

**The Relationship of Cooperative Education Exposure
to Career Decision-Making Self-Efficacy and
Career Locus of Control**

by

David R. DeLorenzo

Dissertation submitted to the Faculty of the
Virginia Polytechnic Institute and State University
in partial fulfillment of the requirements for the degree of

Doctor of Philosophy

in

Counselor Education

Dr. Claire Vaught, Chair

Dr. Jimmie Fortune

Dr. Thomas Hohenshil

Dr. Hildy Getz

Dr. Donna Cassell

June 17, 1998

Blacksburg, Virginia

Keywords: Cooperative Education, Career Decision-Making Self-Efficacy,
Career Locus of Control

**The Relationship of Cooperative Education Exposure
to Career Decision-Making Self-Efficacy and
Career Locus of Control**

by

David R. DeLorenzo

Dr. Claire Vaught, Chair

Counselor Education

(ABSTRACT)

Cooperative education research suggests that co-op participation results in enhanced career maturity, yet little is known about the vocational behavior constructs that may produce these results. The purpose of this study was to examine the relationship between co-op work experience and career decision-making self-efficacy, an individual's confidence to successfully perform various career decision-making tasks. Another purpose of this study was to test the hypothesis that only the co-op work experience group adheres to an internal career locus of control, a belief that one can control career outcomes by exercising effort. Based on social cognitive theory (Bandura, 1986), it was hypothesized that co-op work experience would provide the greatest exposure to sources of self-efficacy information, namely performance accomplishments, vicarious learning (i.e, exposure to role models or mentors), and verbal persuasion (encouragement). Thus, college students having co-op work experience were expected to report significantly higher career decision-making self-efficacy (CDMSE) compared to college students having non-co-op work experience.

Survey data were collected from 415 engineering and computer science students, sophomores through seniors, who had acquired co-op work experience or non-co-op work experience (both related and unrelated to the student's field of study or career interests). There was a 69.75% survey return rate in this (3 x 3) ex-post facto design study. One-Way ANOVAs revealed that CDMSE was significantly higher in the co-op work experience group than in the non-co-op (unrelated) work experience group at the completion of the second work term only. Also, CDMSE in the first work term was significantly higher than the second work term in the non-co-op (unrelated) work experience group. No evidence was found to support a significant cumulative effect in CDMSE. A Two-Way ANOVA revealed no significant interaction effect; however, the main effect of type of work experience was significant ($p = .049$) for CDMSE.

No significant difference was found in the proportion of internal career locus of control between the co-op and non-co-op group. This study's findings did not support prior investigations that found a relationship between engagement in career exploration activities and an internal career locus of control. One-Way ANOVAs revealed a distinct pattern of significance among groups on work experience satisfaction, regardless of the work term completed. Though the co-op group and non-co-op (related) work experience group were comparable on work experience satisfaction, the non-co-op (unrelated) work experience group reported significantly lower work satisfaction from the single most significant work experience acquired during the college years. Survey feedback indicated that co-op students were well pleased with the opportunity to reality-test their career goals in the cooperative education program. Implications of the findings are discussed, and suggestions for future co-op research are provided.

DEDICATION

In loving memory
of my father
Monroe DeLorenzo

ACKNOWLEDGEMENTS

I would like to take this opportunity to express my heartfelt thanks to all of the members who served on my committee. I extend my gratitude to Dr. Claire Vaught, who served as my committee chair and advisor. Throughout my doctoral program, she diligently monitored my progress with care and concern. Her attention to detail was also evident in her skillful editorial review of this dissertation for which I am most grateful. I would also like to thank Dr. Jimmie Fortune for sharing his time and expertise regarding the methodological and statistical details of this study. His talent to explain methodological issues in a pragmatic and collaborative manner was deeply appreciated. Without his inspiration and encouragement, I would not have undertaken the task of collecting data electronically. I also wish to extend my thanks to Dr. Thomas Hohenshil for sharing his insight on data collection issues and to Dr. Hildy Getz for her assistance with the pilot-testing of the researcher-developed questionnaire used in this study. I am also indebted to Dr. Donna Cassell who spent considerable time at the onset of this study brainstorming ideas with me and thereafter provided feedback on the design of the questionnaire used in this study. Her endorsement of the study was undoubtedly instrumental in the securing of student affairs funding which helped to defray part of the research costs. Throughout this research study, her enthusiasm and collaborative spirit have been most appreciated.

In addition to my committee members, I gratefully acknowledge the contribution made by the following academic advisors: Sandra Birch, Dr. William Conger, Dr. William Cox, Dr. Charles Nunnally, Jan Riess, and Latanya Walker. Without their approval and assistance, the collection of data from engineering and computer science students would not have been possible. Their professional goodwill and genuine enthusiasm for this study was deeply appreciated.

TABLE OF CONTENTS

ABSTRACT	ii
DEDICATION	iv
ACKNOWLEDGEMENTS.....	v
LIST OF TABLES	viii
CHAPTER I.....	1
INTRODUCTION.....	1
Background	2
Statement of the Problem	4
Purpose of the Study	5
Research Questions.....	5
Limitations	6
Definition of Terms.....	7
Significance of the Study.....	8
CHAPTER II	9
REVIEW OF THE LITERATURE	9
Historical Background	9
Cooperative Education and Career Maturity.....	11
Cognitive Aspects of Career Maturity	14
Social Cognitive Theory of Career Development	15
Self-Efficacy Beliefs.....	16
Outcome Expectations	17
Personal Goals	17
Sources of Self-Efficacy Information	18
Career Decision-Making Self-Efficacy	20
Career Locus of Control.....	24
Summary	27
CHAPTER III	28
METHODOLOGY	28
Population	28
Participants.....	28
Instrumentation.....	31
Career Decision-Making Self-Efficacy Scale-Short Form.....	31
Validity	32
Reliability.....	33
Scoring.....	34
Career Development Locus of Control (CDLC) Scale	34
Validity	34

Reliability.....	35
Scoring.....	35
Career/Work Experience Questionnaire	35
Pilot Study.....	36
Validity	38
Reliability.....	39
Scoring.....	39
Procedures for Data Collection	39
Data Analysis.....	40
CHAPTER IV.....	44
RESULTS OF THE STUDY	44
Survey Response.....	44
Demographic Information	44
Results.....	45
Summary	75
CHAPTER V	76
DISCUSSION AND RECOMMENDATIONS.....	76
Review	76
Discussion	77
Limitations of the Present Study.....	91
Recommendations for Future Research.....	93
Summary	95
REFERENCES	96
APPENDIX	
Appendix A Career Decision-Making Self-Efficacy Scale-Short Form.....	105
Appendix B Career Development Locus of Control Scale.....	108
Appendix C Career/Work Experience Questionnaire	111
Appendix D Career/Work Experience Questionnaire (Revised).....	114
Appendix E Career/Work Experience Questionnaire (Final Revision)	118
VITA	122

LIST OF TABLES

1.	Means and Standard Deviations of Career Decision-Making Self-Efficacy (CDMSE) Scores for Each of the Nine Work Experience Groups ($n = 25$)	46
2.	Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Type of Work Experience at Completion of First Work Term	47
3.	Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Type of Work Experience at Completion of Second Work Term	49
4.	Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Type of Work Experience at Completion of Third Work Term	50
5.	Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Co-op Work Experience	51
6.	Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Non-Co-op (Related) Work Experience	53
7.	Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Non-Co-op (Unrelated) Work Experience	55
8.	Means and Standard Deviations of Career Locus of Control Scores for Co-op and Non-Co-op Work Experience Groups	57
9.	Test of Two Proportions Results of Internal Career Locus of Control Scores for Co-op and Non-Co-op Work Experience Groups	58
10.	Means and Standard Deviations of Work Experience Satisfaction Scores for Each of the Nine Work Experience Groups ($n = 25$)	59

11.	Analysis of Variance for Work Experience Satisfaction Scores and Type of Work Experience at Completion of First Work Term	61
12.	Analysis of Variance for Work Experience Satisfaction Scores and Type of Work Experience at Completion of Second Work Term	62
13.	Analysis of Variance for Work Experience Satisfaction Scores and Type of Work Experience at Completion of Third Work Term	63
14.	Analysis of Variance of Career Decision-Making Self-Efficacy (CDMSE) Scores for Type of Work Experience and Completion of Work Terms	65
15.	Analysis of Variance of Work Experience Satisfaction Scores for Type of Work Experience and Completion of Work Terms	66
16.	Single Most Significant Work Experience Cited by Students in the Co-op Work Experience Group	68
17.	Single Most Significant Work Experience Cited by Students in the Non-Co-op (Related) Work Experience Group	69
18.	Single Most Significant Work Experience Cited by Students in the Non-Co-op (Unrelated) Work Experience Group	70
19.	Reasons Cited by Students for Enrolling in the Cooperative Education Program	71

20. Reasons Cited by Students for Not Enrolling in the Cooperative Education Program	72
21. Reasons Cited by Students for Not Seeking Work Experience Related to Their Field of Study	74

CHAPTER I

INTRODUCTION

College students often feel confused and apprehensive when faced with the task of making career decisions. A lack of confidence in career planning may be due to a variety of factors. Students may lack a sense of self-awareness in regard to their own interests, abilities, and values and also may lack sufficient knowledge about the world of work. Furthermore, students may not have engaged in planned vocational exploration activities and probably possess limited work experience.

Jordaan (1963) asserts that work experience plays a crucial role in facilitating an individual's exploratory behavior of self and the environment. He identified beneficial outcomes of exploratory behavior to include more specific knowledge of occupations and vocational preferences, clearer self-concept, and confirmation or disconfirmation of career goals. Moreover, without direct experience, students have little opportunity to compare their picture of themselves with the picture of the occupation (Ducat, 1980). According to Super (1957), career decision making is fostered when students are able to reality-test a variety of work environments.

Fortunately, students can reality-test their career aspirations through a variety of work experiences during their college years. The acquisition of work experience that is related to the student's field of study should provide the best means to test one's career aspirations and goals. To assist students in acquiring career related work experience, a number of colleges and universities now offer cooperative education programs. These programs allow the student to integrate classroom learning with alternating or parallel periods of employment in business and industry settings. A key study on career development by Weinstein (1981) revealed that participation in a cooperation education program could enhance the career maturity of students. Healy, O'Shea, and Crook (1985) also found a strong relationship between quality of employment during college and levels of career maturity. Hence, the intent of this study is to determine whether cooperative education work experience has a significant effect on career maturity compared to other types of work experience, both related and unrelated to a student's field of study or career interests.

Background

Research has demonstrated the beneficial influence of cooperative education programs on students' personal growth, career progress, and career development (Fletcher, 1989). Outcomes related to personal growth and cooperative education have historically been the most difficult to measure. Researchers have generally disagreed over how best to operationalize the various constructs of adaptability, maturity, self-reliance, and sense of self (Fletcher, 1989). Also, earlier studies that compared cooperative education (co-op) students to non-co-op students relied primarily on self-reports rather than measuring variables directly. Some studies did, however, measure variables directly and they indicated that co-op experience contributes to increased self-confidence and enhanced self-concept (Cornelius, 1978; Ducat, 1979) and increased autonomy and independence (Wilson, 1974). The findings of Marks and Wohlford (1971) suggest that co-op experience enhanced the development of social maturity and interpersonal skills, such as tolerance, understanding, and the ability to express thoughts and feelings. Even though some of these studies did not use non-co-op control groups, the developmental changes experienced by co-op students are noteworthy.

The influence of cooperative education on personal growth is also examined by Pratt (1993) in a more recent study. He asserts that co-op students are seeking essential insights to their futures. His findings suggest that students seek the co-op experience to make academic work more meaningful, to learn how to work with others, and to generally make sense out of college. This search for meaning and perceived personal development is also investigated by Maciorowski (1996). As expected, his findings revealed higher scores on scales of competence and purpose for co-op students in comparison to non-co-op students. These results are less convincing, however, as much of the difference in scores was due to covariates, namely academic achievement scores.

The positive influence of cooperative education on career progress has also been investigated. Most of these studies were cross-sectional in design and compared co-ops to non-co-ops at a single point in time ranging from one to five years after graduation. Results indicate that co-op graduates are more likely to have first jobs that are related to their major (Brown, 1976; Frankel, Cohen, & Deane, 1977). In addition, significant differences in career advancement have been found for co-op participants. Jarrell (1974) found that the rate of

advancement, number of awards received and involvement in continuing education was greater, while job turnover was lower for co-op than non-co-op students. Gillin, Davie, and Beissel (1984) found that both initially and one to five years later, co-ops held jobs of greater responsibility, had higher salaries, and expressed more satisfaction with their jobs and their careers than did their non-co-op counterparts. Co-op students also took less time to find their first job, were less likely to feel underemployed, had more realistic expectations and were more satisfied with their career potential than non-co-ops (Brown, 1985; Cash, 1987).

This noteworthy record of positive economic findings was also confirmed in a recent study by Dubick, McNerny, and Potts (1996). Their study of computer science co-op graduates revealed significant findings regarding higher present and starting salaries, reduced time spent on finding their first job, and a fewer number of job changes in comparison to non-co-op graduates. In an alumni study spanning ten years, Gardner and Motschenbacher (1993) also found that co-op graduates maintained their salary advantage over non-co-op graduates. They also examined the salaries of co-op graduates who had completed from one to five work terms of co-op work experience. Their findings revealed no significant salary difference between those students with one and two co-op experiences versus those students with no co-op experience. However, they did find a significant salary difference for those students who had completed three to five co-op work experiences. The findings of this study strongly suggest that continued participation in a cooperative education program is likely to yield a significant cumulative economic benefit.

Along with career progress and personal growth, the career development benefits of cooperative education have been reported. Previous studies have suggested the value of co-op work experience in terms of its relevance (Tyler, 1971), career exploration value (Knowles & Associates, 1971), career readiness (Brown, 1976), and effect on career maturity (Martello & Shelton, 1980). While these studies have provided greater insight into career development outcomes of co-op participation, there is still a need for further investigation. Specifically, if there is a cumulative economic benefit of co-op participation (Gardner & Motschenbacher, 1993), could there not also be a cumulative career development benefit of co-op participation? In other words, as co-op students complete from one to three work terms, is there a significant cumulative effect on their level of career maturity?

A few researchers have commented on the lack of investigations that focus on co-op students as they progress through the program. To date, most co-op studies have investigated the career development outcomes of seniors or alumni. The consensus among researchers is articulated by Weaver-Paquette (1997) who argues that the real contributions of cooperative education experiences to the career development of college students are mixed and likely based upon multiple and confounding career development factors. Moreover, research that has identified relevant career variables on the basis of well grounded theoretical literature and tested the relationship of these variables with co-op experience remains scarce (Wilson, 1988).

Weaver-Paquette (1997) suggests that future studies should explore the relative contribution of each co-op work term on a student's career growth and other outcome variables to determine the ideal number of co-op work terms. Another important issue is raised by Jagacinski, LeBold, Linden, and Shell (1986) when they suggest that earlier studies were deficient because they did not contain information about the work experience of non-co-ops while in college. They further argue that it is important to consider the amount and kinds of work experience non-co-ops have, when trying to measure the effects of participation in cooperative education. A similar view on future study is shared by Feldman & Weitz (1990) who state that more research is needed on different types of internship experiences (e.g., co-op students vs. summer interns).

Statement of the Problem

It is generally accepted by researchers that participation in a cooperative education program is likely to provide beneficial career development outcomes. While a number of outcome studies have utilized university seniors and alumni, few studies have investigated the effects of co-op participation on undergraduates as they progress through the program. Most research suggests that co-op participation results in enhanced career maturity, yet little is known about the vocational behavior constructs that may produce these results. To date, it is unknown if sustained co-op participation, over several work terms, is associated with higher levels of confidence to engage in career decision-making tasks. This confidence or self-efficacy in making career decisions is an important facet of career maturity and one that is worthy of scientific

inquiry. Moreover, no research has compared cooperative education work experience with other types of work experiences for the purpose of assessing career decision-making self-efficacy.

Purpose of the Study

The purpose of this study is to gain greater insight into work experiences that may influence the career maturity of university undergraduates. The researcher will describe the career development outcomes of cooperative education work experience and assess whether students in the Cooperative Education Program at Virginia Polytechnic Institute & State University report greater gains in career maturity than their non-co-op counterparts. Career maturity in this study will refer to students' degree of confidence in their career decision-making skills as measured by the Career Decision-Making Self-Efficacy Scale (Taylor & Betz, 1983). The researcher will also assess student attitudes toward career planning as measured by the Career Development Locus of Control Scale (Trice, Haire, & Elliott, 1989).

Research Questions

This study is designed to answer the following research questions:

1. Is there a significant difference in Career Decision-Making Self-Efficacy (CDMSE) among the Cooperative Education Work Experience Group and the Non-Cooperative Education Work Experience Groups [related and unrelated to a student's field of study or career interests] for each respective work term completed?
2. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Cooperative Education Work Experience Group?
3. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience related to their field of study or career interests]?

4. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience not related to their field of study or career interests]?

5. Does the Cooperative Education Work Experience Group at each completed work term possess an internal career locus of control and do the Non-Cooperative Education Work Experience Groups at each completed work term possess an external career locus of control?

6. Is there a significant difference in work satisfaction among the Cooperative Education Work Experience Group and the Non-Cooperative Education Work Experience Groups at each completed work term, as reported on the researcher-developed questionnaire?

Limitations

1. As there is no random assignment of students to these groups, it is understood that the internal validity of the study may have been compromised.

2. As the participants in this study are university students, caution should be exercised when attempting to generalize these results beyond a non-university setting.

3. Due to the predominant representation of engineering students enrolled in the Cooperative Education Program at Virginia Polytechnic Institute & State University, this study compared work experience groups consisting of engineering and computer science majors only. While the results of this study may apply to students of other academic majors, this remains open for speculation.

4. Student responses to the self-efficacy measure used in this study represent perceptions of self-confidence in one's career decision-making skills. Due to the subjective nature of a self-

report, a student may underestimate or overestimate one's degree of confidence. As such, an estimation of confidence in one's skills may not be confirmed in an objective measure of actual skills.

5. Due to the fact that only Virginia Polytechnic Institute & State University students participated in this study, its generalizability may be limited.

Definition of Terms

The following terms are incorporated in this study and are defined as follows:

Career Decision-Making Self-Efficacy: Refers to an individual's confidence in one's ability to successfully engage in career decision-making tasks (Taylor & Betz, 1983).

Career Development: Refers to the process of making a vocational choice (Osipow, 1973).

Career Locus of Control: Refers to attitudes toward career planning. An individual possessing an internal career locus of control views career outcomes as dependent on one's own actions, whereas an individual possessing an external career locus of control views career outcomes as largely under the control of the difficulty of the task, powerful others, or chance factors (Trice et al., 1989).

Career Maturity: "Generally defined as the extent to which the individual has mastered the vocational development tasks, including both knowledge and attitudinal components, appropriate to his or her stage of career development" (Betz, 1988, p. 80).

Cooperative Education: An educational program that provides planned work experiences for students which relate to their academic majors and allows them to explore and test different career possibilities (Wilson, 1974).

Locus of Control: Refers to causal beliefs that outcomes are determined either by one's actions or by external forces beyond one's control (Rotter, 1966).

Self-Efficacy: Refers to an individual's belief in one's ability to successfully perform a given task. An individual needs firm confidence in one's efficacy to mount and sustain the effort required to succeed (Bandura, 1997).

Self-Esteem: Refers to an individual's belief or judgment of one's self-worth, whether one likes or dislikes oneself (Bandura, 1997).

Significance of the Study

The results of this study will:

1. provide unique empirical evidence on the vocational behavior of college students as they acquire different types of work experiences,
2. serve to integrate the recognized value of Lent and Brown's (1996) social cognitive career theory with the current knowledge base within cooperative education research,
3. provide new information on cooperative education research by investigating different vocational constructs and utilizing an innovative research design,
4. provide useful information for cooperative education coordinators, career counselors, academic advisors, and student affairs administrators on the likely impact of various types of work experiences, including co-op, on the vocational behavior and career maturity of students,
5. provide evidence which may encourage cooperative education administrators to expand and promote their programs to a greater number of students from a wider spectrum of academic majors, and
6. provide information on student attitudes toward career planning to determine whether a career intervention may be needed.

CHAPTER II

REVIEW OF THE LITERATURE

This chapter is a review of the literature and is divided into three major sections. The first section pertains to the historical background of cooperative education from a career development perspective, the research on cooperative education and career maturity, and the cognitive aspects of career maturity. The second section focuses on the social cognitive theory of career development and addresses specific aspects such as self-efficacy beliefs, outcome expectations, personal goals, and sources of self-efficacy information. The third section presents research on the career behavior of college students in regards to career decision-making self-efficacy and career locus of control.

Historical Background

In the early 1960's, the credibility of cooperative education as an educational strategy was confirmed by the findings of Wilson and Lyons (1961). Their seminal work, Work-Study College Programs, successfully convinced educational administrators and employers to adopt this new strategy of cooperative education. In their survey of male engineering students, Wilson and Lyons (1961) found that the coordination of work and study increased student motivation, enhanced students' sense of responsibility and maturity, and improved students' human relations skills. In the late 1960's, empirical studies found that co-op students gained certain advantages over non-co-ops on variables such as work competencies and nature of first job (Rhodes, 1968), work attributes such as organizational skills and self-discipline (Baker, 1968) and most significantly, academic achievement and attrition (Lindenmeyer, 1967; Smith, 1965).

In the 1970's, co-op programs proliferated with the influx of Title VIII federal funding (Barbeau, 1985). Consequently, researchers focused their attention largely on program evaluation and student outcomes. Throughout the 1970's and 1980's, empirical studies sought to measure the strength of hypothesized outcomes by comparing co-ops to non-co-ops on several specific variables. A primary focus of inquiry in a number of these empirical studies has been in the area of career development outcomes. According to Wilson (1988, p. 83):

Values which accrue to students and graduates from their participation in cooperative education have been well documented through research: it helps students to set and clarify realistic career goals; comparatively, more co-op students persist to graduation and they tend to achieve better academically, which has been explained, partially, in terms of increased student motivation because of seeing connections between their studies and what is required in the workplace; co-op helps students develop increased self-confidence and greater 'savvy' about the world of work; comparatively, graduates have more realistic career expectations, have better information about careers, better job seeking skills, and tend to command higher starting salaries.

In addition to career development outcomes, Fletcher (1991) compared the research findings in field education with those in cooperative education and suggests that co-op experience may have a greater influence on a participant's sense of competence and self-efficacy than does field experience. Field experience tends to emphasize the "empowerment of others" as mentioned by Williams (1991) and may encompass many different kinds of experiential settings including service learning, advising, tutoring, or volunteering. The results of other studies comparing co-ops to non-co-ops have found that co-ops report more variety in their job search activities and feel more informed of career opportunities (Brown, 1976), and have a more realistic view of themselves and their occupational opportunities (Brown, 1984; Mann & Schlueter, 1985) than do their non-co-op counterparts.

To date, these outcome studies strongly suggest that cooperative education affects career development through the construct of career maturity (Fletcher, 1990). Though there is no universal definition of career maturity as pointed out by Westbrook (1983), some researchers have made useful attempts to define it. For example, Betz (1988) stated that "career maturity can be generally defined as the extent to which the individual has mastered the vocational development tasks, including both knowledge and attitudinal components, appropriate to his or her stage of career development" (p. 80). Alternatively, Savickas (1984, 1993) proposed a useful classification scheme – stimulus (S), organism (O), response (R), and adjustment (A) – for thinking about career maturity. In the S-O-R-A scheme, S refers to vocational development tasks, R refers to coping behaviors (e.g., decision making, planning) that the individual uses to deal with vocational development tasks, O refers to those organism or person characteristics

(e.g., attitudes) that facilitate the person's coping, and A refers to the outcomes of one's coping behaviors.

Though the relationship between cooperative education and career maturity has been investigated in the following studies, the findings need to be interpreted cautiously for several reasons. First, as previously mentioned, career maturity has been defined and measured differently by different researchers. Secondly, researchers have utilized different student populations (e.g., community college students, university seniors or alumni) in their studies. Thirdly, as stated by Wilson (1988), "cooperative education research has fallen short of the ideal of scientific inquiry to illuminate relationships, predict effects, explain findings in light of existing theory, or contribute to theory development" (p. 83). Finally, even though cooperative education research spans more than twenty-five years, only a small fraction of studies have focused on the construct of career maturity.

Cooperative Education and Career Maturity

In working with nontraditional community college students, Tinder (1992) found that cooperative education was more effective than the traditional academic curriculum in increasing the level of student career maturity and self-esteem. In analyzing career maturity pretest scores, the cooperative education students had higher scores than noncooperative education students. These same findings were reported earlier by Gadzera (1988) who also used the same measures of career maturity and self-esteem. While seemingly convincing, it is uncertain whether these results would occur with a younger population of traditional age students.

By investigating the effects of a mandatory cooperative education program on self-concept and exploratory behavior, Ducat (1980) found that her community college co-op students reported a significantly higher rating on perceptions of self in contrast to non-co-op students. In terms of career maturity, these findings suggest that the value of co-op experience may lie in its potential to stimulate career exploration by enlarging students' self-perceptions. Jordaan (1963) would argue that students seek to deliberately test the prospective occupation and that co-op is a better laboratory than the classroom for vocational exploratory behavior.

In addition to exploratory behavior, cooperative education researchers have recently examined the relationship between perceived quality of work experience and career maturity.

Stern, Stone, Hopkins, McMillion, and Cagampang (1992) found that community college co-op students perceive their jobs differently than non-co-op students. Co-op students significantly reported that their jobs are related to their future careers, are interesting now, provide opportunities to learn, and positively reinforce their efforts in college. Although these results seem to support the merits of co-op participation, it may be that students choose to participate because they are already more serious about their jobs and are seeking to connect their work with their studies.

Though Stern et al. (1992) did not focus on possible entry level characteristics between co-op and non-co-op students, this was investigated in a university study by Van Gyn, Branton, Cutt, Loken, and Ricks (1996). This study found that art, science, and engineering co-op students scored significantly higher on an applied knowledge entrance exam than their non-co-op counterparts. These results, however, may be due to sample differences in that co-op students had much more work experience and also were slightly older than non-co-op students. Though this study did not examine career maturity, it does suggest that the co-op program attracts an academically superior student. More research is needed, however, to determine if academic gains are a product of the co-op program or a product of the student's academic capabilities.

Pittenger (1993) investigated the influence of cooperative education on the career maturity of university engineering students as they progressed through the program. This study was based on the premise that as the students' co-op experiences and grade levels increase, so will their chances of learning about their occupations and self-in-occupation and gaining occupation related abilities. The results of this study indicated that students reported significantly more learning from the third co-op quarter than from the first co-op quarter. No significant learning occurred from the third to the fifth co-op work quarter. This research suggests that perhaps other variables such as the quality of the work experience may influence student career growth. Though this study used a sample of only co-op students, it does provide a useful rationale for my own study.

In an earlier study of university liberal arts students, Wilson (1974) interviewed co-op and non-co-op participants to ascertain their perceptions of personal change due to career attitudes and expectations. The findings indicated that co-op students put a high priority on career establishment, whereas non-co-op students put a high priority on personal well-being. In

addition, the co-op students demonstrated more conservative, cautious, and prudent career attitudes.

In another study of university liberal arts students and career attitudes, Martello and Shelton (1980) confirmed earlier studies by reporting that co-op students scored significantly higher than non-co-ops on career maturity. This finding suggests that co-op students are progressing at a higher rate than their peers on the continuum of career development and have more well-developed attitudes affecting career choice. The pretest and posttest results also indicated that co-op students scored higher in career knowledge and possessed superior career planning and problem solving abilities.

Weinstein (1981) examined the career maturity of university seniors from engineering and business disciplines to determine if career decision making skills varied between co-op and non-co-op students. As expected, significant differences were found between the two groups. Non-co-op students reported greater uncertainty about their future plans and, particularly, their career choices. Co-op students indicated a greater degree of confidence concerning their vocational goals, career direction, and future plans. No significant differences were found between business and engineering co-op students. This study also found that certain co-op program strategies affect the career decision-making process. Strategies that facilitated this process were having the same employer for more than one work term, job duties which relate to the student's field of study, structured or planned job duties, and employer/coordinator concern that the job duties contribute to the student's education.

Weston (1986) also investigated confidence and commitment to a career choice two years after graduation among co-op and non-co-op graduates. He developed an 18-item Career Identity Scale for his study. The results indicated that co-op graduates scored no differently than the non-co-op graduates on his career certainty subscale. In addition, the co-op graduates scored only marginally higher than non-co-op graduates on his commitment subscale. These findings seem to suggest that career identity achievement is of little concern to graduates. This population is perhaps more concerned with career advancement than career identity issues.

In addition to cooperative education studies, there is evidence to suggest that formal internship work experiences may also influence the career maturity of college students. For example, Pedro (1984) found significant gains in self-efficacy expectations among university

students in a management trainee program. Posttests indicated that students became more confident in their ability to effect what they desired in their careers. More recently, Brooks, Cornelius, Greenfield, and Joseph (1995) investigated the career development influence of internship experiences on college seniors. Their results, however, did not support Pedro's findings that internships increase career self-efficacy. With the use of only three self-efficacy items, one may speculate that Brooks et al. (1995) missed the possibility of capturing a significant effect. In terms of career exploration, however, Brooks et al.'s study does suggest that direct, structured, and supervised experiences such as internships are related to beneficial changes in self-concept crystallization. Similarly, Taylor (1988) found that university first-term interns displayed a significantly greater crystallization of their vocational self-concept, as well as stronger intentions to remain on the job than did their cohorts who had not completed an internship. Her sample of interns represented the academic departments of business, engineering, industrial relations, interior design, and journalism.

Cognitive Aspects of Career Maturity

While some cooperative education researchers have been interested in exploring career maturity, few have directed their attention solely to the cognitive aspects of career maturity. In general terms, career maturity encompasses the readiness of an individual to make informed, age-appropriate career decisions and cope with career development tasks (Savickas, 1984). More specifically, career maturity includes both cognitive and affective components (Crites, 1961). According to Crites's (1961) model, the affective component is represented by attitudes toward the career decision-making process. Attitudes are expectations that influence the interpretation of career events and affect the accomplishment of career development tasks (Healy et al., 1985). The cognitive component of this model is represented by career choice competencies such as specific problem-solving skills and abilities. Crites (1961) defined these career decision-making competencies to include: accurate self-appraisal, goal selection, gathering occupational information, planning for the future, and problem solving.

An important distinction of Crites's (1961) model of career maturity from other career maturity models is that it examines both the content and the process of vocational decision making (Savickas, 1984). The *content* refers to which occupation a student should enter and thus

focuses on the student's interests and abilities. The *process* refers to how a student arrives at an occupational choice and thus focuses on the student's decision-making concerns and coping responses. The cognitive aspects or competencies that influence the process of career decision-making are of central concern to the researcher of this study, as well as how confident the student is in his or her ability to exercise these competencies and thus make sound career decisions. The cognitive aspects of career maturity are influenced both by the individual's beliefs about self and beliefs about the world of work. The interaction of these self-efficacy beliefs with the social learning aspects of the work environment is introduced in Lent, Brown, and Hackett's (1994) social cognitive theory of career development.

Social Cognitive Theory of Career Development

An understanding of this theory is useful in that it provides insight into the learning and cognitive aspects of career behavior that are suspected to influence the career maturity and career decision-making capabilities of the student. Social cognitive theory emphasizes the role of self-referent thinking in guiding human motivation and behavior (Lent et al., 1994). Albert Bandura (1986) developed this psychosocial theory to recognize the mutual, interacting influences between persons and their behavior and environments. The essence of social cognitive theory is that it supports a model of triadic reciprocity in which behavior, cognitive and affective factors, and environmental events all function as interacting determinants of one another (Hackett & Lent, 1992). This differs from the earlier social learning view which assigned primary causal status to either person or environmental variables in determining behavior.

An appreciation of a social cognitive view of career development becomes more apparent when contrasted to other career models. For example, earlier career development models tended to view person and self variables in trait-oriented terms (Lent & Hackett, 1994). By emphasizing relatively global, static self attributes, such models may not adequately capture the dynamic interactions that occur between developing individuals and their changing contexts (Vondracek, Lerner, & Schulenberg, 1986). By contrast, social cognitive theory emphasizes the situation and domain-specific nature of behavior, relatively dynamic aspects of the self system, and the means by which individuals exercise personal agency (Lent et al., 1994). In a career development context, personal agency refers to the student's exercise of control over his or her own career

behavior. According to social cognitive theory, the three cognitive mechanisms that regulate an individual's career behavior are: self-efficacy beliefs, outcome expectations, and personal goals (Lent & Brown, 1996).

Self-Efficacy Beliefs

A key aspect of social cognitive theory that is widely mentioned in the career literature involves self-efficacy appraisals. Self-efficacy beliefs refer to “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p. 391). These beliefs are seen as constituting the most central and pervasive mechanism of personal agency (Bandura, 1989). In particular, self-efficacy beliefs are postulated as helping to determine one’s choice of activities and environments, as well as one’s effort expenditure, persistence, thought patterns, and emotional reactions when confronted by obstacles (Lent et al., 1994). In career development investigations, self-efficacy has been found to be predictive of academic and career-related choice and performance indices (Hackett & Lent, 1992; Multon, Brown, & Lent, 1991).

In the social cognitive view, self-efficacy is not a singular, static, passive, or global trait, but rather involves dynamic self-beliefs that are linked to particular performance domains and activities such as different academic and work tasks (Lent & Brown, 1996). In other words, due to the domain specificity of self-efficacy, a scenario can exist where a student has high self-efficacy for mathematics, yet a low self-efficacy for career decision-making, or vice versa. It is also important to realize that self-efficacy beliefs are not synonymous with objectively assessed skills. In fact, self-efficacy often yields only a moderate relationship with objective ability indices (Betz & Hackett, 1981; Lent, Brown, & Larkin, 1986). This is not surprising as a student may possibly overestimate or underestimate their level of confidence to successfully complete a given task. Social cognitive theory assumes that human ability is a dynamic (rather than fixed) attribute, and that competent performance at complex or challenging tasks generally requires both component skills and a strong sense of efficacy to deploy one’s resources effectively (Bandura, 1991).

Outcome Expectations

Personal beliefs about probable response outcomes, termed outcome expectations, constitute another important cognitive mechanism in social cognitive theory. An individual's behavior is affected both by their sense of personal capabilities [self-efficacy] and beliefs about the likely effects of various actions [outcome expectations] (Bandura, 1986). Whereas self-efficacy beliefs are concerned with capabilities (i.e., "can I do this?"), outcome expectations are concerned with consequences (i.e., "if I do this, what will happen?"). Of these two cognitive mechanisms, self-efficacy beliefs are viewed by Bandura as being generally the more influential determinant of behavior. Moreover, Lent et al. (1994) assert that a strong sense of efficacy may sustain efforts even when outcome attainment is uncertain.

The linkage between self-efficacy beliefs and outcome expectations is evident as students engage in the career decision-making process. For example, there are many instances in which students hold positive outcome expectations about a given course of action (e.g., the common belief that pursuing a career as a physician will yield a high income) but avoid taking action if they doubt that they possess the requisite capabilities. Alternatively, a person with high self-efficacy for mathematics may choose to avoid science-intensive career fields if she or he anticipates negative outcomes (e.g., non-support from significant others, work/family conflict) to attend such options (Lent et al., 1994). Outcome expectations regarding potential career paths are derived from a variety of direct and vicarious learning experiences, such as perceptions of the outcomes one has personally received in relevant past endeavors and the second-hand information one acquires about different fields (Lent & Brown, 1996).

Personal Goals

In addition to self-efficacy beliefs and outcome expectations, social cognitive theory states that personal goals play an important role in the self-regulation of career behavior. By setting goals, people help to organize and guide their behavior, to sustain it over long periods of time even in the absence of external reinforcement, and to increase the likelihood that desired outcomes will be attained (Lent et al., 1994). Moreover, Bandura (1986) argues that goals are significant because they afford an important means through which people exercise agency [control]. In regards to career choice and decision-making theories, personal goals often play a

central role. In fact, concepts such as career plans, decisions, aspirations, and expressed choices are all essentially goal mechanisms (Lent et al., 1994). According to social cognitive theory, the goals students set for themselves are influenced and consistent with their self-efficacy beliefs and outcome expectations. For example, if a student holds positive beliefs about his or her problem solving (mathematical) capabilities and about the envisioned outcomes of mathematical pursuits, then the student is likely to develop personal goals (the intention to pursue training or a career in engineering) that are consistent with such beliefs.

Sources of Self-Efficacy Information

According to social cognitive theory, self-efficacy beliefs are largely determined and modified by four informational sources: performance accomplishments, vicarious learning, verbal persuasion, and physiological states and reactions (Lent et al., 1994). In fact, these four sources of efficacy information continually and reciprocally interact to affect performance judgments which, in turn, influence human action (Lent & Hackett, 1987). Bandura (1977) asserts that performance accomplishments, in particular, clear success or failure, are the most powerful sources of self-efficacy information. Success at a task, behavior, or skill strengthens self-efficacy expectancies for that task, behavior, or skill, whereas perceptions of failure diminish self-efficacy expectancy (Maddux, 1995). In an effort to strengthen the self-efficacy expectancies for employment interviewing, Solberg, Good, and Nord (1994) advise college students to practice their interviewing behavior. They assert that school-sponsored seminars that offer opportunities to practice networking, personal exploration, and job search activities can provide students with direct feedback about their ability to produce interviewing behaviors in the future. Likewise, it can be argued that cooperative education work experience also provides students with feedback and the opportunity to acquire successful performance accomplishments.

A second major source of self-efficacy information is vicarious learning. Vicarious learning experiences can include observational learning, modeling, or imitation of the actual task. Vicarious experiences influence self-efficacy expectancy when people observe the behavior of others, see what they are able to do, note the consequences of their behavior, and then use this information to form expectancies about their own behavior and its consequences (Maddux, 1995). The effects of vicarious experiences depend on such factors as the observer's perception of the similarity between himself and the model, the number and variety of models, the perceived

power of the models, and the similarity between the problems faced by the observer and the model (Bandura, 1986; Schunk, 1986). It would seem that cooperative education work experience is a powerful vicarious learning experience since it provides students with the opportunity to imitate actual work tasks and also observe the working behavior of models (i.e., supervisors, co-workers). As Bandura (1997) argues that models should display coping and mastery responses, perhaps co-op students might benefit the most by being assigned to a younger co-worker who functions as a peer model. With the absence of empirical evidence on co-op work experience and modeling, this remains open to speculation.

A third source of self-efficacy information is verbal persuasion. Verbal persuasion can be useful in getting people to attempt or sustain certain behaviors. Verbal or social persuasion is generally considered a less potent source of enduring change in self-efficacy expectancy than performance experiences and vicarious experiences (Maddux, 1995). In fact, the potency of verbal persuasion is influenced by such factors as the expertness, trustworthiness, and attractiveness of the source (Petty & Cacioppo, 1981). As pointed out by Maddux, Stanley, and Manning (1987), attractiveness refers to two parties that share similar values. In the context of cooperative education, the student may encounter verbal persuasion, encouragement or discouragement, from several different sources. This verbal persuasion could occur from a supervisor or co-worker(s) at the co-op work site, the co-op placement counselor, an academic instructor, or family members. It may be that students who embark on their first co-op work experience are most susceptible to verbal persuasion, since they lack direct experience upon which to estimate personal competence (Lent et al., 1994).

The final source of self-efficacy information is physiological states and reactions. Self-efficacy beliefs are altered when an individual associates aversive emotional states with poor behavioral performance, perceived incompetence, and perceived failure (Maddux et al., 1987). If for example a student becomes aware of unpleasant physiological arousal (i.e., anxiety), the student is more likely to doubt his or her behavioral competency than if the physiological state were pleasant or neutral. In regards to anxiety, high levels clearly undermine self-efficacy and consequent performance, although moderate levels may be facilitating (Bandura, 1986). In the context of cooperative education, it would not be unusual for students to have some temporary anxiety as they begin each new work term. It may be that the planned and structured nature of

co-op work experience serves to quickly dispel any initial anxiety and thereby enhance perceived self-efficacy.

Career Decision-Making Self-Efficacy

As mentioned by Lent & Hackett (1987), the four sources of self-efficacy information continually interact to affect performance judgments which ultimately influence career behavior. An important aspect of career behavior that has received considerable attention in the career literature is career decision-making (Hackett, Lent, & Greenhaus, 1991). Based on the principles of social cognitive theory, Taylor & Betz (1983) developed the Career Decision-Making Self-Efficacy (CDMSE) scale to assess one's confidence in making effective career decisions. The scale assesses the five cognitive components of effective career decision-making that were identified earlier in Crites's (1961) model of career maturity. These five components or competencies include: accurate self-appraisal, goal selection, gathering occupational information, planning for the future, and problem solving. These competencies are important as career decision-making is not simply a matter of picking a particular occupational pursuit, but rather of developing facility in solving problems when things are not easily predictable (Bandura, 1997). Thus, effective career decision-making involves not only the development of skills, but also confidence in one's decision-making abilities along these specific competencies (Taylor & Betz, 1983). Since its inception, vocational researchers have used the CDMSE scale to investigate various aspects of the career development process. While investigations have focused almost exclusively on college students, there have been no investigations involving cooperative education students.

Taylor & Betz (1983) were the first researchers to design a study that investigated the utility of Bandura's self-efficacy theory to the understanding and treatment of career indecision. They hypothesized that low decision-making self-efficacy could impede exploratory behavior and the development of decision-making skills, and thus may be predictive of career indecision. This study utilized a population of mostly freshmen students from both a private liberal arts college and a large state university. The findings supported the usefulness of the CDMSE scale in predicting career indecision, especially the aspects of indecision that relate to a lack of confidence in career decision-making abilities. No gender differences in CDMSE scores were

found. There was also a negligible relationship between ability level and career decision-making self-efficacy expectations. Though no causal relationships were inferred from this study, career indecision may persist due to the avoidance of engaging in career decision-making tasks as theorized by Bandura (1977).

In an effort to extend earlier research, Taylor & Popma (1990) investigated the interrelationships between CDMSE scale scores and career indecision, occupational self-efficacy, career salience, and locus of control. As in the earlier study, the majority of students were college freshmen. Scores on the CDMSE scale were found to be unrelated to career salience (a value of career importance); no gender differences on CDMSE were found, and CDMSE scale scores were only moderately related to occupational self-efficacy. The results did reveal, however, that only CDMSE was significantly predictive of career indecision. These findings are somewhat inconclusive as the researchers acknowledge that the predictors utilized in this study are intercorrelated. The unexpected finding in regards to CDMSE and career salience may be due to the domain specificity of the CDMSE construct. This is open to speculation until further research is done.

In a more recent study on career indecision, Hird (1995) investigated the relationships between career decision-making self-efficacy, fear of commitment, and sources of self-efficacy information. He found that performance accomplishments, practicing decision-making strategies, predicted career decision-making self-efficacy (CDMSE), which in turn predicted career indecision. While CDMSE and fear of commitment were both predictors of career indecision, CDMSE was found to be the strongest predictor of career indecision. The findings of this study provide further evidence for the predictive relationship of CDMSE and career indecision.

An intervention study targeting career indecision was reported by Fukuyama, Probert, Neimeyer, Nevill, and Metzler (1988). They examined the impact of a computerized, self-directed career-guidance program on CDMSE. College students receiving the computer-administered intervention reported enhanced CDMSE and reduced career indecisiveness. Although causal connections between these two variables were not examined directly, this investigation at least confirms that strengthening CDMSE is associated with enhanced career decidedness.

In addition to career indecision, other aspects of career decision making have been investigated. Blustein (1989) examined whether the goal-directedness and career self-efficacy beliefs of college students could predict environmental and self-exploration activity. His findings revealed that higher scores on the CDMSE scale were significantly related to greater exploratory behavior, and were a much stronger predictor of career exploration than age, gender, or goal-directedness. These findings suggest that college students who engage in exploratory activities (e.g., cooperative education) may score higher on the CDMSE scale than other college students. Perhaps the findings of this investigation will be able to provide supporting evidence for the Blustein study.

Solberg, Good, Fischer, Brown, and Nord (1995) used the CDMSE scale and other measures to assess the degree of confidence that college students had to engage in the exploratory activities of a career search. They also examined whether career search self-efficacy could be predicted from the human agency indices of assertiveness, instrumentality, and interpersonal facility. Though no support was found for a predicting relationship, this study does suggest that career interventions that enhance career search self-efficacy may be more effective than those that seek to change personality traits. This study did confirm earlier CDMSE studies in that no gender differences were found.

In a study of career search self-efficacy and explanatory style, Decker's (1995) findings were similar to Solberg et al. (1995) in that only higher levels of self-efficacy were significantly related to the number of job search activities. There was no association found between explanatory style, causal attributions for success or failure, and number of job search activities. As in other college studies, no gender differences were found. Though the Job Search Self-Efficacy Scale was used in this study instead of the CDMSE scale, these findings do support the relationship between career search self-efficacy and exploratory activities.

Investigation of career decision-making self-efficacy has not been limited to exploratory behavior and career indecision. There have been a number of other studies that have examined the relationship between CDMSE and various career development variables. For example, Luzzo's (1993a) study investigated the value of CDMSE in predicting the career decision-making attitudes and skills of college students. Results revealed that CDMSE was moderately and positively related to career decision-making attitudes and age of participants but was not

related to career decision-making skills. These findings suggest that perhaps self-efficacy for attitudes may be different from self-efficacy for specific skills. Another possible explanation is that students may have poorly developed decision-making skills that may cause gross overestimates of confidence in career decision-making skills.

Niles and Sowa (1992) used the CDMSE scale to examine the degree to which career beliefs, personality hardiness, general self-efficacy, and occupational choice status are related to career self-efficacy. The results of the regression analysis revealed that career beliefs, personality hardiness, and general self-efficacy predicted the CDMSE scores of college students. The specific variables of motivation, commitment, and general self-efficacy predicted over 50% of the variance in scores on the CDMSE scale. These findings suggest that interventions that foster a sense of purpose and commitment toward one's career development are to be encouraged.

Lent, Brown, and Larkin (1987) explored the contribution of three variables, self-efficacy, interest congruence, and consequence thinking, in explaining career-relevant behavior in students considering science and engineering fields. The findings indicated that self-efficacy was the most useful of the three in predicting grades and persistence in technical/scientific majors. Self-efficacy and congruence contributed to the prediction of the range of perceived career options, whereas congruence alone accounted for significant variance in explaining career indecision. Consequence thinking, an awareness of negative consequences, did not enhance prediction of the career decision variables.

Though many different career development variables have been examined in CDMSE studies, virtually all studies have not found gender differences. When examining CDMSE and gender role identity, some studies have reported some interesting findings. For example, Arnold and Bye (1989) reported a weak but significant relationship between gender and CDMSE scores, and a strong positive correlation between instrumentality scores on the Bem Sex Role Inventory (BSRI) and higher levels of self-efficacy for career decision-making. The findings of this study suggest that more flexible self-perceptions of gender roles can facilitate stronger self-efficacy for career decision-making. Nevill and Schlecker (1988) found that women with higher CDMSE and assertiveness scores displayed greater willingness to engage in nontraditional career activities than women who scored lower on these measures.

Career Locus of Control

In addition to career decision-making self-efficacy, research has indicated that career locus of control may also be a useful predictor of college students' career maturity. Rotter's (1966) locus of control construct refers to the extent to which a person considers himself or herself to be in control of the sources of reinforcement in his or her life. Moreover, locus of control is not an expectancy concerning a particular type of reinforcement, but a 'problem-solving' generalized expectancy, addressing the issue of whether behaviors are perceived as instrumental to goal attainment, regardless of the specific nature of the goal or reinforcer (Furnham & Steele, 1993). Individuals perceiving an internal locus of control tend to view themselves as having more control over and personal responsibility for the direction of their lives than do externals, who are likely to feel themselves powerless to control events (Taylor, 1982). Research has consistently demonstrated that an individual's locus of control is moderately correlated with assessments of career maturity (Bernardelli, DeStefano, & Dumont, 1983; Luzzo, 1993b; Taylor, 1982). Researchers have discovered that college students with an internal career locus of control are more likely to possess attitudes and exhibit skills indicative of higher levels of career maturity than students with an external career locus of control (Blustein, 1987; Gable, Thompson, & Glastein, 1976; Taylor, 1982).

Luzzo (1993b) explored the relationships between locus of control, career decision-making skills, and career decision-making attitudes among undergraduates from a large state university. Locus of control was assessed by Rotter's (1966) Internal-External (I-E) scale. As expected, significant relationships were found between locus of control and career decision-making skills, as well as between locus of control and career decision-making attitudes. Students that possessed an internal locus of control demonstrated more mature career decision-making attitudes and had greater career decision-making skills. These findings suggest that students with an internal locus of control are more likely than those with an external locus of control to take an active role in vocational planning and assume responsibility for career choices.

In an investigation of college seniors, Erickson (1995) examined students' expectations about the job market and their attitudes toward career planning in relation to their job search activity. She used several measures in this study, including the Career Locus of Control Scale (Trice et al., 1989), to investigate the onset, frequency, and amount of time spent on job search

activities. As expected, students with an internal career locus of control reported being more optimistic about their job search, starting earlier, and persisting longer than students with an external career locus of control. Students that reported greater job-seeking confidence also tended to report higher grade point averages. The findings of this study suggest that an internal career locus of control may facilitate engagement in job search activities and may also play a role in academic achievement.

Similarly, Friedrich (1988) investigated whether locus of control is related to students' aspirations and expectations for obtaining satisfying summer employment. It was hypothesized that external locus of control students would possess lower aspirations and expectations for summer employment. The results revealed a clear tendency for externality to be associated with lower expectations for job satisfaction and a greater discrepancy between what students aspire to ideally and what they believe they will attain. These findings suggest that students' perceptions of control over work-related outcomes should be addressed along with the instruction of decision-making strategies. Structured experiences that are designed to facilitate student successes and enhance perceived control over work outcomes are offered as a recommendation in this study. Though not mentioned, it would seem that the structured experiences of cooperative education could enhance students' perceived control over work outcomes.

Researchers have recognized that career locus of control and career decision-making self-efficacy (CDMSE) are both important indices of a student's career maturity. Historically, researchers examined these two constructs to determine which one is the best predictor of career maturity. In an effort to extend the earlier efforts of Taylor and Popma (1990), Luzzo (1995) investigated whether the career self-efficacy model is more useful than the career locus of control model in predicting the affective and cognitive components of career maturity. The affective component refers to career decision-making (CDM) attitudes, whereas the cognitive component refers to career decision-making (CDM) skills. The results of this study revealed that the strongest predictor of CDM attitudes was CDMSE, followed by CDM skills and career locus of control. The most powerful predictor of CDM skills among the students is their CDM attitudes. Neither of the two models was of any significant value in explaining the variance in students' CDM skills. No gender differences were found among the variables. These findings provide evidence that the career self-efficacy model is a more powerful predictor of CDM

attitudes than the career locus of control model. This study also confirms prior investigations in that students with an internal career locus of control displayed more mature attitudes toward career decision-making than students with an external career locus of control.

Luzzo and Ward (1995) investigated the relative contributions of career self-efficacy and career locus of control to the prediction of vocational congruence among nontraditional students. They hypothesized that college students who are employed in occupations that are congruent with their career aspirations are more likely to experience job satisfaction, which in turn should increase their confidence to make more effective career decisions (CDMSE). It was also hypothesized that aspiration-occupation congruence would be influenced by the student's career locus of control. The results indicated that only career locus of control is a significant predictor of career aspiration-current occupation congruence among college students. The findings on career locus of control support Friedrich's (1988) findings in that students with an internal career locus of control were employed in jobs more suited to their career aspirations. The absence of a congruence/CDMSE relationship in this study might be explained by students who wanted congruent jobs but were unable to find them, or perhaps some students devalue the importance of jobs during college and do not seek congruent opportunities. There is also the possibility that some students may have overestimated their confidence to engage in career decision-making tasks as reported earlier by Luzzo (1993a).

The influence of college employment on the career locus of control and CDMSE of students was also investigated by Luzzo, McWhirter, and Hutcheson (1997). This study served as a follow-up study to the Luzzo and Ward (1995) investigation of college students' career aspiration-current occupation congruence. Unlike the earlier study, this study used a population of traditional age college students. The findings did support the earlier study in that students who were employed in occupations congruent with their career interests exhibited significantly more of an internal career locus of control than their peers. As before, the findings also indicated the absence of any relationship between employment status and CDMSE. These findings reveal that although students working in congruent occupations may have a more internal career locus of control, they cannot be assumed to have higher self-efficacy for career decision-making. A possible limitation of this study is that the sample consisted of only freshmen students who may have limited employment experience. If a cross section of undergraduates was surveyed, perhaps

a relationship between employment status and CDMSE might have become evident. This study may suggest that the congruent nature of cooperative education employment may play an important role in enhancing students' CDMSE and thus is worthy of investigation.

In addition to the possible benefits of college employment on career locus of control and CDMSE, Luzzo, Funk, and Strang (1996) investigated the possible benefits of a career intervention. The intervention was an attributional retraining procedure designed to persuade students to attribute low levels of confidence in making career decisions and career-related failures to a lack of effort. Students were grouped according to their career locus of control and observed a videotape. The videotape presented recent college graduates who described their own career development challenges and how they succeeded by exercising persistent effort. The results indicated that the career decision-making self-efficacy (CDMSE) of students who initially exhibited an external career locus of control significantly increased after the attributional retraining procedure, whereas the students who initially exhibited an internal career locus of control demonstrated no significant increase in CDMSE after attributional retraining. These findings are encouraging in that the significant change in CDMSE remained stable over a 2-week period. Certainly, longitudinal studies are necessary to evaluate the treatment effects over time.

Summary

Students have an opportunity to participate in a variety of work experiences during their college years. These various work experiences have the potential to provide beneficial career development outcomes. Research has provided some evidence that cooperative education work experience influences the career maturity and career decision-making capabilities of college students. As most studies have focused on college seniors or alumni, little is known about the career behavior of students as they acquire work experience and progress through the co-op program. To date, no investigation has examined whether co-op work experience influences career decision-making self-efficacy, a student's confidence to engage in career decision-making tasks. It is also unknown whether co-op participants adhere to an internal career locus of control, a belief that one can control career outcomes by exercising effort. An assessment of these two cognitive variables should provide greater insight into the career development benefits of cooperative education work experience.

CHAPTER III

METHODOLOGY

This chapter details the methods used in this investigation. The chapter begins with a description of the population, participants, and instrumentation. This is followed by a description of the procedures for data collection and a discussion of the methods used in data analysis.

Population

The population for this study was undergraduate students enrolled at Virginia Polytechnic Institute & State University. Sophomores, juniors, and seniors majoring in engineering (mechanical, electrical, computer, chemical, civil, and industrial) and computer science were eligible to participate in this survey research. The population was limited to students in these two fields of study because these two fields were well-represented in the Cooperative Education Program at Virginia Polytechnic Institute & State University. The aim of this study was to assess the relationship of one, two, or three work terms of cooperative education work experience and of noncooperative education work experience on two measures of career maturity. Since freshman students are not eligible to participate in the cooperative education program, they were not included in the population of this study.

Participants

A total of 2,909 undergraduate students majoring in engineering (mechanical, electrical, computer, chemical, civil, and industrial) and computer science were invited to participate in this survey study. The academic advisors representing these disciplines maintained list serv listings of all enrolled sophomores, juniors, and seniors. These e-mail listings provided the source of eligible participants for this study.

It was expected that students would have acquired different types of work experiences during their college years. For example, some students may have acquired cooperative education work experience, some students may have acquired noncooperative education work experience, and some students may have acquired a combination of both co-op and non-co-op work

experience. In addition, some students may have acquired a combination of work experiences both related and unrelated to their field of study or career interests.

In this study, the noncooperative education work experience group consisted of two groups, one group representing students with work experience related to their field of study or career interests, and a second group representing students with work experience unrelated to their field of study or career interests. In this study, students possessing both related and unrelated work experience were categorized according to their related work experience only. Students possessing both co-op and non-co-op work experience were categorized according to their co-op work experience only. Students having no work experience were not utilized in this study.

For the purposes of this study, a work term was defined as 640 hours. This represented a full-time commitment of 160 hours per month over a four-month period of time. This commitment of time (640 hours) represented the approximate duration of one work term of cooperative education work experience. While some students may have spent more or less time in their co-op work assignment, this study adhered to 640 hours as being a reasonable average. Thus, the specific work experience criteria for each of the three work terms in this study was as follows: one work term represents 100 – 640 hours, two work terms represents 641 – 1,280 hours, and three work terms represents 1,281 – 1,920 hours. Based on this specific work experience criteria, student surveys were categorized into one of nine factorially defined groups. Consequently, there was no random assignment of students in this study.

A total of 225 undergraduate student surveys were used for the analysis in this orthogonal design study. Specifically, 75 surveys were collected from students who had acquired cooperative education work experience. In order to investigate the influence of cumulative exposure (participation) in the Cooperative Education Program, surveys were collected from 25 students who had completed one work term, 25 students who had completed two work terms, and 25 students who had completed three work terms of co-op work experience. Surveys were also collected from 75 students who had noncooperative education work experience that was ‘related’ to their field of study or career interests. Similarly, surveys were collected from 75 students who had noncooperative education work experience that was ‘unrelated’ to their field of study or career interests. Both noncooperative education work experience groups also consisted

of 25 students who had completed one, two, or three work term(s) of non-co-op work experience, respectively. An overview of the research design is represented in the following table.

Type of Work Experience: [A] Co-op [B] Non-Co-op (Related to student’s field of study or career interests)

[C] Non-Co-op (Unrelated to student’s field of study or career interests)

Completion of Work Term(s):

One	Two	Three
[A] <u>n</u> = 25	[A] <u>n</u> = 25	[A] <u>n</u> = 25
[B] <u>n</u> = 25	[B] <u>n</u> = 25	[B] <u>n</u> = 25
[C] <u>n</u> = 25	[C] <u>n</u> = 25	[C] <u>n</u> = 25

Instrumentation

The students who participated in this study completed a survey consisting of three questionnaires. These questionnaires included the Career Decision-Making Self-Efficacy Scale-Short Form (CDMSE-SF), the Career Development Locus of Control (CDLC) Scale, and a researcher-developed Career/Work Experience Questionnaire.

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

Betz, Klein, & Taylor’s (1996) 25-item CDMSE-SF scale was administered to assess students’ expectations regarding career decision-making tasks. The CDMSE scale is “a generalized career self-efficacy measure covering a multifaceted domain of career decision-making behaviors” (Taylor & Popma, 1990, p. 28). The five Career Choice Competencies postulated in Crites’s model of career maturity, as assessed in the Career Maturity Inventory (Crites, 1978), formed the original basis for scale construction. Thus, the item content includes

behaviors pertinent to: accurate self-appraisal, gathering occupational information, goal selection, making plans for the future, and problem-solving. The CDMSE scale was initially validated in a sample of 346 college students, 153 students (68 male and 85 female) attending a private liberal arts college and 193 students (60 male and 133 female) attending a large state university (Taylor & Betz, 1983). Respondents indicate their perceived confidence in accomplishing 25 different tasks necessary to make quality career decisions. Responses are obtained using a 5-level confidence continuum, ranging from 1 (no confidence at all) to 5 (complete confidence). A representative item from this scale is, “How much confidence do you have that you could: make a plan of your goals for the next five years?” For a review of the entire scale turn to Appendix A on page 105.

Validity of CDMSE-SF Scale

As the construct of self-efficacy refers to beliefs of capability with respect to a specific domain of behavior, adequate specification of that domain is a precondition for content validity (Betz & Luzzo, 1996). Crites’s (1978) five career choice competencies as articulated in his well-regarded theory of career maturity provide the basis for the development of the CDMSE scale. Although constructed with a sound conceptual basis, evidence from factor analyses has not supported the existence of five subscales (Betz & Luzzo, 1996). Factor analyses on the longer 50-item version of the CDMSE scale conducted by Taylor and Betz (1983) and later by Taylor and Popma (1990) revealed that a high number of items loaded on the first factor. Peterson and del Mas (1994) concluded from a components analysis that the 50-item CDMSE scale consists of two major factors, Decision-Making and Information-Gathering. As with previous research, the five-factor theoretical basis for the CDMSE-SF scale was supported only marginally by factor analysis (Betz et al., 1996). Betz et al. reported that evidence for the existence of Occupational Information and Goal Selection factors is strong, although each factor also included Planning items. Given these findings on content validity, Robbins (1985) and Taylor and Popma (1990) suggest that the CDMSE scale is a generalized measure of career decision-making self-efficacy.

Considerable research has demonstrated the concurrent validity of the CDMSE scale. As mentioned by Betz and Luzzo (1996), research has consistently demonstrated that stronger perceptions of career decision-making self-efficacy are related to lower levels of career

indecision, as measured by Osipow's (1987) Career Decision Scale (CDS). The CDMSE scale is also related to the 18-item Identity subscale of Holland, Daiger, and Power's (1980) My Vocational Situation (MVS) instrument. Robbins (1985) reported values of r ranging from .28 (Planning with VI [Vocational Identity]) to .40 (Goal Selection with VI). In Betz et al.'s (1996) sample of 184 participants using the CDMSE-SF scale, correlations with VI ranged from .28 to .66. CDMSE scores have also been shown to be correlated to scores on the Fear of Commitment Scale (Betz & Serling, 1995), Career Maturity Attitude Scale (Luzzo, 1993c), and Career Development Inventory (Luzzo, 1995).

Empirical research supports the nomological network of the construct of career-related self-efficacy as measured by the CDMSE scale, and thus provides evidence of construct validity (Cronbach & Meehl, 1955). Correlations with other variables postulated to be related to career decision-making self-efficacy also support contentions of construct validity. For example, total CDMSE scores were significantly related to global self-esteem ($r = .58$) and trait anxiety ($r = .24$) in the study by Robbins (1985). Taylor and Popma (1990) reported a correlation of $-.30$ with locus of control, indicating that the more external the locus of control, the lower the career self-efficacy. CDMSE scores were also reported by Niles and Sowa (1992) to be positively related to the motivation dimension of Krumboltz's (1988) Career Beliefs Inventory, to the commitment component of psychological hardiness (Hardiness Institute, 1987), and to a measure of generalized self-efficacy.

Reliability of CDMSE-SF Scale

The internal consistency reliability of the Short Form (SF) ranged from .73 (Self-Appraisal) to .83 (Goal Selection) for the 5-item subscales and yielded an alpha of .94 for the 25-item total score (Betz et al., 1996). In two samples including a total of 347 college students, reliabilities ranged from .69 to .83 for the subscales (again with Self-Appraisal the lowest and Goal Selection the highest) and yielded an alpha of .93 for the total score (Betz & Luzzo, 1996). For the original 50-item version of the CDMSE scale, Luzzo (1993c) reported a total scale alpha of .93 and a 6-week test-retest reliability of .83. In a recent psychometric evaluation of the CDMSE scale, Luzzo (1996) concluded that adequate reliability of the scale has been demonstrated and the use of the CDMSE scale in research and applied settings is supported.

Scoring of CDMSE-SF Scale

The 25 items of the CDMSE-SF scale are rationally distributed among five subscales. Each subscale score is the sum of the responses given to the five items on that subscale. Thus, total subscale scores can range from 5 to 25. A total score is the sum of the five subscale scores or, alternatively stated, the sum across all 25 items. This study used the 5-point Likert scale version of the CDMSE-SF scale. Since factor analysis has not supported the existence of five subscales (Betz & Luzzo, 1996) and the CDMSE scale is regarded as a ‘generalized’ measure of career decision-making self-efficacy (Taylor & Popma, 1990; Robbins, 1985), this investigation used total scores in data analysis.

Career Development Locus of Control (CDLC) Scale

Trice et al.’s (1989) CDLC scale was administered to assess students’ attitudes toward career planning. The CDLC scale is based on Rotter’s (1966) locus of control theory. A respondent’s scores indicate whether the individual views career outcomes as dependent on one’s own actions [an internal orientation] or largely under the control of the difficulty of the task, powerful others, or chance factors [an external orientation] (Trice et al., 1989). The CDLC scale was initially validated in a sample of 400 college students, 210 students attending a private women’s college and 190 students attending a state university (Trice et al., 1989). The CDLC scale consists of 18 statements related to career planning. Respondents are asked to indicate whether each statement is true or false for them. A representative item from this scale is, “Getting a good job is primarily a matter of being in the right place at the right time.” For a review of the entire scale turn to Appendix B on page 108

Validity of CDLC Scale

Construct validity of the CDLC scale has been supported by results of several recent studies showing that scores on the CDLC are positively correlated with a variety of adaptive career development behaviors, including job search and career exploration activities (Trice et al., 1989). An external locus of control has been shown to be associated with career indecision (Fuqua, Blum, & Hartman, 1988; Hartman & Fuqua, 1982; Taylor, 1982), and lower levels of

career maturity (Gable et al., 1976). Research has also revealed a moderate correlation of .52 between the CDLC scale and Rotter's (1966) global measure of locus of control (Trice et al., 1989). Rotter (1975, 1990) advocates the use of domain-specific locus of control scales to increase the precision of the locus of control model. Some domain-specific locus of control scales have reported increased face validity and predictive validity in comparison to a general locus of control scale (Furnham & Steele, 1993).

Reliability of CDLC Scale

Trice et al. (1989) have reported a three-week test-retest reliability of .93 for the Career Development Locus of Control (CDLC) Scale. Kuder-Richardson 20 (KR-20) reliability estimates for several college student samples have ranged from .81 to .89 (Trice et al., 1989).

Scoring of CDLC Scale

Scores on the 18-item attitude scale are calculated by totaling the number of 'external' responses selected. In other words, higher scores on the CDLC represent a relatively external locus of control for career development, whereas lower scores indicate a relatively internal locus of control for career development. Students with an external locus of control believe they can not control career outcomes, whereas students with an internal locus of control believe they can control career outcomes by exercising effort.

Career/Work Experience Questionnaire

In addition to assessing students' career decision-making self-efficacy and career locus of control, the researcher was also interested in assessing students' perceptions of work satisfaction in regards to their single most significant work experience acquired during the college years. The purpose of assessing perceptions of work experience satisfaction was to determine whether or not students in the cooperative education work experience group report significantly higher work experience satisfaction than students in the noncooperative education work experience groups.

The Career/Work Experience Questionnaire was designed to capture work experience satisfaction based on three factors. One factor relates to the beneficial influence of social/observational learning experiences as described by Bandura's (1997) sources of self-

efficacy information. A second factor relates to important conditions within the work environment such as structure and supervision which influence work satisfaction as reported by Weinstein (1981) and Taylor (1988). The third factor relates to whether the work is congruent to one's interests, which influences work satisfaction as reported by Luzzo et al. (1997) and Healy et al. (1985). Nine Likert-scale items were developed based on these three factors. The content validity for each item is demonstrated by the Table of Specifications found on page 49. Responses are based on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). A representative item from this questionnaire is, "I believe I was successful in applying my academic knowledge to the work tasks that I was assigned". For a review of the entire questionnaire, turn to Appendix C on page 111.

Pilot Study

Prior to its use in this investigation, the researcher-developed Career/Work Experience Questionnaire was pilot-tested. The Career/Work Experience Questionnaire was administered to a class of first semester graduate students enrolled in the Counselor Education Program at Virginia Polytechnic Institute & State University during the Fall of 1997 (N = 20). The purpose of this test pilot was twofold. First, it was necessary to gather data to ascertain the internal consistency reliability and test-retest reliability of the questionnaire. Second, it was necessary to solicit student comments and questions regarding the questionnaire's clarity of instructions, items, and format.

As a result of this pilot study, some changes were made in the questionnaire's format to solicit even more information from the student. Specifically, a number of students commented that they possessed a repeated number of work experiences in one category, i.e.- summer job(s), and some were related and some were not related to their field of study. Thus, the format was revised for Item 3 under Section 1 to accommodate a greater breadth of possible responses. All students agreed that the 9 Likert-scale items in Section 2 were clear. After the first phase of the pilot study, it became clear that students' responses to these 9 Likert-scale items would be even more meaningful to the researcher if the origin of the most significant work experience was known. Thus, the directions for Section 2 were revised as well. For a review of the revised questionnaire, turn to Appendix D on page 114.

In a final review of the revised questionnaire, it became necessary to make a few additional adjustments before its release. In the final revision, greater clarity was achieved in the directions for Section 2, as well as in the body of Section 2. In an effort to quantify work experience with greater precision, Section 2 (B) was expanded into two separate sections, hours/week and months, respectively. In Section 2 (A), greater clarity was achieved under types of work experience. Also, Section 2 (C) was converted into 2 (D) and expanded to include ‘career interests’. Section 3 was divided into Section 3 and Section 4. The directions were shortened for improved clarity and the format was modified to improve ease of reading. Also, an additional question was added to Section 3 to solicit what the student had ‘learned’ from their work experience. In Section 4, an additional item was added to solicit whether the student was satisfied with their work experience. Finally, the previous Section 4 was renamed Section 5. For a review of the questionnaire in its final form, turn to Appendix E on page 118.

Validity of Career/Work Experience Questionnaire

The Table of Specifications below provides evidence of the content validity of the Career/Work Experience Questionnaire.

Content Areas	Item 1 & 7 “successful” “work well”	Item 2 “role model”	Item 3 “encourage- ment”	Item 4 “assigned duties”	Item 5 “excellent supervision”	Item 6 “work interesting”	Item 8 & 9 “confirm/ change”
Performance Accomplishments	Bandura (1997) Maddux (1995)						
Vicarious Learning		Bandura (1997)					
Verbal Persuasion			Bandura (1997)				
Structured Work Environment				Fletcher (1989) Weinstein (1981)			
Quality Supervision					Brooks et al. (1995) Taylor (1988)		
Work Congruent w/ Interests						Luzzo et al. (1997) Healy et al. (1985)	
Reality Testing of Work Environment							Ducat (1980) Jordaan (1963) Super (1957)

Reliability of Career/Work Experience Questionnaire

The internal consistency reliability for the first administration (trial) was an alpha of .88, and the second administration (trial) also yielded an alpha of .88. The two-week test-retest reliability coefficient was .94.

Scoring of Career/Work Experience Questionnaire

Total scores on the questionnaire are calculated by summing the responses from each of the ten items. The questionnaire uses a 4-point Likert scale. Total scores can range from 10 to 40.

Procedures for Data Collection

The following steps were taken to ensure an orderly collection of the data. First, in an effort to collect all data electronically, it was necessary to generate listings of Virginia Polytechnic Institute & State University undergraduates. The academic advisors from the engineering and computer science departments supported this research study and provided access to their respective list servers which contained e-mail addresses of all currently enrolled students. Each advisor was provided with a copy of the survey and briefed on the purpose of the investigation during the Fall Semester of 1997. To likely capture a higher student response rate, the surveys were distributed by e-mail at the beginning of the Spring Semester in January 1998.

Second, for the purpose of further improving response rates, each advisor agreed to send out a research invitation letter on their list server to encourage their students' participation in this important survey research. Participation in the study was strictly voluntary. The students did not receive any academic credit for their participation and no student was contacted directly. The researcher prepared an invitation letter to introduce the purpose and confidentiality of the study. The invitation concluded by soliciting the student's decision to participate. The student simply indicated his/her decision by checking off either 'yes' or 'no' and then e-mailed his/her response back to the researcher. This procedure served as a manipulation check so that no student could complete more than one survey. Also, this procedure assisted in the monitoring of incoming surveys by informing the researcher as to when follow-up reminders needed to be sent. Students that responded with a 'yes' received the survey as a file attachment. Each student was requested to complete and return the survey within one week. If the survey was not returned after one

week, an e-mail reminder notice was sent out. If after an additional ten days there was no response, a final reminder notice along with another copy of the survey was sent out.

Third, in a final effort to improve student response rates, the invitation letter included a financial incentive. Any student who participated in the study by completing the survey had a chance to win \$100 in a drawing. Students who wanted to participate in the drawing entered their e-mail address in the space provided on the survey. The e-mail addresses were then recorded on cards and placed into a container. In late March 1998, the drawing was held and the winning student was contacted using his e-mail address. Upon presenting photo identification, the student signed a receipt and received the \$100.

Fourth, in an effort to process the student surveys in an efficient and prompt manner, only one adviser per week was instructed to send out the invitation letter over their list server. If the adviser maintained separate list servers for sophomores, juniors, and seniors, then three separate invitation letters were sent out in a staggered fashion. Specifically, sophomores were contacted on Monday, juniors were contacted on Wednesday, and seniors were contacted on Friday. Distributing and processing the surveys in this manner insured an orderly collection of the data.

The fifth and final step in the data collection procedure involved the distribution of the survey to each student. The survey was sent as a rich text format (rtf) file attachment so that each student could easily access the survey, whether using a PC or MAC. The first page of the survey contained an informed consent form and the student was instructed to enter their name, e-mail address, date of birth, and today's date. At the end of the survey, if the student was interested, he/she had the opportunity to obtain a summary of the research findings. By entering his/her e-mail address in the space provided, a summary was sent to the student's e-mail address at the conclusion of the study. After completing the survey, the student simply returned the file attachment by e-mail directly to the researcher. The survey took approximately 15 minutes to complete.

Data Analysis

The methods of data analysis are discussed as they relate to each of the research questions.

1. Is there a significant difference in Career Decision-Making Self-Efficacy (CDMSE) among the Cooperative Education Work Experience Group and the Non-Cooperative Education

Work Experience Groups [related and unrelated to a student's field of study or career interests] for each respective work term completed?

2. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Cooperative Education Work Experience Group?

3. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience related to their field of study or career interests]?

4. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience not related to their field of study or career interests]?

5. Does the Cooperative Education Work Experience Group at each completed work term possess an internal career locus of control and do the Non-Cooperative Education Work Experience Groups at each completed work term possess an external career locus of control?

6. Is there a significant difference in work satisfaction among the Cooperative Education Work Experience Group and the Non-Cooperative Education Work Experience Groups at each completed work term, as reported on the researcher-developed questionnaire?

A brief overview of the (3 x 3) factorial design and its variables provide a clear rationale for the methods of data analysis. In this ex-post facto design study there were two independent variables, each having three levels. One independent variable was type of work experience at

three levels (cooperative education work experience, noncooperative education work experience [related to student's field of study or career interests], and noncooperative education work experience [unrelated to student's field of study or career interests]). The other independent variable was completion of work term(s) at three levels (one, two, or three work terms). The two dependent variables in this study were career decision-making self-efficacy (CDMSE) and work experience satisfaction as measured by the Career/Work Experience Questionnaire. Though career locus of control was examined in this study, it was not a dependent variable as described in research question 5. For this study, the researcher had selected a power of .80 (Beta = .2), an effect size of .5, and an alpha level of .05.

Only completed surveys were used in this study and all data were entered into the computer by the researcher. The statistical software package used by the researcher was Minitab (1997) Release 12 version. The following analyses were run to address each of the six research questions.

The data analysis for each of the research questions consisted of running descriptive statistics to ascertain the differences in means and standard deviations. In regard to research question 1, three One-Way ANOVAs were run to determine whether a significant difference in CDMSE existed among the work experience groups at each of the three work terms. If a significant difference was found ($p < .05$), then a Tukey pairwise comparison test was run to compare the means.

For research question 2, a One-Way ANOVA was run to determine whether a significant difference in CDMSE existed among the work terms of the cooperative education work experience group. If a significant difference was found ($p < .05$), then a Tukey pairwise comparison test was run to compare the means. Likewise, for research questions 3 and 4, a One-Way ANOVA was run to determine whether a significant difference in CDMSE existed among the work terms of the non-cooperative education work experience group(s), respectively. Again, if a significant difference was found ($p < .05$), then a Tukey pairwise comparison test was run to compare the means.

For research question 5, a test of two proportions was run to determine if the co-op work experience group contained a significantly greater proportion of internal career locus of control students compared to the non-co-op work experience group. For this analysis, the two non-co-op

work experience groups were treated as one group. It is important to keep in mind that research question 5 was concerned with determining career locus of control status only. This explains why career locus of control was not a dependent variable in this study. The researcher was only interested in validating the findings of prior investigations on career locus of control (Luzzo, 1993b; Trice et al., 1989; Taylor, 1982; Gable et al., 1976). Based on prior investigations, it was expected that the cooperative education work experience students would possess an internal career locus of control. The noncooperative education work experience students were expected to possess an external career locus of control.

For research question 6, three One-Way ANOVAs were run to determine whether a significant difference in work experience satisfaction existed among the work experience groups at each of the three work terms. If a significant difference was found ($p < .05$), then a Tukey pairwise comparison test was run to compare the means.

The researcher also ran a Two-Way ANOVA for each dependent variable (CDMSE, work experience satisfaction) to determine if a significant interaction effect existed between the two independent variables (type of work experience and completion of work terms). If a significant interaction was found ($p < .05$), then a Tukey pairwise comparison test was run to compare the means.

CHAPTER IV

RESULTS OF THE STUDY

The results of the analysis of data are presented in this chapter. Response rates for data collection are reported in the first section. In the second section, the sample is described in terms of the demographic information. The third section presents the results of the analytical procedures in relation to the research questions. A concluding section provides a summary of the chapter.

Survey Response

A total of 595 engineering and computer science students responded to the initial e-mail invitation and indicated an interest in participating in this survey. An additional 39 students responded to the invitation and indicated they did not wish to participate. After two follow-up e-mail reminders, the final response rate of completed surveys was 69.75% (N = 415). From the 415 surveys, 53 were eliminated from the study because they did not meet the established work experience criteria. Specifically, 8 students had no work experience. There were 8 students that had considerably less than the minimum 100 hours of career-related work experience and 11 students that had considerably more than the maximum 1,920 hours of career-related work experience. Also, 26 students who had completed four work terms of co-op work experience were eliminated from the study. The remaining 362 surveys were randomly selected from each of the nine factorially defined groups. In keeping with an orthogonal or balanced design, there were 225 surveys [25 in each cell] used for the analysis in this study.

Demographic Information

In the total sample of 225 students, the ages ranged from 18 to 27 years, with a mean age of 20.71 and a standard deviation of 1.55. Males comprised 76.0% (n = 171) of the sample; females comprised 24.0% (n = 54). In regard to academic major, 86.7% (n = 195) were enrolled in engineering; 13.3% (n = 30) were enrolled in computer science. The breakdown of students by academic rank was as follows: 53 sophomores (23.6%), 90 juniors (40.0%), and 82 seniors (36.4%).

Results

Analysis of the total sample ($N = 225$) in regard to the career decision-making self-efficacy (CDMSE) variable yielded a mean of 95.30 (maximum score on CDMSE could have been 125) and a standard deviation of 11.74. The means and standard deviations for each of the nine factorially defined groups ($n = 25$) are indicated in Table 1. The results of the analyses are presented immediately following each research question.

1. Is there a significant difference in Career Decision-Making Self-Efficacy (CDMSE) among the Cooperative Education Work Experience Group and the Non-Cooperative Education Work Experience Groups [related and unrelated to a student's field of study or career interests] for each respective work term completed?

A series of One-Way ANOVAs were run to determine whether a significant difference in CDMSE existed among the co-op and non-co-op work experience groups at each of the three work terms. As indicated in Table 2, no significant difference was found in CDMSE at the

Table 1

Means and Standard Deviations of Career Decision-Making Self-Efficacy (CDMSE) Scores for Each of the Nine Work Experience Groups (n = 25)

Completion of Work Term(s):			
One	Two	Three	
[A] M = 97.32 SD = 9.95	[A] M = 96.16 SD = 13.21	[A] M = 99.36 SD = 13.83	M = 97.61 SD = 12.35
[B] M = 93.84 SD = 11.91	[B] M = 94.84 SD = 9.96	[B] M = 97.36 SD = 11.17	M = 95.35 SD = 10.99
[C] M = 97.40 SD = 10.90	[C] M = 88.48 SD = 9.87	[C] M = 92.96 SD = 12.34	M = 92.95 SD = 11.53
M = 96.19 SD = 10.93	M = 93.16 SD = 11.48	M = 96.56 SD = 12.62	

Note. [A] = Co-op work experience group; [B] = Non-Co-op (Related to student's field of study or career interests) work experience group; [C] = Non-Co-op (Unrelated to student's field of study or career interests) work experience group.

Table 2

Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Type of Work Experience at Completion of First Work Term

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work	2	206.63	103.30	.86	.43
Experience					
Error	72	8632.86	119.98		
Total	74	8839.49			

p < .05.

completion of the first work term. A significant difference was found in CDMSE at the completion of the second work term ($F = 3.41, p < .05$) as indicated in Table 3. A Tukey pairwise comparison test was run to compare the means. There was a significant difference between the co-op work experience group ($M = 96.16$) and the non-co-op (unrelated) work experience group ($M = 88.48$). No significant difference was found in CDMSE at the completion of the third work term as indicated in Table 4. With the exception of the second work term, the results do not support significant differences in CDMSE between the co-op work experience group and the non-co-op (unrelated) work experience group based on completed work term. Furthermore, the results do not support significant differences in CDMSE between the co-op work experience group and the non-co-op (related) work experience group based on completed work term. The implications of these findings are discussed in greater detail in Chapter 5.

2. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Cooperative Education Work Experience Group?

A One-Way ANOVA was run to determine whether a significant difference in CDMSE existed among work terms of the cooperative education work experience group. As indicated in Table 5, no significant difference was found in CDMSE among completed work terms of the cooperative education work experience group. Though there was a slightly higher mean reported for the third co-op work term ($M = 99.36$) in comparison to the first co-op work term ($M = 97.32$), the results provide no evidence for a significant cumulative effect in CDMSE. Specifically, as work terms increased there was no statistically significant increase in CDMSE.

Table 3

Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Type of Work Experience at Completion of Second Work Term

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work Experience	2	843.12	421.69	3.41	.04*
Error	72	8911.44	123.77		
Total	74	9754.56			

*p < .05.

Table 4

Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Type of Work Experience at Completion of Third Work Term

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work	2	536.98	268.49	1.72	.19
Experience					
Error	72	11239.20	156.10		
Total	74	11776.18			

p < .05.

Table 5

Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Co-op Work Experience

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Completion of Work Terms	2	131.22	65.61	.42	.66
Error	72	11152.80	154.90		
Total	74	11284.02			

p < .05.

Though no statistical significance was found, the row means in Table 1 (see page 46) indicate that CDMSE was highest in the cooperative education work experience group.

3. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience related to their field of study or career interests]?

A One-Way ANOVA was run to determine whether a significant difference in CDMSE existed among work terms of the non-co-op (related) work experience group. As indicated in Table 6, no significant difference was found in CDMSE among completed work terms of the non-co-op (related) work experience group. Though there was an increase in CDMSE at each completed work term, as indicated in Table 1 (see page 46), no evidence was found to support a significant cumulative effect in CDMSE. Even so, these results suggest that repeated participation in non-co-op work experience (related to one's field of study or career interests) may be associated with higher levels of CDMSE.

4. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience not related to their field of study or career interests]?

Table 6

Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Non-Co-
op (Related) Work Experience

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Completion of Work Terms	2	164.54	82.27	.67	.51
Error	72	8776.80	121.90		
Total	74	8941.34			

p < .05.

A One-Way ANOVA was run to determine whether a significant difference in CDMSE existed among work terms of the non-co-op (unrelated) work experience group. A significant difference was found in CDMSE among completed work terms in the non-co-op (unrelated) work experience group ($F = 4.05$, $p < .05$) as indicated in Table 7. A Tukey pairwise comparison test was run to compare the means. Although there was a significant difference between the first work term ($M = 97.40$) and the second work term ($M = 88.48$), the results overall provided no evidence for a significant cumulative effect in CDMSE. Specifically, as work terms increased it was expected that CDMSE would increase; however, the results indicated a significant decrease in CDMSE in the second work term. Though this group did yield an increase in CDMSE after completing the third work term, as indicated in Table 1 (see page 46), it is unclear as to why CDMSE was significantly lower in the second work term.

5. Does the Cooperative Education Work Experience Group at each completed work term possess an internal career locus of control and do the Non-Cooperative Education Work Experience Groups at each completed work term possess an external career locus of control?

A test of two proportions was run to determine if the co-op work experience group contained a significantly greater proportion of internal career locus of control students compared to the non-co-op work experience group. For this analysis, the two non-co-op work experience groups were treated as one group. As career locus of control was not a dependent variable in this study, the researcher sought only to validate prior findings. Based on prior investigations (Luzzo, 1993b; Trice et al., 1989; Taylor, 1982; Gable et al., 1976), it was expected that co-op work

Table 7

Analysis of Variance for Career Decision-Making Self-Efficacy (CDMSE) Scores and Non-
Coop (Unrelated) Work Experience

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Completion of Work Terms	2	994.68	497.34	4.05	.02*
Error	72	8845.20	122.85		
Total	74	9839.88			

*p < .05.

experience students would possess an internal career locus of control and that non-co-op work experience students would possess an external career locus of control. The career locus of control means and standard deviations for the two work experience groups are presented in Table 8. No significant difference was found in the proportion of internal career locus of control scores between the two groups, as indicated in Table 9. The data in this table revealed that 90.7% of students in the co-op group possessed an internal career locus of control, whereas 88.0% of students in the non-co-op group possessed an internal career locus of control. These results did not support the findings of prior investigations on career locus of control.

6. Is there a significant difference in work satisfaction among the Cooperative Education Work Experience Group and the Non-Cooperative Education Work Experience Groups at each completed work term, as reported on the researcher-developed questionnaire?

Analysis of the total sample ($N = 225$) in regards to the work experience satisfaction variable yielded a mean of 30.92 (maximum score could have been 40) and a standard deviation of 4.35. The means and standard deviations for each of the nine factorially defined groups ($n = 25$) are indicated in Table 10. A series of three One-Way ANOVAs was run to determine whether a significant difference in work experience satisfaction existed among the work experience groups at each of the three work terms. In this study, work satisfaction referred to the students' perception of their single most significant work experience acquired during the college years. A significant difference in work experience satisfaction was found at each of the three work terms. A significant difference in work experience satisfaction was found at the completion

Table 8

Means and Standard Deviations of Career Locus of Control Scores for Co-op and Non-Co-op Work Experience Groups

Work Group	<u>N</u>	<u>M</u>	<u>SD</u>	<u>Min</u>	<u>Q1</u>	<u>Mdn</u>	<u>Q3</u>	<u>Max</u>
Co-op	75	12.91	2.00	8.00	12.00	13.00	14.00	16.00
Non-Co-op	150	12.33	2.22	6.00	11.00	13.00	14.00	18.00

Table 9

Test of Two Proportions Results of Internal Career Locus of Control Scores for Co-op and Non-Co-op Work Experience Groups

Work Group	X	<u>N</u>	Sample p	<u>p</u>
Co-op	68	75	.907	.733
Non-Co-op	132	150	.880	

Table 10

Means and Standard Deviations of Work Experience Satisfaction Scores for Each of the Nine Work Experience Groups (n = 25)

Completion of Work Term(s):

One	Two	Three	
[A] <u>M</u> = 31.84 <u>SD</u> = 3.66	[A] <u>M</u> = 31.92 <u>SD</u> = 3.71	[A] <u>M</u> = 32.80 <u>SD</u> = 4.06	<u>M</u> = 32.19 <u>SD</u> = 3.79
[B] <u>M</u> = 33.08 <u>SD</u> = 3.48	[B] <u>M</u> = 32.60 <u>SD</u> = 3.74	[B] <u>M</u> = 31.64 <u>SD</u> = 4.06	<u>M</u> = 32.44 <u>SD</u> = 3.76
[C] <u>M</u> = 28.64 <u>SD</u> = 3.71	[C] <u>M</u> = 27.56 <u>SD</u> = 4.87	[C] <u>M</u> = 28.16 <u>SD</u> = 3.73	<u>M</u> = 28.12 <u>SD</u> = 4.10
<u>M</u> = 31.19 <u>SD</u> = 4.03	<u>M</u> = 30.69 <u>SD</u> = 4.66	<u>M</u> = 30.87 <u>SD</u> = 4.38	

Note. [A] = Co-op work experience group; [B] = Non-Co-op (Related to student's field of study or career interests) work experience group; [C] = Non-Co-op (Unrelated to student's field of study or career interests) work experience group.

of the first work term ($F = 10.04, p < .05$), as indicated in Table 11. A Tukey pairwise comparison test was run to compare the means. There was a significant difference between the co-op work experience group ($M = 31.84$) and the non-co-op (unrelated) work experience group ($M = 28.64$). A significant difference was also found between the non-co-op (related) work experience group ($M = 33.08$) and the non-co-op (unrelated) work experience group ($M = 28.64$).

A significant difference in work experience satisfaction was found at the completion of the second work term ($F = 10.91, p < .05$), as indicated in Table 12. A Tukey pairwise comparison test was run to compare the means. There was a significant difference between the co-op work experience group ($M = 31.92$) and the non-co-op (unrelated) work experience group ($M = 27.56$). A significant difference was also found between the non-co-op (related) work experience group ($M = 32.60$) and the non-co-op (unrelated) work experience group ($M = 27.56$).

A significant difference in work experience satisfaction was found at the completion of the third work term ($F = 9.33, p < .05$), as indicated in Table 13. A Tukey pairwise comparison test was run to compare the means. There was a significant difference between the co-op work experience group ($M = 32.80$) and the non-co-op (unrelated) work experience group ($M = 28.16$). A significant difference was also found between the non-co-op (related) work experience group ($M = 31.64$) and the non-co-op (unrelated) work experience group ($M = 28.16$).

These results indicated a definite pattern in work experience satisfaction in regards to the students' single most significant work experience acquired during the college years. Regardless of the work term, students in the co-op work experience group rated their satisfaction significantly higher than the non-co-op (unrelated) work experience group. Likewise, regardless of the work term, students in the non-co-op (related) work experience group rated their

Table 11

Analysis of Variance for Work Experience Satisfaction Scores and Type of Work Experience at Completion of First Work Term

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work Experience	2	262.43	131.21	10.04	.00*
Error	72	940.96	13.07		
Total	74	1203.39			

*p < .05.

Table 12

Analysis of Variance for Work Experience Satisfaction Scores and Type of Work Experience at Completion of Second Work Term

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work Experience	2	373.95	186.97	10.91	.00*
Error	72	1234.00	17.14		
Total	74	1607.95			

*p < .05.

Table 13

Analysis of Variance for Work Experience Satisfaction Scores and Type of Work Experience at
Completion of Third Work Term

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work Experience	2	291.55	145.77	9.33	.00*
Error	72	1125.12	15.63		
Total	74	1416.67			

*p < .05.

satisfaction significantly higher than the non-co-op (unrelated) work experience group. As indicated by the row means in Table 10 (see page 59), work experience satisfaction for the non-co-op (related) work experience group ($M = 32.44$) is slightly higher than the co-op work experience group ($M = 32.19$). Thus, the results did not support the expectation that work experience satisfaction in the co-op group would be significantly higher than in both non-co-op groups. With the exception of the third work term, these findings revealed that students in the non-co-op (related) work experience group reported comparable or slightly higher work satisfaction than the co-op work experience group in regards to their single most significant work experience. In this study, 49.3% of the non-co-op (related) work experience group reported an internship as being their single most significant work experience.

The researcher also ran a Two-Way ANOVA for CDMSE to determine if a significant interaction effect existed between the two independent variables (type of work experience and completion of work terms). No significant interaction effect was found for CDMSE; however, the main effect of type of work experience just met significance ($F = 3.07$, $p < .05$), as indicated in Table 14. This result was significant, albeit a weak value ($p = .049$), for type of work experience and CDMSE. Though no causal relationship was proposed, these findings suggest that additional investigations involving CDMSE and co-op work experience are worthy of further examination.

Finally, a Two-Way ANOVA was run for work experience satisfaction to determine if a significant interaction effect existed between the two independent variables (type of work experience and completion of work terms). No significant interaction effect was found for work experience satisfaction; however, the main effect of type of work experience was significant ($F = 28.85$, $p < .05$), as indicated in Table 15. As previously stated, the results for work experience

Table 14

Analysis of Variance of Career Decision-Making Self-Efficacy (CDMSE) Scores for Type of Work Experience and Completion of Work Terms

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work Experience	2	816.94	408.47	3.07	.05*
Completed Work Term	2	521.51	260.80	1.96	.14
Interaction	4	768.84	192.21	1.44	.22
Error	216	28778.20	133.23		
Total	224	30885.49			

Note. Exact p value for Type of Work Experience is .049.

*p < .05.

Table 15

Analysis of Variance of Work Experience Satisfaction Scores for Type of Work Experience and Completion of Work Terms

Source	<u>df</u>	<u>SS</u>	<u>MS</u>	<u>F</u>	<u>p</u>
Type of Work Experience	2	881.61	440.80	28.85	.00*
Completed Work Term	2	9.40	4.70	.31	.74
Interaction	4	46.31	11.58	.76	.55
Error	216	3300.08	15.28		
Total	224	4237.40			

*p < .05.

satisfaction indicated a strong significant difference between the co-op and non-co-op (unrelated) work experience group, as well as between the non-co-op (related) and non-co-op (unrelated) work experience group. Regardless of the work term, students in the non-co-op (unrelated) work experience group reported the lowest rating of work satisfaction from their single most significant work experience.

Almost unanimously, 94.7% of co-op students in this study identified a co-op work experience as being their single most significant work experience during their college years, as indicated in Table 16. Moreover, 56.3% of co-op students who had completed three work terms selected their first co-op work term as being their most significant work experience. The most significant work experience identified by students in the non-co-op (related) work experience group was an internship (49.3%), followed by a summer job (26.7%), as indicated in Table 17. Students in the non-co-op (unrelated) work experience group identified a summer job (61.4%) as being their most significant work experience, as indicated in Table 18.

There were several motivations or reasons why students decided to enroll in the cooperative education program. The leading motivation was the belief that participation in the program would provide a competitive advantage in obtaining employment upon graduation (34.7%), as indicated in Table 19. The second leading motivation was students wanted to evaluate their career goals and/or direction (30.7%). Likewise, there were several reasons why students did not choose to participate in the cooperative education program. The most prevalent reason mentioned was the co-op program requires too much time commitment and thus delays graduation beyond the four-year time frame (51.4%), as indicated in Table 20. As one might expect, students also provided several reasons why they did not seek work experience related to their field of study or career interests. Though fewer students overall responded to this inquiry, it

Table 16

Single Most Significant Work Experience Cited by Students in the Co-op Work Experience

Group

Type of Work Experience	Number	Percent of Total
Co-op	71	94.7
Internship	<u>4</u>	<u>5.3</u>
TOTAL	75	100.0

Note. Students who had completed three co-op work terms indicated the single most significant co-op work term as follows: first work term (56.3%), second work term (16.9%), third work term (26.8%).

Table 17

Single Most Significant Work Experience Cited by Students in the Non-Co-op (Related) Work Experience Group

Type of Work Experience	Number	Percent of Total
Internship	37	49.3
Summer Job	20	26.7
Other Part-time Work	8	10.7
Military (ROTC)	5	6.7
Work-Study	4	5.3
Volunteer	<u>1</u>	<u>1.3</u>
TOTAL	75	100.0

Table 18

Single Most Significant Work Experience Cited by Students in the Non-Co-op (Unrelated) Work Experience Group

Type of Work Experience	Number	Percent of Total
Summer Job	46	61.4
Other Part-time Work	19	25.3
Internship	5	6.7
Work-Study	3	4.0
Other Full-time Work	1	1.3
Volunteer	<u>1</u>	<u>1.3</u>
TOTAL	75	100.0

Table 19

Reasons Cited by Students for Enrolling in the Cooperative Education Program

Reasons	Number	Percent of Total
Employment advantage upon graduation	26	34.7
Desire to evaluate career goals/direction	23	30.7
Seek career-related experience prior to graduation	18	24.0
Need to finance education	5	6.7
Seek to improve work skills in chosen field	2	2.6
No reason cited	<u>1</u>	<u>1.3</u>
TOTAL	75	100.0

Table 20

Reasons Cited by Students for Not Enrolling in the Cooperative Education Program

Reasons	Number	Percent of Total
Excessive time commitment/delays graduation	77	51.4
Not aware of potential benefits/advantages	18	12.0
No reason cited	15	10.0
Insufficient GPA, not eligible	11	7.3
Found beneficial career position elsewhere	9	6.0
Planning to enroll in co-op program soon	8	5.3
Not aware of such a program	7	4.7
Conflicts with military obligations	5	3.3
TOTAL	150	100.0

was noteworthy that 18.7% stated that they were in the process of applying for the cooperative education program, as indicated in Table 21. The desire to graduate within four years time was also mentioned by 13.3% who were having some academic difficulties and were attending summer school.

Table 21

Reasons Cited by Students for Not Seeking Work Experience Related to Their Field of Study

Reasons	Number	Percent of Total
No reason cited	21	28.0
Currently applying for the co-op program	14	18.7
Not willing to give up good paying summer job	13	17.3
Attending summer school to graduate in four years	10	13.3
Have tried to obtain but not yet successful	8	10.7
Not willing to leave home no opportunities locally	5	6.7
Plan to seek work related to my field of study soon	3	4.0
Conflicts with military obligations	<u>1</u>	<u>1.3</u>
TOTAL	75	100.0

Summary

Contrary to expectation, no evidence was found to support a significant cumulative effect in career decision-making self-efficacy (CDMSE) in the co-op work experience group at the completion of each work term. Though CDMSE was higher after completing the third co-op work term, there was not a significant increase in CDMSE with each successive work term. CDMSE was significantly higher in the co-op work experience group than in the non-co-op (unrelated) work experience group at the completion of the second work term only. Also, CDMSE in the first work term was significantly higher than the second work term in the non-co-op (unrelated) work experience group. Although open to speculation, it is believed that students who completed the first work term in the non-co-op (unrelated) work experience group may have overestimated their degree of confidence to successfully perform career decision-making tasks.

The results on career locus of control were also unexpected as no significant difference was found in the proportion of internal career locus of control students between the co-op and non-co-op group. This study's findings did not support prior investigations that found a relationship between proactive career planning behavior and an internal career locus of control. As the career locus of control measure is relatively new and has never before been used with co-op students, it may be premature to draw firm conclusions without further study.

In regards to work satisfaction from the single most significant work experience acquired during college, the results were the same regardless of the work term completed. In each work term, the co-op group reported significantly higher work experience satisfaction than the non-co-op (unrelated) work experience group. Similarly, the non-co-op (related) work experience group reported significantly higher work experience satisfaction than the non-co-op (unrelated) work experience group. Thus, students' level of work experience satisfaction in the co-op group was not significantly higher but rather comparable to the non-co-op (related) work experience group. Students in the non-co-op (unrelated) work experience group consistently reported the lowest level of work experience satisfaction.

Finally, this study found that the motivation to participate in the cooperative education program was largely due to students' belief that participation would yield a competitive advantage in obtaining employment upon graduation. Also, participation provided an opportunity to evaluate one's career goals and/or academic direction.

CHAPTER V

DISCUSSION AND RECOMMENDATIONS

This chapter presents a discussion of the results and integrates the findings of the study. The first section provides a review of the study and its overall findings. The second section discusses the findings and offers conclusions based on each of the research questions. The third section examines limitations of the present study. The fourth section provides recommendations for future research. A final section provides a summary of the chapter.

Review

The purpose of this study was to examine whether a relationship exists between cooperative education work experience and career decision-making self-efficacy, an individual's confidence to successfully perform various career decision-making tasks. Another purpose of this study was to determine whether only co-op participants adhere to an internal career locus of control, a belief that one can control work outcomes by exercising effort. Due to the academic related nature of co-op work experience, this study also examined whether co-op students rated their work experience satisfaction higher than non-co-op students. Work experience satisfaction was measured in this study based upon a student's single most significant work experience acquired during the college years. Based on social cognitive theory (Bandura, 1986), it was hypothesized that co-op work experience would provide the greatest exposure to sources of self-efficacy information, namely performance accomplishments, vicarious learning (i.e., exposure to role models/mentors), and verbal persuasion (encouragement). Thus, co-op students were expected to report significantly higher career decision-making self-efficacy (CDMSE) compared to non-co-op students.

Contrary to expectation, this study found no evidence to support a significant cumulative effect in CDMSE in the co-op work experience group at the completion of each work term. As work terms increased, there was not a significant increase in CDMSE with each successive work term. CDMSE was generally found to be higher after the third work term and a pattern of increasing scores was evident in the non-co-op (related) work experience group. CDMSE was significantly higher in the co-op work experience group than in the non-co-op (unrelated) work

experience group at the completion of the second work term only. Also, CDMSE in the first work term was significantly higher than the second work term in the non-co-op (unrelated) work experience group.

The finding on career locus of control was also unexpected. No significant difference was found in the proportion of internal career locus of control between the co-op and non-co-op group. In fact, it was surprising to find that only a few students in each group possessed an external career locus of control. Thus, this study's finding did not support prior investigations that found a relationship between proactive career planning behavior and an internal career locus of control.

In regards to work satisfaction from the single most significant work experience acquired during college, this study found that the co-op work experience group was not significantly higher but rather comparable to the non-co-op (related) work experience group. Overall, the non-co-op (related) work experience group reported a slightly higher rating of work experience satisfaction than the co-op group. A definite pattern of significance existed regardless of the work term completed. Specifically, the co-op group was significantly higher in work experience satisfaction than the non-co-op (unrelated) work experience group. Similarly, the non-co-op (related) work experience group was significantly higher in work experience satisfaction than the non-co-op (unrelated) work experience group. Students in the non-co-op (unrelated) work experience group consistently reported the lowest level of work experience satisfaction.

Discussion

The findings are discussed as they relate to the specific research questions in this study. The discussion of the findings is presented immediately following each research question.

1. Is there a significant difference in Career Decision-Making Self-Efficacy (CDMSE) among the Cooperative Education Work Experience Group and the Non-Cooperative Education Work Experience Groups [related and unrelated to a student's field of study or career interests] for each respective work term completed?

A series of One-Way ANOVAs revealed that a significant difference in CDMSE was found only between the co-op and non-co-op (unrelated) work experience group at the completion of the second work term. As the researcher was expecting the co-op group to be significantly different from both of the non-co-op groups at each of the three work terms, this finding was surprising. These findings may have indicated that students in the non-co-op (related) work experience group were obtaining work experiences that provided opportunities for successful performance accomplishments (Bandura, 1986) that closely approached those work experiences found in the cooperative education program. Alternatively, lower overall CDMSE scores in the non-co-op (unrelated) work experience group may have indicated that students had limited opportunity to develop meaningful performance accomplishments and consequently possessed lower confidence when faced with career decision-making tasks. Though overall CDMSE was highest in the co-op work experience group, it did not achieve significance when compared to the non-co-op (related) work experience group. The significant finding between the co-op and the non-co-op (unrelated) work experience group was expected; however, it was unclear as to why this occurred only at the completion of the second work term. These findings did not fully support the significant findings between the co-op and non-co-op groups as reported in Weinstein's (1981) career decision-making study. Conclusions based on comparisons between these two studies are somewhat complicated. This is so because Weinstein (1981) utilized a sample of only seniors and also did not use the CDMSE scale to measure confidence in career decision-making. Moreover, no attempt was made in her study to distinguish the different types of work experiences that non-co-op students may possess. Though there were few significant findings of CDMSE in this present study, it did address a critical concern noted earlier by Jagacinski et al. (1986) for closer examination of non-co-op work experiences.

In addition to the finding that CDMSE was only significant at the second work term, it was equally surprising to have found a slightly higher score ($M = 97.40$) for the non-co-op (unrelated) work experience group compared to the co-op group ($M = 97.32$) at the first work term. Though it is open to speculation, it may be that students who possessed work experience that was both limited and unrelated to their field of study also had poorly developed decision-making skills. Poorly developed decision-making skills may have caused gross overestimation of

confidence and consequently inflated CDMSE scores. This possible explanation for higher than expected CDMSE scores was also mentioned earlier in a study by Luzzo (1993a).

In contrast to the Luzzo et al. (1997) study, the overall pattern of CDMSE scores in this study suggests that there is a relationship between work experience and CDMSE. This relationship may have been influenced by the composition of this study's sample. Specifically, this study utilized sophomores through seniors whereas, Luzzo et al's (1997) study utilized only freshmen.

Another possible explanation for the general increase in CDMSE at the completion of successive work terms may have been that career attitudes (beliefs about career planning and working) tend to increase with age as reported in Healy et al's (1985) study. The mean age of students in their study was 21.64. It is important to note, however, that this prior study used only the Attitude Scale of Crites's (1978) Career Maturity Inventory and did not investigate CDMSE. As this was the first study to investigate CDMSE with co-op students, additional research is needed before definitive conclusions can be made. Moreover, caution is needed in interpreting these present findings since no prior studies have investigated CDMSE with co-op students as they progress through the cooperative education program.

2. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Cooperative Education Work Experience Group?

The One-Way ANOVA revealed that there was no significant difference in CDMSE among completed work terms in the co-op work experience group. Though CDMSE mean scores were the highest for the co-op group compared to the non-co-op groups, no support was found for a significant cumulative effect in CDMSE. Specifically, as work terms increased it was expected that there would also be a significant increase in CDMSE between each completed work term. There are several possible explanations for these results. As work terms increased, the actual quality of the experiential learning in the co-op work assignment may not have increased or been sustained. It is also possible that some students' expectations pertaining to the quality of the co-op work assignment may not have been realized. Specifically, opportunities for

successful performance accomplishments, beneficial vicarious experiences (i.e., exposure to role models/mentors), and verbal persuasion (encouragement) are likely to have varied from work assignment to work assignment. Also, the variation or inconsistency in work assignment quality may be due to poorly structured work duties (Fletcher, 1989) or inadequate supervision (Brooks et al., 1995; Taylor, 1988) which may have had a suppressing effect on students' CDMSE.

Another possibility may be that the co-op assignment at any given work term may have served to confirm or disconfirm the students' career goals and/or career direction and consequently this may have had a moderating effect on students' CDMSE. For example, if a student was pleased with his/her co-op assignment and it served to confirm career goals and/or career direction in engineering, this may have caused an increase in confidence to successfully perform career decision-making tasks (CDMSE). Alternatively, if a student was pleased or displeased with his/her co-op assignment and it served to disconfirm one's career goals and/or career direction in engineering, this may have caused a decrease in confidence to successfully perform career decision-making tasks (CDMSE). A co-op assignment that serves to disconfirm one's career goals and/or career direction may be pleasing (i.e., a relief) or displeasing (i.e., cause for anxiety), depending upon the student's perception.

Another speculation as to why there was not a significant cumulative effect in CDMSE as work terms increased may be due to the composition of students in each of the work terms. Specifically, each work term in the co-op group contained a mixture of students with different academic ranks (i.e., sophomores, juniors, and seniors), as well as ages. For example, it was not uncommon for a senior to have possessed only one work term of co-op experience, whereas a junior may have possessed three work terms of co-op experience. There was considerable variation in academic rank among students in these co-op work terms. Some students had selected engineering or computer science later in their undergraduate years due to a change in majors and consequently were somewhat older than their co-op classmates. Though age has not been shown to be an influencing factor on CDMSE in college studies using traditional age students (Luzzo et al., 1997; Solberg et al., 1995; Blustein, 1989), it is unknown whether the variation in academic rank may have influenced CDMSE scores in the respective work terms. If a scenario existed where only sophomores completed the first work term, only juniors completed the second work term, and only seniors completed the third work term, perhaps a significant

difference in CDMSE may have been found in the co-op group. Though the researcher was surprised in not having found a significant cumulative effect in CDMSE, perhaps if this scenario had existed there may have been a significant difference in CDMSE found between the first and third co-op work terms. This speculation is based on the observation that seniors typically have had more time to acquire work experience than juniors or sophomores. It is unclear as to what influence, if any, other work experience that was acquired outside of the co-op program may have had on co-op students' CDMSE in this study. This remains open to further research.

3. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience related to their field of study or career interests]?

The One-Way ANOVA revealed that there was no significant difference in CDMSE among completed work terms in the non-co-op (related) work experience group. Though the results indicated there was no significant cumulative effect in CDMSE, there was a pattern of increasing CDMSE at the completion of each work term. As previously mentioned, the CDMSE results for the non-co-op (related) work experience group may indicate that students were obtaining work experiences that provided opportunities for successful performance accomplishments (Bandura, 1986) that closely approached those work experiences found in the cooperative education program.

It is worth noting that this study found 49.3% of the students in the non-co-op (related) work experience group indicated that an internship was the single most significant work experience acquired during the college years. Therefore, it seems probable that internship work experiences were similar to co-op work experiences in their capacity to provide students with opportunities that facilitate successful performance accomplishments. Consequently, it seems logical to conclude that participation in internship work experiences probably had a positive effect on students' confidence to successfully perform career decision-making tasks (CDMSE). Internship experiences may have facilitated increases in career decision-making confidence by providing work strategies that were similar to those found in co-op work experiences. Work

strategies such as job duties that relate to the student's field of study, structured or planned job duties, and employer concern that the job duties contribute to the student's education have been found to increase career decision-making confidence (Weinstein, 1981). The speculation that internship experiences have likely increased CDMSE in this present study seem to support the findings of Pedro (1984). This prior study found significant gains in career self-efficacy among university students participating in an internship experience.

Another explanation based on social cognitive theory (Bandura, 1986) for the CDMSE results in the non-co-op (related) work experience group may have been that students who engaged in internship experiences possessed outcome expectations and personal goals that were similar to those shared by co-op students. Like their co-op counterparts, internship students likely sought meaningful career-related experiences and possessed expectations that such work would assist them in attaining career planning goals. Having not expected the considerable number of students who acquired internship work experiences, the researcher was surprised by the CDMSE results for this non-co-op group. The findings of this study suggested to the researcher that future studies on CDMSE and internships are worthy of further investigation.

4. Is there a significant difference [a cumulative effect] in Career Decision-Making Self-Efficacy (CDMSE) among completed work terms in the Non-Cooperative Education Work Experience Group [students having work experience not related to their field of study or career interests]?

The One-Way ANOVA revealed that there was a significant difference in CDMSE only between the first and second work term in the non-co-op (unrelated) work experience group. Consequently, there was not a significant cumulative effect in CDMSE between each of the three work terms. The researcher was surprised by the higher CDMSE score for the first work term ($M = 97.40$) in contrast to the second work term ($M = 88.48$). As mentioned earlier, one may speculate that students who possessed work experience that was both limited and unrelated to their field of study may also have had poorly developed decision-making skills. Poorly developed decision-making skills may cause gross overestimation of confidence and consequently inflate CDMSE scores. An overestimation of confidence in one's career decision-

making skills has been found in an earlier study by Luzzo (1993a) who investigated career decision-making skills and CDMSE.

It may also be argued that students in the non-co-op (unrelated) work experience group had fewer opportunities to exercise and test work skills and abilities that serve to clarify future career goals/direction. With fewer opportunities to demonstrate and attain successful performance accomplishments (Bandura, 1986), students in the non-co-op (unrelated) work experience group yielded lower overall CDMSE scores. Though only a speculation, these lower CDMSE scores may suggest that students demonstrated less exploratory behavior in terms of taking the initiative to seek out meaningful, career-relevant work. Alternatively, students that had engaged in the planned career exploration activity of co-op and/or internship work experience may explain the higher CDMSE scores. It is unclear whether higher CDMSE is an antecedent or consequence of greater engagement in career exploration activities. If this speculation is valid, then the findings of this study may support the prior findings of Blustein's (1989) study. The relationship between CDMSE and engagement in career exploration activities seems logical; however, more research is needed to validate whether a causal relationship exists.

5. Does the Cooperative Education Work Experience Group at each completed work term possess an internal career locus of control and do the Non-Cooperative Education Work Experience Groups at each completed work term possess an external career locus of control?

A test of two proportions revealed that there was no significant difference in the proportion of internal career locus of control between the co-op work experience group and the non-co-op work experience group. For this analysis, the two non-co-op work experience groups were treated as one group. This was done as career locus of control was not a dependent variable in this study and the researcher sought only to validate prior findings. As prior investigations (Luzzo, 1993b; Trice et al., 1989; Taylor, 1982; Gable et al., 1976) revealed a relationship between engagement in career planning [career exploration] activities and an internal career locus of control, it was expected that the co-op group would possess an internal career locus of control. Alternatively, the non-co-op group was expected to possess an external career locus of control. The findings of this study did not provide validation of prior investigations. It was

particularly interesting to find that 90.7% of students in the co-op group and 88.0% of students in the non-co-op group possessed an internal career locus of control. These findings revealed that regardless of students' work experience background, most students believed that they could control career outcomes by exercising effort. As they did not possess an external career locus of control, most students did not believe that career outcomes were largely under the control of the difficulty of the task, powerful others, or chance factors.

There are several possible explanations for these unexpected findings. Prior investigations of career locus of control have been primarily limited to college students who were indecisive about their career choice (Luzzo, 1993b; Taylor, 1982) and thus confined their samples to freshmen and sophomores. In contrast, this study utilized sophomores through seniors who already possessed a designated field of study and consequently may have felt more secure about future career planning. Moreover, the students in this study had the opportunity to accrue varying amounts of work experience (both co-op and/or non-co-op) which may have influenced their career locus of control beliefs. Non-co-op students may have worked at part-time jobs or work-study while attending school in an effort to help pay for tuition costs. It may be speculated that students who work to finance their education may recognize the relationship between their own efforts and the future outcome of attaining a degree. Perhaps working students also see future career planning outcomes as dependent upon their own effort. Moreover, as tuition costs today are considerably higher than a decade ago, it seems plausible that students in prior career locus of control studies may have spent less time working to finance their education. If this speculation has merit, it may partly explain why this study found non-co-op students adhering to an internal career locus of control. Also, in contrast to prior studies, this study did not use freshmen students or undeclared students and thus it is uncertain whether some students may have changed career locus of control status [external to internal] just prior to becoming a sophomore or declaring a major. Additionally, as a pretest/posttest design was not used in this study, it is unclear as to what influence, if any, the specific types of work experience may have had on career locus of control. Future researchers, who prefer to go beyond validation and examine career locus of control as a dependent variable, may wish to consider these speculations when developing their research design.

At the onset of this study, the researcher's rationale that only the co-op group would possess an internal career locus of control was also based on the premise that these students were obtaining employment that was well suited to their career aspirations. As the findings revealed that both the co-op and the non-co-op group possessed an internal career locus of control, no support was found for the Friedrich (1988) or Luzzo et al. (1997) studies. These studies did find a relationship between aspiration-employment congruence and a career locus of control. Specifically, students that were employed in positions that matched their career aspirations were found to possess an internal career locus of control.

Other possible explanations for these unexpected findings may lie with the actual measurement instrument itself or the composition of the sample used in this study. Though it is open to speculation, perhaps the Career Development Locus of Control (CDLC) scale was not ideally suited for use with co-op students. Specifically, the CDLC scale (Trice et al., 1989) was validated in three studies using three different student samples. The first sample utilized college seniors who either did or did not initiate a job search prior to graduation. The second sample utilized college juniors who had not yet declared their majors. Finally, the third sample utilized college juniors who on their own volition attended various career activities offered on campus. These three sample studies along with all the other previously cited locus of control studies utilized only liberal arts or social science students. As this was the first study to examine career locus of control with engineering and computer science students, it is uncertain whether these fields of study influenced career locus of control. Also, as this was the first study to use the CDLC scale with a co-op student sample, it is unclear whether the scale is suitable for students who are already actively engaged in a structured employment program. Of course, even if the scale is suitable for use with co-op students, this still does not explain why non-co-op students also possessed an internal career locus of control. Although it is reasonable to conclude that students with structured internship experiences may have skewed the non-co-op (related) work experience group toward an internal career locus of control, it is unclear why the non-co-op (unrelated) work experience group did not possess an external career locus of control. As this was the first study to examine career locus of control and co-op work experience, more studies using engineering and other disciplines are needed before definitive conclusions can be reached.

6. Is there a significant difference in work satisfaction among the Cooperative

Education Work Experience Group and the Non-Cooperative Education Work Experience Groups at each completed work term, as reported on the researcher-developed questionnaire?

A series of One-Way ANOVAs revealed that a significant difference in work experience satisfaction was found among the co-op and non-co-op groups at each of the three work terms. In fact, each group shared the same pattern of significance regardless of the work term completed. Specifically, the co-op group was significantly higher on work experience satisfaction than the non-co-op (unrelated) work experience group. Similarly, the non-co-op (related) work experience group was significantly higher on work experience satisfaction than the non-co-op (unrelated) work experience group. Although contrary to expectation, the co-op group was not significantly different from the non-co-op (related) work experience group on work experience satisfaction. As stated earlier, work experience satisfaction in this study was based on the student's single most significant work experience acquired during the college years. The non-co-op (related) work experience group reported slightly higher work experience satisfaction than the co-op group. The non-co-op (unrelated) work experience group consistently reported the lowest level of work experience satisfaction as expected.

The higher work experience satisfaction scores in the non-co-op (related) work experience group is probably best explained by examining the composition of students in this group. Specifically, this study found 49.3% of these students had reported an internship as being their single most significant work experience. It would seem logical to conclude that students were obtaining quality internship experiences that were comparable to experiences offered within the cooperative education program. As noted earlier, quality work experiences are characterized as providing structured work duties (Fletcher, 1989; Weinstein, 1981) and sufficient supervision (Brooks et al., 1995). In addition, quality work experiences provide the student with meaningful opportunities for learning and practicing new skills. Learning is enhanced when students have opportunities to demonstrate successful performance accomplishments and benefit from vicarious experiences (i.e.- exposure to role models/mentors) and verbal persuasion (encouragement) (Bandura, 1986). Clearly, many factors have the potential to influence work experience satisfaction. This study, by no means, addressed all possible factors. Structured work

duties, sufficient supervision, and learning opportunities possess the potential to influence work experience satisfaction in a positive manner. This study's findings suggest that both co-op and internship work experiences may offer equal potential for satisfying work.

The distinct pattern of work experience satisfaction scores in this study suggests to the researcher that the Career/Work Experience Questionnaire was effective in capturing the differences in quality among the work experience groups. Though the content validity of the questionnaire had been established, the researcher concedes that with the use of items from several content areas based on different theoretical perspectives, it is difficult to ascertain the contribution made by social cognitive theory. In other words, was the difference in the quality of the work experience due to the sources of self-efficacy information (the first three items), the structure/supervision of the work environment, or did both factors contribute equally? Though this is left open to speculation in this study, future studies that examine the quality of co-op and internship work experiences are worthy of further investigation. It seems clear from this study's findings that students who seek greater work experience satisfaction could benefit significantly by pursuing either co-op or internship work experiences.

This study also revealed interesting insight into students' perceptions of their single most significant work experience. In section three of the survey, students were asked to describe the most important personal and/or professional things that they had learned from their single most significant work experience. The researcher was surprised by the students' feedback for two reasons. First, there was very little difference in the content of the feedback between the work experience groups. For example, it was expected that co-op students would elaborate the most about important professional learning accomplishments such as the acquisition of new skills. Though some co-op students did discuss the acquisition and growth of new work skills, it did not overshadow similar comments on work skills by the non-co-op (related) work experience group. As previously mentioned, 49.3% of these students had indicated that an internship was their single most significant work experience. Thus, some internship students also commented on the development of new work skills.

Second, most students regardless of the work experience group, put more emphasis on discussing personal things that they had learned from their single most significant work experience. By far, the most prevalent comments dealt with office politics, getting one's work

noticed, getting along with co-workers, and pleasing the boss. The general thrust of students' comments focused on organizational dynamics such as learning how the system works. Comments on professional things that students had learned from their single most significant work experience tended to focus on the development of interpersonal skills, communicating appropriately to superiors and co-workers, learning to work well in a group (team player), and asserting one's ideas. The professional learning experiences reported in this study did support the earlier findings of Marks and Wohlford (1971). Feedback on personal and professional learning experiences indicated that most students were distinctly aware of organizational issues and consequently focused their attention on trying to meet the expectations of employers. Though student feedback from this study was not limited to co-op students only, these findings do seem to support the organizational socialization issues described by Brown (1985). Her study mentioned that co-op students perceive their work as an opportunity to get acclimated to company policies and consequently value commitment to their employing organization.

It is noteworthy that the present study found 94.7% of co-op students had selected a co-op work experience as their single most significant work experience during their college years. It seems clear that co-op students place considerable value on the work experience they have acquired through the cooperative education program. Though students mentioned several reasons for electing to participate in the co-op program, the primary reason was the belief that participation would yield a competitive advantage in obtaining employment upon graduation. Some students believed employment would not be realized unless they participated in the co-op program. Most students perceived the job market as being competitive and that employers demanded career-related work experience. A secondary reason for participating in the program was a desire to evaluate one's career goals and/or academic direction. Many students viewed participation in the co-op program as an essential opportunity to reality-test whether they were pursuing the appropriate major (e.g., engineering, computer science), the appropriate discipline within the major (e.g., electrical engineering, mechanical engineering, etc.), the appropriate work environment (e.g., manufacturing plant, laboratory, office, etc.), or the appropriate work tasks (e.g., production, research, sales, etc.). The consensus from the feedback was that co-op students were pleased with their co-op work experience because it assisted them in either confirming or changing their career goals and/or academic direction. Some students were quite enthusiastic

about their co-op experience(s) and highly recommended the program to other students who may be undecided about participating. The positive feedback, especially as it relates to reality-testing, supports the earlier findings of Martello and Shelton (1980) and Weinstein (1981).

It was interesting to the researcher to find that 56.3% of co-op students that had completed three work terms in the present study had selected their first co-op work term as being their most significant work term. As work skills typically improve with practice over time, it was thought that co-op students would perhaps select their third work term as being the most significant work term. Though this finding was based on a rather small sample ($n = 25$), it raised the following speculation. The preference for the first work term may suggest that students were more concerned initially with reality-testing their career goals and/or academic direction than in improving work skills. The findings of this study seem to support this speculation as 30.7% of students sought to evaluate their career goals and/or academic direction compared to 2.6% who sought to improve work skills in their chosen field. If this speculation has merit, it may suggest that students utilize the first co-op work term as a juncture to either continue in or change their designated field of study. This suggests the critical importance of placing the co-op student in a suitable work assignment upon entry into the program. Thus, the co-op advisor should solicit the student's vocational interests, abilities, and future career plans and thereafter assist the student to select the most appropriate work option(s). Moreover, this study may suggest that it's prudent for co-op advisors to spend the greatest proportion of their time with newly enrolled co-op students who have not yet started their first work term.

Despite the potential benefits derived from participating in the co-op program, this study's findings revealed that 51.4% of all students in the non-co-op (related and unrelated) work experience groups did not enroll in the program because they believed it required an excessive commitment of time. Many students expressed that they were simply not willing to delay their graduation beyond the traditional four-year period. An additional 12.0% of students indicated they were not aware of the program's potential benefits and 4.7% were not even aware that such a program existed. These findings suggest that co-op administrators need to exercise greater effort in promoting the benefits of co-op participation to their students. Perhaps more students would delay their graduation if they were aware of the career development and financial benefits of co-op participation. It would seem unlikely that co-op administrators would be able to

accomplish this goal all by themselves. As this study found a number of satisfied co-op students who were enthusiastic supporters of the program, an initiative targeted at enlisting the support of these students would seem worthwhile. Perhaps these co-op students could serve as role models and discuss what they learned from their work experiences with students who are still undecided about participating in the program. Enthusiastic co-op students should make ideal role models because they have successfully dealt with career decision-making challenges and are similar in age to the undecided students.

Student feedback in this study has provided greater insight into the motivations and expectations of college students as they engage in different types of work experiences. Though findings in this study were often unexpected, it seems clear from student comments that participation in the cooperative education program has had a noteworthy impact on career decision-making and career planning. Overall, co-op students were well pleased with the opportunity to reality-test their career goals. As noted earlier, this finding on reality-testing was reported in prior co-op investigations.

Though no evidence was found for a significant cumulative effect in career decision-making self-efficacy (CDMSE) at the completion of each work term, this study's findings do suggest a relationship existed between type of work experience and CDMSE. As this was the first study to examine CDMSE and co-op participation, more research is needed to investigate the nature and extent of this relationship. Similarly, this was the first study to examine career locus of control and co-op participation. Though the finding of career locus of control was contrary to expectation, it would be premature to rule out the possibility of a relationship without further study. On a more positive note, this study's findings did reveal a distinct pattern of significance in regards to work experience satisfaction among the work experience groups. Students who are sincere in their desire for greater work satisfaction would be wise to pursue co-op and/or internship work experience(s).

Students who acquire career-related work experience should continue to attract the attention of employers who wish to remain competitive in today's global economy. As greater emphasis is placed on the selection and retention of human resources, the need for further research on college student employment and career maturity should become apparent. At the present time, our knowledge of the relationship between cooperative education and career

development is still rather limited. The findings of this study suggest that more research is needed to capture the relative contribution of each co-op work term. It is hoped that this study may serve as a catalyst for other researchers who seek to further explore the vocational behavior of cooperative education students.

Limitations of the Present Study

As this study utilized a quasi-experimental research design, there was no random assignment of students into the three work experience groups. The absence of random assignment is a threat to internal validity and consequently no claim for a causal relationship can be made in this study. It is not possible to state unequivocally that type of work experience and completion of work terms affected CDMSE and work experience satisfaction. Though significance was found for work experience satisfaction among the work experience groups, more studies need to be done to determine if these findings can be replicated.

Another threat to internal validity, namely maturation, may have limited the findings in this study. This study utilized a sample of traditional age college students and it is not believed that age was an influencing factor on CDMSE as also found in the previously cited studies. However, the work experience groups at each completed work term contained a mixture of students (i.e., sophomores, juniors, and seniors) that possessed a variety of work experiences. It is believed that the variety of acquired work experiences, as opposed to mere age, may have limited or confounded the findings in this study.

Another maturation effect that may have been a threat to internal validity is that over time some students may have engaged in career exploration activities outside of their respective work experience(s). This study did not investigate whether some students had taken advantage of the various career services available to them on campus. For example, some students could have met with a counselor and received career guidance, used a computer-assisted career guidance system such as DISCOVER, read occupational information, or perhaps attended a career decision-making or resume workshop. Moreover, some students may have engaged in informational interviewing or job shadowing experiences prior to this study. One or more of these career exploration activities may have influenced the students' CDMSE or career locus of control. Engagement in career exploration activities may or may not have been related to age. Though

this study utilized students with declared majors (i.e., engineering, computer science), it does not rule out the possibility that some students may have engaged in career exploration activities prior to this study.

Another possible threat to internal validity in this study may have been selection bias. As this study found most students possessed an internal career locus of control, perhaps students of an external career locus of control decided not to respond to the initial survey invitation. Moreover, as external career locus of control students do not believe they can control career outcomes by exercising effort, perhaps these students were not motivated to respond to a survey on career planning and decision-making. Thus, this survey topic may have a selection bias effect on this student population.

As with any self-report measure dealing with confidence, it is possible that some students may have underestimated or overestimated their confidence to successfully perform various career decision-making tasks (CDMSE). The possibility of overestimation of confidence was discussed earlier in this study in regards to the non-co-op (unrelated) work experience group at the completion of the first work term. As mentioned, Luzzo (1993a) found that poorly developed decision-making skills may cause gross overestimation of CDMSE. Though he found a relationship between CDMSE and career decision-making attitudes, Luzzo did not find a relationship between CDMSE and career decision-making skills. Luzzo's findings suggest that an estimation of confidence in one's skills may not be confirmed in an objective measure of actual skills. Thus, the possibility of underestimating or overestimating one's confidence may have limited this study's findings.

Possible threats to external validity may have also limited the findings of this study. As only Virginia Polytechnic Institute & State University students participated in this study, its generalizability to other college populations may be limited. In addition, as this was the first study to examine the constructs of CDMSE and career locus of control with cooperative education students, its generalizability may also be limited. Having utilized only university students, caution should be exercised when attempting to generalize this study's findings to high school students or employed professionals. Moreover, it is also unclear if the findings would be generalizable to a more ethnically diverse student population. Finally, as this study utilized only engineering and computer science students, the findings may not be generalizable to students of

other academic majors. Perhaps, engineering and computer science students are more committed to their chosen career path than students of other majors and consequently the CDMSE findings of this study may not be generalizable to students of other majors. In the absence of other research, this study's findings remain open to speculation.

Recommendations for Future Research

A number of studies could be undertaken to further examine CDMSE and career locus of control. Studies that utilize research designs which reduce the internal validity threat of maturation would probably contribute the most to our understanding of these two constructs. For example, a study that utilized a pretest/posttest design to compare the differences between co-op work experience and internship work experience on CDMSE and career locus of control would be worthy of investigation. Although there are limitations with any research design, it would be helpful to capture the assessment data just prior to the work assignment and then immediately after the assignment. With students enrolled in the co-op program, this could be accomplished with the assistance of the co-op advisors. Before each assignment begins, the co-op advisor could request the co-op student to participate in the study and complete the instruments. Then, right before the completion of the assignment the employer could have the student complete the instruments. Upon completion, the employer would surrender the student's final paycheck and the employer could mail back the instruments to the co-op advisor or researcher. Obviously, the researcher and co-op advisors would have to solicit the cooperation of participating employers in order for the study to be successful. It would be challenging to encourage the participation and cooperation of students who were pursuing internship work experiences. With these students, the employers would probably have to play a greater role in such an assessment study.

If the preceding research study was successful, then it may be possible to conduct a longitudinal study. This would provide an excellent opportunity for a repeated-measures design and should provide useful data on the influence of each successive work assignment (work term) on each student. If students were interested in participating in the longitudinal study and also agreed not to utilize any other career exploration activities while in the study, the findings may provide a substantial contribution to our current knowledge of CDMSE and career locus of

control. Perhaps the larger employers who may be more committed to the cooperative education program would be interested in the longitudinal study.

Although prior studies have not found any gender effects with CDMSE, it may still be interesting to study gender and engineering or computer science co-op students as they progress through the program. As no prior studies have examined CDMSE and gender in technical disciplines, this type of co-op study could make a contribution to our present knowledge of vocational behavior. Additional work experience studies that utilize other technical or scientific disciplines are also needed to further examine CDMSE and career locus of control. Future studies that examine both co-op and internship work experience and utilize students from a wide range of college majors are also worthy of investigation.

As prior researchers of CDMSE and career locus of control have conducted their college studies either with traditional or nontraditional age students, a future researcher may wish to investigate both types of students in a single study. To date, studies utilizing nontraditional college students have generally shown that age has a moderating effect, at best, on CDMSE. Alternatively, studies utilizing traditional college students have not shown that age has an influencing factor on CDMSE. A researcher may wish to collect data at a college from both traditional and nontraditional students. Moreover, the researcher may wish to compare traditional and nontraditional students from two ethnically different college populations. This type of study would address the present paucity of research on CDMSE and ethnicity.

Another shortcoming of research on CDMSE and career locus of control has been the exclusive use of college student populations. Future researchers may wish to investigate the vocational behavior of working professionals. CDMSE and career locus of control instruments could be developed specifically for use with working professionals that are facing job transitions. These instruments could be utilized by researchers and counselors working in outplacement and private practice settings. As these instruments can be administered and scored in a brief period of time, their use is well suited for both research and practice purposes.

Finally, future researchers may also wish to collect their data electronically as was done in this study. Though electronic surveying eliminates substantial postage costs, the researcher must still engage in the time consuming task of monitoring the data collection process. The expectation held by the researcher that electronic surveying would facilitate a faster and higher

response rate than traditional mailings did not come to fruition. As with traditional mailings, it was still necessary to send out multiple e-mail reminders/surveys. The college students in this study were competent in using computers; this may not be the case with other populations. Thus, it is recommended that future researchers consider whether electronic surveying is appropriate for their population.

Summary

This study investigated the relationship of cooperative education exposure to career decision-making self-efficacy and career locus of control. Though no evidence was found for a significant cumulative effect in CDMSE at the completion of each work term, this study's findings do suggest a relationship existed between type of work experience and CDMSE. Contrary to expectation, students possessed an internal career locus of control regardless of the type of work experience acquired. A distinct pattern of significance was found for work experience satisfaction, regardless of the work term completed. Though the co-op group and non-co-op (related) work experience group were comparable on work experience satisfaction, the non-co-op (unrelated) work experience group reported significantly lower work experience satisfaction. Survey feedback indicated co-op students were well pleased with the opportunity to reality-test their career goals in the cooperative education program. Further research is necessary to validate this study's findings.

REFERENCES

Arnold, J., & Bye, H. (1989). Sex and sex role self-concept as correlates of career decision-making self-efficacy. *British Journal of Guidance and Counselling*, 17, 201-206.

Baker, W. (1968). A study of selected characteristics of cooperative engineering students. *Journal of Cooperative Education*, 5 (2), 40-48.

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

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

Bandura, A. (1989). Human agency in social cognitive theory. *American Psychologist*, 44, 1175-1184.

Bandura, A. (1991). Human agency: The rhetoric and the reality. *American Psychologist*, 46, 157-162.

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

Barbeau, J. (1985). *Second to none*. Boston: Northeastern University Custom Book Program.

Bernardelli, A., DeStefano, J., & Dumont, F. (1983). Occupational information-seeking as a function of locus of control and other personality variables. *Canadian Counsellor*, 17, 75-81.

Betz, N. E. (1988). The assessment of career development and maturity. In W. B. Walsh & S. H. Osipow (Eds.), *Career decision making* (pp. 77-136). Hillsdale, NJ: Lawrence Erlbaum Associates.

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

Betz, N. E., Klein, K. L., & 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., & Luzzo, D. A. (1996). Career assessment and the Career Decision-Making Self-Efficacy Scale. *Journal of Career Assessment*, 4, 413-428.

Betz, N. E., & Serling, D. (1995). Fear of commitment and career decision-making self-efficacy. Unpublished manuscript, Department of Psychology, Ohio State University.

Blustein, D. L. (1987). Social cognitive orientations and career development: A theoretical and empirical analysis. *Journal of Vocational Behavior*, 31, 63-80.

Blustein, D. L. (1989). The role of goal instability and career self-efficacy in the career exploration process. *Journal of Vocational Behavior*, 35, 194-203.

Brooks, L., Cornelius, A., Greenfield, E., & Joseph, R. (1995). The relation of career-related work or internship experiences to the career development of college seniors. *Journal of Vocational Behavior*, 46, 332-349.

Brown, S. (1976). Cooperative education and career education: A comparative study of alumni. Boston: Northeastern University, Cooperative Education Research Center. (ERIC Document Reproduction Service No. ED 141 503)

Brown, S. (1984). The influence of cooperative education on first job after college. Boston: Northeastern University, Cooperative Education Research Center. (ERIC Document Reproduction Service No. ED 254 663)

Brown, S. (1985, April). Cooperative education as a predictor of organizational socialization and sense of power in first job after college. Paper presented at the annual meeting of the American Educational Research Association, Chicago, IL. (ERIC Document Reproduction Service No. ED 261 621)

Cash, S. (1987). Employability and job satisfaction of co-op versus non-co-op business undergraduates, 1978-1979. Proceedings of the Fifth World Conference on Cooperative Education. Amsterdam: World Council and Assembly on Cooperative Education.

Cornelius, C. (1978). Florida community college student self-perceptions related to an initial semester of participation in a cooperative education program. Unpublished doctoral dissertation, University of Florida.

Crites, J. O. (1961). A model for the measurement of vocational maturity. *Journal of Counseling Psychology*, 8, 255-259.

Crites, J. O. (1978). *Career Maturity Inventory*. Monterey, CA: McGraw Hill.

Cronbach, L. S., & Meehl, P. (1955). Construct validity in psychological tests. *Psychological Bulletin*, 52, 281-302.

Decker, P. S. (1995). Explanatory style, self-efficacy, and job-seeking behavior (Doctoral dissertation, University of Missouri, Kansas City, 1995). *Dissertation Abstracts International*, 56, 3055A.

Dubick, R. A., McNerny, R. B., & Potts, B. K. (1996). Career success and student satisfaction: A study of computer science cooperative education graduates. *Journal of Cooperative Education*, 32 (1), 66-74.

Ducat, D. E. (1979). Cooperative education, self-concept, and occupational concept for community college students (Doctoral dissertation, Columbia University, 1979). *Dissertation Abstracts International*, 40, 1360B.

Ducat, D. E. (1980). Cooperative education, career exploration, and occupational concepts for community college students. *Journal of Vocational Behavior*, 17, 195-203.

Erickson, A. R. (1995). Expectations and job search behavior among graduating university seniors (Doctoral dissertation, Iowa State University, 1995). *Dissertation Abstracts International*, 56, 2914B.

Feldman, D. C., & Weitz, B. (1990). Summer interns: Factors contributing to positive developmental experiences. *Journal of Vocational Behavior*, 37, 267-284.

Fletcher, J. K. (1989). Student outcomes: What do we know and how do we know it? *Journal of Cooperative Education*, 26 (1), 26-38.

Fletcher, J. K. (1990). Self-esteem and cooperative education: A theoretical framework. *Journal of Cooperative Education*, 26 (3), 41-55.

Fletcher, J. K. (1991). Field experience and cooperative education: Similarities and differences. *Journal of Cooperative Education*, 27 (2), 46-54.

Frankel, S., Cohen, A., & Deane, R. (1977). *Cooperative education: A national assessment*. Silver Springs, MD: Applied Management Sciences.

Friedrich, J. (1988). The influence of locus of control on students' aspirations, expectations, and information preferences for summer work. *Journal of College Student Development*, 29, 335-339.

Fukuyama, M. A., Probert, B. S., Neimeyer, G. J., Nevill, D. D., & Metzler, A. E. (1988). Effects of DISCOVER on career self-efficacy and decision making of undergraduates. *The Career Development Quarterly*, 37, 56-62.

Fuqua, D. R., Blum, C. R., & Hartman, B. W. (1988). Empirical support for the differential diagnosis of career indecision. *The Career Development Quarterly*, 36, 364-373.

Furnham, A., & Steele, H. (1993). Measuring locus of control: A critique of general, children's, health- and work-related locus of control questionnaires. *British Journal of Psychology*, 84, 443-479.

Gadzera, M. (1988). The effects of cooperative education on the career maturity and self-esteem of community college students. (Doctoral dissertation, Boston University, 1988). *Dissertation Abstracts International*, 49, 2079A.

Gardner, P. D., & Motschenbacher, G. (1993). More alike than different: Early work experiences of co-op and non-co-op engineers. East Lansing, MI: Michigan State University, Collegiate Employment Research Institute. (ERIC Document Reproduction Service No. ED 362 659)

Gillin, L., Davie, R., & Beissel, K. (1984). Evaluating the career progress of Australian engineering graduates. *Journal of Cooperative Education*, 20 (3), 53-70.

Hackett, G., & Lent, R. W. (1992). Theoretical advances and current inquiry in career psychology. In S. D. Brown & R. W. Lent (Eds.), *Handbook of counseling psychology* (2nd ed., pp. 419-451). New York: Wiley.

Hackett, G., Lent, R. W., & Greenhaus, J. H. (1991). Advances in vocational theory and research: A 20-year retrospective. *Journal of Vocational Behavior*, 38, 3-38.

Hardiness Institute. (1987). Fact sheet for third generation hardiness test. (Unpublished manuscript).

Hartman, B. W., & Fuqua, D. R. (1982). The construct validity of the Career Decision Scale adapted for graduate students. *Vocational Guidance Quarterly*, 31, 69-77.

Healy, C. C., O'Shea, D., & Crook, R. H. (1985). Relation of career attitudes to age and progress during college. *Journal of Counseling Psychology*, 32, 239-244.

Hird, J. S. (1995). The relationship of sources of efficacy information to career decision-making self-efficacy (Doctoral dissertation, Arizona State University, 1995). *Dissertation Abstracts International*, 56, 2173A.

Holland, J. L., Daiger, D., & Power, P. G. (1980). *My Vocational Situation*. Odessa, FL: Psychological Assessment Resources.

Jagacinski, C. M., LeBold, W. K., Linden, K. W., & Shell, K. D. (1986). The relationship between undergraduate work experience and job placement of engineers. *Engineering Education*, 76 (4), 232-236.

Jarrell, D. (1974). Co-ops and non-co-ops at NASA. *Journal of Cooperative Education*, 10 (2), 51-54.

Jordaan, J. P. (1963). Exploratory behavior: The formation of self and occupational concepts. In D. E. Super (Ed.), *Career development: Self-concept theory* (pp. 42-78). New York: College Entrance Examination Board.

Knowles, A. S., & Associates (Eds.). (1971). Handbook of cooperative education. San Francisco: Jossey-Bass.

Krumboltz, J. D. (1988). The Career Beliefs Inventory. Palo Alto, CA: Consulting Psychologists Press.

Lent, R. W., & Brown, S. D. (1996). Social cognitive approach to career development: An overview. *The Career Development Quarterly*, 44, 310-321.

Lent, R. W., Brown, S. D., & Hackett, G. (1994). Toward a unifying social cognitive theory of career and academic interest, choice, and performance [Monograph]. *Journal of Vocational Behavior*, 45, 79-122.

Lent, R. W., Brown, S. D., & Larkin, K. C. (1986). Self-efficacy in the prediction of academic performance and perceived career options. *Journal of Counseling Psychology*, 33, 265-269.

Lent, R. W., Brown, S. D., & Larkin, K. C. (1987). Comparison of three theoretically derived variables in predicting career and academic behavior: Self-efficacy, interest congruence, and consequence thinking. *Journal of Counseling Psychology*, 34, 293-298.

Lent, R. W., & Hackett, G. (1987). Career self-efficacy: Empirical status and future directions [Monograph]. *Journal of Vocational Behavior*, 30, 347-382.

Lent, R. W., & Hackett, G. (1994). Sociocognitive mechanisms of personal agency in career development: Theoretical prospects. In M. L. Savickas & R. W. Lent (Eds.), *Convergence in career development theories: Implications for science and practice* (pp. 77-101). Palo Alto, CA: Consulting Psychologists Press.

Lindenmeyer, R. S. (1967). A comparison of the academic progress of the cooperative and the four year student. *Journal of Cooperative Education*, 3 (2), 8-18.

Luzzo, D. A. (1993a). Value of career decision-making self-efficacy in predicting career decision-making attitudes and skills. *Journal of Counseling Psychology*, 40, 194-199.

Luzzo, D. A. (1993b). The relationship between undergraduates' locus of control and career development. *Journal of College Student Development*, 34, 227-228.

Luzzo, D. A. (1993c). Reliability and validity testing of the Career Decision-Making Self-Efficacy Scale. *Measurement and Evaluation in Counseling and Development*, 26, 137-142.

Luzzo, D. A. (1995). The relative contributions of self-efficacy and locus of control to the prediction of career maturity. *Journal of College Student Development*, 36, 61-66.

Luzzo, D. A. (1996). A psychometric evaluation of the Career Decision-Making Self-Efficacy Scale. *Journal of Counseling and Development*, 74, 276-279.

Luzzo, D. A., Funk, D. P., & Strang, J. (1996). Attributional retraining increases career decision-making self-efficacy. *The Career Development Quarterly*, 44, 378-386.

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, 166-172.

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, 307-317.

Maciorowski, J. F. (1996). Relationships between cooperative education participation and perceived personal development (Doctoral dissertation, The University of Connecticut, 1996). *Dissertation Abstracts International*, 58, 397A.

Maddux, J. E. (1995). Self-efficacy theory. In J. E. Maddux (Ed.), *Self-efficacy, adaptation, and adjustment: Theory, research, and application* (pp. 3-33). New York: Plenum Press.

Maddux, J. E., Stanley, M. A., & Manning, M. M. (1987). Self-efficacy theory and research: Applications in clinical and counseling psychology. In J. E. Maddux, C. D. Stoltenberg, & R. Rosenwein (Eds.), *Social processes in clinical and counseling psychology* (pp. 39-55). New York: Springer-Verlag.

Mann, R., & Schlueter, D. (1985). *The relationship between realistic expectations about work and the cooperative education work experience*. Boston: Northeastern University, Cooperative Education Research Center.

Marks, E., & Wohlford, J. (1971). The co-op experience and its effect on undergraduates. *Engineering Education*, 61 (7), 822-824.

Martello, J. S., & Shelton, P. D. (1980). An experimental study of career development in cooperative and non-cooperative education liberal arts students. *Journal of Cooperative Education*, 17 (1), 7-15.

Minitab (1997). [Statistical Software]. State College, PA: Minitab Inc.

Multon, K. D., Brown, S. D., & Lent, R. W. (1991). Relation of self-efficacy beliefs to academic outcomes: A meta-analytic investigation. *Journal of Counseling Psychology*, 38, 30-38.

Nevill, D. D., & Schlecker, D. I. (1988). The relation of self-efficacy and assertiveness to willingness to engage in traditional/nontraditional career activities. *Psychology of Women Quarterly*, 12, 91-98.

- Niles, S. G., & Sowa, C. J. (1992). Mapping the nomological network of career self-efficacy. *The Career Development Quarterly*, 41, 13-21.
- Osipow, S. H. (1973). *Theories of career development*. New Jersey: Prentice-Hall.
- Osipow, S. H. (1987). *The Career Decision Scale* (3rd ed.). Odessa, FL: Psychological Assessment Resources.
- Pedro, J. D. (1984). Induction into the workplace: The impact of internships. *Journal of Vocational Behavior*, 25, 80-95.
- Peterson, S. L., & del Mas, R. C. (1994). The component structure of career decision-making self-efficacy for underprepared college students. Unpublished manuscript, University of Minnesota at Minneapolis.
- Petty, R. E., & Cacioppo, J. T. (1981). *Attitudes and persuasion: Classic and contemporary approaches*. Dubuque, IA: Brown.
- Pittenger, K. K. (1993). The role of cooperative education in the career growth of engineering students. *Journal of Cooperative Education*, 28 (3), 21-29.
- Pratt, C. (1993). Procedures and outcomes for students in cooperative education (Doctoral dissertation, Seton Hall University, 1993). *Dissertation Abstracts International*, 54, 835A.
- Rhodes, H. (1968). The after effects of cooperative education. *Journal of Cooperative Education*, 6 (2), 13-32.
- Robbins, S. B. (1985, July). Validity estimates for the Career Decision-Making Self-Efficacy Scale. *Measurement and Evaluation in Counseling and Development*, 64-71.
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80 (1, Whole No. 609).
- Rotter, J. B. (1975). Some problems and misconceptions related to the construct of internal versus external control of reinforcement. *Journal of Consulting and Clinical Psychology*, 43, 56-67.
- Rotter, J. B. (1990). Internal versus external control of reinforcement: A case history of a variable. *American Psychologist*, 45, 489-493.
- Savickas, M. L. (1984). Career maturity: The construct and its measurement. *Vocational Guidance Quarterly*, 32, 222-231.

Savickas, M. L. (1993). Predictive validity criteria for career development measures. *Journal of Career Assessment*, 1, 93-104.

Schunk, D. H. (1986). Vicarious influences on self-efficacy for cognitive skill learning. *Journal of Social and Clinical Psychology*, 4, 316-327.

Smith, H. S. (1965). The influence of participation in the cooperative program on academic performance. *Journal of Cooperative Education*, 2 (1), 7-20.

Solberg, V.S., Good, G. E., Fischer, A. R., Brown, S. D., & Nord, D. (1995). Career decision-making and career search activities: Relative effects of career search self-efficacy and human agency. *Journal of Counseling Psychology*, 42, 448-455.

Solberg, V. S., Good, G. E., & Nord, D. (1994). Career search self-efficacy: Ripe for applications and intervention programming. *Journal of Career Development*, 21, 63-72.

Stern, D., Stone, J. R., Hopkins, C., McMillion, M., & Cagampang, H. (1992). Quality of work experience as perceived by two-year college students in co-op and non-co-op jobs. *Journal of Cooperative Education*, 28 (1), 34-47.

Super, D. E. (1957). *The psychology of careers*. New York: Harper & Row.

Taylor, K. M. (1982). An investigation of vocational indecision in college students: Correlates and moderators. *Journal of Vocational Behavior*, 21, 471-476.

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.

Taylor, M. S. (1988). Effects of college internships on individual participants. *Journal of Applied Psychology*, 73, 393-401.

Tinder, W. F. (1992). The effects of cooperative education on the career maturity and self-esteem of community/technical college students (Doctoral dissertation, Clemson University, 1992). *Dissertation Abstracts International*, 53, 1785A.

Trice, A. D., Haire, J. R., & Elliott, K. A. (1989). A career locus of control scale for undergraduate students. *Perceptual and Motor Skills*, 69, 555-561.

Tyler, R. W. (1971). Values and objectives. In A. S. Knowles & Associates (Eds.), *Handbook of cooperative education* (pp. 18-25). San Francisco: Jossey-Bass.

Van Gyn, G., Branton, G., Cutt, J., Loken, M., & Ricks, F. (1996). An investigation of entry level characteristics between co-op and non-co-op students. *Journal of Cooperative Education*, 32 (1), 15-28.

Vondracek, F. W., Lerner, R. M., & Schulenberg, J. E. (1986). *Career development: A life-span developmental approach*. Hillsdale, NJ: Lawrence Erlbaum Associates.

Weaver-Paquette, E. (1997). Crystallization and congruence: Implications of cooperative education experiences upon the career development process. *Journal of Cooperative Education*, 32 (2), 63-69.

Weinstein, D. (1981). Cooperative education program strategies and student career development in business and engineering curricula. *Journal of Cooperative Education*, 17 (2), 34-42.

Westbrook, B. W. (1983). Career maturity: the concept, the instrument, and the research. In W. B. Walsh & S. H. Osipow (Eds.), *Handbook of vocational psychology* (Vol. 1, pp. 263-303). Hillsdale, NJ: Lawrence Erlbaum Associates.

Weston, W. D. (1986). Career identity and its relationship to participation in cooperative education program. *Journal of Cooperative Education*, 23 (1), 25-36.

Williams, R. (1991). The impact of field education on student development: Research findings. *Journal of Cooperative Education*, 27 (2), 29-45.

Wilson, J. W. (1974). *Impact of cooperative education upon personal development and growth of values: Final report to the Braitmayer Foundation*. Boston: Northeastern University, Cooperative Education Research Center. (ERIC Document Reproduction Service No. ED 126 029)

Wilson, J. W. (1988). Research in cooperative education. *Journal of Cooperative Education*, 24 (2), 77-89.

Wilson, J. W., & Lyons, E. H. (1961). *Work-study college programs: Appraisal and report of the study of cooperative education*. New York: Harper & Brothers.

Appendix A

Career Decision-Making Self-Efficacy Scale-Short Form

CAREER QUESTIONNAIRE

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 entering the ‘number’ of your selection on the line to the left of the corresponding question.

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

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

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

If your response was “Moderate Confidence,” you would enter the number 3 on the appropriate line.

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:

- _____ 1. Find information in the library about occupations you are interested in.
- _____ 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.

**NO CONFIDENCE
AT ALL**
1

**VERY LITTLE
CONFIDENCE**
2

**MODERATE
CONFIDENCE**
3

**MUCH
CONFIDENCE**
4

**COMPLETE
CONFIDENCE**
5

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:

- ___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 about 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 the field you are interested in.
- ___20. Choose a major or career that will fit your interests.
- ___21. Identify employers, firms, 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 B

Career Development Locus of Control Scale

ATTITUDES TOWARD CAREER PLANNING QUESTIONNAIRE

DIRECTIONS: For each of the following, indicate whether you consider it True [T] or False [F] for you. Please mark your response with an (X).

- T() F() 1) Getting a good job is primarily a matter of being in the right place at the right time.
- T() F() 2) I expect that I will be able to get a career-entry job within a month after I start looking for one without much difficulty.
- T() F() 3) College grades play a very large role in getting a job.
- T() F() 4) I expect that my social/family/college connections will be the primary factor in getting my first job.
- T() F() 5) I expect to get a job primarily on my record of hard work.
- T() F() 6) I expect that when I go for a job interview, whether I am successful or not will largely depend on the impression the interviewer makes of me: there is little I can do to anticipate how the interviewer will perceive me.
- T() F() 7) I am confident that the career services on campus will be able to find me an excellent job upon graduation.
- T() F() 8) I would take a low paying position upon graduation that would help me in my career over a higher paying job that was not related to my career objectives.
- T() F() 9) I expect to be hired for my first job out of college on the basis of the skills I have worked on developing.
- T() F() 10) One day I will just happen onto a career option that is right for me.
- T() F() 11) I believe that the right career will just come my way.
- T() F() 12) There are too many factors involved in getting a job or entering a career that I have no control over to worry about it.
- T() F() 13) There is too much emphasis on getting a job these days in college.
- T() F() 14) Senior year is the time to start worrying about selecting a career.
- T() F() 15) I am very committed to my career, and I will do what I need to succeed in it.
- T() F() 16) Most of the people I know have just “lucked” into a career that was right for them.

[Continued Next Page]

T() F() 17) I have only a vague idea of what I want to be doing five years after graduation.

T() F() 18) I hate to think about careers and life after school.

Appendix C

Career/Work Experience Questionnaire

CAREER/ WORK EXPERIENCE QUESTIONNAIRE

SECTION 1 - DIRECTIONS: Please mark your response with an (X) to the following questions:

- 1) Gender status: ()Male ()Female
- 2) My current academic status: ()Sophomore ()Junior ()Senior Other: _____
- 3) In the section below, mark with an (X) your work experience(s) during your college years, the length of time, and whether or not it was related to your field of study:

<u>Work Experience:</u>	<u>Length (No. of Months):</u>	<u>Related to my field of study:</u>	
()Co-op	_____	()Yes	()No
()Internship	_____	()Yes	()No
()Summer Job	_____	()Yes	()No
()Work-Study	_____	()Yes	()No
()Other Full-time work	_____	()Yes	()No
()Other Part-time work	_____	()Yes	()No
()Military	_____	()Yes	()No
()Volunteer	_____	()Yes	()No
()No work experience [go to Section 3]			

- 4) My academic major is: ()Engineering ()Computer Science ()Business Other: _____

SECTION 2 - DIRECTIONS: In responding to the following questions below, Consider the Most Significant Work Experience You Had During Your College Years. By using the scale below, enter the Number of your selection on the line to the left of the corresponding question.

STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	2	3	4
<hr/>			

1) I believe I was successful in applying my academic knowledge to the work tasks that I was assigned.			

2) I could identify a co-worker who was an important role model or mentor to me.			

3) I received verbal encouragement from a co-worker or supervisor when faced with a challenging work task/situation.			

4) My assigned work duties were clearly defined.			

5) I received excellent supervision with helpful feedback in regards to my work performance.			

6) I found the work interesting.			

_____ 7) I performed the work well.

_____ 8) The work experience was helpful in confirming my career/academic direction.

_____ 9) The work experience was helpful in changing my career/academic direction.

SECTION 3 – DIRECTIONS: For Items 10 – 12 below, respond to all that apply to you.

10) I did not choose to enroll in the Cooperative Education Program at Virginia Tech because: (Mark your reason/s)

- Not aware of such a Program
- Requires too much time commitment
- Not aware of potential benefits/advantages
- Other: Please explain: _____

11) I chose to enroll in the Cooperative Education Program at Virginia Tech because:

12) I did not seek work experience related to my field of study because: _____

Appendix D

Career/Work Experience Questionnaire (Revised)

CAREER/ WORK EXPERIENCE QUESTIONNAIRE

[SECTION 1] - DIRECTIONS: Please mark your response with an (X) to the following questions:

- 1) Gender status: () Male () Female
- 2) My current academic status: () Sophomore () Junior () Senior Other: _____
- 3) My academic major is: () Engineering () Computer Science () Business Other: _____
- 4) My age is: _____

[SECTION 2] – DIRECTIONS: Complete Parts A, B, & C below. In Part A, mark with an (X) the type and number of each work experience you had during your college years. In Part B, record the length of time of each work experience. In Part C, indicate whether or not each work experience was related to your field of study.

[A] <u>Work Experience:</u>	[B] <u>Length (No. of Months):</u>	[C] <u>Related to My Field of Study:</u>
() Co-op		
() First work term	_____	() Yes () No
() Second work term	_____	() Yes () No
() Third work term	_____	() Yes () No
() Fourth work term	_____	() Yes () No
() Internship		
() First work term	_____	() Yes () No
() Second work term	_____	() Yes () No
() Third work term	_____	() Yes () No
() Fourth work term	_____	() Yes () No
() Summer Job		
() First	_____	() Yes () No
() Second	_____	() Yes () No
() Third	_____	() Yes () No
() Work-Study		
() First	_____	() Yes () No
() Second	_____	() Yes () No
() Third	_____	() Yes () No
() Other Part-time work		
() First	_____	() Yes () No
() Second	_____	() Yes () No
() Third	_____	() Yes () No
() Other Full-time work		
() First	_____	() Yes () No
() Second	_____	() Yes () No
() Third	_____	() Yes () No

[Continued on Next Page]

[A] Work Experience:

[B] Length (No. of Months):

[C] Related to My Field of Study:

Volunteer

First

Second

Third

Military

No work experience [Go to Section 4]

Yes No

Yes No

Yes No

Yes No

[SECTION 3] - DIRECTIONS: From Section 2, Select One Type of Work Experience That You Consider to be the Most Significant Work Experience You Had During Your College Years and indicate your choice below with an (X). Be sure to also indicate the appropriate number of the experience, i.e.- First, Second, Third, or Fourth. After making your selection, answer the following questions by using the scale below. Enter the Number of your selection on the line to the left of the corresponding question.

Co-op

Internship

First

Second

Summer Job

Work-Study

Third

Fourth

Other Part-time work

Volunteer

Other Full-time work

Military

STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	2	3	4

_____ 1) I believe I was successful in applying my academic knowledge to the work tasks that I was assigned.

_____ 2) I could identify a co-worker who was an important role model or mentor to me.

_____ 3) I received verbal encouragement from a co-worker or supervisor when faced with a challenging work task/situation.

_____ 4) My assigned work duties were clearly defined.

_____ 5) I received excellent supervision with helpful feedback in regards to my work performance.

_____ 6) I found the work interesting.

_____ 7) I performed the work well.

_____ 8) The work experience was helpful in confirming my career/academic direction.

_____ 9) The work experience was helpful in changing my career/academic direction.

[SECTION 4] – DIRECTIONS: For Items 10 – 12 below, respond to all that apply to you.

12) I did not choose to enroll in the Cooperative Education Program at Virginia Tech because: (Mark your reason/s)

- Not aware of such a Program
- Requires too much time commitment
- Not aware of potential benefits/advantages
- Other: Please explain: _____

13) I chose to enroll in the Cooperative Education Program at Virginia Tech because:

12) I did not seek work experience related to my field of study because: _____

Appendix E

Career/Work Experience Questionnaire (Final Revision)

CAREER/ WORK EXPERIENCE QUESTIONNAIRE

[SECTION 1] - DIRECTIONS: Please mark your response with an (X) to the following questions:

- 1) Gender status: ()Male ()Female
- 2) My current academic status: ()Sophomore ()Junior ()Senior Other: _____
- 3) My academic major is: ()Engineering ()Computer Science ()Business Other: _____
- 4) My age is: _____

[SECTION 2] – DIRECTIONS: Complete Columns A, B, C, & D below. In Column A, mark with an (X) the type and quantity of each work experience you had during your college years. In Column B, enter the number of hours you worked per week at each work experience. In Column C, enter the number of months you worked at each work experience. In Column D, indicate whether or not each work experience was related to your field of study or career interests.

[A] <u>Work Experience:</u>	[B] <u>Hours/Week:</u>	[C] <u>Months:</u>	[D] <u>Related to My Field of Study or Career Interests:</u>
() Co-op:			
() my First work term	_____	_____	()Yes ()No
() my Second work term	_____	_____	()Yes ()No
() my Third work term	_____	_____	()Yes ()No
() my Fourth or more work term(s)	_____	_____	()Yes ()No
() Internship:			
() my First experience	_____	_____	()Yes ()No
() my Second experience	_____	_____	()Yes ()No
() my Third experience	_____	_____	()Yes ()No
() my Fourth experience	_____	_____	()Yes ()No
() Summer Job:			
() my First experience	_____	_____	()Yes ()No
() my Second experience	_____	_____	()Yes ()No
() my Third experience	_____	_____	()Yes ()No
() my Fourth experience	_____	_____	()Yes ()No
() Work-Study:			
() my First experience	_____	_____	()Yes ()No
() my Second experience	_____	_____	()Yes ()No
() my Third experience	_____	_____	()Yes ()No
() my Fourth experience	_____	_____	()Yes ()No
() Other Part-time Work:			
() my First experience	_____	_____	()Yes ()No
() my Second experience	_____	_____	()Yes ()No
() my Third experience	_____	_____	()Yes ()No
() my Fourth experience	_____	_____	()Yes ()No

[Continued on Next Page]

[A] Work Experience: **[B] Hours/Week:** **[C] Months:** **[D] Related to My Field of Study or Career Interests:**

- | | | | | |
|--|-------|-------|------------------------------|-----------------------------|
| <input type="checkbox"/> Other Full-time Work: | | | | |
| <input type="checkbox"/> my First experience | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> my Second experience | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> my Third experience | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Volunteer: | | | | |
| <input type="checkbox"/> my First experience | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> my Second experience | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> my Third experience | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> Military (ROTC) | _____ | _____ | <input type="checkbox"/> Yes | <input type="checkbox"/> No |
| <input type="checkbox"/> No work experience [Go to Section 5] | | | | |

[SECTION 3] - DIRECTIONS: Select ‘one’ type of work experience that you consider to be the single most significant work experience you had during your college years and indicate your choice below with an (X). Be sure to also indicate the specific term/order of the work experience, i.e.- First, Second, Third, or Fourth.

- Co-op Internship Summer Job Work-Study Other Part-time work
- Other Full-time work Volunteer Military

Work Experience: First Second Third Fourth

The most important personal and/or professional things I have learned from this work experience are:

[SECTION 4] – DIRECTIONS: Consider your single most significant work experience from Section 3 and answer the following questions by using the scale below. Enter the ‘number’ of your selection on the line to the left of the corresponding question.

STRONGLY DISAGREE	DISAGREE	AGREE	STRONGLY AGREE
1	2	3	4

- _____ 1) I believe I was successful in applying my academic knowledge to the work tasks that I was assigned.
- _____ 2) I could identify a co-worker who was an important role model or mentor to me.
- _____ 3) I received verbal encouragement from a co-worker or supervisor when faced with a challenging work task/situation.

STRONGLY DISAGREE
1

DISAGREE
2

AGREE
3

STRONGLY AGREE
4

- _____ 4) My assigned work duties were clearly defined.
- _____ 5) I received excellent supervision with helpful feedback in regards to my work performance.
- _____ 6) I found the work interesting.
- _____ 7) I performed the work well.
- _____ 8) The work experience was helpful in confirming my career/academic direction.
- _____ 9) The work experience was helpful in changing my career/academic direction.
- _____ 10) I was satisfied with this work experience.

[SECTION 5] – DIRECTIONS: For Items 11 – 13 below, respond to all that apply to you.

- 11) I did not choose to enroll in the Cooperative Education Program at Virginia Tech because: (Mark your reason/s with an (X):
- () Not aware of such a Program
 - () Requires too much time commitment
 - () Not aware of potential benefits/advantages
 - () Other: Please explain: _____

- 12) I chose to enroll in the Cooperative Education Program at Virginia Tech because:

- 13) I did not seek work experience related to my field of study because: _____

Thank you for taking the time to complete this survey. If you would like to receive a copy of the research results from this study, please enter your e-mail address here: _____

VITA

David Richard DeLorenzo was born in Yonkers, New York, on June 4, 1961. He attended Sacred Heart High School in Yonkers and graduated in May of 1979. In 1984, he graduated with honors and received a Bachelor of Science Degree in Horticulture from Delaware Valley College of Science and Agriculture, Doylestown, Pennsylvania. While at Delaware Valley College, he served as a staff columnist for the college newspaper. After graduating, he held positions as an operations manager in a manufacturing plant, an administrative specialist in the finance department at IBM, a sales representative in an automotive leasing firm, and a high school science teacher in the public school system of Palm Beach County, Florida.

While employed as a salesman for the R.H. Macys Company, he attended the Counselor Education Program offered in the evening at Florida Atlantic University in Boca Raton. In 1993, he graduated with a Masters of Education Degree in Counselor Education. From 1993 to 1996, he served as a career counselor in the Access Center at DeKalb College, a two-year unit of the University System of Georgia. He was involved in delivering career counseling, career assessment, academic advising, and the teaching of career development workshops. He was also responsible for maintaining a career resource library, updating career software, and assisting students in the use of the center's career database resources. While at DeKalb College, he initiated and directed a Career Encounters Seminar Program to promote nontraditional occupations for women students.

In periodic assignments from 1993 to 1996, he also served as an outplacement consultant with the Center for Economic Development and Corporate Training in Atlanta, Georgia. He performed career assessment consultations and taught life/career planning to corporate clients in job transition at AT&T and other Fortune 500 companies. He was also retained by Kathleen Greer Associates, an employee assistance program firm, to deliver career counseling and assessment services for executives experiencing job transitions. In 1996, he entered Virginia Polytechnic Institute and State University to pursue a Ph.D. in Counselor Education. From 1996 to 1998, he served as a graduate teaching assistant, co-taught an Internet career development course, and was awarded a Hoppock Career Development Scholarship. He is a national board certified career counselor and member of the American Counseling Association, the American Psychological Association, the Society for Vocational Psychology, and the National Career Development Association.