The Career Decision-Making Self-Efficacy Scale: Revision and further application

by

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INTRODUCTION

Overview of Bandura's Self-Efficacy Theory

Bandura (1977) proposed a cognitive theory of psychological change which hypothesizes that different psychological treatments produce their outcomes by enhancing an individual's self-efficacy (SE). According to his theory, alterations in level and strength of SE expectations are postulated to be the mechanism that underlies behavioral changes arising from diverse treatment methods. SE expectations are essentially expectations of personal mastery and are defined as the belief that an individual can successfully perform a behavior that is required to produce a given outcome. Bandura hypothesized that SE expectations are instrumental in influencing the initiation, extent (i.e., amount of effort expended), and persistence of coping behaviors.

According to SE theory, expectations of SE vary on the following three dimensions: 1) magnitude; 2) generality; and 3) strength. The magnitude dimension refers to the difficulty level of the task or behavior that is associated with the SE expectation. The magnitude of SE expectations can range from low levels, in which the required behavior would be relatively easy, to high levels which would involve extremely demanding tasks. Differences in generality involve variation in the degree to which a SE expectation

regarding a particular behavior will generalize to other behaviors. Finally, the strength dimension orders SE expectations along a continuum ranging from weak to strong. Weak expectations of personal mastery are readily extinguished in response to contradictory experiences; whereas strong efficacy expectations are maintained despite disconfirming experiences.

SE theory identifies four main sources of information by which SE expectations are derived or modified: 1) performance accomplishments; 2) modeling or vicarious experiences; 3) verbal persuasion; and 4) emotional arousal. Performance accomplishments function as a source of efficacy information in that repeated experiences of success or mastery establish or enhance expectations of SE. In contrast, repeated unsuccessful experiences, in general, lower expectations of personal mastery. In sum, Bandura suggests that the cumulative impact of success and failure experiences affects SE appraisals. Vicarious experiences in which an individual observes a model successfully perform the behavior of interest provides information which enhances SE expectations. The verbal persuasion (exhortative) source alters expectations of SE via suggestions that the individual can successfully perform the behavior in question. Performance accomplishments, due to their direct experiential base, are suggested to have a greater impact on

expectations of mastery than vicarious and exhortative sources. The emotional arousal (emotive) source of efficacy information, stems from physiological feedback concerning an individual's state of arousal associated with performance of the behavior in question. High levels of aversive arousal negatively impact on performance and, consequently, affect SE. Expectations of SE are enhanced in situations in which aversive arousal is low, and are lowered in situations involving a high level of aversive arousal.

SE theory postulates that the cognitive appraisal or processing of different sources of efficacy information determines the specific impact of such information on SE expectations. Furthermore, it is suggested that the manner in which efficacy information is cognitively appraised is influenced by a number of factors. For example, appraisal of information arising from performance accomplishments is influenced by situational variables, attributions regarding causality, and assessment of task difficulty. Cognitive processing of information stemming from vicarious experiences is said to be affected by such variables as model characteristics, model and observer similarity, situational variables, and task difficulty. Similarly, the appraisal of information arising from verbal persuasion is influenced by characteristics of the persuaders; whereas, information originating from emotional arousal is appraised

according to attributions concerning the source of arousal and situational characteristics. Thus, as illustrated in the above examples, various factors influence the cognitive appraisal of efficacy information, which, in turn, mediates the effect of efficacy information on expectations of mastery.

Empirical Support for Self-Efficacy Theory

Since the conception of Bandura's SE theory, numerous studies have attempted to investigate empirically the theory's propositions. Early empirical support for SE theory stemmed from studies by Bandura and his colleagues that examined SE as a predictor of behavioral performance of snake phobic subjects (Bandura & Adams, 1977; Bandura, Adams, & Beyer, 1977; Bandura, Adams, Hardy, & Howells, 1980). In these studies, microanalyses of the congruence between SE and performance at the level of individual tasks were used to assess the usefulness of SE expectations as predictors of behavioral performance. These studies provide support for Bandura's prediction that higher degrees of SE are associated with increased performance. Bandura, Adams, and Beyer (1977) demonstrated that they could instate efficacy expectations via participant modeling and live modeling treatments, and found that both level and strength of efficacy expectations were accurate predictors of subsequent task performance. In accord with SE theory,

results of this study also showed that a treatment based on performance accomplishments (i.e., participant modeling) produced efficacy expectations that were greater in magnitude, stronger, and more generalized than efficacy expectations produced by a strictly vicarious modeling treatment (i.e., live modeling). Bandura and Adams (1977) found that systematic desensitization --a treatment involving emotive experiences-- significantly increased level and strength of SE expectations. Similarly, they demonstrated that SE was a consistently reliable predictor of subsequent performance, both over the course of treatment and following treatment. Bandura, Adams, Hardy, and Howells (1980) demonstrated that level and strength of SE expectations were increased following covert modeling; the resulting efficacy expectations were predictive of subsequent performance. In a second part of this study, the authors obtained conceptually similar findings using agoraphobics and a participant modeling type of treatment. As pointed out by Bandura (1982), the aforementioned research shows that different types of treatment (e.g., enactive, vicarious, and emotive treatments) commonly enhance SE expectations and that SE expectations, in turn, are predictive of subsequent behavioral performance regardless of how these expectations are instated.

In a causal analysis of the relationship between perceived SE and performance, Bandura, Reese, and Adams (1982) employed a design which provided for both intergroup and intrasubject comparisons of performance following manipulations of SE levels. In one of these experiments snake phobic subjects underwent an enactive mastery treatment; whereas, in a second experiment, spider phobics participated in a vicarious modeling treatment. Findings showed a high congruence between manipulated levels of SE and performance in both intergroup and intrasubject comparisons -- higher levels of efficacy corresponded to greater performance. Thus, these experiments further replicated previous findings concerning self-efficacy-performance congruence across different treatments as well as with different types of disorders.

Numerous research findings have confirmed the applicability of SE conceptualizations to a wide range of phenomena and collectively attest to the theory's broad explanatory power (Bandura, 1982). SE has proven useful in accounting for change in diverse areas such as smoking cessation (Condiotte & Lichtenstein, 1981; DiClemente, 1981; and McIntyre, Lichtenstein, & Mermelstein, 1983); assertiveness training (Kazdin, 1979); weight loss (Weinberg, Hughes, Critelli, England, & Jackson, 1984); and achievement behavior (Schunk, 1981, 1982, 1983, & 1984).

Self-Efficacy in Vocational Psychology

In addition to the applications of SE theory mentioned above, SE theory has been extended to the area of vocational psychology, including career decision-making and development. Hackett and Betz (1981) proposed an innovative model in which the vocational behavior of women is explained in terms of SE conceptualizations. Several studies have examined the relationship between SE and educational and career decision-making. Academic SE expectations have been shown to be predictive of academic success and persistence in college students pursuing science and engineering careers (Lent, Brown, & Larkin, 1984). SE expectations regarding mathematics have been found to be related to college student's selection of science-based and non-science-based majors (Betz & Hackett, 1983). In an investigation of the relationship between career related SE and career decision-making, career efficacy expectations of college students were found to be related to the career options considered by these students (Betz & Hackett, 1981). Thus, research suggests that SE plays a role in career choice behavior.

Career Decision-Making Self-Efficacy and Career Indecision

Within this area of career decision-making, research has been conducted which examined the relationship between career decision-making SE and career indecision (Taylor & Betz, 1983). Also, research has focused on the development

and evaluation of a measure of SE with respect to career decision-making tasks or behaviors (Robbins, 1985; Taylor & Betz, 1983) (see next section). This research will be reviewed in detail given its centrality to this paper.

Taylor and Betz (1983) examined the relationship between career decision-making SE and vocational indecision using two samples of male and female student subjects from different colleges (N = 346). The Career Decision-Making Self-Efficacy Scale (CDMSE), which was developed as part of their study, was used to assess career decision-making SE expectations; whereas, the Career Decision Scale (CDS: Osipow, Carney, Winer, Yanico, & Koschier, 1980) was employed as a measure of career indecision. In general, no sex differences were found in career decision-making SE expectations. Correlational findings suggested the existence of a moderate (-.40) inverse relationship between the strength of career decision-making SE expectations and vocational indecision. Intercorrelations between the "lack of career decision-making structure and confidence" factor of the CDS (Osipow, Carney, & Barak, 1976) and CDMSE scores (total and subscale) were, in general, the strongest, with values ranging from -.31 to -.51. In addition, a stepwise multiple regression analysis showed career decision-making SE to be a significant predictor of career indecision scores

in both samples of college students, $F(1,72) = 12.3$, $p < .001$ and $F(1,137) = 11.1$, $p < .001$. As was the case with the correlational findings, individuals with lower career decision-making SE expectations tended to be those who indicated greater levels of career indecisiveness.

In addition, Taylor and Betz suggested that the relationship between career decision-making SE expectations and vocational indecision/decidedness is probably reciprocal in nature. SE expectations regarding career decision-making tasks are thought to impact on vocational indecision/decidedness and, on the other hand, vocational indecision/decidedness is thought to affect SE expectations. That is to say, SE expectations can be viewed as both an antecedent to and consequence of vocational indecision/decidedness. For example, strong SE expectations may lead an individual to engage in career decision-making tasks which result in career decidedness; conversely, strong SE expectations may be the result of an individual deciding on a vocation. Also, for example, weak SE expectations may keep an individual from engaging in career decision-making tasks and therefore lead to career indecision; conversely, weak SE expectations may be the result of vocational indecision. As noted by Taylor and Betz, their study served as a preliminary investigation of the relationship between career decision-making SE and career indecision, and future

research is needed to further elucidate the reciprocal nature of this relationship. The issue of future research with respect to SE and career indecision will be returned to shortly.

Measurement of career decision-making self-efficacy

In addition to having studied the relationship between SE and career indecision, another important contribution of Taylor and Betz's research was the development of the Career Decision-Making Self-Efficacy Scale (CDMSE) -- a measure of SE expectations regarding career decision-making tasks (see Appendix A). The CDMSE consists of 50 items, each of which represents a career decision-making task. The measure is made up of five 10-item subscales, each of which reflects one of the following career choice competencies (Crites, 1961, 1965, 1973): (1) self-appraisal, (2) obtaining occupational information, (3) goal selection, (4) planning, and (5) problem-solving. Item selection involved incorporating career decision-making tasks which were judged to best reflect a competency. As an example, the following is an item taken from the problem-solving subscale: "Change majors if you do not like your first choice."

Responses to each item are based on a 10-point Likert scale, with "0" indicating no confidence and "9" indicating total confidence that the respondent can perform the indicated task. Scoring procedures yield 50 single item

scores, 5 subscale scores, and a total score. Single item scores range from "0" to "9" and are simply the rating assigned to a particular item; whereas, subscale scores range from "0" to "90" and are calculated by summing the 10 item scores from a particular subscale. The total score is obtained by summing the individual item ratings, thus the maximum possible total score is 450. In all scoring cases, higher score values indicate greater SE expectations.

Psychometric properties of the CDMSE with respect to internal consistency reliability and item-total score correlations are high. Standardized coefficient alpha values for the each of the 2 college samples, as well as for the combined college sample, were .97. Coefficient alphas for the subscales ranged from .86 to .89. With respect to item-total score correlations, point-biserial correlational values ranged from .50 to .80 for 86% of the items; the lowest r_{pb} value was .29.

Taylor and Betz (1983) also described the factor structure of the CDMSE. However, it appears that the reporting of their factor analysis is flawed and thus misleading. These researchers stated that they conducted an iterated principal components factor analysis with a Varimax (orthogonal) rotation. The presented factor analytic data is that of a nonorthogonal factor analytic rotation (see Table 5, Taylor & Betz, 1983, p. 75), suggested by the fact

that the sums of the squared factor loadings for various rows are greater than 1.0 -- the maximum for an orthogonal rotation would be 1.0. The correct Varimax rotation results, which were provided upon request by Taylor and Betz, are presented in Table 1. Table 1 presents the factor loadings for the 50 CDMSE items on the five extracted factors. The percentages of variance accounted for by Factors 1 through 5 were 17.10, 10.34, 10.36, 7.14, and 4.76, respectively. The five factors accounted for 49.7% of the total variance, as compared to 52% reported by Taylor and Betz.

Insert Table 1 about here

Additionally, Taylor and Betz's principal axis factor analytic data was provided upon request and is presented in Table 2. As can be seen from Table 2, the first factor appears to be a general factor in that it shows strong positive loadings for almost all of the 50 items. Examination of the Varimax solution (Table 1) suggests that the factor structure is not well-defined. That is, many of items show moderately high factor loadings on more than one of the factors, as opposed to loading high on a single factor and low on the remaining factors. Factor 1, on the Varimax solution, appears to be a general factor given that 24 of the 50 items loaded highest on this factor and given

each of the five subscales contributed to these 24 items. With respect to those items that loaded highest on Factor 1, the self-appraisal, occupational information, goal selection, planning, and problem-solving subscales contributed seven, five, five, five, and two items, respectively. Items loading highest on Factors 2 through 5 are contributed from a combination of two or more of the subscales.

Insert Table 2 about here

It is likely that Taylor and Betz extracted five factors based on the expectation that each of the five subscales might load separately on different factors. As can be seen from the Varimax solution, this was not the case. Despite Taylor and Betz's inaccurate presentation of their factor analytic data, their interpretation of the data also suggested the existence of a general factor. Taylor and Betz (1983) suggested that this general factor may be similar to the "lack of career decision-making structure and confidence" factor obtained on the CDS.

As appropriately noted by Taylor and Betz, the high internal consistency reliabilities obtained for the total scale (coefficient alpha = .97) and subscales (coefficient alphas ranging from .86 to .89) do not support the existence of the five subscales that were rationally derived. The

high intercorrelations observed between subscales (r values ranging from .72 to .85), as well as intercorrelations between subscales and the total score (r values ranging from .89 to .94), further fail to support the applicability of the 5 subscales. The intercorrelations among subscales are too close in value to the reliabilities within subscales to justify the existence of different subscales. As suggested by these researchers, the CDMSE may assess career decision-making SE with respect to career decision-making tasks in general, as opposed to specifically with regard to the five subscale task domains.

Robbins (1985) examined the construct validity of the CDMSE by assessing concurrent and discriminant validity. Concurrent validity findings showed that CDMSE total and subscale scores were significantly and moderately correlated with self-esteem, career decidedness (with the exception of the information subscale), and vocational identity, the last viewed by Robbins as a measure of career decision-making confidence. The correlations between the self-esteem (measured by the Rosenberg Self-Esteem Scale, 1979) and self-efficacy measures are presented in Table 3. Robbins interpreted the moderate correlations between career decision-making SE and self-esteem as suggesting that "the CDMSE is also a measure of a person's general sense of self-worth and confidence" (p. 67). Robbins also compared the

correlations between career decision-making SE and both vocational identity and career decidedness with the correlations between self-esteem with these latter two variables. Both SE ($r = .34$, $p < .05$) and self-esteem ($r = .32$) were significantly correlated with vocational identity; whereas, only SE was significantly correlated with career decidedness ($r = .34$, $p < .05$).

Insert Table 3 about here

With respect to discriminant validity, Robbins looked at the ability of the CDMSE to discriminate between high and low vocational identity groups. Results showed that total score and goal selection, planning, and self-appraisal subscale scores significantly differentiated between the groups. In addition, findings from a discriminant function analysis combined with those from a stepwise selection procedure revealed that the self-appraisal and goal selection subscales served as unique and significant discriminators between high and low vocational identity groups. Thus, the information, problem-solving, and planning subscales failed to contribute additional unique variance in the discrimination between groups.

Based on these findings, Robins suggested that "the CDMSE is a measure of generalized SE rather than a measure of SE expectations for specific career decision-making

skills" and "Perhaps ... should be renamed a measure of generalized career self-efficacy" (Robbins, 1985, p.70). Additionally, Robbins suggested that the subscales overlap considerably and, as a result, use of the individual subscales is questionable. Further evaluation of the CDMSE is needed, as is research which directly examines the link between SE expectations and behavioral performance on career decision-making tasks and behaviors (Robbins, 1985).

Robbins' comment that the CDMSE may be viewed as a measure of generalized career SE warrants further clarification and discussion. Such a comment gives rise to a related theoretical issue concerning specific versus global measurement of SE. Although Bandura suggests that SE expectations be measured in reference to specific behaviors and situations, some researchers have also measured SE in a global or generalized sense (i.e., measured self-efficacy across a wide range of situations and behavioral domains). Tipton and Worthington (1984) developed a scale to measure generalized self-efficacy and conducted two construct validity studies which provided support for a generalized self-efficacy construct. Sherer et al. (1982) also developed an instrument (Self-Efficacy Scale) to measure generalized self-efficacy expectations and conducted studies which offered support for the instrument in terms of construct and criterion validity. Additional evidence for

the construct validity of the Self-Efficacy Scale was obtained by Sherer and Adams (1983). Sherer et al. (1982) and Tipton and Worthington suggested that self-efficacy can be measured in reference to specific situations, as well as across a wide range of situations. The CDMSE differs from both generalized SE instruments cited above in that the items on the CDMSE refer to specific situations and behaviors -- these situations and behaviors pertain to the realm of career decision-making behavior; the items on the generalized SE instruments do not. What Robbins is suggesting is that although the CDMSE is written in reference to specific career decision-making related situations and behaviors, it may be, nonetheless, tapping generalized SE in the career domain. Thus, while Robbins is suggesting that the CDMSE may measure generalized SE, he does not appear to be suggesting that it measures generalized SE across all domains of behavior -- as do the generalized SE measures.

Preliminary Research

One of the major purposes of the current research is to further analyze and evaluate the CDMSE. The limited research conducted to date suggests that the CDMSE does have potential in the study of career decision-making and career indecision; however, the need for further evaluation and possible revision of the CDMSE is apparent. As an initial

step in the evaluation of the CDMSE, Oreshnick (1985) conducted a study in which three aspects of the instrument were explored.

The first of these aspects was that of response bias. An investigation for the possible existence of response bias is merited due to the self-report nature of the instrument. Notably, Taylor and Betz (1983) found that college students reported considerable career decision-making SE, with mean item responses for the five subscales ranging from 6.4 to 7.0. The lowest mean confidence rating for a particular item was 5.18 (s.d. = 2.33); whereas, the highest mean rating was 7.85 (s.d. = 1.39). Only five items received a mean confidence rating of less than 6.0, which is labelled "much confidence" in the response scale. It may be argued that the presence of a social desirability or acquiescence response set may have contributed to these high confidence ratings. Therefore, an examination of possible social desirability and acquiescence response biases on the CDMSE appeared appropriate.

Oreshnick (1985) examined this response bias issue by administering the CDMSE and a short-form version of the Marlowe-Crowne Social Desirability Scale (M-C SDS) (Strahan & Gerbasi, 1972) to a sample of 105 male and female university students. The short-form M-C SDS was scored in two different ways which allowed for the measurement of

acquiescence as well as social desirability. As pointed out by Strahan and Gerbasi (1975), the balanced-keying nature of the MC SDS leads to the existence of a positively-keyed and a negatively-keyed subscale. Responses to the two subscales were summed to yield an acquiescence score; whereas, a social desirability score was obtained by subtracting the sum of the responses to negatively-keyed items from the sum of positively-keyed items. Correlations were nonsignificant between the CDMSE total score and both the acquiescence and social desirability measures. In sum, the CDMSE did not appear to engender a significant degree of acquiescence or social desirability response set.

The second aspect of the Oreshnick (1985) study concerned the distinction between SE and self-esteem. As noted by Marlatt (1985), Bandura differentiates between SE and self-esteem by stressing that SE refers to an expectancy that one can adequately perform a given task or behavior in a specific situation (i.e., a specific expectancy), whereas the latter refers to a "global self-image" (p. 129) which is maintained across many situations (i.e., a global expectancy). Sherer et al. (1982) differentiated between these two constructs by noting that SE concerns beliefs about an individual's own abilities, whereas self-esteem concerns beliefs about one's self-worth. As was mentioned previously, Robbins suggested that the CDMSE may also tap an

individual's sense of self-worth. Oreshnick examined the ability of the CDMSE to tap a construct other than self-esteem. This aspect of the study provided a cross-validation, in part, of Robbin's (1985) research. The Rosenberg Self-Esteem Scale (RSES: Rosenberg, 1979) was also administered to the original sample of 105 male and female university students and was scored according to a Likert format. Results, similar to Robbins' (1985) findings, showed a significant correlation between CDMSE and RSES total scores ($r = .45$, $p < .0001$). As a means of investigating whether or not the CDMSE and RSES measure the same construct, Oreshnick computed the corrected-for-attenuation correlation between the two scales; alpha coefficients were used as reliabilities. Such a procedure was recommended by Strahan (1983) for determining whether or not two scales measure the same construct. The obtained corrected-for-attenuation correlation was .49; the two scales have approximately 25% shared variance. This result suggests that the scales measure two distinct constructs which are not totally independent. That is to say, the scales measure two distinct, but correlated, dimensions.

A third purpose of the Oreshnick (1985) study was to further explore the factor structure of the CDMSE. To further examine the factor structure, Oreshnick introduced a general factor by using a modified version of Wherry's

(1959) rotation procedure (see Wolins, 1982). Table 4 presents the factor loadings which resulted from the introduction of a general factor. Column 1 represents the general factor; the remaining 5 factors that were extracted are located Columns 2 through 6. With respect to the obtained rotation, all items showed moderate-to-strong loadings on the general factor. Loadings on the general factor ranged from .36 to .68, with only 9 of the 50 items loading below .45. Forty-three items loaded highest on the general factor; six of the remaining seven items had their second highest loadings on the general factor. Once the general factor was isolated, item loadings on the remaining 5 extracted factors were, for the most part, low. These results, in conjunction with the previously reported findings of Taylor and Betz (1983) -- including findings from the corrected Varimax data -- and Robbins (1985), suggest that the CDMSE is measuring one dimension.

Insert Table 4 about here

Purposes of the Current Research

Although the CDMSE appears to have potential in the study of career decision-making, the usefulness of this instrument in its present form is questionable. In view of the research that suggests the CDMSE is unidimensional, the continued use and scoring of the five subscales is not

supported. Accordingly, a revision of the CDMSE which involves the elimination of the five subscales would be potentially useful. In addition, revising the instrument so as to produce a short-form version would provide researchers with a more economic instrument in relation to administration time, and would provide a useful screening instrument. Thus, one purpose of the current research is to revise the CDMSE as stated above.

Prior to delineating the other purposes of the current research, a comment is warranted regarding research and clinical use of the CDMSE. Taylor and Betz (1983) suggested that the instrument is potentially helpful with respect to clinical intervention. They suggested that it provides the clinician with, in addition to an index of strength of the client's career decision-making SE expectations, an individualized (client) hierarchy of career decision-making tasks ordered according to level of difficulty. They also suggested that such a hierarchy can be used as a guide to intervention; intervention can proceed from relatively easy to relatively more difficult tasks. Therefore, based upon the above clinical considerations, it may be that reducing the number of items on the CDMSE would decrease the amount of potentially useful information available to the clinician since the hierarchy would be more constricted. However, it should be noted that it is inevitably the case that some

information is sacrificed when employing the shortened version of any instrument. Such loss of information is a cost that is incurred and is counterbalanced by the savings in administration time resulting from employment of the short-form version.

A second purpose of the current research is to examine the relationship between strength of SE expectations regarding career decision-making tasks and past behavioral performance (i.e., successful/unsuccessful performance accomplishments) on these career decision-making tasks. A hypothesis related to this second purpose -- based on Bandura's SE theory -- predicts a positive correlation between strength of SE expectations regarding specific career decision-making tasks and success of past behavioral performance on these career decision-making tasks. Thus, it is predicted that strong SE expectations will be associated with successful past performance on these career decision-making tasks. In contrast, it is hypothesized that weak SE expectations will be associated with unsuccessful past performance on these career decision-making tasks. It is also predicted that weak SE expectations will be associated with lack of attempts regarding performance of these career decision-making tasks, given that low SE expectations may keep an individual from engaging in these tasks.

The third and final purpose of the present research is to further explore the relationship between career indecision and both perceived career decision-making SE and past performance on career decision-making tasks. A hypothesis related to this third purpose predicts the existence of a substantial association between career indecision, SE expectations regarding career decision-making tasks, and past behavioral performance histories regarding career decision-making tasks. More specifically, it is hypothesized that career indecision will be negatively correlated with both strength of career decision-making SE expectations and success of past performance on career decision-making tasks. Thus, it is predicted that higher levels of career indecision will be associated with both weaker career decision-making SE expectations and higher levels of unsuccessful career decision-making task performance. On the other hand, lower levels of career indecision, indicating more career decidedness, are predicted to be associated with stronger career decision-making SE expectations and higher levels of successful career decision-making task performance. Furthermore, it is predicted that both strength of career decision-making SE expectations and success of past performance with respect to career decision-making tasks will predict level of career indecision. Since it is unlikely that these two predictors

will be perfectly correlated, the use of two predictors should account for more variance in level of career indecision than the use of either predictor alone. Lastly, it is predicted that higher levels of career indecision will be associated with lack of past career decision-making task attempts.

In sum, there are three primary purposes of the current research. The first of these is to shorten the CDMSE and to gather psychometric data regarding the revised instrument. Secondly, the relationship between SE expectations and past experience will be examined. Thirdly, the relationship between career indecision and both SE expectations and past experience will be explored. With respect to the this last major purpose, the career indecision aspect will be extended by also examining career and college major decidedness as they relate to SE expectations and past experience.

Table 1. Correct factor analysis (varimax rotation) of Career Decision-Making Self-Efficacy Scale items

	Factor				
Item No.	1	2	3	4	5
1	.41	.28	.23	-.08	.39
2	.32	.47	.29	.02	.26
3	.22	.14	.76	-.04	.07
4	.23	.14	.72	.03	.09
5	.22	.49	.35	.26	.19
6	.28	.32	.33	.31	.30
7	.12	.59	.14	.15	.18
8	.20	.15	.75	.05	.13
9	.22	.48	.56	.11	.00
10	.25	.42	.40	.20	.14
11	.53	.27	.25	-.06	.44
12	.03	.73	.13	.08	.11
13	.45	.19	.43	.26	.20
14	.24	.35	.36	.14	.29
15	.18	.27	.12	.30	.43
16	.42	.02	.47	.25	.22
17	.55	.35	.13	.16	.13
18	.15	.13	.49	.49	.09
19	.41	.33	.25	.29	-.03
20	.29	.31	.20	.38	.34
21	.55	.18	.27	.23	.37

Table 1 (continued)

Item No.	Factor 1	2	3	4	5
22	.60	.45	.08	.20	.01
23	.13	.11	-.06	.56	.14
24	.53	.25	.26	.37	.08
25	.23	.05	.11	.50	.20
26	.15	.35	.09	.26	.05
27	.51	.16	.42	.24	.12
28	.28	.25	.02	.32	.02
29	.24	.54	.01	.33	.02
30	.27	.20	.10	.48	.01
31	.47	.31	.21	.23	.12
32	.30	.59	.11	.06	.23
33	.66	.12	.47	.24	.16
34	.61	.30	.25	.22	.10
35	.51	.14	.06	.26	.21
36	.61	.15	.18	.15	.18
37	.37	.46	.22	.11	.10
38	.63	.16	.43	.24	.12
39	.51	.28	.38	.28	.16
40	.48	.31	.28	.21	.32
41	.40	.32	.29	.28	.20
42	.69	.25	.24	.23	.02

Table 1 (continued)

	Factor				
Item No.	1	2	3	4	5
43	.63	.20	.31	.29	.03
44	.58	.35	.29	.28	.04
45	.20	.22	.15	.50	.22
46	.51	.06	.15	.07	.33
47	.54	.53	.11	.20	.09
48	.39	.07	.23	.21	.31
49	.41	.14	.21	.27	.42
50	.02	.12	.02	.24	.45
% of variance accounted for	17.10	10.34	10.36	7.14	4.76

Table 2. Principal axis factor analysis

Item No.	Factor 1	2	3	4	5
1	.56	-.07	.07	-.19	.30
2	.62	.01	.24	-.11	.14
3	.54	-.54	.24	.06	-.05
4	.56	-.48	.19	.09	-.06
5	.66	.07	.25	.12	-.01
6	.66	.02	.07	.17	.09
7	.50	.24	.34	.03	.05
8	.58	-.50	.21	.14	-.03
9	.64	-.16	.37	.04	-.17
10	.63	-.03	.23	.08	-.04
11	.67	-.09	.01	-.23	.33
12	.47	.30	.51	-.02	.00
13	.70	-.15	-.06	.06	-.00
14	.59	-.05	.18	.08	.13
15	.51	.17	.01	.20	.26
16	.63	-.27	-.15	.11	.02
17	.66	.11	-.04	-.20	-.02
18	.57	-.13	-.01	.40	-.16
19	.62	.06	.01	-.02	-.21
20	.64	.14	-.02	.19	.12
21	.73	-.04	-.17	-.03	.17

Table 2 (continued)

Item No.	Factor 1	2	3	4	5
22	.69	.21	-.02	-.25	-.14
23	.34	.31	-.21	.32	-.05
24	.69	.09	-.16	-.00	-.13
25	.45	.13	-.24	.29	-.00
26	.40	.20	.11	.08	-.08
27	.70	-.18	-.10	-.00	-.07
28	.42	.23	-.07	.04	-.12
29	.52	.37	.15	.01	-.14
30	.48	.19	-.13	.19	-.19
31	.65	.06	-.03	-.07	-.05
32	.59	.23	.27	-.15	.11
33	.81	-.23	-.19	-.06	-.06
34	.74	.02	-.09	-.15	-.08
35	.56	.11	-.24	-.07	.06
36	.64	-.02	-.20	-.18	.03
37	.61	.09	.17	-.12	-.04
38	.78	-.18	-.16	-.07	-.08
39	.76	-.07	-.05	.00	-.05
40	.73	.01	-.02	-.02	.13
41	.68	.03	.01	.05	.01
42	.74	-.00	-.18	-.20	-.16

Table 2 (continued)

	Factor				
Item No.	1	2	3	4	5
43	.74	-.06	-.18	-.09	-.18
44	.76	.04	-.05	-.10	-.16
45	.53	.18	-.09	.29	-.00
46	.53	-.07	-.21	-.14	.22
47	.72	.24	.07	-.20	-.08
48	.54	-.07	-.16	.05	.16
49	.63	.01	-.16	.08	.23
50	.28	.15	-.03	.25	.34
% of variance accounted for	38.40	3.82	3.15	2.32	1.96

Table 3. Correlations between the Rosenberg Self-Esteem Scale (total score) and the Career Decision-Making Self-Efficacy Scale (CDMSE)

CDMSE Subscales	r^a
Self-Appraisal	.54
Occupational Information	.38
Goal Selection	.48
Planning	.57
Problem Solving	.52
Total Score	.58

Note. n = 92.

[a] $p < .05$ for all r values.

Table 4. Factor loadings for the Career Decision-Making Self-Efficacy Scale following the introduction of a general factor

	Factor					
Item No.	1	2	3	4	5	6
1	.52	.15	.20	.13	-.15	.20
2	.55	.13	.37	.18	-.08	.02
3	.37	.23	.10	.69	-.14	.07
4	.40	.23	.09	.63	-.08	.03
5	.59	.09	.37	.23	.14	-.18
6	.61	.09	.21	.22	.22	-.11
7	.48	-.02	.49	.05	.08	-.15
8	.42	.20	.09	.68	-.04	.04
9	.49	.20	.37	.45	-.05	-.17
10	.54	.14	.31	.29	.07	-.14
11	.62	.22	.17	.13	-.15	.21
12	.43	-.07	.64	.05	.01	-.18
13	.61	.29	.06	.29	.09	-.08
14	.53	.07	.26	.26	.08	-.01
15	.54	-.06	.19	.03	.30	-.03
16	.54	.29	-.08	.35	.12	-.03
17	.59	.34	.20	-.02	-.05	-.12
18	.48	.13	.03	.39	.37	-.27
19	.52	.31	.19	.11	.06	-.28
20	.63	.07	.19	.08	.30	-.14

Table 4 (continued)

Item No.	Factor 1	2	3	4	5	6
21	.68	.28	.04	.12	.08	.01
22	.61	.40	.28	-.09	-.07	-.24
23	.39	.01	.01	-.14	.49	-.32
24	.63	.36	.08	.10	.14	-.25
25	.46	.09	-.06	.01	.42	-.22
26	.37	.06	.25	.01	.16	-.23
27	.59	.37	.02	.28	.04	-.11
28	.40	.17	.14	-.09	.17	-.26
29	.50	.12	.40	-.11	.16	-.34
30	.45	.18	.07	-.01	.32	-.35
31	.58	.29	.17	.07	.04	-.16
32	.55	.09	.48	-.01	-.05	-.07
33	.68	.47	-.03	.30	.00	-.08
34	.64	.41	.14	.09	-.03	-.15
35	.54	.28	.01	-.08	.10	-.09
36	.57	.38	.02	.03	-.04	-.04
37	.53	.22	.33	.10	-.06	-.13
38	.65	.45	.01	.26	-.00	-.11
39	.66	.34	.13	.22	.08	-.15
40	.67	.23	.18	.14	.07	-.03
41	.62	.22	.19	.16	.13	-.14

Table 4 (continued)

Item No.	Factor 1	2	3	4	5	6
42	.63	.50	.07	.06	-.06	-.19
43	.62	.48	.03	.14	.02	-.21
44	.65	.41	.18	.11	.02	-.24
45	.53	.55	.10	.04	.41	-.25
46	.50	.25	-.04	.04	-.04	.12
47	.64	.32	.36	-.06	-.04	-.22
48	.51	.18	-.02	.13	.13	.02
49	.62	.15	.03	.09	.19	.02
50	.36	-.18	.08	-.01	.33	.05

METHOD

Subjects

Subjects consisted of 76 male and 97 female students (N = 173) enrolled in a large, midwestern, state university. Subjects volunteered to participate in the study in exchange for credit toward their grades in undergraduate level psychology courses.

Measures

Short-Form Career Decision-Making Self-Efficacy Scale (SFCDMSE)

As part of this study, a revised Short-Form Career Decision-Making Self-Efficacy Scale (SFCDMSE) was developed in which the 5-subscale format was eliminated and the total number of items was reduced to 20 items (see Appendix B). The 20 items which loaded highest on the general factor that was introduced (via a modified version of Wherry's rotation procedure) in the Oreshnick (1985) study were selected to comprise the SFCDMSE. Table 5 provides a listing of the 20 items which comprise the SFCDMSE. The total number of items on the SFCDMSE was determined by calculating coefficient alpha values for tests of varying lengths. The 20-item SFCDMSE produced a coefficient alpha value of .93; adding items beyond this point yielded progressively diminishing returns. In reference to how the original 5 subscales are distributed among the 20 items, the SFCDMSE is composed of 4 self-appraisal subscale items, 4 occupational information

subscale items, 4 goal selection subscale items, 5 planning subscale items, and 3 problem-solving subscale items. The total score for the SFCDMSE is obtained by summing the 20 individual item ratings; the response format is the same as on the CDMSE. Thus, the range of possible scores extends from 0 to 180, with higher scores indicating greater career decision-making self-efficacy.

Insert Table 5 about here

Development of the Past Experience Survey (PES)

In order to examine the relationship between the level of perceived SE regarding career decision-making tasks and past performance on these tasks, it was required that a instrument be developed to measure the latter. The Past Experience Survey (PES) was developed to measure subjects' past performance (i.e., performance accomplishments; successes and failures) on the 20 career decision-making tasks tapped by the SFCDMSE. The PES (see Appendix C) is a retrospective self-report measure in which subjects indicate whether or not they have attempted each task and, for those tasks which they have attempted, rate how successful they were at accomplishing the task. Success ratings are made according to a 10-point Likert scale which ranges from "completely unsuccessful" (0) to "completely successful"

(9). The PES yields two scores: 1) a "task attempt score" reflecting the total number of tasks attempted, obtained by summing the number of "yes" responses; and 2) a "success score" reflecting the degree of success regarding task attempts, calculated by dividing the sum of success ratings by the number of attempts.

A brief comment at this point is warranted regarding the use of a retrospective self-report measure such as the PES. Although it can be argued that retrospective self-report methods of data collection are subject to memory biases and distortions (e.g., selective memory), the use of such an instrument in the present study is necessitated by practical considerations (e.g., alternative methods of data collection are not applicable in this case) and by the retrospective "real-life" nature of the data which is sought. Given that the career decision-making tasks are behavioral or relatively behavioral in nature, the self-report responses would appear to be more clear-cut, more easily recalled, and therefore less subject to recall biases and distortions. Thus, the behavioral nature of the tasks (items) makes this less of a methodological concern.

Career Decision Scale (CDS)

The Career Decision Scale (CDS: Osipow, Carney, Winer, Yanico, & Koschier, 1980) was employed as a measure of career indecision. The CDS is an 18-item instrument: items

1 and 2 reflect decidedness with respect to career and college major choice, respectively; whereas items 3-18 form a general indecision index. Responses to items are made on a 4-point Likert scale ranging from "not at all like me" (1) to "exactly like me" (4). With respect to scoring, the summation of items 1 and 2 provides a measure of educational and vocational decidedness; whereas, the summation of items 3-18 provides an indecision score. In the former case, scores may range from 2 to 8, with higher scores indicating more decidedness. In the latter case, scores may range from 16 to 64, with higher scores reflecting more career indecision. The scale has sufficient test-retest reliability and demonstrated validity. (See Osipow, 1980 for further details.)

Procedure

The inventories were administered to subjects in group settings in two phases. During the first phase, subjects initially completed an informed consent form (see Appendix D) and a demographic information sheet (see Appendix E), and then were administered the SFCDMSE, PES, and CDS in counterbalanced order. Some subjects returned two weeks after their respective first administration date to participate in the second administration phase. During the second phase, subjects were re-administered the SFCDMSE in order to provide test-retest data for this instrument.

Data Analysis

In view that this was the initial administration of the newly developed SFCDMSE, several psychometric properties of the instrument were examined. The reliability of the test over repeated administrations was ascertained by calculating the test-retest reliability. Also, with respect to the investigation of reliability, the internal consistency of the SFCDMSE was examined by calculating coefficient alpha. Lastly, item-total score correlations were obtained for the SFCDMSE.

Measures of central tendency were obtained for all three measures. Means and standard deviations were calculated for the SFCDMSE, PES, and CDS. A mean item response value was also obtained for the SFCDMSE by dividing the total score by the number of items (20).

The relationship between the strength of SE expectations regarding career decision-making tasks and past behavioral performance on these career decision-making tasks was analyzed in the following manner. A Pearson product-moment correlation was obtained between total score on the SFCDMSE and PES success score (which reflects the degree of success or lack of success that subjects experienced in their attempts at performing career decision-making tasks). From a conceptual perspective, on a general level, tasks on the SFCDMSE and PES can be viewed as "subtasks" which comprise

the overall task of career decision-making. Accordingly, the aforesaid analysis looks at the cumulative result of successful and unsuccessful "subtask" experiences, which can be expected to influence the overall strength of career decision-making SE expectations. Secondly, the prediction that weak SE expectations are associated with lack of past career decision-making task attempts was analyzed by employing two t-test comparisons for each item (task) on the SFCDMSE. Given that the tasks that comprise the SFCDMSE and the PES are identical, it was possible to compare the SFCDMSE responses of non-attempters, unsuccessful attempters, and successful attempters for each item (task). PES responses allowed for determining which subjects made no attempt, an unsuccessful attempt, or a successful attempt for each item. T-test comparisons were made between SFCDMSE mean item response values for non-attempters versus successful attempters on each task, and also for non-attempters versus unsuccessful attempters on each task. Differences were predicted between mean item response values in the non-attempted/successfully attempted comparison; the mean item response value for non-attempted items was expected to be lower than the mean item response value for successfully attempted items. No differences were expected between mean item response values in the non-attempted/unsuccessfully attempted comparison. The t-test

analyses required setting a cutting-point for determining successful versus unsuccessful task attempts.

The relationship between career indecision and both perceived SE regarding career decision-making tasks and past career decision-making task performance was analyzed as follows. The CDS was scored in two ways which allowed for various analyses; a decidedness score was obtained by summing items 1 and 2, and a indecision score was calculated by summing items 3-18. Correlations were computed between career decidedness score and both SFCDMSE total score and PES success score (i.e., score reflecting success of task performance), as well as between career indecision score and both SFCDMSE total score and PES success score. The association between these variables was further examined by using multiple correlations. Two multiple correlations were calculated, along with corresponding R^2 values. One of these multiple correlations used career decidedness score as the dependent variable and both SFCDMSE total score and PES success score as independent variables. The second multiple correlation employed career indecision score as the criterion variable and used the same variables as predictor variables that were used in the first multiple correlation. The ability of both strength of career decision-making SE expectations and success of past career decision-making task performance to predict career indecision was also evaluated.

Lastly, the prediction that higher levels of career indecision are associated with lack of past career decision-making task attempts was analyzed using t-test comparisons. For the purpose of analysis, high and low career indecision groups, as well as high and low career decidedness groups, were formed on the basis of CDS career indecision and decidedness scores, respectively. T-test comparisons were made between PES mean task attempt scores (which reflect number of tasks attempted) for high versus low career indecision groups, as well as for high versus low career decidedness groups. It was predicted that the high career indecision group would have a lower mean task attempt score as compared to the low career indecision group. With respect to the career decidedness groups, a lower mean task attempt score was predicted for the low career decidedness group as compared to the high career decidedness group. Additional analyses were conducted in order to take into consideration the theoretical observation that numerous unsuccessful task attempts, in addition to lack of task attempts, may be associated with career indecision. These analyses involved t-test comparisons between mean PES success scores for both high versus low career indecision groups and high versus low career decidedness groups. It was predicted that the low career decidedness group and high career indecision group would show lower mean PES success

scores as compared to the high career decidedness group and low career indecision group, respectively. Table 6 summarizes the predictions and data analyses concerning the three purposes of this study.

Insert Table 6 about here

Table 5. Short-Form Career Decision-Making Self-Efficacy Scale items

Item No.	Item
1	Determine the steps to take if you are having academic trouble with an aspect of your chosen major
2	Accurately assess your abilities
3	List several occupations that you are interested in
4	Choose a career that will fit your preferred lifestyle
5	Talk to a faculty member in a department you are considering for a major
6	Change occupations if you are not satisfied with the one you enter
7	Decide what you value most in an occupation
8	Ask a faculty member about graduate schools and job opportunities in your major
9	Get involved in a work experience relevant to your future goals
10	Choose a major or career that will fit your interests
11	Decide whether or not you will need to attend graduate or professional school to achieve your career goals
12	Choose a major or career that will suit your abilities
13	Plan course work outside of your major that will help you in your future career
14	Identify some reasonable major or career alternatives if you are unable to get your first choice

Table 5 (continued)

Item No.	Item
15	Figure out what you are and are not ready to sacrifice to achieve your career goals
16	Talk with a person already employed in the field you are interested in
17	Choose the best major for you even if it took longer to finish your college degree
18	Identify employers, firms, institutions relevant to your career possibilities
19	Find information about graduate or professional schools
20	Successfully manage the job interview process

Table 6. Summary of hypotheses, predictions, and analyses

Purpose 1

To revise the CDMSE by reducing the number of items and eliminating the subscale structure so as to produce a short-form CDMSE.

Method of Analysis. Test-retest reliability to assess reliability of test over repeated administrations, coefficient alpha to determine internal consistency, and item-total score correlations.

Purpose 2

To examine relationship between strength of career decision-making SE expectations and corresponding past task performance.

Hypothesis: Positive correlation between strength of career decision-making SE expectations and success in past task performance.

Prediction 1. Strong SE expectations associated with successful past task performance; weak SE expectations associated with unsuccessful past task performance.

Method of Analysis. Pearson product-moment correlation between SFCDMSE total score and PES success score.

Prediction 2. Predict weak SE expectations associated with lack of past task attempts.

Method of Analysis. T-test comparisons between SFCDMSE mean item response values for: 1) non-attempters versus successful attempters for each task; and 2) non-attempters versus unsuccessful attempters for each task.

Table 6 (continued)

Purpose 3

Further explore relationship between career indecision and both career decision-making SE expectations and past task performance.

Hypothesis: Substantial association between career indecision, career decision-making SE expectations, and past task performance.

Prediction 1. Career indecision negatively correlated with both strength of career decision-making SE expectations and success in past task performance.

Method of Analysis. Pearson product-moment correlations between: 1) career decidedness score and both SFCDMSE total score and PES success score; and 2) career indecision score and both SFCDMSE total score and PES success score.

Method of Analysis. Two multiple correlations with R^2 values. First multiple correlation used CDS career decidedness score as dependent variable (d.v.) and both SFCDMSE total score and PES success score as independent variables. Second multiple correlation used CDS indecision score as d.v. and same predictor variables as first multiple correlation.

Prediction 2. Higher levels of career indecision associated with lack of past task attempts, and lack of successful past attempts.

Method of Analysis. T-test comparisons between mean PES task attempt scores for: 1) high versus low career indecision groups; and 2) high versus low career decidedness groups. Also, t-test comparisons between mean PES success scores for: 1) high versus low career indecision groups; and 2) high versus low career decidedness groups.

RESULTS

The following analyses, unless specified otherwise, were based on a sample of 169 subjects; the data obtained from 4 individuals in the original sample of 173 subjects were discarded due to failure on the part of these subjects to follow instructions. The sample of 169 subjects consisted of 75 males and 94 females, whose ages ranged from 15 to 44 years with a mean age of approximately 23 years. With respect to subjects' year in school, the percentages of students who were freshmen, sophomores, juniors, and seniors were 13.0, 15.4, 29.0, and 41.4, respectively (two students did not fall into this classification scheme). Approximately 91% of the subjects reported that they had declared a major, whereas the remaining subjects indicated that they were undeclared.

SFCDMSE Psychometric Properties

Analyses of the psychometric properties of the SFCDMSE yielded the following results. Test-retest reliability figures were calculated for total scores, as well as for individual item scores, with a 2-week interval, based on a subset of individuals from the original sample. Although test-retest data were collected from 56 individuals, the analyses were performed on a sample of 53 subjects given that 3 individuals failed to follow instructions. The total score test-retest correlation was .85 ($p < .0005$). Item

test-retest correlations ranged from .35 to .78, with 70% of the correlations occurring between .64 and .78, inclusive. All item test-retest correlations reached significance with p values beyond the .01 level. Test-retest correlations are presented in Table 7. The coefficient alpha value obtained for the 20-item SFCDMSE was .92, thus reflecting a high degree of internal consistency. The item-total score correlations are shown in Table 8. As can be seen in Table 8, the item-total score correlations ranged from .53 to .73, with 80% of the correlations falling between .61 and .73, inclusive. All item-total score correlations were highly significant ($p = .0001$).

Insert Table 7 about here

Insert Table 8 about here

Measures of Central Tendency

Measures of central tendency (i.e., means and standard deviations) for the SFCDMSE, PES, and CDS were as follows. With respect to the SFCDMSE, the mean total score was 144.15 (s.d. = 21.47) and the mean item score was 7.21. In reference to the PES, the mean "task attempt" and "success" scores were 14.21 (s.d. = 3.62) and 6.85 (s.d. = 1.13), respectively. The mean Career Decision Scale values were

5.89 (s.d. = 1.60) and 26.36 (s.d. = 7.81) for career decidedness and career indecision scores, respectively. T-tests were conducted to analyze for sex differences with respect to each of the above mentioned mean scores. The only comparison which showed a significant sex difference was the mean career indecision score comparison; males reported more career indecision (M = 27.63) than females (M = 25.35), $t(167) = -1.90$, $p = .05$.

Strength of Career Decision-Making Self-Efficacy Expectations and Past Task Performance Relationship

Results concerning the analysis of the relationship between strength of SE expectations regarding career decision-making tasks and past behavioral performance on these tasks were provided by correlational and t-test analyses. Table 9 presents the correlations between all experimental variables. Results from the correlational analysis showed that SFCDMSE total score and PES success score values were highly correlated in a positive direction ($r = .77$, $p < .0005$).

Insert Table 9 about here

As mentioned previously, the t-test comparisons used to evaluate the prediction that weak self-efficacy expectations are associated with lack of past career decision-making task attempts necessitated the setting of a cutting-point for

specifying successful versus unsuccessful task attempts. Following a scrutiny of the raw data, the cutting-point was set so that an unsuccessful task attempt was defined as a PES success rating of 0-4 on that task; a PES success rating of 5-9 constituted a successful task attempt on the respective task. It should be recalled that subjects who did not attempt a particular task did not make a success rating for that task, in accordance with PES instructions. Thus, for each item, subjects fell into one of three groups: 1) non-attempters: those who didn't attempt the task, designated as Group N; 2) unsuccessful attempters: those who unsuccessfully attempted the task, labelled Group U; and successful attempters: those who successfully attempted the task, referred to as Group S. Accordingly, comparisons were made on an item-by-item basis.

The t-test comparisons between SFCDMSE mean item response values for non-attempters (Group N) versus successful attempters (Group S) are reported in Table 10. Table 11 details the t-test comparisons between SFCDMSE mean item response values for non-attempters (Group N) versus unsuccessful attempters (Group U). As can be seen from inspection of Table 10, nineteen of the twenty Group N vs. Group S comparisons were significant ($p < .0005$) in the "expected direction" (i.e., the mean item response for Group N was less than that of Group S). Thus, for the majority of

items (tasks), subjects who didn't attempt a particular task reported self-efficacy ratings, for that task, that were significantly lower than self-efficacy ratings reported by successful attempters. Inspection of Table 11 shows that there were no significant mean item response differences between Groups N and U in fourteen of the twenty comparisons. Thus, for the majority of tasks, no significant differences in self-efficacy ratings were found between those who didn't attempt the task versus those who were unsuccessful at the task. However, it should be noted that in 6 of the 20 comparisons the mean item response for Group U was significantly lower than that of Group N -- the significance level was beyond .05. That is to say, for 6 tasks non-attempters reported SE expectations that were higher than those reported by unsuccessful attempters.

Insert Table 10 about here

Insert Table 11 about here

Relationship Between Career Indecision and Both Self-Efficacy Expectations and Past Task Performance

Findings reported in this section concern the relationship between career indecision and both career decision-making SE expectations and past performance on career decision-making tasks. Results dealing with the

association between career indecision and both SE expectations and past task performance, which were obtained from correlational and regression analyses, are presented first. Subsequently, the t-test findings relating to the prediction that higher levels of career indecision are linked with lack of past career decision-making task attempts, as well as with lack of successful past attempts, are presented.

Correlational results indicated the existence of a highly significant negative correlation between subjects' CDS indecision scores and SFCDMSE total scores ($r = -.50$, $p < .0005$). Similarly, a highly significant negative correlation was observed between subjects' CDS indecision scores and PES success scores ($r = -.61$, $p < .0005$). The correlational results with respect to subjects' CDS decidedness scores showed that these scores were highly correlated with SFCDMSE total scores ($r = .50$, $p < .0005$), as well as with PES success scores ($r = .61$, $p < .0005$). Subjects' indecision scores and decidedness scores were shown to be significantly correlated in an inverse direction ($r = -.67$; $p = .0001$).

The regression results further elucidated the relationship of career decision-making self-efficacy expectations and past career decision-making task performance to career indecision. Multiple correlation

findings indicated that 37.8% of the variance in subjects' CDS indecision scores can be predicted on the basis of subjects' SFCDMSE total scores and PES success scores (R^2 = .3784); subjects' SFCDMSE total scores and PES success scores together accounted for 37.0% of the variance in CDS decidedness scores (R^2 = .3703). Although subjects' SFCDMSE total scores and PES success scores were found to be significant predictors of CDS scores (based on correlational results), removing the joint effects (via the Statistical Analysis System's Type III regression procedure which yielded partial F values) from the multiple correlations showed that the unique contribution of only one of the predictors was significant in each case. In the case of CDS indecision scores, the unique contribution of subjects' PES success scores was significant in predicting indecision scores [$F(1,166) = 34.04$, $p < .0005$], unlike the unique contribution of SFCDMSE total scores [$F(1,166) = 0.63$, $p = .4267$]. PES success scores were thus found to add to SFCDMSE total scores in predicting the criterion (CDS indecision scores); SFCDMSE total scores added little to PES success scores in terms of predicting indecision scores. Similarly, in the case of subjects' CDS decidedness scores, the unique contribution of subjects' PES success scores was significant in predicting decidedness scores [$F(1,166) = 33.01$, $p < .0005$], unlike the unique contribution of SFCDMSE

total scores [$F(1,166) = 0.59$, $p = .4433$]. Again, PES success scores were found to add to SFCDMSE total scores in predicting the criterion (CDS decidedness score); SFCDMSE total scores did not significantly add to PES success scores in terms of predicting decidedness scores.

As mentioned previously, t-test analyses used to evaluate the prediction that higher levels of career indecision are linked with lack of both past career decision-making task attempts and successful past attempts necessitated the formation of high- and low- career indecision and career decidedness groups. Groups were formed based on a perusal of the frequency distributions of CDS indecision and decidedness scores, which allowed for the determination of cutoff points for high and low groups. The high career indecision group consisted of subjects (n = 59) who had indecision scores ranging from 29 to 44 (approximately the top one-third of the distribution); subjects (n = 53) who had indecision scores ranging from 16 to 20 (approximately the bottom one-third of the distribution) comprised the low career indecision group. The high career decidedness group consisted of subjects (n = 61) who had career decidedness scores ranging from 7 to 8 (approximately the top one-third of the distribution); subjects (n = 59) who had decidedness scores ranging from 2

to 5 (approximately the bottom one-third of the distribution) comprised the low career decidedness group.

The t-test comparison results were consistent with the prediction that that higher levels of career indecision are linked with lack of past career decision-making task attempts, as well as with lack of successful past attempts. PES task attempt scores for the high career indecision ($\underline{M}$ = 12.53) group were significantly lower than PES task attempt scores reported by the low career indecision group ($\underline{M}$ = 15.34), $\underline{t}(110) = 4.28$, $\underline{p} < .0005$. Similarly, the mean PES task attempt score for the low career decidedness group ($\underline{M}$ = 12.46) was significantly lower than the mean PES task attempt score for the high career decidedness group ($\underline{M}$ = 15.72), $\underline{t}(118) = -5.17$, $\underline{p} < .0005$. Thus, subjects who reported high levels of indecision or, similarly, low levels of decidedness attempted fewer career decision-making tasks, as compared to those who expressed low levels of career indecision or high levels of decidedness. With respect to comparisons involving PES success scores, the mean score for the high career indecision group (M = 6.07) was significantly lower than the mean score for the low career indecision group (M = 7.56), $\underline{t}(110) = 7.80$, $\underline{p} < .0005$. Correspondingly, the low career decidedness group reported significantly lower PES success scores ($\underline{M}$ = 6.14), as compared to the high career decidedness group ($\underline{M}$ = 7.51),

$t(118) = -7.20$, $p < .0005$. In other words, subjects who expressed high levels of career indecision or low levels of career decidedness experienced less success in their previous career decision-making task attempts, in contrast to those who reported low career indecision or high career decidedness. Lastly, it should be noted that PES task attempt scores and PES success scores were shown to be significantly correlated ($r = .40$, $p < .0005$).

Table 7. Short-Form Career Decision-Making Self-Efficacy Scale test-retest correlations: On both item level and total score level

Items	*r*
1	.58***
2	.73***
3	.68***
4	.76***
5	.72***
6	.54***
7	.67***
8	.39**
9	.78***
10	.71***
11	.43**
12	.77***
13	.64***
14	.60***
15	.70***
16	.72***

**$p < .005$.

***$p < .0005$.

Table 7 (continued)

Items	r
17	.35*
18	.54***
19	.65***
20	.78***
Total Score	.85***

*p < .01.

Table 8. Item-total score correlations for the Short-Form Career Decision-Making Self-Efficacy Scale

Items	*r*
1	.64
2	.62
3	.53
4	.53
5	.61
6	.62
7	.64
8	.62
9	.58
10	.62
11	.62
12	.70
13	.65
14	.63
15	.66
16	.73
17	.55
18	.69
19	.72
20	.68

Note. All *r* values significant at *p* = .0001.

Table 9. Correlations between experimental variables

Variables	r 1	2	3	4
1. SFCDMSE total score				
2. PES task attempt score	.48			
3. PES success score	.77	.40		
4. CDS decidedness score	.50	.43	.61	
5. CDS indecision score	-.50	-.37	-.61	-.67

Note. All r values significant at the $p < .0005$ level.

Table 10. T-test comparisons between Short-Form Career Decision-Making Self-Efficacy Scale mean item responses for non-attempters (Group N) vs. successful attempters (Group S)

Item	Mean		s.d.	t[a]
	Group N	Group S		
1	6.62	6.86	1.60	0.95
2	5.19	7.10	1.37	6.93*
3	6.10	7.91	1.45	5.21*
4	6.52	7.67	1.38	3.69*
5	6.14	7.96	1.67	5.78*
6	6.23	7.46	2.04	3.80*
7	6.15	7.58	1.26	5.81*
8	6.60	8.08	1.73	5.33*
9	6.54	8.10	1.55	6.26*
10	6.25	7.92	1.21	3.81*
11	6.45	8.05	1.51	6.13*
12	5.63	7.59	1.28	4.22*
13	6.48	7.65	1.42	4.93*
14	6.05	7.09	1.67	3.72*

Note. T-tests were derived using the General Linear Model with pooled variances.

[a] Degrees of freedom = 166 for all t-test comparisons.

*$p < .0005$.

Table 10 (continued)

Item	Mean		s.d.	t[a]
	Group N	Group S		
15	5.76	7.51	1.59	6.30*
16	7.24	8.25	1.46	3.84*
17	6.24	7.94	1.54	5.87*
18	6.47	7.73	1.62	4.63*
19	7.06	8.32	1.62	4.87*
20	6.10	7.78	1.80	5.91*

Table 11. T-test comparisons between Short-Form Career Decision-Making Self-Efficacy Scale mean item responses for non-attempters (Group N) vs. unsuccessful attempters (Group U)

Item	Mean		s.d.	t[a]
	Group N	Group U		
1	6.62	5.56	1.60	2.36*
2	5.19	5.35	1.37	0.39
3	6.10	5.69	1.45	0.85
4	6.52	5.08	1.38	3.03***
5	6.14	5.86	1.67	0.41
6	6.23	5.29	2.04	1.18
7	6.15	6.90	1.26	1.65
8	6.60	6.78	1.73	0.28
9	6.54	5.18	1.55	2.69**
10	6.25	6.60	1.21	0.61
11	6.45	6.22	1.51	0.41
12	5.63	4.78	1.28	1.36

Note. T-tests were derived using the General Linear Model with pooled variances.

[a] Degrees of freedom = 166 for all t-test comparisons.

*$p < .05$.

**$p < .01$.

***$p < .005$.

Table 11 (continued)

Item	Mean		s.d.	t[a]
	Group N	Group U		
13	6.48	5.45	1.42	2.19*
14	6.05	5.55	1.67	1.21
15	5.76	5.86	1.59	0.24
16	7.24	5.73	1.46	3.05***
17	6.24	7.00	1.54	0.93
18	6.47	6.27	1.62	0.37
19	7.06	6.50	1.62	0.82
20	6.10	3.50	1.80	3.42****

****p <.001.

DISCUSSION

In general, the obtained results are consistent with the predictions advanced at the outset of this study and offer support for the application of Bandura's SE theory to career decision-making behavior. Furthermore, use of SFCDMSE as a measure of career decision-making SE expectations was supported by findings which investigated its psychometric properties.

The discussion in this section proceeds along the following lines. The initial discussion focuses on the primary findings of this study. Following the discussion of the primary results, the implications of such findings are addressed. Next, the limitations of the present study are detailed. Lastly, suggestions are make regarding the potential direction of future research in this area.

Primary Findings

SFCDMSE psychometric properties

Findings regarding the psychometric properties of the SFCDMSE validate its use as a measure in this study, and offer initial support for its general use as an assessment instrument. Evidence of sufficient test-retest reliability, at both the total score and individual item level, suggests that the SFCMSE is a stable measure. The test-retest correlations are especially informative given that coefficients of stability were not previously reported for

the CDMSE. Also, in relation to reliability, the finding of a high (positive) degree of internal consistency: 1) suggests that the items on the test (SFCDMSE) are measuring the same thing, and 2) may be interpreted as a reflection that the items are measuring a single attribute or dimension. The observation that the SFCDMSE items were found to be highly intercorrelated (i.e., homogeneous) was of little surprise given the high inter-item consistency and undimensionality observed for the CDMSE. Although the degree of internal consistency for the SFCDMSE is somewhat lower than the internal consistency for the CDMSE, it is high nonetheless. The finding that the internal consistency for the SFCDMSE is lower than that of the CDMSE is to be expected given that the SFCDMSE has fewer items. The high level of internal consistency can be seen as directly contributing to the highly significant item-total score correlations that were obtained for the SFCDMSE. The item-total score correlations for the SFCDMSE were comparable to those reported for the CDMSE.

Measures of central tendency

Based on the means reported for the SFCDMSE and PES instruments, the subjects in this study in general: expressed considerably strong career decision-making SE expectations; attempted, on the average, approximately 75% of the career decision-making tasks; and were reasonably

successful in their attempts. The mean SFCDMSE item response (7.21) slightly exceeded the highest mean item response (7.0, for a particular subscale) obtained by Taylor and Betz (1983). Thus, in general, college students in the present study reported strong career decision-making SE expectations, as did subjects in Taylor and Betz's two samples. The lack of sex differences in career decision-making SE expectations was congruent with findings from Taylor and Betz's (1983) study.

The fact that subjects reported attempting the majority of the career decision-making tasks may be due to the composition of the sample. More specifically, most of the subjects had already declared a major and were predominantly juniors and seniors. It is likely that such subjects would have participated in various career decision-making tasks given their academic status.

The presence of sex differences in mean CDS indecision score is, in some respect, a controversial finding. Osipow (1980) reported a lack of sex differences in indecision scores based on a normative college sample. Taylor and Betz (1983) found indecision score sex differences in one group of college students, but failed to find such sex differences in a second group of college students. As was the case in Taylor and Betz's study, the observed sex difference in this study indicated that males reported significantly more

indecision than females. Explication of this disparity in findings across college samples must await further research.

Strength of career decision-making self-efficacy expectations and past task performance relationship

Examination of the relationship between strength of SE expectations regarding career decision-making tasks and past behavioral performance on these tasks yielded results that were, for the most part, congruent with predictions. The demonstration of a highly significant correlation between SFCDMSE total score and PES success score values (.77) suggests that subjects with strong SE expectations regarding career decision-making tasks tended to have successful career decision-making task experiences. Additionally, this finding suggests that subjects with less strong career decision-making SE expectations tended to have less successful career decision-making task experiences. Such results conform with Bandura's theoretical claim that successful experiences enhance SE expectations, whereas unsuccessful experiences weaken SE expectations.

Secondly, the prediction that weak SE expectations are associated with lack of past career decision-making task attempts received support. T-test comparisons for non-attempters versus successful attempters showed that, on essentially all tasks, SE expectations (regarding the respective task) of non-attempters were significantly weaker than SE expectations of successful attempters. This result

is consistent with the notion that low self-efficacy regarding a task may deter the individual from attempting that task. The related prediction that the career decision-making SE expectations of non-attempters would not differ significantly in strength from unsuccessful attempter's SE expectations was supported in 70% of the comparisons. The finding that SE expectations of unsuccessful attempters were significantly lower than SE expectations of non-attempters for 6 of the tasks was inconsistent with the prediction.

A plausible explanation for this latter finding stems from SE theory itself. The occurrence of low or diminished SE expectations in unsuccessful attempters follows directly from Bandura's proposition concerning the impact of performance accomplishments. The strength of SE expectations regarding unattempted tasks is likely to vary between individuals given the diversity of their past performance experiences and variation in the generalization of SE expectations. As previously mentioned, Bandura posits that one dimension along which SE expectations vary is generality. Recall that generality refers to the variation in the degree to which a SE expectation regarding a specific behavior will generalize to other behaviors. For some individuals, the strength of SE expectations for unattempted tasks may be elevated due to the generalization from positive experiences on similar tasks. Such an instance

would explain the latter finding of differences between non-attempters and unsuccessful attempters. For other individuals, the effect of the generalization process may not be as great, hence the strength of SE expectations for unattempted tasks may not be elevated for those individuals. The former finding of no differences between non-attempters and unsuccessful attempters would be consistent with this second instance. The preceding explanation could also be presented in an analogous fashion dealing with the generalization of negative experiences. The issue is complex given that generalization of both positive and negative expectancies is likely to occur.

Relationship between career indecision and both self-efficacy expectations and past task performance

In general, exploration of the relationship between career indecision and both career decision-making SE expectations and past performance on career decision-making tasks led to findings that were consistent with predictions. The prediction that subjects' degree of career indecision would be negatively correlated with both strength of career decision-making SE expectations and past success (or lack of success) regarding career decision-making task performance was borne out by the significant correlational results. Subjects with high career indecision, or similarly low career decidedness, tended to express lower career decision-making SE and reported less career decision-making task

success, in comparison to low career indecision and high career decidedness subjects. The confirmation of such a prediction is congruent with SE theory. Thus, both strength of career decision-making SE expectations and degree of past task performance success were significant predictors of indecision and decidedness status.

The aspect of this "prediction" concerning the negative relationship between career indecision score and SFCDMSE total score is probably better described as an attempt to replicate, using a revised SE measure, Taylor and Betz's (1983) findings. Thus, the present finding can be viewed as a successful replication; in fact, the correlation coefficient obtained in this study between SFCDMSE score and indecision score (-.50) was greater than that obtained by Taylor and Betz between CDMSE total score and indecision score (-.40). An analogous statement can be make regarding the positive relationship observed between career decidedness score and SFCDMSE total score. Similarly, the significant correlation observed in the current study between decidedness and SFCDMSE scores replicated the finding of Robbins (1985), who looked at the relationship between decidedness score and CDMSE total score. The correlation coefficient calculated in the present study (.50) exceeded the coefficient obtained by Robbins (.34). The fact that the observed correlations between SFCDMSE

total scores and CDS indecision and decidedness scores tended to be higher in the present study than in past studies may be related to differences in sample composition. Samples used in the previous research consisted of predominantly freshman and sophomores; whereas the sample in the present study was composed of mostly juniors and seniors. Corresponding to differences in sample composition may be a related trend towards decreasing levels of indecision through college, as noted by Osipow (1980). The existence of such a trend may account for the modest correlational differences observed between samples.

The relationship of SE expectations and past task success to career indecision and decidedness scores was shown to be parallel, but in the reverse direction (as would be expected). The magnitude of the correlation coefficients obtained between SE expectations and both career indecision and decidedness scores was virtually the same after rounding. Similarly, the magnitude of the correlation coefficients obtained between PES success scores and both indecision and decidedness scores was the same. These findings imply the existence of a strong negative association between career indecision and decidedness scores, as was evidenced in the highly significant negative correlation (-.67) that was obtained.

The multiple correlation findings showed that PES success and SFCDMSE scores together accounted for a significant amount of the variance in CDS indecision and decidedness scores, approximately 37% in each case. As mentioned previously, PES success and SFCDMSE scores were significant individual predictors of CDS indecision and decidedness scores. The finding that SFCDMSE total score significantly predicts indecision score replicates Taylor and Betz's regression finding which showed that strength of career decision-making SE expectations, as measured by the CDMSE, predicts CDS career indecision scores. The regression results obtained in the present study were useful in understanding the relative contribution of SFCDMSE total and PES success scores in predicting the criterion (i.e., career indecision as reflected by CDS indecision and decidedness scores). While PES success score was found to add significantly to SFCDMSE total score in predicting CDS indecision and decidedness scores, SFCDMSE total score did not contribute significantly to PES success score in predicting the criterion. These findings are not surprising in view of the highly significant correlation that was found between SFCDMSE total and PES success scores ($r = .77$, $p < .0005$). That is to say, as the correlation between two predictors increases, the amount of added predictability contributed by the second predictor decreases. Given that

PES success score was more highly correlated with the criterion (CDS scores) than was SFCDMSE score, it appears to be the better predictor in this case. However, one can not discount the predictive capability of career decision-making SE expectations; given that they are significant predictors by themselves, as indicated by the significant correlational findings regarding SE expectations and career indecision variables.

The aforementioned finding that past career decision-making task performance appears to be a better predictor than career decision-making SE expectations may be viewed as contrasting with Bandura's contention (Bandura, 1977, 1982) that SE expectations are often better than past task performance in predicting future performance. Bandura reasons that how one cognitively processes information arising from a performance experience alters SE expectations and influences future behavior accordingly; the performance experience, per se, is less informative. Bandura's contention relates to a situation in which past task performance and SE expectations are used to predict a future task performance. For those who are inclined to interpret subjects' career indecision status (as measured by the CDS) as a reflection of "future" career decision-making task performance, this finding runs contrary to what Bandura might have predicted. For those who are not inclined to

make such an interpretation, the obtained result would not be seen as conflicting with Bandura's contention -- the result would be seen as nonapplicable to the contention.

The prediction that higher levels of career indecision are linked with lack of past career decision-making task attempts, as well as with lack of successful past career decision-making attempts, was supported. That is, findings showed that the high indecision and low decidedness groups reported both significantly fewer task attempts and significantly less success in their task attempts, as compared to the low indecision and high decidedness groups. Furthermore, correlational findings suggested that subjects who were less successful in their career decision-making task attempts tended to make less task attempts, whereas subjects who more successful in their task attempts tended to make more career decision-making task attempts.

A brief discussion which summarizes and integrates the findings commented on in the last two sections is warranted. Bandura (1977) suggests that, given the prerequisite abilities and motivation, SE expectations are influential in determining task initiation and performance. The relationships between the career decision-making variables observed in this study parallel the relationships predicted by Bandura's SE model, thus offering support for SE theory based on, in part, reports of real life behavioral

performances. Unlike Bandura's studies, this study looks at past behavior which occurred naturally outside the laboratory setting. In line with Bandura's SE model, strong SE expectations were associated with successful past career decision-making task performance; whereas weak SE expectations were associated with unsuccessful past performance. The SE model contends that strong SE expectations pertaining to certain behaviors are associated with more frequent initiation of those behaviors (and related behaviors), and with greater persistence on the part of the individual when faced with difficulties stemming from such tasks. Results supported this contention; findings showed that subjects with relatively strong SE expectations were more successful in their career decision-making task attempts and tended to make more task attempts. The success may be due to greater persistence on the part of individuals with high SE. Conversely, the SE model suggests that weak SE expectations regarding specific behaviors are associated with less frequent initiation of those and related behaviors, and with less task persistence in the face of obstacles. Findings demonstrated that subjects with relatively weak SE expectations were less successful in their task attempts and tended to make fewer task attempts. The lack of success may be due to less persistence on the part of individuals with relatively low SE. High career

indecision was shown to be linked with weak career decision-making SE expectations, lack of past career decision-making task attempts, and less successful past task attempts. It is likely the career indecision, career decision-making SE expectations, and past career decision-making task performance interact in a complex way in which each variable affects the other in a reciprocal manner.

Clinical and Research Implications

The findings of this study have clinical, as well as research, implications. The clinical implications will be discussed first, followed by a detailing of the research implications. One of the primary clinically related implications concerns the clinical application of the SFCDMSE. Based on the findings of the present research, the SFCDMSE appears to be a reliable measure of career decision-making SE and, as such, can be of valuable use in vocational counseling. Given the brevity of this instrument, it can be easily administered within the time constraints of a first session, and can therefore provide the clinician with an indication of the strength of a client's career decision-making SE expectations at an early point in the counseling process. The demonstration of a significant relationship between career indecision, SE expectations, and past behavioral performance suggests that the vocational counselor could assist undecided clients by incorporating,

into the existing treatment, an intervention aimed at enhancing career decision-making SE expectations. For example, providing clients with opportunities for successful experiences at career decision-making tasks would be one type of efficacy enhancement intervention. The enhancement of career decision-making SE expectations would also be advantageous in that its impact would transfer beyond an initial career decision; subsequent career decisions, which might arise at later times, would benefit as a result of the initial SE enhancement.

As was the case regarding clinical implications, findings suggest that the SFCDMSE also has application in career decision-making research. Its short administration time, coupled with its demonstrated psychometric properties (which are essentially comparable to the CDMSE), argues for its potential use in place of the CDMSE when a total career decision-making SE score is needed. The utility of the CDMSE subscales scores, which would be additionally provided by the CDMSE, is questionable. This is not to say that the CDMSE should be discarded; the CDMSE provides useful information as far as providing SE ratings on a broader range of career decision-making tasks is concerned. The use of the SFCDMSE in research is further supported by its demonstrated concurrent validity with the CDMSE. More specifically, relationships that were observed between the

CDMSE and career indecision variables in past research were also observed between the SFCDMSE and these variables. Additionally, the SFCDMSE may prove helpful in research which involves the evaluation of career indecision interventions. That is to say, assessing career decision-making SE expectations pre- and posttreatment would give some indication of the intervention's effectiveness -- since career decision-making SE expectations appear to be a important component of career indecision. Lastly, the observed relationship between career indecision, career decision-making SE expectations, and past career decision-making task performance highlights the importance of considering SE and past performance variables in the study of career indecision. While this study does not suggest that career decision-making SE is the primary determinant of career indecision or decidedness, it does argue as to the importance of SE in the career decision-making process. In order to facilitate the discussion of potential future research in this area, it will be useful to first point out the limitations of this current study.

Limitations of the Present Study

One limitation of this study stems from its design and the corresponding interpretations that can be made from its findings. Given that the research design is correlational in nature, as opposed to experimental, one must guard

against over interpreting the findings. That is to say, the results should not be interpreted as demonstrating causal relationships. On the other hand, the significant correlations that were found do suggest a strong association between the variables studied.

A second limitation of this study involves the extent to which the various aspects of SE theory were evaluated. The present study focused on the relationship between performance accomplishments and strength of SE expectations. It would be an oversimplification to suggest that this aspect of SE theory was evaluated in its entirety. The cognitive appraisal aspect of the SE process, which suggests that cognitive processing of SE information mediates the impact of such information on SE expectations, was not specifically addressed in this study. As Bandura (1977) points out, the impact of performance information (i.e., successful and unsuccessful experiences) can be contrary to what is usually the case if one cognitively appraises the information in certain ways. For example, if an individual discounts successful experiences, these experiences would not serve to enhance the individual's SE. Also, parallel to the preceding example, if an individual discredits information arising from unsuccessful experiences, these experiences would not function to reduce the individual's SE. Suggestions concerning the possible examination of this

cognitive appraisal process will be discussed further in the remaining section.

Suggestions for Future Research

The encouraging results found in the present study, in conjunction with previous findings, suggest the importance of the role of SE expectations in relation to career indecision. Research which further explores the role of career decision-making SE expectations in the career decision-making process appears justified. Following are several suggestions regarding potentially advantageous research pursuits.

One research direction to pursue involves the examination of the relationship between career decision-making SE expectations and the career choice process (or alternatively, career indecision) using a causal analysis or experimental framework. It is apparent that SE is not the sole determinant in the career decision-making process. Accordingly, in order to examine the potential causal relationships between career decision-making SE expectations and other variables operating in the career choice process, a path analysis may prove valuable.

Controlled experimental manipulations of successful and unsuccessful career decision-making task performances, along with pre-and-post measures of SE expectations, may provide causal tests of the aspect of SE theory evaluated in the

present study. For example, such an experiment might involve, as one of its tasks, a simulated job interview task (like item 20 on the SFCDMSE) in which some subjects are given positive feedback suggesting that they successfully completed the task and some subjects negative feedback suggesting that they unsuccessfully completed the task. Career decision-making SE expectations for the various tasks could then be compared for pre-and-post task performance differences, as well as for differences between successful and unsuccessful groups. Employment of the above described procedures would allow for conclusions that are more causally oriented, thus would extend the current research findings.

Research pursuits which examine the cognitive appraisal aspect of SE theory would also prove useful in further evaluating SE theory. Although this aspect of SE theory is highlighted by Bandura as a key theoretical component, surprisingly little research has experimentally examined the relationship between cognitive appraisal and SE. Furthermore, one important variable which is suggested, by Bandura, to influence the cognitive appraisal of efficacy information involves attributions of causality. Thus, a fruitful avenue of research would be to empirically test Bandura's contentions concerning the influence of causal

attributions in the cognitive appraisal of efficacy information.

Finally, with respect to the SFCDMSE, additional research can be done to further evaluate the SFCDMSE. Such research might examine the construct validity and criterion-related validity of the SFCDMSE by conducting both concurrent and discriminant validity studies, possibly similar to those that have been conducted with the CDMSE by Robbins (1985). Factor analytic studies of the SFCDMSE may also contribute in its evaluation. Lastly, it is recommended that norms be established for the SFCDMSE in both high school and college populations.

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APPENDIX A.

CAREER DECISION-MAKING SELF-EFFICACY SCALE

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 following 10-point continuum.

None Very little Some Much Complete

0 1 2 3 4 5 6 7 8 9

Example:

How much confidence do you have that you could:

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

If your response on the 10-point continuum was 5, "some confidence", you would circle the number 5 in the right hand column as follows: 0 1 2 3 4 (5) 6 7 8 9

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some			Much		Complete
1. List several majors that you are interested in.	0	1	2	3	4	5	6	7	8	9	
2. Find information in the library about occupations you are interested in.	0	1	2	3	4	5	6	7	8	9	
3. Select one major from a list of potential majors you are considering.	0	1	2	3	4	5	6	7	8	9	
4. Make a plan of your goals for the next five years.	0	1	2	3	4	5	6	7	8	9	
5. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.	0	1	2	3	4	5	6	7	8	9	
6. Accurately assess your abilities.	0	1	2	3	4	5	6	7	8	9	
7. Find information about companies who employ people with college majors in English.	0	1	2	3	4	5	6	7	8	9	
8. Select one occupation from a list of potential occupations you are considering.	0	1	2	3	4	5	6	7	8	9	
9. Determine the steps you need to take to successfully complete your chosen major.	0	1	2	3	4	5	6	7	8	9	
10. Persistently work at your major or career goal even when you get frustrated.	0	1	2	3	4	5	6	7	8	9	

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some			Much		Complete
11. List several occupations that you are interested in.	0	1	2	3	4	5	6	7	8	9	
12. Find information about educational programs in engineering.	0	1	2	3	4	5	6	7	8	9	
13. Choose a career that will fit your preferred lifestyle.	0	1	2	3	4	5	6	7	8	9	
14. Prepare a good resume.	0	1	2	3	4	5	6	7	8	9	
15. Change majors if you did not like your first choice.	0	1	2	3	4	5	6	7	8	9	
16. Determine what your ideal job would be.	0	1	2	3	4	5	6	7	8	9	
17. Talk to a faculty member in a department you are considering for a major.	0	1	2	3	4	5	6	7	8	9	
18. Make a career decision and then not worry about whether it was right or wrong.	0	1	2	3	4	5	6	7	8	9	
19. Get letters of recommendation from your professors.	0	1	2	3	4	5	6	7	8	9	
20. Change occupations if you are not satisfied with the one you enter.	0	1	2	3	4	5	6	7	8	9	
21. Decide what you value most in an occupation.	0	1	2	3	4	5	6	7	8	9	

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some			Much		Complete
22. Ask a faculty member about graduate schools and job opportunities in your major.	0	1	2	3	4	5	6	7	8	9	
23. Choose a major or career that your parents do not approve of.	0	1	2	3	4	5	6	7	8	9	
24. Get involved in a work experience relevant to your future goals.	0	1	2	3	4	5	6	7	8	9	
25. Resist attempts of parents or friends to push you into a career or major you believe is beyond your abilities.	0	1	2	3	4	5	6	7	8	9	
26. Figure out whether you have the ability to successfully take math courses.	0	1	2	3	4	5	6	7	8	9	
27. Describe the job duties of the career/occupation you would like to pursue.	0	1	2	3	4	5	6	7	8	9	
28. Choose a career in which most workers are the opposite sex.	0	1	2	3	4	5	6	7	8	9	
29. Find and use the Placement Office on campus.	0	1	2	3	4	5	6	7	8	9	
30. Move to another city to get the kind of job you really would like.	0	1	2	3	4	5	6	7	8	9	
31. Determine the academic subject you have the most ability in.	0	1	2	3	4	5	6	7	8	9	

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little		Some		Much		Complete	
32. Find out the employment trends for an occupation in the 1980s.	0	1	2	3	4	5	6	7	8	9
33. Choose a major or career that will fit your interests.	0	1	2	3	4	5	6	7	8	9
34. Decide whether or not you will need to attend graduate or professional school to achieve your career goals.	0	1	2	3	4	5	6	7	8	9
35. Apply again to graduate schools after being rejected the first time.	0	1	2	3	4	5	6	7	8	9
36. Determine whether you would rather work primarily with people or with information.	0	1	2	3	4	5	6	7	8	9
37. Find out the average yearly earnings of people in an occupation.	0	1	2	3	4	5	6	7	8	9
38. Choose a major or career that will suit your abilities.	0	1	2	3	4	5	6	7	8	9
39. Plan course work outside of your major that will help you in your future career.	0	1	2	3	4	5	6	7	8	9
40. Identify some reasonable major or career alternatives if you are unable to get your first choice.	0	1	2	3	4	5	6	7	8	9

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some			Much		Complete
41. Figure out what you are and are not ready to sacrifice to achieve your career goals.	0	1	2	3	4	5	6	7	8	9	
42. Talk with a person already employed in the field you are interested in.	0	1	2	3	4	5	6	7	8	9	
43. Choose the best major for you even if it took longer to finish your college degree.	0	1	2	3	4	5	6	7	8	9	
44. Identify employers, firms, institutions relevant to your career possibilities.	0	1	2	3	4	5	6	7	8	9	
45. Go back to school to get a graduate degree after being out of school 5-10 years.	0	1	2	3	4	5	6	7	8	9	
46. Define the type of lifestyle you would like to live.	0	1	2	3	4	5	6	7	8	9	
47. Find information about graduate or professional schools.	0	1	2	3	4	5	6	7	8	9	
48. Choose the major you want even though the job market is declining with opportunities in this field.	0	1	2	3	4	5	6	7	8	9	
49. Successfully manage the job interview process.	0	1	2	3	4	5	6	7	8	9	
50. Come up with a strategy to deal with flunking out of college.	0	1	2	3	4	5	6	7	8	9	

APPENDIX B.

SHORT-FORM CAREER DECISION-MAKING SELF-EFFICACY SCALE

CAREER QUESTIONNAIRE

INSTRUCTIONS: For each statement below, please read carefully and indicate how much confidence you have that you could accomplish the task by circling the appropriate number on the 10-point scale to the right of each statement.

Example:

How much confidence do you have that you could:	None		Very little			Some		Much		Complete
A. Summarize the skills you have developed in the jobs you have held?	0	1	2	3	4	(5)	6	7	8	9

If your response on the 10-point scale was 5, "some confidence", you would circle the number 5 as shown above.

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some		Much		Complete
1. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.	0	1	2	3	4	5	6	7	8	9
2. Accurately assess your abilities.	0	1	2	3	4	5	6	7	8	9

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some			Much		Complete
3. List several occupations that you are interested in.	0	1	2	3	4	5	6	7	8	9	
4. Choose a career that will fit your preferred lifestyle.	0	1	2	3	4	5	6	7	8	9	
5. Talk to a faculty member in a department you are considering for a major.	0	1	2	3	4	5	6	7	8	9	
6. Change occupations if you are not satisfied with the one you enter.	0	1	2	3	4	5	6	7	8	9	
7. Decide what you value most in an occupation.	0	1	2	3	4	5	6	7	8	9	
8. Ask a faculty member about graduate schools and job opportunities in your major.	0	1	2	3	4	5	6	7	8	9	
9. Get involved in a work experience relevant to your future goals.	0	1	2	3	4	5	6	7	8	9	
10. Choose a major or career that will fit your interests.	0	1	2	3	4	5	6	7	8	9	
11. Decide whether or not you will need to attend graduate or professional school to achieve your career goals.	0	1	2	3	4	5	6	7	8	9	
12. Choose a major or career that will suit your abilities.	0	1	2	3	4	5	6	7	8	9	
13. Plan course work outside of your major that will help you in your future career.	0	1	2	3	4	5	6	7	8	9	

HOW MUCH CONFIDENCE DO YOU HAVE THAT YOU COULD:	None		Very little			Some			Much		Complete
14. Identify some reasonable major or career alternatives if you are unable to get your first choice.	0	1	2	3	4	5	6	7	8	9	
15. Figure out what you are and are not ready to sacrifice to achieve your career goals.	0	1	2	3	4	5	6	7	8	9	
16. Talk with a person already employed in the field you are interested in.	0	1	2	3	4	5	6	7	8	9	
17. Choose the best major for you even if it took longer to finish your college degree.	0	1	2	3	4	5	6	7	8	9	
18. Identify employers, firms, institutions relevant to your career possibilities.	0	1	2	3	4	5	6	7	8	9	
19. Find information about graduate or professional schools.	0	1	2	3	4	5	6	7	8	9	
20. Successfully manage the job interview process.	0	1	2	3	4	5	6	7	8	9	

APPENDIX C.

PAST EXPERIENCE SURVEY

PAST EXPERIENCE SURVEY

INSTRUCTIONS: For each item below, first read the statement describing the task. Then circle "yes" if you have attempted the task or "no" if you have not attempted the task. For each item that you respond "yes", please indicate how successful you were at accomplishing the task by circling the appropriate number on the 10-point scale which ranges from completely unsuccessful (0) to completely successful (9). For each item that you respond "no", do not circle any number on the scale -- go directly to the next item.

Example:	Completely unsuccessful		Unsuccessful		Moderately successful			Successful		Completely successful
Task: Find out the employment trends for an occupation in the 1980s.	0	1	2	3	4	5	6	7	8	9

Yes / No

If you have attempted to accomplish the above task, you would circle "yes". If you were somewhat successful in accomplishing this task, you might circle 4 or 5.

On the other hand, if you have not attempted to accomplish the above task, you would circle "no". You would not circle any number on the scale and would move on to the next item.

	Completely unsuccessful		Unsuccessful		Moderately successful		Successful		Completely successful	
1. Task: Determine the steps to take if you are having academic trouble with an aspect of your chosen major.	0	1	2	3	4	5	6	7	8	9
Yes / No										
2. Task: Accurately assess your abilities.	0	1	2	3	4	5	6	7	8	9
Yes / No										
3. Task: List several occupations that you are interested in.	0	1	2	3	4	5	6	7	8	9
Yes / No										
4. Task: Choose a career that will fit your preferred lifestyle.	0	1	2	3	4	5	6	7	8	9
Yes / No										
5. Task: Talk to a faculty member in a department you are considering for a major.	0	1	2	3	4	5	6	7	8	9
Yes / No										
6. Task: Change occupations if you are not satisfied with the one you enter.	0	1	2	3	4	5	6	7	8	9
Yes / No										
7. Task: Decide what you value most in an occupation.	0	1	2	3	4	5	6	7	8	9
Yes / No										

	Completely unsuccessful		Unsuccessful		Moderately successful		Successful		Completely successful	
8. Task: Ask a faculty member about graduate schools and job opportunities in your major.	0	1	2	3	4	5	6	7	8	9
Yes / No										
9. Task: Get involved in a work experience relevant to your future goals.	0	1	2	3	4	5	6	7	8	9
Yes / No										
10. Task: Choose a major or career that will fit your interests.	0	1	2	3	4	5	6	7	8	9
Yes / No										
11. Task: Decide whether or not you will need to attend graduate or professional school to achieve your career goals.	0	1	2	3	4	5	6	7	8	9
Yes / No										
12. Task: Choose a major or career that will suit your abilities.	0	1	2	3	4	5	6	7	8	9
Yes / No										
13. Task: Plan course work outside of your major that will help you in your future career.	0	1	2	3	4	5	6	7	8	9
Yes / No										

	Completely unsuccessful		Unsuccessful		Moderately successful		Successful		Completely successful	
14. Task: Identify some reasonable major or career alternatives if you are unable to get your first choice.	0	1	2	3	4	5	6	7	8	9
Yes / No										
15. Task: Figure out what you are and are not ready to sacrifice to achieve your career goals.	0	1	2	3	4	5	6	7	8	9
Yes / No										
16. Task: Talk with a person already employed in the field you are interested in.	0	1	2	3	4	5	6	7	8	9
Yes / No										
17. Task: Choose the best major for you even if it took longer to finish your college degree.	0	1	2	3	4	5	6	7	8	9
Yes / No										
18. Task: Identify employers, firms, institutions relevant to your career possibilities.	0	1	2	3	4	5	6	7	8	9
Yes / No										
19. Task: Find information about graduate or professional schools.	0	1	2	3	4	5	6	7	8	9
Yes / No										
20. Task: Successfully manage the job interview process.	0	1	2	3	4	5	6	7	8	9
Yes / No										

APPENDIX D.

INFORMED CONSENT FORM

INSTRUCTIONS FOR SURVEY PARTICIPANTS

Please read carefully

This survey seeks to explore the association between a person's confidence, past experiences, and other variables considered important in career development. You will be asked to answer questions about: your confidence, your past experiences, general information concerning yourself, and your career development. None of the questions requires you to reveal very personal information about yourself. It should take about 25-35 minutes of your time. Only the investigators of this study will see your responses, and they will keep them strictly confidential. Publication of the results of the study will report data only for groups; not for any individuals. There are no known risks to you, and you are free to withdraw from participation at any time.

Consent for Participation

The general nature of this study has been explained to my satisfaction. I acknowledge that I have had the opportunity to obtain additional information about the study and that any questions I have asked have been answered to my satisfaction. I understand that I am free to make further inquiries and to withdraw from participation any time. I am also aware that the information I provide will be safeguarded and remain confidential. I enter this agreement with the belief that the study will pose minimal or no risk to my physical and psychological well-being. Finally, I acknowledge that I have

read and fully understand this consent form, and that I have signed it freely and voluntarily. I understand that I may receive a copy of this form upon request.

Date_____ Signature_____

APPENDIX E. DEMOGRAPHIC DATA SHEET

Subj. No. _____

DEMOGRAPHIC DATA SHEET

Please complete the following items about yourself. Circle the appropriate answer or fill in the blank.

1) Sex: Male or Female

2) Age: _____

3) Year in school: _____

4) a. Have you declared a major? Yes or No

   b. If yes, what is your major? _____