likelihood of encountering each barrier and the second response assesses the

degree to which each barrier would be a hindrance to career progress. This study used a total composite score measuring overall perception of barriers. A copy of the instrument is located in Appendix C.

Validity of the CBI-R scale

Swanson and Woitke (1997) reported that the CBI-R was designed as a research instrument for use with college students in order to assess their perception of career barriers. Swanson et al. (1996) reported construct validity across seven different data sets for 1,700 college students. The CBI-R was used with college students and a factor analysis was conducted. Scores ranged from .93 for the career choice sub-scale, .86 for finding a job, .70 for job performance, and .80 for career balance when measuring the likelihood of encountering certain career barriers (Smith, 2004). Studies by Swanson et al. (1996), Quimby and O'Brien (2004), Smith (2004) and Byars-Winston and Fouad (2008) found college women perceived more barriers than college men when measuring perception of barriers, thus supporting the validity of the scale. Byars-Winston (2006) demonstrated scale validity by using it on a group of African American undergraduates finding a positive association between perceived barriers and racial ideology. Rivera et al. (2007) did a path analysis with Hispanic women attending a community college using the CBI-R and found it to be valid when measuring for female dominated career barrier perceptions.

Reliability of the CBI-R scale

Byars (1997) reported internal consistent reliability of .95 for the revised version of the CBI. She performed Cronbach's alpha coefficient on the four subfactors which resulted in .77 for career choice, .87 for finding a job, .92 from job performance and .79 for balancing career and other life demands. Byars-Winston and Fouad (2008) used three of the four sub-factors (choice of career, finding a job, and performing your job) and achieved an internal consistency reliability of .93. Byars-Winston (2006), in a study of Black undergraduates, also used three of the four sub-factors (excluding career balance) and found a Cronbach's alpha coefficient to range from .77-.92. In their study of Hispanic women, Rivera et al. (2007) reported a Cronbach's alpha of .98 for the entire scale. In a study of freshman college students in a university first-year experience course, Metz (2005) reported Cronbach's alpha of .97 when using the CBI-R.

Pilot Study

According to O'Sullivan et al. (2003), a pilot study is a way of testing the procedures and conducting any planned analysis of the data on a smaller sample size. Therefore, a pilot study was performed on a small community college sample. ENG-111 is a general education, expository writing course that associate degree, diploma and certificate students take to complete an English course requirement. A large class consisting of a cross-section of students from degree, diploma and certificate programs was most desirable for the pilot study; therefore, an on-line general education ENG 111 class with an estimated 63 enrollees being taught during the spring 2009

semester was selected. Invited students who completed the online survey were given a chance to win a gift certificate for a meal at a local restaurant. The pilot group provided informed consent by their willingness to complete the survey. Students were asked to complete online versions of CDSE-SF and the CBI-R through the research instrument SurveyMonkey. They were given two weeks to complete the surveys and follow-up reminders were emailed three and ten days after the surveys were sent out. The demographic portion, as well as each question on the CDSE-SF and CBI-R, was marked with an asterisk (*) which meant the question required an answer. Students could not continue with the survey unless they answered all (*) questions. Students who completed the assessments were asked at the conclusion of the survey (1) if the directions were clear; (2) were the questions understandable; and (3) what should be changed, if anything.

Performing this pilot study allowed the researcher to test the delivery method, obtain reliability information for the survey instruments, and make any necessary changes needed for data collection.

Data Collection

All data was collected electronically using the online survey service known as SurveyMonkey. The registrar's office as well as the office of Institutional Effectiveness at the southeastern urban community college supported this research study and provided access to email addresses of students that were eligible to participate. The Vice President for Curriculum, the Director of Institutional Effectiveness and the Grants Director were

provided a copy of the surveys and briefed about the study prior to the spring 2009 semester when it was conducted. Content and construct validity as well as EFA were performed on the survey instruments prior to data collection. Primary email addresses on the admissions application were used to communicate with the participants. Self-reported demographic characteristics were collected through a series of questions at the beginning of the survey. Surveys were available through a secure website and students were asked to complete the survey during the month of March 2009 with a two week deadline. Reminders to complete the surveys and mention of the opportunity to win prizes were emailed to each student to encourage participation; if the survey had not been filled out after the first three days, a final reminder was sent after ten days. A confidentiality agreement was part of the email message and each participant was allowed to complete the survey only once. Because only one email address was used per participant, the responses were limited and linked to a unique email address and only one response was allowed per computer. In addition, the program provided by SurveyMonkey also did not allow students to respond to the survey more than once.

Data Analysis

The statistical software programs used for the analysis of the study were SPSS, SAS and Microsoft Excel. Null hypotheses were tested for statistical significance to determine if the data contradicted the null. If the null hypothesis was rejected at the .05 level with evidence of significant differences, it was deduced that a relationship existed between the variables (O'Sullivan et al., 2003). The data analysis consisted of descriptive

and inferential statistics on the demographic and study variables. Multiple regressions were run on the study variables to reveal any relationships among demographics, CDMSE, and perceived career barriers. In the following, data analysis is discussed as it relates to the following research questions and related hypotheses.

Research Questions and Corresponding Hypotheses

1. Are there differences in mean scores of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by demographic characteristics (gender, ethnicity, age, first-generational, employment, full and part-time student status)?

H_0: There will be no significant differences in mean scores of CDMSE and perception of barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by gender, age, ethnicity, first-generational employment, and full and part-time student status.

For question 1, data from each instrument (CDSE-SF and CBI-R) is presented in table format in order to compare descriptive statistics (mean and standard deviation). Inferences between applied technology and college transfer students based upon gender, age, major, ethnicity, employment, first- generational status and full or part-time student classification were drawn, as well as descriptive statistics and inferences within each group based upon demographics (gender, age, ethnicity, employment, first-generational and full or part-time student status). Separate *t*-tests were completed for gender, ethnicity,

and age for comparison. It was expected that there would be no differences in mean scores.

2. What is the predictive value of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no effect of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

For question 2, a multiple linear regression model was set up to reveal if demographics had any effect on CDMSE and perceived career barriers for applied technology and college transfer students. A regression determined whether different variables were more significant than others, thus allowing for comparisons among the demographics within each student group. Analysis of variance (ANOVA) was conducted along with bivariate analysis of the dependent variables. A t-test was used to determine whether or not the partial slope (s) corresponding to gender, age, ethnicity, employment, first-generational and full or part-time student status were significantly different from zero. If so, that demographic would predict scores for each group. It was expected that there would be no demographic predictors of CDSE-SF and CBI-R scores.

3. Is there a relationship between CDMSE and perceived career barriers of applied technology and of college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no correlation between CDMSE and CBI-R scores of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

For question 3, a regression for significant correlation between two variables in a single population was used. According to O'Rourke et al. (2005), the multiple regression technique was appropriate for this study for the following reasons: (1) it provided a model of the study variables since it determined whether there was a significant relationship between the group of independent variables and the dependent variable; (2) it determined whether a single independent variable was statistically significant in predicting the dependent variable; and (3) it accounted for the magnitude of variance that a single independent variable contributed to the dependent variable beyond the variance accounted for by other independent variables. It was expected that there would be an inverse relationship between CDMSE and perception of career barriers. If there was evidence of zero correlation, there would be a nonlinear relationship between the variables and this type of correlation would be tested.

This chapter discussed the research design used in this study, including methods, design, population and sample, instrumentation and, finally, a description of the

procedures used for data collection, and methods used in the analysis of the data. Findings are now discussed in chapter 4.

CHAPTER FOUR RESULTS

The following chapter presents the findings from the following research questions and hypotheses.

1. Are there differences in mean scores of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by demographic characteristics (gender, ethnicity, age, first-generational, employment, full and part-time student status)?

H_0: There will be no significant differences in mean scores of CDMSE and perception of barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by gender, age, ethnicity, first-generational employment, and full and part-time student status.

2. What is the predictive value of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no effect of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

3. Is there a relationship between CDMSE and perceived career barriers of applied technology and of college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no correlation between CDMSE and CBI-R scores of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

Data analysis was used to examine the relationship between CDMSE, perceived career barriers and the demographics (gender, ethnicity, age, first- generational, employment, full and part-time student status) among applied technology and college transfer students pursuing associate degree, diploma or certificate programs. Preliminary results include exploratory factor analysis results followed by the pilot study results are discussed in the first section; the second section discusses the results from the larger study, including descriptive statistics and data analysis as these relate to the research questions and hypotheses.

Exploratory Factor Analysis

Exploratory factor analysis (EFA) was performed on the CDSE-SF Scale for this study as described in chapter three and, based on the eigenvalue criterion, there was evidence of four sub-factors. The eigenvalue of 11.174 for the first factor explained most of the variability. The other factors were highly correlated and, therefore, it was determined to use total scores to measure CDMSE for this study, as was done in previous

research. The oblique rotated factor patterns are located in Table 4.1. Oblique rotations were used because the factors were allowed to be correlated (O'Rourke et al., 2005). In addition, The Cronbach's Alpha value for the entire CDSE-SF instrument measured 0.947. This alpha score was similar to scores from previous research; therefore, the instrument was deemed to be reliable.

In addition, EFA conducted on the CBI-R and based on the eigenvalue criterion found evidence of six factors that had scores of 1or higher. The oblique rotated factor pattern is provided in Table 4.2. There is evidence that the survey measures more than one factor (perceived barrier level), yet the first factor explained most of the variability with a score of 12.463. The other factors were highly correlated; therefore, a composite score was used to measure an overall perception of barriers, as was done in previous research by Byars-Winston and Fouad (2008) when they conducted a path analysis. A Cronbach's alpha of .824 was tabulated for the entire instrument. This alpha score was similar to alpha scores recorded in previous research; therefore, the CBI-R was considered a reliable measure of perceived barriers.

Pilot Study Results

As mentioned in chapter 3, students who completed the assessments were asked at the conclusion of the survey (1) if the directions were clear; (2) were the questions understandable; and (3) what should be changed, if anything. All 17 students who completed the survey answered "yes" to questions (1) and (2). Comments from question (3), mentioned the need to for a link explaining items in the survey (i.e., resume writing,

Table 4.1

Exploratory Factor Analysis of CDSE-SF

Rotated Factor Pattern Matrix

Question	Factor 1	Factor 2	Factor 3	Factor 4
15	.630			-.102
21	.555	-.292		
23	.508		.239	-.130
19	.438	-.357		-.107
12	.367		.170	-.255
24	.358		.138	-.287
10	.321		.230	-.146
9		-.650	.196	
20	.171	-.589		-.123
11		-.507	.204	-.102
22	.329	-.473		
14	.213	-.431	.102	-.187
16	-.161	-.424	.172	-.336
7			.693	
4			.686	-.233
2		-.185	.645	
3		-.157	.532	

Table 4.1 (continued)

Rotated Factor Pattern Matrix

Question	Factor 1	Factor 2	Factor 3	Factor 4
6		-.416	.478	
5	.127	-.141	.426	-.174
8	.120	-.118	.372	-.123
1	.346		.347	
17				-.804
25	.158		.122	-.605
13	.138	.115		-.618
18		-.292		-.510

Note. 25 Total questions. Rotations converged in 20 iterations.

Table 4.2

Exploratory Factor Analysis of CBI-R

Table 4.2

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
24	.818	.256	.150		.142	
25	.760	.166	.206		.290	
26	.756	.135	.188	.129	.188	
27	.751		.112	.179	.298	
28	.748	.272	.122	.184	.182	
21	.747	.299	.143	.111		
14	.734	.187		.129	-.112	.160
22	.717	.255	.205		.196	.144
13	.715	.147		.264	-.211	
23	.684	.163	.245		.207	
3	.580	.193	.107	.457	-.221	
4	.563	.719	.168	.486	-.302	
11	.258	.711				.181
7	.116	.706	.180	.222		
8	.256	.687	.193	.230		
12	.213	.642				.283
16	.272	.500	.360	.185	.119	-.1.1

Table 4.2 (continued)

Factor Pattern (Rotated Component Matrix)

Question	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6
17	.288	.491	.327	.137	.286	-.116
10	.243	.487	.191	.405	.158	
15	.309	.323	.391	.185	.241	-.126
9			.229	.111	.161	.276
34	.107	.150	.767	.139		
33	.227	.250	.761			
32	.213	.171	.749		.103	.103
31	.281	.117	.620		.199	.128
30		.395	.563			.554
1		.408	.232	.582	.130	-.116
2	.135	.155	.207	.554	.118	
5	.185			.533	.172	.329
6	.401			.420	.168	.397
19	.254	.371	.112	.295	.605	.264
20	.198	.317			.557	.131
18	.385		.310		.404	
19	.124		.2535			.740

choosing a career or major); too many questions on one page; and dislike for the way birth date was asked; nothing needed to be changed; the survey was easy to use; and well wishes for the research. Examination of the demographic data revealed confusion regarding the questions, "What is your primary program of study or major?" and "Are you a college transfer student or an applied technology student?" Responses to questions regarding major showed a need for clarification about the majors offered at the community college. Therefore, as a result of the pilot findings, the question was revised and all 153 major codes were uploaded in a drop down menu for the larger study.

Table 4.3 reflects the descriptive statistics that were obtained from the pilot study. It should be noted that no student responded that he/she was laid off or retired. Due to the small number of respondents, there were no statistically significant outcomes; however, all results from the pilot study are located in Tables 4.3, 4.4, 4.5, 4.6, 4.7 and 4.8. Demographics of the pilot study were consistent with the full study as illustrated in Tables 4.3 and 4.9.

For the purposes of data analysis for the pilot study, major was broken into categories of arts and math (both of which are college transfer majors) and health, computer, business and other applied (health, computer and business are applied technology majors). There were no responses to "other applied students." Full descriptive statistics of the pilot study are shown in Table 4.4 and 4.5 including mean, standard deviation, minimum, and maximum scores. All statistical methods were performed in the pilot study. Two-sample t-tests as well as ANOVA were performed along with regression

Table 4.3

Descriptive Demographic Statistics from the Pilot Study

Variable (N=20)	*Percentage*	*Frequency*
Male	35	7
Female	65	13
Caucasian	60	14
African American	15	3
Asian	10	2
Other	5	1
Over 31 Years of Age	40	8
17-21 Years of Age	30	6
Between 22-25 Years of Age	5	4
Employed	89	18
Employed Full-Time	70	12
Employed Part-Time	40	6
Unemployed	13	2
Attending Part-Time	35	7
Attending Full-Time	65	13
First Generational	45	9

Table 4.4

CDSE-SF Full Descriptive Statistics from the Pilot Study

Result	Variable (N=20)		*M*	*SD*	Min	Max
CDSE-SF	Gender	Female	103	15.6	74	125
		Male	96	24	68	125
	Age	17-21	98.9	21.2	69	125
		22-26	68	.	68	68
		26-30	104.7	6.7	97	109
		31+	105.6	16.3	74	124
	Major	Arts	89.1	16.2	68	117
		Math	111	4.4	108	116
		Health	114.3	8.4	109	124
		Computer	106.3	24.2	79	125
		Business	125	.	125	125
	Ethnicity	Asian	97	39.6	69	125
		African American	106.3	15.3	97	124
		Caucasian	99.3	18.3	68	125
		Other	108	.	108	108
	Employment	Full	97.7	18.5	68	125
		Part	105.9	19.1	79	125

Table 4.4 (continued)

Result	Variable (N=20)		*M*	*SD*	Min	Max
	Type	Transfer	94.8	18.1	68	125
		Vocation	11.3	15.5	79	125
	First Generational	Yes	90.6	16.1	68	116
		No	108.7	17	74	125

Note. CDSE-SF possible minimum score= 25 and max =125. A value of "." indicates a missing value where there were no observations in that category.

Table 4.5

CBI-R Full Descriptive Statistics from the Pilot Study

Result	Variable (N=17)		*M*	*SD*	Min	Max
CBI-R		Female	201.8	55.8	110	269
		Male	202	62.1	98	293
	Age	17-21	232	44.1	177	293
		22-26	177	.	177	177
		26-30	180	50	137	235
		31+	189	68.1	98	251
	Major	Arts	226.1	33.2	177	269
		Math	131.7	19.6	110	148
		Health	215	42	168	249
		Computer	194.3	97.5	98	293
		Business	.	.	.	.
		Applied	.	.	.	.
	Ethnicity	Asian	212.5	29	192	233
		African American	242	9.9	235	249
		Caucasian	198.8	62.1	98	293
		Other	137	.	137	137
	Employment	Full	206.3	48.2	110	269
		Part	191.2	78.7	98	293

Table 4.5 (continued)

Result	Variable		*M*	*SD*	Min	Max
	Type	Transfer	201.7	52.4	110	269
		Applied	202.2	68.9	98	293
	First Generational	Yes	226.5	57.7	110	293
		No	180	48.5	98	249

Note. CBI-R possible minimum score =0 and max = 408. A value of "." indicates a missing value where there were no observations in that category.

Table 4.6

CDSE-SF Pilot Study t-Test Results of Demographic Variables

Response	Variable	t-value	p-value
CDSE-SF	Gender	0.79	0.4381
	Employment	-0.93	0.3643
	Type of Student	-2.04	0.0562
	First Generational	-2.43	0.0256

ANOVA Results

Response	Variable	F Statistic	p-value
CDSE-SF	Age	1.32	0.3021
	Major	2.95	0.0555
	Ethnicity	0.17	0.9154

Note: Type of Student refers to part or full-time enrollment

Table 4.7

CBI-R Pilot Study t-Test Results of Demographic Variables

Response	Variable	t-value	p-value
CBI-R	Gender	-0.01	0.9946
	Employment	0.49	0.631
	Type of Student	-0.01	0.9884
	First Generational	1.81	0.0909

ANOVA Results

Response	Variable	F Statistic	p-value
CBI-R	Age	0.88	0.4762
	Major	2.82	0.0807
	Ethnicity	0.77	0.529

Note: Type of Student refers to part or full-time enrollment

Table 4.8

Linear Regression Results for the Pilot Study

Response	Variable	F statistic	p-value
CDSE-SF	Gender	0.01	0.9409
	Age	1.26	0.2988
	Ethnicity	0.87	0.4983
	Major	1.42	0.32
	Employment	2.81	0.1378
	Type of Student	0.6	0.4657
	First Generational	1.89	0.2116
CBI-R	Gender	0.59	0.4774
	Age	0.31	0.6001
	Ethnicity	0.07	0.9757
	Major	1.09	0.4347
	Employment	0.24	0.6428
	Type of Student	0.03	0.8752
	First Generational	1.13	0.3361

Note. $p<.05$. Type of Student refers to Full or Part-time Enrollment

Table 4.9

Percents of Gender/Ethnicity/Age at the Community College and Sample Studied

Variable	Community College %	Sample %
Male	43.7	33
Female	56.3	67
Caucasian	54.9	70.3
African American	21.8	13.7
Asian	4.9	4.8
Hispanic	4.5	4.8
American Indian	.8	.8
Other Ethnicity	13.1	4.6
17-21 years of age	28.2	28
22-25 years of age	18.6	15
26-30 years of age	18.0	15
31 +	35.2	42

models. It appeared there was little correlation between the students' CDMSE and CBI-R scores.

The pilot study revealed a critical need for clarification in the demographic questions regarding college transfer or applied technology programs and college major, resulting in the revisions in the demographic portion of the survey document. Changes in the demographic questions were vital as they were an integral part of the study. Further, the pilot study confirmed that the time needed to complete the two surveys was approximately 20 minutes.

Data Collection

Thirteen thousand two hundred eighty eight full and part-time students registered in degree, diploma and certificate programs were eligible to participate in this research study. Students were invited to participate through their email accounts. The survey was housed through a secure website by SurveyMonkey (2010). Just as with the pilot study, students were encouraged to complete the survey by offering them a chance to win one of four $25.00 gift certificates to Kohl's department store, Outback Steakhouse or Applebees Restaurant in a random drawing. Emails inviting students to participate in the study were sent to 9,999 students the last week of March 2009. Follow-up reminder emails were sent three and ten days after the first emails encouraging students to participate. The demographic portion of the study was completed by 785 students with 737 completing the CDSE-SF survey and 606 completed the CBI-R survey. The number of students that responded exceeded the minimum 564 students needed to fulfill the

desired confidence level of 95% with an accuracy of plus or minus 4%. The response rate was 8%. Because the number of respondents exceeded the minimum number needed, the researcher chose not to continue with additional follow-up emails to non-respondents.

Descriptive Statistics

Table 4.9 compares percentages of gender and ethnicity of the community college where the study was conducted to percentages of students studied in the sample. The sample is representative of the overall demographics of the entire community college population where the study was conducted.

Pre-analysis checks that consisted of histograms, homoskedasticity and normality assumptions were run on the data. According to Freedman, Pisani, Purves and Adhikari (1991), homoskedasticity is when the dispersion of the dependent variable is the same across the data; in particular, the range in the y-axis does not increase along the x-axis. A test for homoskedasticity was performed as well as normality assumptions. For the residual plots that assessed homoskedasticity, the patterns were scattered around zero, with no apparent pattern; therefore, the constant variance assumption was valid. For the normality assumption, all plots had a linear trend, which indicated that the normality assumption was valid; therefore, all assumptions necessary to perform the statistical analysis were met. In addition, histograms for both CDSE-SF and CBI-R scores were compiled and grouped by the variables of gender, age, major, ethnicity, employment, first-generational, transfer, full-time or part-time student. In all breakdowns, the histograms appeared to follow a normal distribution.

A table of the means broken down by applied technology versus college transfer and the demographic variables of gender, age, major, ethnicity, employment, first generational and full or part-time student status are shown in Tables F1 and G1 on appendices F and G. Mean, standard deviation, minimum, and maximum scores from the CDSE-SF and the CBI-R are also included. College transfer students were defined as those with majors that included arts or math and applied technology students as those majors that included computer, health, business and other applied. There were 334 college transfer students and 451 applied technology students that completed the CDSE-SF and CBI-R as noted in Table 4.10. Table F1 is the number of students surveyed broken down by college transfer and applied technology and by demographic variable. It is important to note that younger college transfer students (17-21) accounted for 43% of the sample and 51% of the applied technology students were older (31+).

Asians represented 5% of the overall sample and African Americans made up 14%, Hispanics 6%, Native Americans 1%, Other, 4% and the largest ethnic group that responded to the surveys was Caucasians at 70%.

It should be noted that of the 14% African American student group 67% of those students were applied technology students. Within the Caucasian group, 57% of those students were also applied technology students. The percentage of Caucasian students is the same as the overall percentage for both college transfer and applied technology.

Table 4.10

Demographic Breakdown of Applied Technology and College Transfer Students

Variable	Category	Applied	Transfer	Total
Gender	Male	144	116	260
	Female	308	218	526
Ethnicity	Asian	22	16	38
	African American	72	36	108
	Caucasian	318	234	552
	Hispanic	23	23	46
	Native American	1	5	6
	Other	16	20	36
Employment	Full-Time	178	96	274
	Laid-Off	28	11	39
	Part-Time	117	126	243
	Retired	6	5	11
	Unemployed	105	73	178
First Generational	Yes	102	65	167
	No	350	269	619
Full-Time Student	Yes	173	192	365
	No	279	142	421

Table 4.10 *(continued)*

Variable	Category	Applied	Transfer	Total
Age	17-21	77	143	220
	22-25	64	55	119
	26-30	77	37	114
	31+	233	99	332

Note. There were 334 transfer students and 451 applied students.

Based on chi-square test results of independence, college transfer students differ from applied technology students across age (p-value<0.0001) and college transfer students differ from applied technology students across ethnicity (p-value=0.0443). Consequently, there were more college transfer students who were younger and more applied technology students who were older. It can also be seen that more Asian and African American students are applied technology students, more Hispanic and Native American students are college transfer students, and Caucasian students are just as likely to be college transfer as applied technology students.

Results of Research Question and Null Hypothesis 1

Question 1. Are there differences in mean scores of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs by demographic characteristics (gender, ethnicity, age, first-generational, employment, full and part-time student status)?

The null hypothesis stated there would be no significant differences in mean scores of CDMSE and perception of barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by gender, age, ethnicity, employment status, first-generational and full and part-time student status. The study found that mean scores of CDMSE and perception of barriers were significantly different overall, but not significant when broken down by demographics; still, the null hypothesis was rejected at the .05 level of significance.

Null Hypothesis 1. There will be no significant differences in mean levels of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by demographics (gender, age, ethnicity, employment, first generational and full and part-time student status).

The mean scores for both CDSE-SF and CBI-R were broken down by applied technology compared to college transfer and for each demographic variable (gender, age, ethnicity, employment, first generational, full-time and part-time student). In order to test for an overall difference in means between college transfer and applied technology students for both CDSE-SF and CBI-R scores, two-sample t-tests were utilized. Table 4.11 shows the results for the t-tests of transfer versus applied technology students for both CDSE-SF and CBI-R scores.

Both p-values are less than 0.05, indicating that both mean CDSE-SF and mean CBI-R scores were significantly different between college transfer students and applied technology students overall. According to Table 4.11, college transfer student mean scores are lower for CDSE-SF than applied technology student scores. However, the college transfer mean scores of perceived career barriers were higher than the mean scores of applied technology students. As seen in Table 4.11, applied technology students as a group perceived fewer barriers and had higher scores on the CDSE-SF.

Further testing examined whether or not this relationship held for the subgroups created by the other demographic variables of gender, age, ethnicity, employment, first-

Table 4.11

t-Tests for CDSE-SF and CBI-R of Applied Technology and College Transfer Students

Response	Mean Transfer	Mean Applied	F statistic	p-value
CDSE-SF	98.4804	101.2186	6.21	0.0129*
CBI-R	189.8714	179.8242	4.09	0.0435*

Note. p<.05; transfer refers to College Transfer, Applied refers to Applied Technology.

*Indicates p-values less than .05

generational and full or part-time student. To test for statistically significant differences in both mean CDSE-SF scores and mean CBI-R scores between college transfer students versus applied technology students with respect to the different demographic variables of interest, a two-sample t-test was performed. For instance, for the variable gender, a total of two t-tests were performed for both CBI-R and CDSE-SF scores; one compared college transfer and applied technology students who were females and the other compared applied technology and college transfer students who were males. The p-values for these tests can be seen in Table 4.12. These p value results did not account for multiple t-testing. Because a total of 21 t-tests for applied technology versus college transfer students for both CDSE-SF and CBI-R scores were performed, it was determined that the original p-value threshold was no longer accurate. In order to reduce the chance of falsely declaring means significantly different when in fact they are the same for all 21 tests or, in other words, reducing the probably of making a Type I error, a new Bonferroni-corrected threshold of 0.0024 was used (O'Rourke et al., 2005). Under this new, more stringent threshold, none of the p-values are less than 0.0024. Therefore, college transfer students did not have significantly different scores than applied technology students when broken down by any of the demographic variables. Part of the reason the mean scores for college transfer versus applied technology students were different overall but not for any of the demographic breakdowns is that the sample size was reduced when data were broken into the different demographic groups. The sample size for college transfer was 334 and for applied technology 451. When the sample was

Table 4.12

Differences in Means (p-values) of Demographic Variables for Applied Technology and College Transfer Students

Variable	Category	CDSE-SF p-value	CBI-R p-value
Gender	Female	0.279514051	0.303821
	Male	0.103777058	0.02506*
Age	17-21	0.346366072	0.786257
	22-25	0.768749474	0.246876
	26-30	0.986742655	0.87215
	31+	0.073820356	0.429837
Ethnicity	Asian	0.286523859	0.670313
	African American	0.109480163	0.122339
	Caucasian	0.040883557*	0.049795*
	Native American	NA	NA
	Hispanic	0.773158449	0.208499
	Other	0.276853154	0.012662*
Employment	Part-time	0.981956396	0.00269*
	Unemployed	0.582873083	0.661801
	Laid-Off	0.038380555*	0.577554
	Retired	0.893707375	0.654232

Table 4.12 (continued)

Variable	Category	CDSE-SF p-value	CBI-R p-value
First Generational	Yes	0.155593626	0.076083
	No	0.181566554	0.221196

Note. *denotes p<.05.

broken down into subgroups, the size decreased even further. For example, there were only 46 Hispanics, 23 in applied technology and 23 in college transfer. The smaller the subgroup, the less accurate the statistical results become (O'Sullivan et al., 2003).

A regression model was also used to look at the effects demographic variables had on college transfer versus applied technology students for each score simultaneously, allowing for an interaction between the demographic variables and college transfer versus applied technology groups. This interaction suggested that the relationship between scores and the demographic variables was different for college transfer students than for applied technology students.

Table 4.13 shows the Bonferroni analysis which allowed for interactions, including the p-value for the demographic variable, for college transfer versus applied groups and for the interaction of each. P-values less than 0.05 are denoted with an (*).

None of the interaction p-values is less than 0.05. This means the relationship between the demographic variables and mean scores does not differ between college transfer and applied technology students. This relationship did not change for different levels of any of the demographic variables. For example, according to Table 4.13, with regard to CDSE-SF scores, age, ethnicity and employment demographics outweighed the effects of being a college transfer student. Yet, because the interaction p-value was greater than .05, no real interaction resulted. The relationship that was revealed by testing the whole college transfer and applied technology groups without breaking them down by demographics was upheld. Overall, college transfer students, regardless of the

Table 4.13

Bonferroni Calculations for Applied Technology and College Transfer Students

Response	Variable	Demographic p-value	Applied/Transfer p-value	Interaction p-value
CDSE-SF	Gender	0.53	0.0129*	0.6015
	First-generational	0.7861	0.0162*	0.4898
	Age	0.0009*	0.301	0.546
	Ethnicity	0.011*	0.1813	0.6853
	Employment	0.0203*	0.255	0.1664
	Full-time Student	0.2919	0.022*	0.4103
CBI-R	Gender	0.1531	0.0213*	0.2598
	First-generational	0.3566	0.0233*	0.2285
	Age	0.0028*	0.3273	0.7872
	Ethnicity	0.0144*	0.0498*	0.1028
	Employment	0.4286	0.5373	0.2889
	Full-time Student	0.7955	0.0529	0.9564

Note. p<.05. *indicates p-values less than .05. Applied refers to applied technology Transfer refers to college transfer, Demographic p-value represents the results of a regression model that looks at the effects the demographic variable and applied technology versus college transfer have on a score simultaneously allowing for an interaction between a demographic variable and applied technology versus college transfer. The interaction reveals whether the relationship between the score and the demographic variable is different for applied technology students than for college transfer students.

demographic breakdown, scored lower than applied technology students on CDSE-SF. In addition, with regard to CDSE-SF scores, gender, first-generational and full-time student variables outweighed the effects of the college transfer/applied technology groups. For example, college transfer males scored lower than females on the CDSE-SF, first generational college transfer students had lower CDSE-SF scores than non-first-generational and full-time college transfer students scored lower than part-time college transfer students. Yet, because the interaction p-value was greater than .05, no interaction resulted. The relationship that was revealed by testing the whole college transfer/applied technology group without breaking it down by demographics, was upheld. It is important to note, the overall findings of college transfer students, regardless of demographic breakdown, reflected lower scores than applied technology students on CDSE-SF. Also, according to Table 4.13, with regard to CBI-R scores, age and ethnicity outweighed the other demographic variables, yet the p-scores for interaction were above .05. CBI-R scores for the college transfer and applied technology groups with respect to gender, first-generational and ethnicity outweighed the college transfer/applied technology group. Male applied technology students had lower CBI-R scores than female applied technology students, first generational applied technology students had lower CBI-R scores than non-first generational applied technology students, and Hispanic college transfer students scored higher on CBI-R than Hispanic applied technology students. But, applied technology students, regardless of demographic breakdown, perceived lower barriers than college transfer students. The relationships between CDSE-SF scores and

CBI-R scores remained the same across demographic variables for college transfer and applied technology students.

Results of Question and Null Hypothesis 2

Question 2. What is the predictive value of demographic (gender, age, ethnicity, employment, first-generational and full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs? The null hypothesis stated there would be no effect of demographic (gender, age, ethnicity, employment, first-generational and full and part-time student status) variables on CDMSE and perceived barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs. The study found demographic variables of age and ethnicity did have an effect; therefore the null hypothesis was rejected at the .05 level of significance.

Null Hypotheses 2. There will be no effect of demographic (gender, age, ethnicity, employment, first generational, and full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs. Tests results are more accurate than those of the pilot study due to the increased sample size in the larger study; thus, there was more probability of detecting true differences or predictive values (O'Sullivan et al., 2003). Because of the larger sample size, there was less probability of rejecting a false null hypothesis.

In order to determine which variables are significant predictors of CDSE-SF and CBI-R scores when considering college transfer vs. applied technology students, a linear model was constructed including the variables gender, age, ethnicity, employment, college transfer versus applied technology students, first-generational, full and part-time student status and interactions of each demographic variable with college transfer versus applied technology (denoted as Gender*Transfer, etc). The interaction terms were utilized to account for the fact that relationships between a demographic variable (such as gender) and CDSE-SF/CBI-R score might change based on whether or not the student is a college transfer student or applied technology student, after accounting for the effects of all demographic variables. Including these interaction terms allowed for the creation of a mathematical model that treated college transfer students differently than applied technology students for the different demographic variables. Because many of the variables were categorical variables with more than two levels (ethnicity and employment), F-statistics were used to evaluate significance. Age was treated as a continuous variable. These F-statistics test whether the coefficients associated with each variable are equal to 0 (i.e. the variable is not associated with CDSE-SF/CBI-R). Results of the F-statistics tests are located in Tables 4.14 and 4.15.

Both age (as a continuous variable) and ethnicity were significant predictors of CDSE-SF and CBI-R scores. These results are very similar to the initial analysis of means. It should be noted that the results of these tests considered all predictors simultaneously, whereas the t-test results for demographic variables of transfer vs.

Table 4.14

CDSE-SF Results of the F-Statistics Tests for Applied Technology and College Transfer Students

Result	Variable	F statistic	p value
CDSE-SF	Gender	0.47	0.4932
	Age	3.75	0.0531*
	Ethnicity	2.46	0.0321*
	Employment	1.7	0.1475
	First Generational	0.08	0.7708
	Full-Time	0	0.9828
	Transfer vs. Applied	0.12	0.7336
	Applied	0.24	0.6255
	Gender*Transfer	0.44	0.5082
	Age*Transfer	0.84	0.5187
	Ethnicity*Transfer	2.08	0.082
	Employment*Transfer	1.27	0.2598
	First Gen*Transfer	2.36	0.1249
	Full-Time*Transfer	0.47	0.4932

Note. Significant predictors have p-values <0.05 and are denoted with *, First Gen refers to First Generational, Transfer refers college transfer, applied refers to applied technology, Full-time refers to Full-time enrollment status, Gender * Transfer, etc… represents interactions of each variable with college transfer versus applied technology students.

Table 4.15

CBI-R Results of the F-Statistics Tests for Applied Technology and College Transfer Students

Result	Variable	F statistic	p value
CBI-R	Gender	1.23	0.2674
	Age	8.19	0.0044*
	Ethnicity	2.73	0.0191*
	Employment	0.53	0.7105
	First Generational	2.53	0.1125
	Full-Time	1.17	0.2798
	Transfer vs. Applied	0.68	0.4102
	Gender*Transfer	2.15	0.1435
	Age*Transfer	0.03	0.8583
	Ethnicity*Transfer	1.52	0.1801
	Employment*Transfer	1.31	0.2642
	First Gen*Transfer	1.06	0.3037
	Full-Time*Transfer	0.61	0.4349

Note. Significant predictors have p-values <0.05 and are denoted with *. First Gen refers to First Generational, Transfer refers college transfer, Applied refers to applied technology, Full-time refers to Full-time enrollment status. Gender * Transfer, etc… represents interactions of each variable with college transfer versus applied technology students.

applied technology students were considered one predictor at a time. This predictive analysis accounted for correlation and confounding between the predictor variables yet the t-tests did not. This explains why the results are slightly different between the two analyses and why some of the t-test results show significant differences between transfer and applied students for some of the demographic variables, but the interactions in the predictive model do not.

Results of Question and Null Hypothesis 3

Question 3. Is there a relationship between CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs? The null hypotheses stated there would be no correlation between CDMSE and CBI-R scores of transfer and applied technology community college students pursuing associate degree, diploma or certificate programs. The study found there was a relationship; therefore the null hypothesis was rejected at the .05 level of significance.

Null Hypothesis 3. There is no relationship between CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs. To determine whether CDSE-SF scores and CBI-R scores were significantly associated with each other, a linear model with barrier as a predictor for confidence was tested. It was estimated that an increase of one point in mean CBI-R decreases the mean CDSE-SF score by 0.101 points ($t=-10.82$, $p<0.0001$). This does not indicate a very large effect of perception of barrier on CDMSE;

however, it is statistically significant since $p<0.05$. A similar result was observed in the pilot study, although the results of the larger study are more powerful. The reported t-statistic tests whether the coefficient of barrier is equal to zero (i.e. if perception of barriers is significantly associated with CDMSE).

A test for an association between CDSE-SF and CBI-R scores was calculated by using the Pearson correlation coefficient (see Table 4.16). The correlation between CDSE-SF and CBI-R is estimated to be -0.403, consistent with what was recorded in the pilot study (which was -0.42). A test was also conducted to see if this correlation was equal to zero, and found a p-value < 0.0001. There is evidence that the correlation between CDSE-SF and CBI-R is not zero (since $p<0.05$) and, hence, CDSE-SF scores are significantly associated with CBI-R scores; therefore, the null hypothesis is rejected. Notice that the results from testing the correlation are consistent with the results obtained from the linear model; both found that CDMSE is significantly associated with perception of barriers.

Finally, regressions for CDSE-SF scores on CBI-R scores were performed as before for the college transfer students and then for the applied technology students. The results showed an increase in one unit of the CBI-R score was associated with a statistically significant decrease of about -0.1 points in the CDSE-SF score on average. Therefore, the relationship between CDSE-SF score and CBI-R score does not differ between college transfer and applied technology students ($p=0.7031$). In other words, an

Table 4.16

Relationship Between CDSE-SF Scores and CBI-R Scores of College Transfer and Applied Technology Students

Group	Estimate	t-statistic	p-value
Transfer	-0.09568	-6.21	<.0001*
Applied	-0.10299	-8.76	<.0001*

Note. p<.05. Transfer refers to college transfer and applied refers to applied technology. *Indicates p-values less than .05.

increase in CBI-R score results in a slight decrease in CDSE-SF score regardless of whether a student was an applied technology student or a college transfer student.

The study found CDSE-SF scores are significantly associated with CBI-R scores. There is an inverse relationship between CDMSE and perception of barriers. As barriers increase, CDMSE decreases. CBI-R scores are a predictor for CDSE-SF scores. Table 4.17 shows the correlations among all of the demographic variables of interest. Many of the correlations between variables are significantly different from zero, indicating that many of the demographic variables are correlated with each other. In particular, college transfer is significantly correlated with age, full-time student status, major, and ethnicity This explains why scores differed for college transfer and applied technology students overall, but not when accounting for the other demographic variables.

In summary, the data revealed that mean levels of CDMSE and perceived barriers are significantly different between college transfer students and applied technology students overall. Mean CDSE-SF scores for college transfer students are significantly different from those of applied technology students. And, mean CBI-R scores for college transfer students are significantly different from those of applied technology students. Both age (as a continuous variable) and ethnicity were found to be significant predictors of CDSE-SF and CBI-R scores after controlling for all other demographic variables.

Table 4.17

Correlation Matrix of All Demographic Variables for Entire Sample

Variable	Gender	Age	Full-Time	Major	Ethnicity	First	Employed	Transfer
Gender	1.000	-0.087*	0.115*	-0.084*	0.021	-0.048	-0.031	0.030
Age	*	1.000	0.423**	0.095*	-0.126*	0.051	-0.206**	0.292**
Full-time	*	*	1.000	-0.083*	0.085*	-0.053	0.269**	0.190*
Major	*	*	*	1.000	-0.050	0.020	0.017	-0.164*
Ethnicity	*	*	*	*	1.000	0.095*	0.046	0.092*
First	*	*	*	*	*	1.000	-0.067	-0.038
Employed	*	*	*	*	*	*	1.000	0.039
Transfer	*	*	*	*	*	*	*	1.000

Note. *denotes correlations which are significantly different from 0. **denotes correlations significantly different than 0 with magnitude >0.2 (representing stronger correlations). Transfer refers to college transfer. First refers to First-generational**.**

CHAPTER FIVE CONCLUSIONS AND IMPLICATIONS

The purpose of this study was to explore relationships between career decision-making self-efficacy (CDMSE) and perceived career barriers among college transfer and applied technology students attending a southeastern urban community college. This study sought to investigate and quantify the differences in CDMSE and perceived barriers between transfer and applied technology students at a southeastern urban community college by comparing mean scores from the CDSE-SF and CBI-R survey instruments and by constructing regression models that would show predictive values of certain demographic variables of transfer and applied technology students pursuing associate, diploma or certificate programs by posing the following research questions and corresponding hypotheses:

1. Are there differences in mean scores of CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs by demographic characteristics (gender, ethnicity, age, first-generational, employment, full and part-time student status)?

H_0: There will be no significant differences in mean scores of CDMSE and perception of career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs broken down by gender, age, ethnicity, first-generational employment, and full and part-time student status.

2. What is the predictive value of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no effect of demographic (gender, ethnicity, age, first-generational, employment, full and part-time student status) variables on CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs.

3. Is there a relationship between CDMSE and perceived career barriers of applied technology and college transfer community college students pursuing associate degree, diploma or certificate programs?

H_0: There will be no correlation between CDMSE and CBI-R scores of college transfer and applied technology community college students pursuing associate degree, diploma or certificate programs.

Conclusions

The study found mean levels of CDMSE were lower for college transfer students than for applied technology students and the college transfer mean scores of perceived career barriers were higher than the mean scores of the applied technology students. This relationship was supported across demographic variables. It should be noted that gender, employment, first-generational and full or part-time student status were not significant demographic variables for this particular sample of students being studied. The statistical

method of multiple regression showed that the relationship between the demographic variables and scores for CDMSE and perception of career barriers did not differ between applied technology and college transfer students. However, age and ethnicity were revealed as significant demographic variables within each of the groups. The results showed that older college transfer students had higher scores for CDMSE and lower scores for perceived career barriers. This supports Healy and Reilly's (1989) findings that younger community college students had more career needs in the areas of knowing more about interests and abilities, understanding how to decide on a career goal, becoming certain of a career plan, exploring career related interests and abilities, selecting courses relevant to career goals and obtaining a job. These needs correspond with the CDSE-SF and CBI-R questions that were asked in this study. In addition, it supported studies by Haviland and Mahaffy (1985) that found older students reported fewer perceived barriers than younger students, and Luzzo (1993a), who found that older students possessed a higher level of CDMSE. This study found there were a majority of older students in the applied technology group and, as was seen in Luzzo's study, they possessed a higher level of CDMSE. Thus, it can be concluded that older students are generally more self-confident in their career decision-making and perceive fewer career barriers than younger students. Older applied technology students reported fewer career barriers than younger college transfer students.

Ethnicity was also a demographic variable that was revealed to have significance, within the two groups, yet it did not alter the relationship between CDMSE and

perception of career barriers. Despite the significance of ethnicity, overall, there were no specific demographic variables that changed the relationship between CDMSE and perception of career barriers between the two groups. As discussed in Chapter 4, when the sample size was broken down into subgroups, the number of students within each demographic group decreased even further. As noted by O'Sullivan et al. (2003), as each subgroup decreases in size the less accurate the statistical results will become.

A linear regression model was used in question two to determine if demographics had predictive value when calculating CDMSE and perceived barriers. The linear model showed that age (as a continuous variable) and ethnicity were significant predictors of CDSE-SF scores and CBI-R scores. CDSE-SF scores tended to be lower for traditional aged students (17-21) for both college transfer and applied technology students. These scores increased according to age resulting in older students having higher scores. This result was similar to the initial analysis that compared mean scores. For this particular study, age and ethnicity were the primary variables that predicted levels of CDMSE and perception of barriers of the applied technology and college transfer students. Both groups had an inverse relationship of CDMSE to perception of career barriers. The applied technology group scored higher on CDSE-SF and lower on CBI-R. This could be because the applied technology group was comprised primarily of older students who tend to be more mature and focused. The fact that both groups had an inverse relationship reveals that the groups are more alike than different in regards to CDMSE and perceptions of career barriers.

Questions three was looking for a correlation and it was expected that there would be no correlation between CDMSE and perception of career barriers. However, the study found a relationship between higher CDSE-SF scores and lower CBI-R scores for applied technology students and CDSE-SF scores were significantly associated with CBI-R scores. In other words, as perceptions of career barriers increase, the level of CDMSE decreases, and as perceptions of career barriers decrease, CDMSE increases.

These findings support Luzzo's (1996) research that found a negative relationship between perceived career barriers and CDMSE. An interesting perspective is that Luzzo's (1996) study was conducted with university students and this study was conducted with community college students, which might suggest that the perceptions of career barriers among university students could be the same as those of community college students, especially for college transfer students who are hoping to enroll at a university.

Implications for Practice and Research

Social cognitive career theory (SCCT) and career decision-making self-efficacy (CDMSE) provided the framework for this study. Taylor and Betz (1983), as well as Taylor and Popma (1990), found a negative relationship between CDMSE and career or vocational indecision. It should be noted that career indecision could be perceived as a career barrier. The results of this study support the findings of Taylor and Betz, as well as Taylor and Popma. Findings also revealed that the community college transfer students showed the same negative relationship between CDMSE and perception of career barriers as found in studies of university students (Gloria & Hird, 1999; Mau, 2000; Peterson &

delMas, 1998). This is not surprising as college transfer students are usually enrolled in programs that lead towards a baccalaureate degree (Bailey et al., 2004). Scores for applied technology students also revealed a negative relationship between CDMSE and perception of career barriers, yet their levels of CDMSE were higher and their perceptions of career barriers were lower than those of college transfer students. Their interest in learning job skills is one of the main reasons applied technology students attend a community college (Bailey et al.). The reasons for the higher CDMSE scores and lower perceived career barrier scores for applied technology students could be attributed to age, which was also found to be a significant factor in the study. The applied technology students were generally older and have had time to mature, as seen in SCCT. Lent et al. (1994) believe that career interests develop over time and are reinforced through repetitive actions. SCCT includes three social cognitive factors: self-efficacy, outcome expectations and goals. The applied technology students in this study showed higher levels of self-efficacy, perhaps due to the expectation of earning a degree or diploma in their chosen field in a short amount of time and seeing the goal as attainable. In contrast, college transfer students' levels of self-efficacy were found to be lower perhaps because they may have been uncertain about which college or program to choose, may have perceived more career barriers because of that unknown entity, and may find it more difficult to see the goal of a baccalaureate degree as attainable.

In addition, studies by Betz and Hackett (1981), Quimby and O'Brien (1994), and Zeldin et al. (2007) found men and women differed in their levels of self-efficacy. It is

interesting to note that this study did not find gender as a predictor of CDMSE or perception of career barriers. However, Luzzo (1995), in his study of gender differences in a group of university students (of which 76% were under the age of twenty), found females scored higher than males when measuring career decision-making. The finding that gender was not a predictor in this study could be due to a sample consisting of older community college students in an urban setting or to the current economic climate of the area at the time it was performed. Results differ from the economic climate when Luzzo's study was done in 1995.

This study laid the foundation for future findings to build upon the career decision-making framework of Taylor and Betz (1983) and Lent, et al., (1994) as well as Swanson et al., (1996). The findings helped to fill the gap of research literature that is sorely lacking on community college students especially when comparing college transfer students to applied technology students.

Findings from this study suggest a mentoring program at the community college could be useful. Older applied technology mentors could share information and insight with the younger college transfer students and, perhaps, create awareness of possible careers for exploration.

Information about the relationship and correlation of CSMSE and perceive career barriers from this study may help career counselors and faculty advisors guide their students in career decision-making. Assistance with the career decision-making process

could become a part of orientation sessions or be addressed in student success courses, for example.

In-service training for counselors and advisors concerning issues of self-efficacy and perceived career barrier of college transfer and applied technology students could be the first step in developing and implementing interventions to increase CDMSE and to help students deal with perceived career barriers. The need for mentoring programs and interventions within the ethnic minority population should become an administrative priority.

Future Research

Findings from this study indicate that college transfer students, overall, had lower levels of CDMSE and higher perceived career barrier scores than applied technology students. It also highlighted the relationship between CDMSE and perception of career barriers especially in the areas of age and ethnicity. Exploring gender and ethnicity in regard to CDMSE and perception of barriers at the community college to gain more insight and clarity is recommended. In addition, studies that include the socioeconomic status of students and the influences of family of origin are recommended.

A qualitative study to investigate the types of past or present career exploration of students engage in could help the community college in determining whether more extensive programming is needed to assist in the career decision-making process. Additional qualitative studies that reveal career interests within age and ethnic groups or specific perceived career barriers could be beneficial. Information from college transfer

discussion groups might reveal some of the specific perceived career barriers of that population.

The results of this study offer some exciting insights about career decision-making self-efficacy and perceived career barriers of community college students and serve as a good foundation for further research. Investigation within the groups of college transfer and applied technology students is warranted particularly in regard to age and ethnicity. If community colleges can learn more about the career aspirations and needs of student on their campuses, this will enhance serves for those students and, in turn, help fulfill their mission of educating the workforce.

REFERENCES

Agresti, A., & Finlay, B. (1999). *Statistical methods for the social sciences.* Upper Saddle River, NJ: Prentice Hall.

Albert, K. A., & Luzzo, D. A. (1999). The role of perceived barriers in career development: A social cognitive perspective. *Journal of Counseling & Development, 77*, 431-436.

Alfonso, M., Bailey, T. R., & Scott, M. (2005). The educational outcomes of occupational sub-baccalaureate students: evidence from the 1990s' *Economics of Educational Review, 24*, 197-212.

American Association of Community Colleges. (2009). *American graduation initiative.* Retrieved August 21, 2009, from http://www.aacc.nche.edu/Pages/default.aspx

Arbona, C., & Nora, A. (2007). The influence of academic and environmental factors on Hispanic college degree attainment. *The Review of Higher Education, 30*(3), 247-269.

Bailey, T., Leinbach, T., Scott, M., Alfonso, M., Kienzl, G., & Kennedy, B. (2004). The characteristics of occupational students in postsecondary education. *Community College Research Center CCRC Brief,* 21, New York, New York: Columbia University.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychology Review, 84,* 191-215.

Bandura, A. (1989). Social cognitive theory. In R. Vasta (Ed.), *Annals of child development*. *vol 6*. *Six theories of child development* (pp. 1-60). Greenwich, CT: JAI Press.

Bandura, A., Adams, N. E., & Beyer, J. (1977). Cognitive processes and mediating behavioral change. *Journal of Personality and Social Psychology, 35*(3), 125-139.

Bandura, A., & Cervone, D. (1986). Differential engagement of self-reactive influences in cognitive motivation. *Organization Behavior and Human Decision Processes, 38,* 92-113.

Bers, T. H. (1988). Student major choices and community college persistence. *Research in Higher Education, 29*(2), 161-173.

Betz, N. E. (2000). Self-efficacy theory as a basis for career assessment. *Journal of Career Assessment, 8*(3), 205-222.

Betz, N. E., Klein, K., & Taylor, K. M. (1996). Evaluation of a short form of the career decision-making self-efficacy scale. *Journal of Career Assessment, 4*, 47-57.

Betz, N. E., & Hackett, G. (1981). The relationship of career-related self-efficacy expectations to perceived career options in college women and men. *Journal of Counseling Psychology, 28*(5), 399-410.

Betz, N. E., & Hackett, G. (1981). The relationship of career-related self-efficacy expectations to perceived career options in college women and men. *Journal of Counseling Psychology, 28*(5), 399-410.

Betz, N. E., & Hackett, G. (2006). Career self-efficacy theory: Back to the future. *Journal of Career Assessment, 14*(1), 3-11.

Betz, N. E., & Luzzo, D. A. (1996). Career assessment and the career decision-making self-efficacy scale. *Journal of Career Assessment, 4*(4), 413-428.

Blustein, D. L., & Noumair, D. A. (1996). Self and identity in career development: Implications for theory and practice. *Journal of Counseling & Development*, *74*, 433-441.

Brown, S., & Lent, R. (1996). A social cognitive framework for career choice counseling. *The Career Development Quarterly, 44*, 355-367

Byars, A. M. (1997). *Ethnic and racial influences on African American college women's career self-efficacy*. Unpublished doctoral dissertation, Arizona State University.

Byars-Winston, A. M. (2006). Racial ideology in predicting social cognitive career variables for Black undergraduates. *Journal of Vocational Behavior, 69*(1), 134-148.

Byars-Winston, A. M., & Fouad, N. A. (2008). Math and science social cognitive variables in college students contributions of contextual factors in predicting goals. *Journal of Career Assessment, 16*(4), 425-440.

Cardoso, P, & Marques, J. F. (2008). Perception of career barriers: The importance of gender and ethnic variables. *International Journal for Educational and Vocational Guidance*, 8, 49-61.

Choy, S. (2001). Students whose parents did not go to college: Postsecondary access, persistence, and attainment. (NCES Rep. No. 2001-126). Washington, DC: Center for Educational Statistics.

Cooper, C. L., Argyris, C., & Channon, D. F. (Eds.) (1998). *The concise Blackwell Encyclopdia of management.* New York: Blackwell Publishers

Cohen, A. M., & Brawer, F. B. (2003). *The American community college*. San Francisco: Jossey-Bass.

Creed, P. A., Patton, W., & Bartrum, D. (2004). Internal and external barriers, cognitive style, and the career development variables of focus and indecision. *Journal of Career Development, 30*(4), 277-294.

Crites, J. O. (1976). A comprehensive model of career development in early adulthood. *Journal of Vocational Behavior, 9,* 105-118.

Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*(3), 297-334.

Cuseo, J. (2005). "Decided," "undecided," and "in transition": Implications for academic advisement, career counseling, and student retention. In R. S. Feldman (Ed.), *Improving the first year of college: Research and practice* (pp. 27-50). Mahwah, NJ: Lawrence Erlbaum.

Dougherty, K. (1987). The effects of community colleges: Aid or hindrance to socioeconomic attainment. *Sociology of Education, 60*, 86-103.

Dougherty, K. J., & Kienzl, G. S. (2006). It's not enough to get through the open door: Inequalties by social background in transfer from community colleges to four-year colleges. *Teacher College Review*, *108*(3), 452-487.

Dowd, A. C. (2003). From access to outcome: Revitalizing the democratic mission of the community college. *Annals of the American Academy of Political and Social Science,* 586, 92-119. Community Colleges: New Environments, New Directions.

Downes, M., & Kroeck, K. G. (1996). Discrepancies between existing jobs and individual interests: An empirical application of Holland's model. *Journal of Vocational Behavior, 48*(1), 107-117.

Foltz, B. M., & Luzzo, D. A. (1998). Increasing the career decision-making self-efficacy of nontraditional college students. *Journal of College Counseling, 1,* 35-44.

Fredrickson, J. (1998). Today's transfer students: Who are they*? Community College Review, 26*(1), 43-55.

Freedman, D., Pisani, R., Purves, R., & Adhikari, A. (1991)Statistics. New York, New York: W.W. Norton & Company.

Gati, I., Krausz, M., & Osipow, S. H. (1996). A taxonomy of difficulties in career decision making. *Journal of Counseling Psychology*, *43*(4), 510-526.

Gati, I., Osipow, W., & Fassa, N. (1994). The scale structure of multiitem measures: Application of the split scale method to the task-specific occupational self-efficacy scale and the career decision-making self-efficacy scale. *Journal of Career Assessment, 2,* 384-397.

Gianakos, I. (1996). Career development differences between adult and traditional-aged learners. *Journal of Career Development, 22*(3), 211-223.

Gleazer, Jr., E. J. (1994). Evolution of junior colleges into community colleges. In G.A. Baker III (Ed.), *A handbook on the community college in America: Its history, mission, and management* (pp. 17-27). Westport, CT: Greenwood Press.

Gloria, A. M., & Hird, J. S. (1999). Influences of ethnic and nonethnic variables on the career decision-making self-efficacy of college students. *The Career Development Quarterly, 48*, 157-174.

Gottfredson, L. S. (1981). Circumscription and compromise: A developmental theory of occupational aspirations (Monograph). *Journal of Counseling Psychology, 28*(6), 545-579.

Grubb, W. N. (2002). Learning and earning in the middle, part I: National studies of pre-baccalaureate education. *Economics of Education Review, 21*, 299-321.

Gushue, G. V., Clarke, C. P., Pantzer, K. M., & Scanlan, K. R. (2006). Self-efficacy, perceptions of barriers, vocational identity, and the career exploration behavior of Latino/a high school students. *The Career Development Quarterly, 54,* 307-317.

Hall, A. S. (2003). Expanding academic and career self-efficacy: A family systems framework. *Journal of Counseling & Development, 81*, 33-39.

Hammer, L., Grigsby, T., & Woods, S. (1998). The conflicting demands of work, family, and school among students at an urban university. *The Journal of Psychology*, *132*(2), 220-226.

Hansen, L. S. (2001). Integrating work, family, and community through holistic life planning. *The Career Development Quarterly, 49,* 261-274.

Haviland, M. G., & Mahaffy, J. E. (1985). The use of my vocational situation with nontraditional college students. *Journal of College Student Personnel, 26*, 169-170.

Healy, C. C., & Reilly, K. C. (1989). Career needs of community college students: Implications for services and theory. *Journal of College Student Development, 30,* 541-545.

Home, A. M. (1998). Predicting role conflict, overload, contagion in adult women university students with families. *Adult Education Quarterly, 49*(2), 85-98.

Inman, E. W., & Mayes, L. (1999). The importance of being first: Unique characteristics of first-generation community college students. *Community College Review, 26*(4), 3-22.

Kasper, H. T. (2002-03). The changing role of community college. *Occupational Outlook Quarterly*, 14-21.

Keller, G. (2001). The new demographics of higher education. *The Review of Higher Education, 24*(3), 319-235.

Kingan, M. E., & Alfred, R. L. (1993). Entry assessment in community colleges: Tracking or facilitating? *Community College Review, 21*(3), 3-17.

Laanan, F. S. (2000). Community college students' career and educational goals. *New Directions for Community Colleges, 112,* 19-33.

Laanan, F. S. (2003). Degree aspirations of two-year college students. *Community College Journal of Research and Practice, 27,* 495-518.

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

Levin, J. S. (2000). The revised institution: The community college mission at the end of the twentieth century. *Community College Review, 28*(2), 1-25.

Lopez, F. G., & Yi, S. A. (2006). Predictors of career indecision in three racial/ethnic groups of college women. *Journal of Career development, 33*(1), 29-46.

Luzzo, D. A. (1993a). Career decision-making differences between traditional and non-non-traditional college students. *Journal of Career Development, 20*(2), 113-120.

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

Luzzo, D.A. (1993c). Reliability and validity testing of the career decision-making self-efficacy scale. *Measurement & Evaluation in Counseling & Development, 26*(2), 137-142.

Luzzo, D. A. (1995). Gender differences in college students' career maturity and perceived barriers in career development. *Journal of Counseling & 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*(4), 239-248.

Luzzo, D. A. (1999). Identifying the career decision-making needs of nontraditional college students. *Journal of Counseling & Development, 77*(2), 135-140.

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., McWhirter, E. H., & Hutcheson, K. G. (1997). Evaluating career decision-making factors associated with employment among first-year college students. *Journal of College Student Development, 38*(2), 16-171.

Luzzo, D. A., & Ward, B. E. (1995). The relative contributions of self-efficacy and locus of control to the prediction of vocational congruence. *Journal of Career Development, 21*(4), 307-317.

Mau, W. (2000). Cultural differences in career decision-making styles and self-efficacy. *Journal of Vocational Behavior, 57*, 365-378.

Maxwell, M., Hagedorn, L., Cypers, S., Moon, H., Brocato, P., Wahl, K., & Prather, G. (2003). Community and diversity in urban community colleges: Coursetaking among entering students. *Community College Review, 30*(4), 21-47.

McMillan, J. H. (1992). *Educational research fundamentals for the consumer*. New York: Harper Collins.

McWhirter, E. H., Torres, D., & Rasheed, S. (1998). Assessing barriers to women's career adjustment. *Journal of Career Assessment, 6*(4), 449-479.

Metz, A. J. (2005). Unique contributions of career-related variables in predicting academic persistence and performance in university 101 college students. (Doctoral dissertation, University of Wisconsin-Milwaukee, 2005). *ProQuest Dissertation and Thesis*, (AAT 3196016)

Murtagh, N., Lopes, P., & Lyons, E. (2007). What makes a career barrier a barrier? *Industrial and Commercial Training, 39*(6), 332-338.

Nauta, M. M., & Kahn, J. H. (2007). Identity status, consistency and differentiation of interests, and career decision self-efficacy. *Journal of Career Assessment, 15*(1), 55-65.

Nonis, S. A., & Hudson, G. I. (2006). Academic performance of college students: Influence of time spent studying and working. *Journal of Education for Business*, 151-159.

North Carolina Community College System. (2004). *System mission*. Retrieved November 5, 2009, from http://www.nccommunitycolleges.edu/External_Affairs/system_mission.htm

O'Leary, V. E. (1974). Some attitudinal barriers to occupational aspirations in women. *Psychological Bulletin, 81*(11), 809-826.

O'Rourke, N., Hatcher, L., & Stepanski, E. J. (2005). *A step-by step approach to using SAS for univariate and multivariate statistics,* (2nd ed.). Cary, NC: SAS Institute Inc.

O'Sullivan, E., Rassel, G. R., & Berner, M. (2003). *Research methods for public administrators*. New York: Addison Wesley Longman, Inc.

O'Toole, D. M., Stratton, L. S., Wetzel, J. N. (2003). A longitudinal analysis of the frequency of part-time enrollment and the persistence of students who enroll part-time. *Research in Higher Education, 44*(5), 519-537.

Parsons, F. (1909). *Choosing a vocation*. Boston: Houghton Mifflin.

Pascarella, E., Pierson, C., Wolniak, G., & Terenzini, P. (2004). First-generation college students additional evidence on college experiences and outcomes. *The Journal of Higher Education, 75*(3), 249-284.

Paradise, L., & Long T. (1981). *Counseling in the community college models and approaches.* New York: Praeger Publishers.

Peterson, S. L. (1993). Career decision-making self-efficacy and social and academic integration of underprepared college students: Variations based on background characteristics. *Journal of Vocational Education Research, 18*(1), 77-115.

Peterson, S. L., & delMas, R. C. (1996, April). Effects of career-decision-making self-efficacy on the retention of underprepared adults: A path analytic study of student persistence. Paper presented at *Annual Meeting of the American Educational Research Association*, New York, NY.

Peterson, S. L., & delMas, R. C. (1998). The component structure of career decision-makingSelf-efficacy for underprepared college students. *Journal of Career Development, 24*(3), 209-225.

Phelan, D. J. (2000). Enrollment policies and student access at community colleges *Education Commission of the States, Community College Policy Center*. Denver, CO, 1-12.

Prussia, G. E., Anderson, J. S., & Manz, C. C. (1998). Self-leadership and performance outcomes: The mediating influence of self-efficacy. *Journal of Organizational Behavior, 19,* 523-538.

Quimby, J. L., & O'Brien, K. M. (2004). Predictors of student and career decision-making self-efficacy among nontraditional college women. *The Career Development Quarterly, 52,* 323-339.

Reardon, R. C., Bullock, E. E., & Meyer, K. E. (2007). A Holland perspective on the U.S. workforce from 1960 to 2000. *The Career Development Quarterly, 55,* 262-274.

Rivera, L. M., Chen, E. C., Flores, L. Y., Blumberg, F., & Ponterotto, J. G. (2007). The effects of perceived barriers, role models, and acculturation on the career self-efficacy and career consideration of Hispanic women. *The Career Development Quarterly, 56,* 47-61.

Robbins, S. B. (1985, July). Validity estimates for the career decision-making self-efficacy scale. *Measurement and Evaluation in Counseling and Development*, 64-71.

Ryan, N. E., Solberg, V. S., & Brown, S. D. (1996). Family dysfunction, parental attachment, and career search self-efficacy among community college students. *Journal of Counseling Psychology, 43*, 84-89.

Sandler, M. E. (2000). Career decision-making self-efficacy, perceived stress, and an integrated model of student persistence: A structural model of finances, attitudes, behavior and career development. *Research in Higher Education, 41*(5), 537-580.

Segner, III, K. B. (1974). *A history of the community college movement in North Carolina, 1927-1963.* Kenansville, NC: James Sprunt Press.

Simon, M. A., & Tovar, E. (2004). Confirmatory factor analysis of the career factors inventory on a community college sample. *Journal of Career Assessment, 12*(3), 255-269.

Smith, S. (2004). Career barriers among information technology undergraduate majors. *Information Technology, Learning, and Performance Journal, 22*(1), 49-56.

Spitzer, T. (2000). Predcitors of college success: A comparison of traditional and Nontraditional age students. *NASPA Journal, 38*(1), 82-98.

Super, D. E. (1955). Personality integration through vocational counseling. *Journal of Counseling Psychology, 2,* 217-216.

SurveyMonkey, (2010). Retrieved December 7, 2008. http://www.surveymonkey.com/

Swanson, J. L., Daniels, K. K., & Tokar, D. M. (1996). Assessing perceptions of career-related barriers: The career barriers inventory. *Journal of Career Assessment, 4*(2), 219-244.

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), 443-462.

Tansley, D. P., Jome, L. M., Haase, R. F., & Martens, M. P. (2007). The effects of message framing on college students' career decision making. *Journal of Career Assessment, 15*(3), 301-316.

Taylor, K. M., & Betz, N. E. (1983). Applications of self-efficacy theory to the understanding and treatment of career indecision. *Journal of Vocational Behavior*, *22,* 63-81.

Taylor, K. M., & Popma, J. (1990). An examination of the relationships among career decision-making self-efficacy, career salience, locus of control, and vocational indecision. *Journal of Vocational Behavior, 37*, 17-31.

Tien, H. S., Lin, C., & Chen, S. (2005). A grounded analysis of career uncertainty perceived by college students in Taiwan. *The Career Development Quarterly, 54*, 162-174.

Triola, M. E. (2001). *Elementary statistics using excel and math*. Reading, MA: Addison-Wesley.

United States Bureau of Labor Statistics. (2005). Occupational Outlook Handbook. Retrieved October 16, 2007, from http://www.bls.gov/oco/oco2003.htm

Velez, W. (1985). Finishing college: The effects of college type. *Sociology of Education, 58,* 191-200.

Wake Technical Community College Catalog. (2009). Retrieved August 30, 2009, from Wake Technical Community College, Raleigh, NC: Web site: http://catalog.waketech.edu/2general/

Wake Technical Community College 2008 Fact Book. (2008) Retrieved February 27, 2010 from Wake Technical Community College, Raleigh, NC: Web site: http://planningandresearch.waketech.edu/ie/factbook.php

Walker, R. (1985). Is there a service economy? *Science & Society*, *49,* 42-83.

Wassmer, R., Moore, C., & Shulock, N. (2004). Effect of racial/ethnic composition On transfer rates in community colleges: Implications for policy and practice. *Research in Higher Education, 45*(6), 651-671.

Whiston, S. C., & Keller, B. K. (2004). The influences of the family of origin on career development: A review and analysis. *The Counseling Psychologist, 32*(4), 493-568.

Williams, C. M. & Subich, L. M. (2006). The gendered nature of career related learning experiences: A social cognitive career theory perspective. *Journal of Vocational Behavior, 69*(2), 262-275.

Wise, R., Charner, I., & Randour, M. (1976). A conceptual framework for career awareness in career decision-making. *The Counseling Psychologist*, *6*(3), 47-53.

Zeldin, A. L., Britner, S. L., & Pajares, F. (2007). A comparative study of the self-efficacy beliefs of successful men and women in mathematics, science, and technology careers. *Journal of Research in Science Teaching*, 1-27.

Zeldin, A. L., & Pajares, F. (2000). Against the odds: Self-efficacy beliefs of women in mathematical, scientific, and technological careers. *American Educational Research Journal*, *37*(1), 215-246.

APPENDICES

Appendix A. Informed Consent

Dear Student:

I am currently a doctoral candidate in the department of Adult and Higher education at North Carolina State University under the direction of Dr. Timothy Hatcher.

Purpose & Methodology

I am conducting a study to determine the relationship between career decision-making self efficacy and perceived career barriers of community college students. In this study, you will be asked to complete two survey instruments. Your participation should take about 20 minutes.

There are **no risks** to you.

Confidentiality

All information will be handled in a strictly confidential manner, so that no one will be able to identify you when the results are recorded/reported.

The following weblink will connect you to the survey page until May 1, 2009, at which point the data will be compiled.

https://www.surveymonkey.com/s.aspx?sm=KipfigVQnO8tTVdDXlAhsA_3d_3d

Your participation in this study is **totally voluntary** and you may **withdraw** at any time without negative consequences. Your willingness to participate voluntarily in this study will be of great assistance to me and the effort to learn more about community college students. If you wish to withdraw at any time during the study, simply email rjkelly@waketech.edu. Students, if they wish, may elect to participate in a random drawing to receive one of four $25.00 gift certificates to (1) Kohl's Dept Store (2) Outback Steakhouse or (3) Applebees for completing the questionnaire.

All student responses will be collected **anonymously** and store in the aggregate. Data will be analyzed using a quantitative statistical approach to determine the factors that contribute to career decision-making self-efficacy and perceived career barriers. A student's choice to respond to the survey will indicate his/her informed consent to participate.

At the end of the survey, students may request a copy of the final report via email. E-mail addresses will not be linked to responses on the survey.

Contact Information

Please feel free to contact Rosemary Kelly at 919-866-5705 if you have any questions about the study. Or, for other questions, contact Wake Tech's Grants Director, Carol Cutler-White at 919-866-5925 or my dissertation advisor Dr. Timothy Hatcher 919-515-6246.

Thank you for your time.

Respectfully, Rosemary Kelly

Appendix B. Career Decision Self-Efficacy Scale

CDSE–Short Form

INSTRUCTIONS: For each statement below, please read carefully and indicate how much confidence you have that you could accomplish each of these tasks by marking your answer according to the key, Mark your answer by filling in the correct circle on the answer sheet.

NO CONFIDENCE AT ALL	VERY LITTLE CONFIDENCE	MODERATE COMPLETE CONFIDENCE	MUCH CONFIDENCE	CONFIDENCE
1	2	3	4	5

Example: How much confidence do you have that you could:

a. Summarize the skills you have developed in the jobs you have held?

If your response was "Moderate Confidence," you would fill out the number 3 on the answer sheet.

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:

1. Use the internet to find information about occupations that interest you.
2. Select one major from a list of potential majors you are considering.
3. Make a plan of your goals for the next five years.
4. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.
5. Accurately assess your abilities.
6. Select one occupation from a list of potential occupations you are considering.
7. Determine the steps you need to take to successfully complete your chosen major.

8. Persistently work at your major or career goal even when you get frustrated.

9. Determine what your ideal job would be.

10. Find out the employment trends for an occupation over the next ten years.

11. Choose a career that will fit your preferred lifestyle.

12. Prepare a good resume.

13. Change majors if you did not like your first choice.

14. Decide what you value most in an occupation.

15. Find out about the average yearly earnings of people in an occupation.

16. Make a career decision and then not worry whether it was right or wrong.

17. Change occupations if you are not satisfied with the one you enter.

18. Figure out what you are and are not ready to sacrifice to achieve your career goals.

19. Talk with a person already employed in a field you are interested in.

20. Choose a major or career that will fit your interests.

21. Identify employers, firms, and institutions relevant to your career possibilities.

22. Define the type of lifestyle you would like to live.

23. Find information about graduate or professional schools.

24. Successfully manage the job interview process.

25. Identify some reasonable major or career alternatives if you are unable to get your first choice.

Appendix C. Career Barriers Inventory-Revised

Byars and Hackett (1995); Byars (1997)

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, or while you are working in your job or career.

Please think about each of the common barriers listed below in terms of your own career progress. Then, for each, please indicate:

a) how likely you think it is that you may experience each one, and then;

b) how much each barrier would hinder or interfere with your career progress: In other words, how much would each barrier make your progress difficult?

CHOICE OF CAREER	How likely are you to encounter this barrier? Very Unlikely / Very Likely	If encountered, how much would this barrier hinder your career progress? Not At All / Completely
	0 1 2 3 4 5 6	0 1 2 3 4 5 6
1. Lacking information about possible jobs/careers	0 1 2 3 4 5 6	0 1 2 3 4 5 6
2. Being undecided about what job/career I would like	0 1 2 3 4 5 6	0 1 2 3 4 5 6
3. Being limited to certain career choices because of my gender	0 1 2 3 4 5 6	0 1 2 3 4 5 6
4. Being limited to certain career choices because of my race/ethnicity	0 1 2 3 4 5 6	0 1 2 3 4 5 6
5. Being discouraged from pursuing nonmath/science fields (e.g., engineering)	0 1 2 3 4 5 6	0 1 2 3 4 5 6
6. Other people's beliefs that certain careers are not appropriate for women/men	0 1 2 3 4 5 6	0 1 2 3 4 5 6
FINDING A JOB		
7. Lacking the necessary experience for a job	0 1 2 3 4 5 6	0 1 2 3 4 5 6
8. Not being able to find a job after graduation	0 1 2 3 4 5 6	0 1 2 3 4 5 6
9. Not wanting to move away from my friends and family	0 1 2 3 4 5 6	0 1 2 3 4 5 6

10. Unsure of how to actually find a job	0 1 2 3 4 5 6	0 1 2 3 4 5 6
11. Tight economy	0 1 2 3 4 5 6	0 1 2 3 4 5 6
12. Not knowing the "right people" to get a job	0 1 2 3 4 5 6	0 1 2 3 4 5 6
13. Racial discrimination in hiring for a job	0 1 2 3 4 5 6	0 1 2 3 4 5 6
14. Sex discrimination in hiring for a job	0 1 2 3 4 5 6	0 1 2 3 4 5 6

PERFORMING YOUR JOB

	How likely are you to encounter this barrier?	If encountered, how much would this barrier hinder your career progress?
	Very Unlikely / Very Likely	Not At All / Completely
	0 1 2 3 4 5 6	0 1 2 3 4 5 6
15. Not being able to perform my job well	0 1 2 3 4 5 6	0 1 2 3 4 5 6
16. Lacking the required skills for my job	0 1 2 3 4 5 6	0 1 2 3 4 5 6
17. Being dissatisfied with my job/career	0 1 2 3 4 5 6	0 1 2 3 4 5 6
18. Not receiving support from my coworkers/supervisors	0 1 2 3 4 5 6	0 1 2 3 4 5 6
19. Fear of being considered unattractive to the opposite sex because of my job/career	0 1 2 3 4 5 6	0 1 2 3 4 5 6
20. Difficulty dealing with "politics" at work	0 1 2 3 4 5 6	0 1 2 3 4 5 6
21. Racial discrimination in promotions in job/career	0 1 2 3 4 5 6	0 1 2 3 4 5 6
22. Not being taken seriously at work because I'm a man/woman	0 1 2 3 4 5 6	0 1 2 3 4 5 6
23. Sexual harassment on the job	0 1 2 3 4 5 6	0 1 2 3 4 5 6
24. Sex discrimination in promotions in job/career	0 1 2 3 4 5 6	0 1 2 3 4 5 6
25. Lack of respect from coworkers/supervisor because of my gender	0 1 2 3 4 5 6	0 1 2 3 4 5 6
26. Lack of respect from coworkers/supervisor because of my race/ethnicity	0 1 2 3 4 5 6	0 1 2 3 4 5 6
27. Being the "token" in a job because of my gender	0 1 2 3 4 5 6	0 1 2 3 4 5 6
28. Being the "token" in a job because of my race/ethnicity	0 1 2 3 4 5 6	0 1 2 3 4 5 6

BALANCING YOUR JOB WITH OTHER ASPECTS OF YOUR LIFE

29. Getting married	0 1 2 3 4 5 6	0 1 2 3 4 5 6

30. Having children	0 1 2 3 4 5 6	0 1 2 3 4 5 6
31. Not feeling supported by my family	0 1 2 3 4 5 6	0 1 2 3 4 5 6
32. Conflict between my marriage/family plans and my career plans	0 1 2 3 4 5 6	0 1 2 3 4 5 6
33. Not being able to find good day-care services for my children	0 1 2 3 4 5 6	0 1 2 3 4 5 6
34. Feeling guilty about working while my children are young	0 1 2 3 4 5 6	0 1 2 3 4 5 6

Appendix D. Permission to Use Scales

Here you go
Best wishes
NB

>>> Rosemary Kelly 8/29/2008 3:10 pm >>>
Dr. Betz,

I am a doctoral student at North Carolina State University in Raleigh, NC and have only completion of the dissertation to complete my adult education degree. My research plan is to measure the level of career decision-making self-efficacy of first year students enrolled at Wake Technical Community College where I am the Dean of Enrollment and Record Services. My study will also explore the possible effects of barriers in career decision-making.

Use of your career decision-making self-efficacy scale (short form) would benefit my study immensely. I am writing to ask your permission to use it. My committee chair is Dr. Timothy Hatcher. I will be happy to provide you with a copy of the results of my study.

Thank you for considering my request.

Rosemary Kelly
Dean of Enrollment & Records/College Registrar
Wake Technical Community College
9101 Fayetteville Rd
Raleigh, NC 27603
Phone 919-866-5705
FAX 919-662-3564

Hello, Ms. Kelly.

Thank you for your contact and interest in the CBI-revised scale that Gail Hackett and I modified from Swanson & Tokar. This email constitutes my permission for you to use the scale in your dissertation.

Attached, please find a Word doc that includes the scale itself (feel free to remove authors' name from scale for participants) and 2 articles that provide reliability and validity data for 3 of the 4 subscales I used in my dissertation research. The subscale balancing work with other family demands was omitted because it wasn't germane to my research questions in those studies.

You'll notice that in one study (JVB, 2006) I analyzed the subscales independently since it was a regression analysis and in another (JCA, Nov 2008), I used a total scale score since it was a path analysis.

I would welcome your sharing your study results as I continue to use this modified CBI scale in my research and am interested in validity and reliability indices for this modified scale.

Let me know if I can help in any way. All the best to you in your research and in completing your doctorate!

Angela Byars-Winston, Ph.D.
Scholar, Institute for Clinical & Translational Research
UW Center for Women's Health Research
School of Medicine and Public Health
University of Wisconsin
700 Regent Street, Suite #301
Madison, WI 53715-2634
Email: ambyars@wisc.edu
Phone: 608.263.1731
Fax: 608.265.6423

----- Original Message -----
From: Rosemary Kelly <rjkelly@waketech.edu>
Date: Friday, September 26, 2008 7:25 am
Subject: Permission to use career barriers inventory-revised
To: ambyars@wisc.edu
Cc: abyars@education.wisc.edu

> Dr. Byars-Winston,
>
> I am a doctoral student at North Carolina State University in
> Raleigh, NC
> and have only completion of the dissertation to complete my adult education
> degree. My research plan is to measure career barriers of first year
> students enrolled at Wake Technical Community College where I am the
> Dean of
> Enrollment and Record Services. My study will also explore the possible
> effects of career decision-making self-efficacy.
>
> Use of your career barriers inventory-revised (the one used in your
> dissertation) would benefit my study immensely. I am writing to ask
> your permission to use it. My committee chair is Dr. Timothy
> Hatcher. I will be happy to provide you with a copy of the results
> of my
> study.
>
> Thank you for considering my request.
>
> Rosemary Kelly
> Dean of Enrollment & Records/College Registrar
> Wake Technical Community College
> 9101 Fayetteville Rd
> Raleigh, NC 27603
> Phone 919-866-5705
> FAX 919-662-3564

Appendix E. Demographics Questionnaire

Demographic Data

1. What is your gender?

   Male
   Female

2. What is your date of birth?

   Example 08/29/1961

3. Are you a full-time or part-time student (full-time is 12 or more credit hours)

   Full-Time
   Part-Time

4. Are you a college transfer student? College transfer is defined as an "Academic major". Students enrolled in a non-career program seeking a general education degree or diploma in Associate of Arts, Science or General Education. Your advisor is the "college transfer advising center".

   Yes
   No

5. Are you an applied technology student? An applied technology student is enrolled in a major that prepares one for a specific career other than Associate of Arts, Science or General Education such as radiography, welding, culinary technology or other degree, diploma and certificate programs.

   Yes
   No

6. What is your primary program of study or major? (Such as college transfer is either Associate of Arts A10100 or Associate of Science A10400). Applied

Technology are majors like Accounting A25100 or Radiography A45700 for example. Please select your program from the drop down menu at the right.

A10100	Associate in Arts
A10300	Associate in General Education
A10400	Associate in Science
A1040D	Associate in Science - Pre-Major: Engineering
A20140	Environmental Science Technology
A20180	BioPharmaceutical Technology
A25100	Accounting
A25120	Business Administration
A2512C	Business Administration: Human Resources Management
A25130	Computer Programming
A25150	Database Management
A25240	Hotel and Restaurant Management
A25260	Computer Information Technology
A25270	Information Systems Security
A25290	Web Technologies
A25310	Medical Office Administration
A25340	Networking Technology
A25360	Office Systems Technology
A2536A	Office Systems Technology: Legal
A25450	Simulation and Game Development
A30100	Advertising and Graphic Design
A30220	Interior Design
A35100	Air Conditioning, Heating and Refrigeration Technology
A35190	Construction Management Technology
A35220	Electrical/Electronics Technology
A40100	Architectural Technology
A40140	Civil Engineering Technology
A40160	Computer Engineering Technology
A40200	Electronics Engineering Technology
A40240	Industrial Engineering Technology
A40260	Landscape Architecture Technology
A40320	Mechanical Engineering Technology
A40380	Surveying Technology
A45120	Associate Degree Nursing
A45260	Dental Hygiene
A45340	Emergency Medical Science
A45380	Human Services Technology
A4538E	Human Services Technology: Substance Abuse
A45400	Medical Assisting
A45420	Medical Laboratory Technology
A45700	Radiography
A50340	Mechanical Drafting Technology
A55130	Baking and Pastry Arts
A55140	Cosmetology
A55180	Criminal Justice Technology

A5518A	Criminal Justice Technology: Latent Evidence
A55200	Culinary Technology
A55220	Early Childhood Associate
A55280	General Occupational Technology
A60160	Automotive Systems Technology
A60240	Heavy Equipment and Transport Technology
A6024A	Heavy Equipment and Transport Technology: Agri. Systems
A6024B	Heavy Equipment and Transport Technology: Construction Equipment Systems
C20180A	BioPharmaceutical Technology: Applied Biotechnology
C25100A	Accounting: Payroll Accounting Clerk
C25100B	Accounting: Income Tax Preparer
C25120A	Business Administration: Sales Development
C25120B	Business Administration: Customer Service
C25120C	Business Administration: Entrepreneurship
C2512CA	Business Administration: Human Resources Management
C2512CB	Business Administration: Human Resources Administration
C2512IA	Business Administration: E-Commerce
C25130A	Computer Programming: JAVA Programming
C25130B	Computer Programming: Visual BASIC Programming
C25130C	Computer Programming: C++ Programming
C25130D	Computer Programming: Visual C# Programming
C25130E	Computer Programming: Computer Science
C25150A	Database Management:: Oracle Developer
C25150B	Database Management:: Oracle DBA Programming
C25150C	Database Management:: MySQL Developer
C25230B	High Performance Computing: Bioinformatics Computing
C25230C	High Performance Computing: Linux/Red Hat Administration
C25240A	Hotel and Restaurant Management: Hotel Management
C25240B	Hotel and Restaurant Management: Restaurant Management
C25260A	Computer Information Technology: M.O.S.
C25260E	Computer Information Technology: Spreadsheet Management
C25260G	Computer Information Technology: Hardware Troubleshooting
C25260J	Computer Information Technology: Computer Forensics
C25260K	Computer Information Technology: IT Support Technician (MCDST)
C25260L	Computer Information Technology: IT Support Management
C25260M	Computer Information Technology: IT Foundations
C25270A	Information Systems Security: Network Security Admin.

C25290A	Web Technologies: Web Developer
C25290B	Web Technologies: E-Commerce Programming
C25290C	Web Technologies: Web Designer
C25310A	Medical Office Administration: Medical Office Specialist
C25310B	Medical Office Administration: Medical Billing and Coding
C25310C	Medical Office Administration: Medical Transcription Specialist
C25340C	Networking Technology: Cisco Certified Network Associate (CCNA)
C25340I	Networking Technology: Cisco Certified Network Professional (CCNP)
C25340J	Networking Technology: Microsoft Certified Systems Administration (MCSA)
C25360E	Office Systems Technology: Word Processing & Publications Certificate
C25360F	Office Systems Technology: Office Specialist
C2536AA	Office Systems Technology: Legal
C25450A	Simulation and Game Development: Modeling and Animation
C25450B	Simulation and Game Development: Production
C30100A	Advertising and Graphic Design: Graphics and Design
C30100B	Advertising and Graphic Design: Web and Graphic Design
C30100C	Advertising and Graphic Design: Digital Media
C35100B	Air Conditioning, Heating, and Refrigeration
C35190B	Construction Management Technology
C35220B	Electrical/Electronics Technology: Residential Wiring Methods
C35220C	Electrical/Electronics Technology: Commercial Wiring Methods
C35300A	Plumbing Applications and Diagrams
C35300B	Plumbing: Modern Plumbing Codes and Blueprint Reading
C40100A	Architectural Technology: Architectural CAD
C40140A	Civil Engineering Technology: Civil Design
C40160B	Computer Engineering Technology: C Programming – Open Source Development
C40200A	Electronics Engineering Technology: Basic Electronics
C40200B	Electronics Engineering Technology: PLC Programming
C40200C	Electronics Engineering Technology: Robotics
C40240A	Industrial Engineering Technology: Industrial Management
C40240B	Industrial Engineering Technology: Quality Assurance
C40240C	Industrial Engineering Technology: Advanced Quality
C40240D	al Engineering Technology: Manufacturing Process Control

C40260A	Landscape Architecture Technology: Landscape Architecture
C40320B	Mechanical Engineering Technology: Mechanical Design
C40320C	Mechanical Engineering Technology: Thermal Mechanics
C40320D	Mechanical Engineering Technology: Materials Engineering
C40320E	Mechanical Engineering Technology: Engineering Management
C40320F	Mechanical Engineering Technology: Engineering Fundamentals
C45200A	Computed Tomography Technology
C45380	Human Services Technology
C4538EA	Human Services Technology: Substance Abuse
C45600	Phlebotomy
C50300B	Machining Technology
C50340B	Mechanical Drafting Technology
C50420B	Welding Technology
C55120	Basic Law Enforcement Training
C55130A	Baking and Pastry Arts
C55200	Culinary Technology
C55200B	Culinary Technology: Baking
C55220B	Early Childhood Associate
C55220C	Early Childhood Associate: Infant/Toddler Care
C6024BB	Heavy Equipment and Transport Technology/ Construction Equipment Systems: Hydraulics, Engines, and Transmissions
C6024BC	Heavy Equipment and Transport Technology/ Construction Equipment Systems: Fuel Injection, Electrical, and Electronics
D10100	Transfer Core Diploma (Arts)
D10400	Transfer Core Diploma (Science)
D25360A	Office Systems Technology
D25450A	Simulation and Game Development
D25450B	Simulation and Game Development: Modeling and Design
D35100A	Air Conditioning, Heating, and Refrigeration Technology
D35220A	Electrical/Electronics Technology
D35300	Plumbing
D45240	Dental Assisting
D45400	Medical Assisting
D45580	Pharmacy Technology
D45740	Surgical Technology
D45750	Therapeutic Massage
D45800	Magnetic Resonance Imaging Technology
D50340A	Mechanical Drafting Technology
D50420	Welding Technology
D55220A	Early Childhood Associate
D6024BA	Heavy Equipment and Transport Technology: Construction Equipment Systems

7. What is your primary ethnicity?

Alaskan, Native American Indian

Asian or Pacific Islander

African American/Black (Not of Hispanic Origin)

Hispanic (Mexican, Puerto Rican, Cuban, Central or South American or other Spanish origin or culture regardless of race)

Caucasian

Other

8. Are you the first person in your immediate family to attend college?

Yes

No

9. What is your employment status?

Employed

Full-time

Retired

Unemployed

Part-time

Laid-off

Appendix F. Mean Scores for CDSE-SF

Table F1

Mean Scores for CDSE-SF for College Transfer and Applied Technology Students

Scale	Transfer vs Applied	Variable	Category	*Mean*	*SD*	Min	Max
CDSE-SF	Transfer	Gender	Female	98.9138	15.0506	61	125
	Transfer	Gender	Male	97.5463	14.6408	60	125
	Applied	Gender	Female	101.256	14.7615	51	125
	Applied	Gender	Male	101.130	14.0460	67	125
	Transfer	Age	17-21	97.0569	14.4988	60	125
	Transfer	Age	22-25	97.2884	14.7904	68	125
	Transfer	Age	26-30	99.4285	15.1604	62	125
	Transfer	Age	31+	100.604	15.3598	66	125
	Applied	Age	17-21	103.471	14.6202	51	125
	Applied	Age	22-25	95.9000	13.8972	62	124

Table F1 Continued

Scale	Transfer vs Applied	Variable	Breakdown	*Mean*	*SD*	Min	Max
	Applied	Age	26-30	99.4000	15.8949	59	125
	Applied	Age	31+	100.732	12.1184	67	123
	Transfer	Major	Arts	99.0926	15.2818	61	125
	Transfer	Major	Math	97.2376	14.1224	60	125
	Applied	Major	Computer	100.207	15.5072	59	125
	Applied	Major	Health	103.633	13.6258	65	125
	Applied	Major	Business	99.3971	14.5483	51	125
	Applied	Major	Applied	103.785	12.5708	75	125
	Transfer	Ethnicity	Asian	95.9230	13.5981	74	122
	Transfer	Ethnicity	Black	104.433	14.5784	77	125
	Transfer	Ethnicity	Caucasian	98.7214	15.1151	60	125

Table F1 Continued

Transfer	Ethnicity	Native American	89.50000	11.9582	72	99
Transfer	Ethnicity	Hispanic	94.7391	14.0331	70	119
Transfer	Ethnicity	Other	94.0000	13.0431	70	120
Applied	Ethnicity	Asian	95.0000	15.1939	59	121
Applied	Ethnicity	AA	103.382	13.9241	66	125
Applied	Ethnicity	Caucasian	101.602	14.4721	51	125
Applied	Ethnicity	African American	106.000	NA	106	106
Applied	Ethnicity	Hispanic	96.0434	15.2895	64	123
Applied	Ethnicity	Other	100.357	14.4627	77	125
Transfer	Employment	Full	97.6451	14.5218	62	125

Table F1 Continued

Transfer	Employment	Part	97.9203	14.9266	60	125
Transfer	Employment	Unemployed	99.8593	15.5071	68	125
Transfer	Employment	Laid-off	93.1818	12.6950	78	114
Transfer	Employment	Retired	115.800	6.45755	105	122
Applied	Employment	Full	102.087	14.6515	51	125
Applied	Employment	Part	99.7314	14.3622	62	124
Applied	Employment	Unemployed	98.7722	14.7992	59	125
Applied	Employment	Laid-Off	103.821	11.3628	77	121
Applied	Employment	Retired	112.333	14.2641	88	125
Transfer	First-Gen	Yes	97.4035	13.4640	62	125
Transfer	First-Gen	No	98.7269	15.2380	60	125

Table F1 Continued

Applied	First-Gen	Yes	101.666	14.0117	65	125
Applied	First Gen	No	101.089	14.6970	51	125

Note. Transfer=College Transfer; Applied=Applied Technology; First Gen=First Generational; AA=African American.

CDSE-SF possible minimum score= 25 and max =125.

Appendix G. Mean Scores for CBI-R

Table G1

Mean Scores for CBI-R for College Transfer and Applied Technology Students

Scale	Transfer vs Applied	Variable	Breakdown	*M*	*SD*	Min	Max
CBI-R	Transfer	Gender	Female	190.371	61.5265	70	376
	Transfer	Gender	Male	188.742	55.3385	68	289
	Applied	Gender	Female	184.017	62.3719	70	402
	Applied	Gender	Male	170.262	53.0189	68	303
	Transfer	Age	17-21	197.860	52.4142	96	329
	Transfer	Age	22-25	195.581	69.4482	68	376
	Transfer	Age	26-30	192.724	62.3554	68	300
	Transfer	Age	31+	177.638	59.2206	70	318
	Applied	Age	17-21	171.475	60.9295	68	402
	Applied	Age	22-25	195.207	57.9035	84	326

Table G1 Continued

Applied	Age	26-30	180.264	56.5189	85	303
Applied	Age	31+	194.964	56.8957	98	327
Transfer	Major	Arts	190.000	61.1894	68	376
Transfer	Major	Math	189.592	56.3364	89	318
Applied	Major	Computer	182.242	52.6370	81	310
Applied	Major	Health	168.184	56.8501	74	309
Applied	Major	Business	193.525	66.6296	70	402
Applied	Major	Applied	157.880	56.1161	68	241
Transfer	Ethnicity	Asian	213.444	60.8114	128	300
Transfer	Ethnicity	AA	177.318	50.5450	104	265
Transfer	Ethnicity	Caucasian	185.011	59.8900	68	322

Table G1 Continued

Transfer	Ethnicity	Native American	183.333	19.0087	164	202
Transfer	Ethnicity	Hispanic	215.150	69.5801	113	376
Transfer	Ethnicity	Other	229.272	24.1540	198	280
Applied	Ethnicity	Asian	201.588	76.2529	85	326
Applied	Ethnicity	AA	199.696	69.7986	70	402
Applied	Ethnicity	Caucasian	173.819	55.7401	68	322
Applied	Ethnicity	Native American	102.000	Na	102	102
Applied	Ethnicity	Hispanic	188.555	58.3399	78	256
Applied	Ethnicity	Other	179.750	55.3026	68	245
Transfer	Employment	Full	182.858	55.4068	81	322
Transfer	Employment	Part	98.0705	58.3682	68	326

Table G1 Continued

Transfer	Employment	Unemployed	89.3461	62.9643	68	329
Transfer	Employment	Laid-Off	203.444	82.4971	135	376
Transfer	Employment	Retired	142.00	47.0850	89	179
Applied	Employment	Full	182.405	66.0416	68	402
Applied	Employment	Part	172.649	53.5840	85	326
Applied	Employment	Unemployed	184.583	59.1341	88	305
Applied	Employment	Laid-Off	186.285	53.7848	103	311
Applied	Employment	Retired	158.166	48.2717	100	216
Transfer	First-Gen	Yes	191.325	67.5770	78	376
Transfer	First-Gen	No	189.555	57.8889	68	329
Applied	First-Gen	Yes	169.542	57.9316	68	327
Applied	First-Gen	No	182.861	60.2849	68	402

Note. Transfer=College Transfer; Applied=Applied Technology; First Gen=First Generational; AA=African American. CBI-R possible minimum score =0 and max = 408.