The Relationship of Cooperative Education Exposure to Career Decision-Making Self-Efficacy and Career Locus of Control[1]

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Abstract
This study examined the relationship of cooperative education exposure to career decision-making self-efficacy (CDMSE) and career locus of control. This study found that co-op students had significantly higher CDMSE scores than the non-co-op students, though no evidence was found for a significant cumulative effect in CDMSE at the completion of each co-op work term. 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. Engineering and computer science students strongly identified with an internal career locus of control regardless of the type of work experience acquired. Co-op students reported significant work experience satisfaction and valued the opportunity to reality-test their career goals. Implications for cooperative education researchers and administrators are discussed.

Students can reality-test their career aspirations through a variety of work experiences during their college years. To assist students in this endeavor, a number of colleges and universities 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. Research has demonstrated the beneficial influence of cooperative education programs on students' personal growth, career progress, and career development (Fletcher, 1989). Co-op work experience contributes to increased self-confidence and enhanced self-concept (Cornelius, 1978; Ducat, 1979; Pratt, 1993) and increased autonomy and independence (Maciorowski, 1996; Wilson, 1988). 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; Dubick, McNerny, & Potts, 1996). Previous studies have suggested the value of co-op work experience in terms of its career relevance (Tyler, 1971), career exploration value (Frankel, Cohen, & Deane, 1977), career readiness (Brown, 1976; Gillin, Davie, & Beissel, 1984), 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 to investigate the contribution of each co-op work term (Weaver-Paquette, 1997) and the contribution of non-co-op work experience (Jagacinski, LeBold, Linden, & Shell, 1986). Since a cumulative economic benefit of co-op participation has been reported by Gardner and 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?

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). A key study on career development by Weinstein (1981) revealed that participation in a cooperative 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 was to determine whether cooperative education work experience is associated with higher levels of career maturity compared to other types of work experience (related and unrelated to a student's field of study or career interests) acquired during the college years.

In this study, career maturity referred to two specific constructs. One construct was career decision-making self-efficacy, an individual's confidence to successfully perform various career decision-making tasks (Taylor & Betz, 1983). The other construct was career locus of control, an individual's belief about whether one can control career outcomes (Trice, Haire, & Elliott, 1989). Based on the principles of 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. In addition, a significant cumulative effect in CDMSE was expected between each completed work term in the co-op work experience group. Similarly, only students with co-op work experience were expected to possess an internal career locus of control, a belief that one can control career outcomes by exercising effort (Gable, Thompson, & Glastein, 1976). It was also expected that the co-op work experience group would report significantly higher work experience satisfaction than the non-co-op work experience groups. In this study, work experience satisfaction was limited to a student's single most significant work experience acquired during the college years.

The non-co-op work experience groups consisted of students possessing work experience from any of the following work categories: internship, summer job, work-study, other part-time work, other full-time work, volunteer, and military (ROTC). In this study, an internship was defined as work experience that is not integrated into the academic calendar and is not recorded on the academic transcript.

This study was designed to answer the following research questions:

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 Group(s) [students having work experience related or unrelated to their field of study or career interests] for each respective work term completed?

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?

Is there a significant difference 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]?

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

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 Group(s) at each completed work term possess an external career locus of control?

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

Method

Participants:

A total of 595 engineering (mechanical, electrical, computer, chemical, civil, and industrial) and

computer science students, sophomores through seniors at a large university in Virginia, responded to the initial e-mail invitation and indicated an interest in participating in this on-line survey. The final response rate of completed surveys was 69.75% (N = 415). Of these, 53 surveys were eliminated from the study because they did not meet the specific work experience criteria. In keeping with an orthogonal design, there were 225 randomly selected surveys used for the analysis in this study. An overview of the research design is represented in Table 1.

The specific work experience criteria for each of the three work terms in this study was as follows: one work term represents 100 to 640 hours, two work terms represents 641 to 1,280 hours, and three work terms represents 1,281 to 1,920 hours. Based on this specific work experience criteria, student surveys were categorized into one of nine factorially defined groups (n = 25). Consequently, there was no random assignment of students in this study. It was expected that students would have acquired different types of work experiences during their college years. Some students may have acquired a combination of work experiences both related and unrelated to their field of study or career interests. 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.

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%).

Instruments

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.

Table 1
Research Design

	Completion of Work Term(s):	
One	Two	Three
[A] n = 25	[A] n = 25	[A] n = 25
[B] n = 25	[B] n = 25	[B] n = 25
[C] n = 25	[C] n = 25	[C] n = 25

Type of Work Experience:
[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.

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 scale's item content includes behaviors pertinent to accurate self-appraisal, gathering occupational information, goal selection, making plans for the future, and problem-solving. Responses are obtained using a 5-level confidence continuum, ranging from 1 (no confidence at all) to 5 (complete confidence). The construct validity of the scale has been supported by correlations with other variables believed to be related to career decision-making self-efficacy. 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) and Taylor and Popma (1990)

reported a correlation of -.30 with external locus of control. The internal consistency reliability of the Short Form (SF) yielded an alpha of .94 for the 25-item total score (Betz et al., 1996). For the original 50-item version of the CDMSE scale, Luzzo (1993a) reported a total scale alpha of .93 and a six-week test-retest reliability of .83. In a more 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.

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]. 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. Construct validity of the CDLC scale has been supported by findings 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). Kuder-Richardson 20 (KR-20) reliability estimates have ranged from .81 to .89 and a three-week test-retest reliability of .93 has been reported for the CDLC scale using several college student samples (Trice et al., 1989).

Career/Work Experience Questionnaire: This questionnaire was developed by the researcher to assess students' perceptions of work satisfaction in regard to their single most significant work experience acquired during the college years. The content validity of the Career/Work Experience Questionnaire was primarily based on prior empirical studies that examined work experience satisfaction. Specifically, the 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). Responses to the 10-item questionnaire were based on a 4-point Likert scale, ranging from 1 (strongly disagree) to 4 (strongly agree). Pilot-testing of the questionnaire, using a class of first-semester graduate counseling students, revealed an internal consistency reliability alpha of .88 and a two-week test-retest reliability of .94.

Procedure

The researcher prepared an invitation letter to introduce the purpose and confidentiality of the study. The academic advisors from the engineering and computer science departments agreed to send out the invitation letter on their list server to encourage their students' participation in this survey study. To improve survey response rates, the invitation letter included a financial incentive. Students who completed the survey had a chance to win $100 in a drawing by simply entering their e-mail address in the space provided on the survey. The invitation concluded by soliciting the students' decision to participate. The students simply indicated their decision by checking off either "yes" or "no" and then e-mailed their response back to the researcher.

Students who responded with a "yes" received the survey as a rich text format (rtf) file attachment. The first page of the survey contained an informed consent form and students were instructed to enter their name, e-mail address, date of birth, and today's date. At the end of the survey, students had the opportunity to obtain a summary of the research findings by entering their e-mail address in the space provided. Date of birth information was collected to verify the identity of the student who won the drawing. After completing the survey,

students simply returned the file attachment by e-mail directly to the researcher. The survey took approximately 20 minutes to complete.

Analysis

The researcher of this study had selected a power of .80 (Beta = .2), an effect size of .5, and an alpha level of .05. In this (3 x 3) ex-post facto design there were two independent variables, each having three levels. One independent variable was type of work experience at three levels (cooperative education work experience, non-cooperative education work experience [related to student's field of study or career interests], and non-cooperative 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. Career locus of control was not a dependent variable in the study as the researcher sought only to validate prior findings.

Table 2
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]	[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]	[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]	[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.

Results

The means and standard deviations of the Career Decision-Making Self-Efficacy Scores are presented in Table 2. A two-way ANOVA, as shown in Table 3, indicates that the main effect of type of work experience was significant (p = .049) for CDMSE. Subsequent pairwise comparisons of the group means showed only that the co-op group had a significantly higher CDMSE score (p=.01) than did the non-co-op (unrelated) group. Contrary to expectation, no significant effect was found for the number of completed work terms, and thus there is no evidence to support a cumulative effect in career decision-making self-efficacy. No significant interaction effect was found.

A test of two proportions revealed no significant difference in the proportion of internal career locus of control students between the co-op (.91 had an internal orientation) and the non-co-op group (.88 had an internal orientation). Thus this study's findings did not fully support prior investigations (Gable et al., 1976; Luzzo, 1993b; Taylor, 1982; Trice et al., 1989) that found a significant relationship between engagement in career exploration activities and an internal career locus of control.

Means and standard deviations for the Work Experience Satisfaction measure, based on the single most significant work experience acquired during the college years, appear in Table 4. A two-way ANOVA (Table 5) revealed a significant main effect for type of work experience, but neither the number of completed work terms nor the interaction were significant. The co-op group and non-co-op (related) work experience group were comparable on work experience satisfaction regardless of the number of terms completed, and both differed significantly (p<.01) from the non-co-op (unrelated) work experience group who consistently reported lower work satisfaction from the single most significant work experience acquired during the college years.

Table 3
Analysis of Variance of Career Decision-Making Self-Efficacy (CDMSE) Scores for Type of Work Experience and Completion of Work Terms

Source	df	SS	MS	F	p
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 4
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] M = 31.84 SD = 3.66	[A] M = 31.92 SD = 3.71	[A] M = 32.80 SD = 4.06	M = 32.19 SD = 3.79
	[B] M = 33.08 SD = 3.48	[B] M = 32.60 SD = 3.74	[B] M = 31.64 SD = 4.06	M = 32.44 SD = 3.76
	[C] M = 28.64 SD = 3.71	[C] M = 27.56 SD = 4.87	[C] M = 28.16 SD = 3.73	M = 28.12 SD = 4.10
	M = 31.19 SD = 4.03	M = 30.69 SD = 4.66	M = 30.87 SD = 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.

Discussion

A significant difference in CDMSE was found as function of type of work experience. The co-op group had the highest scores on the CDMSE, followed by the non-co-op (related) group, and the lowest scores were obtained by the non-co-op (unrelated) work experience group. 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, 1997) 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.

Contrary to expectation, no support was found for a significant cumulative effect in CDMSE for the co-op work experience group. It may be speculated that as work terms increased, the actual quality of the experiential learning in the co-op work assignment may not have increased or been sustained. Opportunities for successful performance accomplishments 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. CDMSE scores may also have been suppressed in the respective work terms due to the variation in academic rank and acquired work experience among the students. These speculations may explain why a significant cumulative effect in CDMSE was not found in this study.

It is noteworthy that this study found 49.3% of the students in the non-co-op (related) work experience group indicated that an internship [in this study an internship was defined as work experience that is not integrated into the academic calendar and is not recorded on the academic transcript] was the single most significant work experience acquired

during the college years. This finding suggests that internship experiences may have increased CDMSE scores for the non-co-op (related) work experience group. If this speculation is valid, this present study may support the findings of Pedro (1984) who found significant gains in career self-efficacy among university students participating in an internship (non-co-op) experience. The finding of lower CDMSE scores for the non-co-op (unrelated) work experience group may suggest that students who possess work experience that is both limited and unrelated to their field of study may also have poorly developed decision-making skills. Poorly developed decision-making skills may cause gross overestimation of confidence and consequently inflate CDMSE scores as reported earlier in a study by Luzzo (1993c).

The finding of no significant difference in the proportion of internal career locus of control between the co-op and non-co-op group revealed that most students believe that they could control career outcomes by exercising effort. 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. This was also the first study to examine career locus of control with engineering and computer science students and it is uncertain whether these fields of study influenced career locus of control. As this was the first study to use the CDLC scale with a co-op student sample, it is also unclear whether the scale is ideally suited for students who are already actively engaged in a structured employment (co-op) program.

The study's finding that the non-co-op (unrelated) work experience group reported a significantly lower rating on work experience satisfaction strongly suggests that students who seek greater work experience satisfaction could benefit considerably by pursuing either co-op or internship (non-co-op) work experiences. Narrative feedback from the researcher-developed questionnaire revealed that 34.7% of co-op students enrolled in the program primarily because they believed it would yield a competitive advantage in obtaining employment upon graduation. A secondary reason for enrolling in the program was cited by 30.7% of co-op students who believed that co-op work experience would enable them to reality-test their career goals and/or academic direction. In fact, the first co-op work term was selected as being the most significant work term by 56.3% of co-op students who had completed three work terms. This finding may suggest that students utilize the first co-op work term as a juncture to either continue in or change their designated major or discipline. This suggests the critical importance of placing the co-op student in a suitable work assignment upon entry into the program and consequently co-op advisors may need to spend the greatest proportion of their time with newly enrolled co-op students. As this study also found a number of satisfied co-op students who were enthusiastic supporters of the program, co-op administrators may wish to utilize these students as role models to promote the potential benefits of the co-op program to undecided students.

This study's findings 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

Table 5
Analysis of Variance of Work Experience Satisfaction Scores for Type of Work Experience and Completion of Work Terms

Source	df	SS	MS	F	p
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			

*$p < .05$.

needed to investigate the nature and extent of this relationship. Although 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. Future studies that utilize a pretest/posttest design and thereby reduce the threat of maturation would probably contribute the most to our understanding of these two career maturity constructs. Studies that examine CDMSE and ethnicity in college student or working professional populations are absent in the research literature and worthy of investigation as well.

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