

CAREER DECISION LEARNING EXPERIENCES:  
DEVELOPMENT AND VALIDATION OF A SCALE

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DEVELOPMENT AND VALIDATION OF A SCALE

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## ABSTRACT

Worldwide, national economies are struggling, and the youth unemployment rate (ages 16 to 24) is 19% (BLS, 2010a). Young adults struggle with career decisions, often halting the process or making inaccurate or ineffective decisions (Gati, Krausz, & Osipow, 1996). With a psychometrically sound instrument based on established theory, psychologists and vocational specialists can support today's youth through research and interventions. The present study consisted of the development and examination of the factor structure of the Career Decision Learning Experiences scale (CDLE) based on Bandura's (1977) Social Cognitive Theory and on Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994). A 5-factor model was hypothesized based on the learning experiences proposed by Bandura and included in SCCT (social persuasion, vicarious learning, mastery experiences, negative emotional arousal, and positive emotional arousal). Positive emotional arousal is the author's innovation, based on Fredrickson's (2001) Broaden and Build Theory of Positive Emotion, which posits that positive emotion contributes uniquely to experiences, beyond negative emotion (or its absence).

Analyses on alternate forms of the 125-item CDLE included exploratory factor analysis (EFA) with a sample of 464 college students and confirmatory factor analysis (CFA) with an independent sample of 465 college students. Additionally, 291 of the students participated in a retest. The hypothesized 5-factor structure was supported by multiple criteria in EFA and a final 40-item, 5-factor solution was confirmed by CFA. Internal consistency estimates of the CDLE and its scales were high, and two- to four-week test-retest reliability scores were strong. Positive emotional arousal resulted in a unique factor. Additionally, social persuasion emerged as the most influential factor. Future research and clinical directions are discussed.

## CHAPTER I

### INTRODUCTION

Worldwide, national economies are struggling. In the United States, governmental intervention in the free market forestalled similar consequences; however, the national unemployment rate is at 7.8% (Bureau of Labor Statistics [BLS], 2012). For youth (ages 16 to 24) the unemployment rate is double at 19% (BLS, 2010a). As more young adults enter the workforce each year with debt loads more than two times the amount of those only ten years ago (American Association of Colleges and Universities [AASCU], 2006), this generation arguably requires the assistance of vocational specialists with an urgency of no generation prior.

Amir, Gati, and Kleiman, (2008) noted that career decision-making problems abound for young adults, and they are the most prevalent kind of vocational problems that youth face, causing them to stop the process or make inaccurate or ineffective decisions for themselves. Gati, Krausz, and Osipow (1996) found that career decision difficulties arise from lack of readiness, lack of information, and inconsistent information. Counseling psychologists and vocational specialists can play a pivotal role by supporting today's youth with research and interventions designed to reduce difficulties for young adults as they face career decisions for the first time. To do this, researchers and clinicians specializing in vocational psychology need psychometrically

sound instruments based on established theory. The purpose of this study was to develop a measure of the learning experiences theorized to foster career decision self-efficacy to fill this void in their field.

### **Career Decisions and Self-Efficacy**

According to Crites' (1976) Career Maturity Theory, there are five processes related to making competent career choices. These are: (a) self-appraisal, (b) occupational information, (c) goal selection, (d) making future plans, and (e) problem solving. Combined with a young adult's mature attitude toward making career decisions, these processes offer an operational framework within which to conceptualize and intervene in young adults' career decision-making process. In fact, Crites' theory, combined with Bandura's (1977; 1982) Social Cognitive Theory (discussed in detail later), provided the basis for the most widely used scale measuring Career Decision Self-Efficacy, the CDSE (Betz, Klein, & Taylor, 1996; Taylor & Betz, 1983) and along with Lent, Brown, and Hackett's (1994) Social Cognitive Career Theory (SCCT), plays a central role in the proposed study.

### **Social Cognitive Career Theory**

SCCT was developed to integrate the wide body of career theories developed by and used within the career development field through the nineties. SCCT incorporates personal, contextual, and behavioral inputs to the career development process and has provided the field with a parsimonious and operationalizable theory upon which to effectively conceptualize career development difficulties and to effectively intervene" (Lent & Brown, 1996). SCCT builds from Bandura's (1977, 1986) concept of the triadic and reciprocal relationship between people, behaviors, and the environment and thereby

acknowledges the dynamic and causal interactions that take place between personal factors (i.e., age, gender), environmental influences (i.e., supports and barriers), and actions a person takes within his or her environment (Brown & Lent, 1996; Lent & Brown, 1996; Lent et al., 1994).

Within the person, the theory proposes three main social cognitive variables: self-efficacy, outcome expectations, and personal goals (Lent & Brown, 1996; Lent et al., 1994). Self-efficacy will be discussed in detail below. *Outcome expectations* are a person's beliefs about the likely result (or outcome) of their performing a particular behavior (Lent et al., 1994). *Personal goals* include a person's intention to participate in a specific behavior and are considered a central aspect of agency leading to behavior (Lent et al., 1994). Outcome expectations are theorized to be strongly influenced, causally, by self-efficacy beliefs (Lent & Brown, 1996). Lent and Brown theorized that people develop career interests as a result of this interaction—their beliefs in their ability to perform career-related tasks and their expectations that taking these actions will yield successful outcomes. Personal goals are in turn influenced by both outcome expectations and self-efficacy beliefs. Due to the apparently foundational role of self-efficacy in the SCCT model, it bears a closer look.

### **The Role of Career Decision Self-Efficacy**

*Career decision self efficacy* (CDSE), coined by Taylor and Betz in 1983, refers to the beliefs a person holds about his or her ability to successfully accomplish tasks and meet goals related to making career decisions. CDSE is central factor mediating career-related behaviors (Betz & Luzzo, 1996). Bandura (1986) considers self-efficacy beliefs to be a fundamental means of personal agency to take action in a specific domain. In

essence, young adults with higher levels of CDSE are more likely to participate actively and effectively in the career exploration and decision-making process, to experience less difficulty doing so, and to persevere through or despite barriers (e.g., Betz, 2007; Blustein, 1989; Solberg et al., 1995). Self-efficacy beliefs inform how likely young adults think they are to succeed at career-related tasks (Nauta, 2007).

Self-efficacy has been recognized as one of the three major factors influencing career choices (Lent et al., 1994), and depending on the level of one's CDSE, young adults will be more or less able to effectively engage in the career exploration process (Nauta, 2007). CDSE correlates positively with career decision-making and correlates negatively with career indecision and fear of commitment to career decisions (e.g., Betz, 2007; Betz et al., 1996; Taylor & Betz, 1983). CDSE correlates positively with motivation, career maturity, and career exploratory behavior, and recent in the past decade and a half appears to indicate that career self-efficacy beliefs appear to be related to both interests and outcome expectations, as hypothesized in Social Cognitive Career Theory (Betz, 2007; Betz & Luzzo, 1996; Lent et al., 1994).

Nearly three decades of research have demonstrated that CDSE is a highly modifiable factor. As Betz (2007) observed in her meta-analysis of studies on career choice interventions which included individual and group career counseling, career choice workshops, and semester-long career exploration courses: "all of the studies of interventions designed to increase CDSE showed significant changes with treatment and no changes for no-treatment control groups" (p. 417). In essence, CDSE is modifiable and through a variety of means, as long as they contain certain components. Thanks to Brown et al.'s (2003) seminal meta-analyses, we know what the effective components of

successful career choice interventions are. These critical treatment ingredients are: (a) workbooks and written exercises, (b) individualized interpretations and feedback, (c) world of work information, (d) modeling, and (e) attention to building support (Brown et al., 2003). Effect sizes increase with use of up to three of these ingredients, regardless of intervention type (individual or group counseling, workshop, or course).

What remains unclear is what the mechanisms of change in these CDSE treatment ingredients are. While we know that a variety of career interventions increase CDSE, and we also know what some of the most effective activities are in those settings, as yet we do not know why they work, empirically speaking. However, Bandura (1977, 1986) provides a strong theoretical case for the development of self-efficacy through its four learning experiences, which will be discussed next.

### **Self-Efficacy and Its Sources: The Learning Experiences**

According to Bandura (1977, 1986), the more efficacious people perceive themselves to be at performing a domain-specific task (such as making a career decision) or at reaching a domain-specific goal (such as choosing an occupation), the more likely they are to pursue it, even amid barriers. Self-efficacy is a central component of human agency (Bandura, 1977). People with low self-efficacy doubt their ability to perform a task or succeed at a goal and therefore are less likely to pursue it. They are also less likely to persevere when difficulties arise. On the other hand, people with high self-efficacy are more likely to pursue related tasks and goals because of the higher expectation to succeed. They are also more likely to continue this pursuit in the face of adverse conditions. Thus, as described previously, when young adults increase their career decision self-efficacy, they are more likely to participate actively and effectively in the

career decision process and to persist in the face of difficulty (e.g., Betz, 2007, 2008; Betz & Luzzo, 1996).

According to Bandura (1986), four sources of efficacy information engender and increase self-efficacy. These self-efficacy learning experiences are (a) performance accomplishments, (b) vicarious learning, (c) social persuasion, and (d) emotional arousal. Theoretically, interventions that contain elements of these four learning experiences enable the modification of self-efficacy (Betz & Luzzo, 1996; Lent & Brown, 1996; Lent et al., 1994). Performance accomplishments entail succeeding at domain-relevant, challenging tasks (Bandura, 1986). This source of self-efficacy is considered to have the greatest influence as it ostensibly provides the person who engages in the activity with accurate, task-relevant information upon which to make future efficacy-related judgments. Vicarious learning occurs when a person observes others who are performing a task and receiving reinforcement for doing so. The theory purports that the more similar the observer finds herself to be to the person performing the task, the more influence that experience may have on the observer's self-efficacy to perform a similar task. Social persuasion is the effect of a trusted, respected other (such as a parent, professor, or more advanced student) conveying to the student that he or she is competent and capable, which can have an effect on the student's beliefs about her abilities. Emotional arousal (or lack of) negative affect such as stress, anxiety, and fatigue is the final antecedent of self-efficacy. Namely the absence of negative affect is theorized to contribute to increases in self-efficacy.

Emotional arousal is the least widely studied learning experience and to date appears to have the smallest contribution to self-efficacy (e.g., Gainor, 2006). Recent

developments in social psychology appear to support the argument that emotion's true contribution has been obscured, arguably because only the absence of negative affect has been measured (Frederickson, 2001, 2005). This oversight regarding positive emotion is understandable. Throughout the field of psychology, amelioration of negative emotional states has been the focus for decades; therefore much more is understood about the purpose, outcome, and evolution of negative emotions (i.e., fear, anger, disgust) than is known of positive emotions (Frederickson, 2001; Fredrickson & Branigan, 2005). Until recently, positive emotions had been largely assumed to have comparable (though opposite) mechanisms, locations, and outcomes. However, empirical investigations over the past decade, based on Frederickson's Broaden and Build Theory of Positive Emotions, reveal that unlike negative emotions which limit cognitive and behavioral repertoires to survival-focused reactions, when positive emotions are engendered and sustained, one's emotional, cognitive, and behavioral repertoires deepen and expand (in the moment and long-term; Fredrickson, 2001; Fredrickson & Branigan, 2005).

The affective-cognitive-behavioral capacities that are differentially possible during positive and negative emotional states may be of critical importance to distinguish when studying the learning experiences that produce self-efficacy. Because to date the study of this fourth learning experience has been limited to measuring negative affect, positive affect will be added to the proposed scale to determine if its presence makes a unique contribution to self-efficacy, above and beyond the absence of negative affect.

#### **Measuring Career Decision Learning Experiences: Purpose of the Proposed Study**

"It is difficult to imagine a conceptual problem more salient than that of how and why young people enter and adjust to their jobs as they do" (Crites, 1976, p. 105).

Without domain-specific, psychometrically validated, and standardized instruments it will remain difficult to help young adults overcome career decision problems. Because LEs lead to the development of self-efficacy, interventions should be based on them, and they are. Because interventions are based on the LEs, then domain-specific, psychometrically sound instruments are needed to accurately measure the LEs in order for research, theory, and practice in the field to advance. To date, despite the vast literature on CDSE and on the variety of interventions aimed at fostering it with multiple populations in diverse settings, there is no existing measure of the four learning experiences that foster CDSE. The proposed scale, the CDLE, is needed in this field to advance research, to validate theory, and to enrich practice.

## CHAPTER II

### LITERATURE REVIEW

This chapter discusses four broad topics, leading to an explanation of the purpose of the proposed study. First, a general overview of career decision self-efficacy will be provided. Over 400 studies have been conducted on this construct; it is central to the field and to the proposed scale development project. Next, the sources of self-efficacy—the four learning experiences—will be examined. These experiences (performance accomplishments, vicarious learning, social persuasion, and emotional arousal) are theorized to foster self-efficacy. Next will be an overview of the theoretical framework housing the constructs of self-efficacy and the learning experiences, Social Cognitive Career Theory (SCCT). With the variables of focus placed in their theoretical context, a rationale will be provided for the need of a psychometrically validated instrument with which to measure the learning experiences that foster career decision self-efficacy in career development research and practice.

#### **Career Decision Self-Efficacy**

Self-efficacy beliefs are a fundamental means of personal agency, as they represent the confidence a person has in his or her ability to take action in a specific domain (Bandura, 1986). The specific domain of interest in the proposed dissertation is career decision-making. *Career decision self-efficacy* (CDSE; Taylor & Betz, 1983) refers to the beliefs a person holds about his or her ability to successfully accomplish tasks and

meet goals related to making career decisions. CDSE mediates behavior in that the more confident people are about their ability to succeed in various career decision-making domains, the more likely they are to engage in career decision-making behaviors (Betz & Luzzo, 1996). CDSE correlates positively with motivation, career maturity, and career exploratory behavior (Betz, 2007, 2008). In essence, young adults with higher levels of CDSE are more likely to participate actively and effectively in the career exploration and decision-making process, to experience less difficulty doing so, and to persevere through or despite barriers (e.g., Betz, 2007, 2008; Blustein, 1989; Solberg et al., 1995). Self-efficacy beliefs inform how likely young adults think they are to succeed at career-related tasks (Nauta, 2007).

Supporting young adults in the decision-making phase of their exploration process is crucial because career decision-making issues are among young adults' most prevalent vocational problems (Amir et al., 2008). Making informed and accurate career decisions is key for young adults who face these tasks for the first time in their lives during this period of their lives. Making solid and effective career decisions may be more particularly crucial for today's youth (ages 18 to 24) who face an unemployment rate double the national average at 19% (BLS, 2010a). As more young adults enter the workforce each year with debt loads more than twice the amount of those only ten years ago (AASCU, 2006), this generation arguably requires career decision-making support with a level of urgency of no generation prior.

Self-efficacy has been recognized in the field as a major variable influencing career decisions (Lent et al., 1994). Depending on the level of one's CDSE, young adults will be more or less able to effectively engage in the career exploration process (Nauta,

2007). Decades of research have shown that CDSE is a highly modifiable factor, through a variety of means, for diverse populations, in multiple settings (Betz, 2007, 2008; Lindley, 2006). As Betz (2007) observed in a meta-analysis of studies on career choice interventions—which included individual and group career counseling, career choice workshops, and semester-long career exploration courses—that statistically significant increases were found in participants' CDSE in all studies, regardless of intervention type.

Because of its importance in young adults' career development process, and because of its high rate of modifiability, CDSE has been the subject of over 400 research studies in vocational psychology. Extending the CDSE research base beyond the search for direct effects, Brown et al.'s (2003) work revealed specific components that effective interventions commonly contain. These critical treatment ingredients are: (a) workbooks and written exercises, (b) individualized interpretations and feedback, (c) world of work information, (d) modeling, and (e) attention to building support (Brown et al., 2003). Their work revealed that effect sizes increase with the use of up to three of these ingredients, regardless of intervention type (individual or group counseling, workshop, or course), meaning that including any combination of up to three these components significantly increases the effectiveness of career decision interventions.

Although empirical research indicates that CDSE is a central component of young adults' career exploration and selection process and that it is modifiable through a variety of interventions that are effective in a wide range of settings, it remains unknown what the exact mechanisms of change are in these critical ingredients (Brown et al., 2003). Theoretically, the mechanisms are four learning experiences, which Bandura (1977, 1982, 1986) proposed to increase self-efficacy will be discussed in detail below.

However, without a domain-specific, standardized measure of the LEs related to career decision-making, the mechanisms that give rise to CDSE cannot be definitively known (Anderson & Betz, 2007). Therefore, the development of a Career Decision Learning Experiences scale (CDLE) is the focus of the proposed dissertation.

### **Self-Efficacy and Its Sources**

The value of a psychological theory is judged not only by its explanatory and predictive power, but also by its operational power to effect change. Perceived self-efficacy is embedded in a broader theory of human agency that specifies the sources of self-efficacy beliefs and identifies the processes through which they produce their diverse effects. (Bandura, 2006, p. 319)

*Self-efficacy* is the belief a person has that he or she will succeed in domain-specific activities. According to Bandura (1977, 1982), the more self-efficacy a person has about performing a domain-specific task (such as researching a major or an occupational field) or about reaching a domain-specific goal (such as selecting a major or an occupational field), the more likely he or she is to pursue it, even amid barriers (Bandura, 2006). People with low self-efficacy doubt their ability to perform a task or succeed at a goal and therefore are less likely to pursue it. They are also less likely to persevere when difficulties arise. On the other hand, people with high self-efficacy are more likely to pursue related tasks and goals because of the higher expectation to succeed. They are also more likely to continue this pursuit in the face of adverse conditions. Thus, when young adults develop greater career decision self-efficacy, they are more likely to participate actively and effectively in the decision-making process, to experience less difficulty in doing so, and to persist despite barriers that may arise during (e.g., Betz, 2007, 2008; Gainor, 2006).

**Differentiating self-efficacy and self-esteem.** To clarify, self-efficacy is not self-esteem (Bandura, 1977). Self-esteem is a more global construct reflecting a person's estimation of worth and is considered a stable trait like quality. Self-efficacy, on the other hand, is thought to be a dynamic, domain specific construct capable of being altered over time (Bandura, 1982, 1986). Further, self-efficacy is a reflection of a person's sense of perceived control and confidence in their ability to accomplish a task or reach a goal within that domain. For example, while a person with low self-esteem who happens to be a successful student may have high test-taking self-efficacy, and being unsuccessful in sports, she may have low baseball-playing self-efficacy. The person's self-efficacy is domain specific, whereas the self-esteem is global and unrelated to the self-efficacy.

**Differentiating self-efficacy and locus of control.** Self-efficacy is also differentiated from locus of control. Bandura (1986) pointed out that the construct of locus of control, while task or goal related (as self-efficacy is) is connected directly to the goal's outcome. Locus of control is the person's evaluation of whether he or she can have a meaningful effect on the outcome as a direct result of their behavior. If so, a person is said to have an internal locus of control; if not, the person is said to have an external locus of control. For example, a student who attributes success to hard work has an internal locus of control and will tend to continue working hard. An external locus of control, on the other hand, is typified by a person's perception that she will have no meaningful impact on the outcome of a task or goal, such as a student who thinks that tests are rigged and therefore perceives that no chance of success would result from personal effort.

Like locus of control, self-efficacy is also theorized to occur in relation to a task or goal in a specific domain. Unlike locus of control, self-efficacy is not influenced by the expected outcome. For example, a person may have an internal locus of control such that they believe that success on a test results from their knowledge of the content area; however, they may have low confidence in their ability to gain that knowledge (i.e., low self-efficacy). While locus of control is thought to be a facet of outcome expectations, self-efficacy is theorized to predict outcome expectations—a distinct variable in Bandura’s self-efficacy model and in the career-specific model called Social Cognitive Career Theory (SCCT; Lent & Brown, 1996).

Interestingly, locus of control might contribute to self-efficacy and outcome expectations in a similar manner, specifically as related to making career decisions. An early study showed a moderate correlation between the two constructs in which external locus of control correlated positively with low CDSE and vice versa for internal locus of control (Taylor & Popma, 1990). In a later experiment conducted with 60 college students, a video-tape intervention aimed at retraining students’ attributional style was tested (Luzzo, Funk, & Strang, 1996). The video attempted to persuade students that low CDSE and career decision failure was attributable to lack of effort. Students in the experimental condition who already had an internal locus of control showed no significant differences in CDSE at pretest and posttest. However, students who had an externalizing attributional style at pretest changed to an internalizing attributional style at posttest, and as a result had statistically significant increases in CDSE following the intervention (Luzzo et al., 1996). If there were a psychometrically validated measure of career decision LEs, researchers would have the potential to discover why a shift in

attributional styles increases CDSE. Having a scale that measures the career decision learning experiences would enable counseling psychologists to determine the mechanisms of change in interventions like the one described above.

### **Source of Self-Efficacy: The Four Learning Experiences**

Bandura (1977, 1982, 1986) provided a strong theoretical case for the development of self-efficacy through four sources, known as Learning Experiences (LEs). The LEs are central to the model because they are the theorized mechanisms that foster self-efficacy. As Betz (2007) noted, “[LEs] play a central role in both understanding the initial development of expectations of efficacy and in designing programs of intervention for low or weak self-efficacy expectations” (p. 409). Therefore, it stands to reason that psychometrically validated measures of the LEs are needed.

There are four LEs that promote self-efficacy (a) performance accomplishments, (b) vicarious learning, (c) social persuasion, and (d) emotional arousal (Bandura, 1977; 1982). It is critical to remember that an LE that enhances one person’s self-efficacy may not influence another person’s because an LE’s weight depends upon how each person cognitively evaluates the experience. The four LEs form the basis of the proposed scale development project, and they will be described in detail next.

**Performance accomplishments.** Performance accomplishments entail succeeding at domain-relevant, challenging tasks (Bandura, 1977; Betz, 2007). Having succeeded at a domain-relevant task in the past, a person develops confidence about succeeding at similar tasks in the same domain in the future. This LE is considered to have the greatest influence as it ostensibly provides the person who engages in the

activity with accurate, task-relevant information upon which to make future efficacy-related judgments (Anderson & Betz, 2001; Bandura, 1977, 1986).

The person's cognitive processing of the experience determines how much and what type of conclusion they will draw about it and therefore about their future ability to succeed. For example, a student who interprets a high grade as resulting from the hours she put into studying for a test is more likely to have higher test-taking self-efficacy than a student who did not study and still received a high grade. This example emphasizes the distinction between self-efficacy and the construct of locus of control. The example also reinforces the important point that experiences that contribute to self-efficacy do not do so equally for all people across the board—rather an LE's influence depends upon how the individual cognitively perceives the experience. In other words, there are individual differences in the effects of LEs, which is another reason that having a standardized way to measure them is appropriate and will contribute to the development of interventions and robustness of career decision-making research.

A common component of interventions that focus on career decision making includes the opportunity for students to attempt and succeed at career-related tasks, capitalizing on the contribution of performance accomplishments to students' career-related self-efficacy. For instance, in career courses and individual counseling settings, young adults may practice interviewing and take part in experiential learning activities that may include volunteering in a field of interest, joining an organization related to their field of interest, and job shadowing. After participating in such experiences, talk therapy and self-reflective written exercises may help them integrate and apply the experiences to their career decision-making process. A number of counseling psychologists have

conducted within-groups studies on such experiences to determine their effectiveness (e.g., Fouad et al., 2009; Grier-Reed & Ganuza, 2011; Reese & Miller, 2006). Across the board, interventions like these raise participants' CDSE significantly (Betz, 2008; Fouad et al., 2009).

With a measure of the LEs, it will be possible to determine to what extent each LE contributes to such increases and if they do so differentially for various populations based on gender, age, and racial background. It will also make it possible to determine if the results of studies that show students who have prior work experience have greater career decision self-efficacy are attributable to the theorized effect of performance accomplishments on self-efficacy. Creed and colleagues (Creed, Prideaux, & Patton, 2005) found that undecided students in their study were less likely to have had paid work experience in the past. They later found that work-bound students have more decision-making difficulty than college-bound students (Creed, Patton, & Hood, 2010).

**Vicarious learning.** Vicarious learning, the second LE theorized to foster self-efficacy, occurs when a person observes others who are performing a task and who are receiving reinforcement for doing so (Bandura, 1977; 1986). The theory purports that the more similar the observer finds himself or herself to be to the person performing the task, the more influence that experience may have on the observer's self-efficacy to perform a similar task.

In a career workshop, course, or counseling group that includes discussion, students can vicariously experience each other completing domain-relevant, though not exactly similar tasks (Brown et al., 2003). By hearing about a peer's successful choice of a field that matches her interests and values, for example, a young adult who has not

made such a decision might have a sense of increased efficacy for doing so by determining that his peer's age, job history, and education level are similar to his. Also, career courses and workshops often include experiential learning opportunities that include informational interviews with graduate students in their field of interest, job shadowing, volunteer, and internship opportunities—all of which capitalize on the potential effects of vicarious learning on the student's self-efficacy. In series of articles about a constructivist-focused career course, researchers found that using oral presentations were effective means of providing the 82 culturally diverse participants with both performance accomplishment and vicarious learning experiences (Grier-Reed & Skaar, 2010; Grier-Reed & Ganuza, 2011). Another research team noted that women in their career course had greater improvements in CDSE than the undergraduate men did (Scott & Ciani, 2008). They attributed this to vicarious learning, or modeling, due to the mostly female staff of course teachers. These conclusions, while logically sound, have yet to be tested empirically.

**Social persuasion.** Social persuasion is the third theorized self-efficacy LE. This component is the effect of a trusted, respected other (such as a parent, professor, or more advanced student) conveying to the student that he or she is competent and capable in the domain of interest. Receiving social persuasion from respected superiors can have a positive effect on the student's beliefs about her abilities.

Social persuasion figures into individual career counseling to the extent that the client respects his or her counselor's opinion. Having gone out each week and attempted career-related tasks, receiving feedback from the counselor about his or her actions and progress can potentially increase the client's self-efficacy. In a similar manner, social

persuasion could result from a supportive parent-child relationship (Keller & Whiston, 2008). In a study of 282 middle-school students, those who felt their parents' behavior were supportive of their career decision-making and whose parents expressed positive opinions about their process (e.g., social persuasion) showed higher levels of CDSE (Keller & Whiston, 2008).

In a career course, written feedback provided to students on their assignments can serve a similar purpose. Social persuasion may also be the reason that the personalized feedback generated by assessment results is one of the critical ingredients to effective interventions identified by Brown et al. (2003). Researchers have found that undecided undergraduates who completed online assessments and received immediate feedback from the program experienced significant improvements in CDSE and decision-making ability, potentially demonstrating the role computerized feedback may play as a form of social persuasion (Betz & Borgen, 2010). Others have reached a similar conclusion based on results comparing groups that received assessment with feedback, assessment without feedback, and a control group (Luzzo & Day, 1999). The group that received feedback had significantly greater increases in CDSE than the other two groups (Luzzo & Day, 1999). With a scale designed to measure the four LEs, it will be possible to determine the exact mechanisms of change that are present in various career development programs.

**Emotional arousal.** Emotional arousal is the fourth contributing factor to self-efficacy and a variable of special interest in the proposed scale. To date, the theory and research on this component have focused on the role of negative emotional arousal (or lack of)—such as stress, anxiety, and fatigue—in developing self-efficacy. Namely the

absence of these negative emotional states is theorized to contribute to increases in self-efficacy (Bandura, 1977; 1986).

Several career-related studies have been conducted on the contribution of emotional arousal to career-related self-efficacy. For instance, one team developed a workshop intended to increase career decision-making self-efficacy in nontraditional female students that included an anxiety-reduction component (Foltz & Luzzo, 1998). They used a general measure of anxiety, however, and not a domain-specific measure. Also, the relaxation techniques were focused on the general reduction of anxiety, rather than focusing on reducing anxiety specifically as it related to the domain of career decision making.

Several recent studies have investigated the relation between parental attachment and career decision self-efficacy and difficulty (e.g., Germeijs, & Verschueren, 2009; Lease & Dahlbeck, 2009). In one study, secure attachment with the mother, in particular, correlated significantly with CDSE and with the participants' likelihood to engage in goal-directed, career exploration behaviors (Germeijs & Verschueren, 2009). Another study revealed that parental attachment significantly predicted CDSE in undergraduate women, but not in undergraduate men (Lease & Dahlbeck (2009).

Ainsworth (1979; 1990) hypothesized a general relation between attachment and self-efficacy, which has also been attributed to "affectively charged cognitions" (Cassidy, 1988, p. 92). Fredrickson (2001) has made the connection between attachment experiences, emotional trait tendencies, and cognitive development in animals and in humans throughout the developmental stages. Specifically, she linked secure attachment to positive emotional states and relatedly to healthy cognitive development. The

connection between career exploration behavior and attachment has been theorized in the career development literature (e.g., Blustein, Prezioso, & Schultheiss, 1995; Hazan & Shaver, 1990). Combining the findings above, it is possible that the link between attachment and career decision variables is mediated by positive emotional arousal.

In the proposed scale, the emotional arousal LE will be expanded to two include subscale—one targeted at negative emotion and one at positive emotion. The reasons for this are empirically supported and will be discussed in depth later in the Scale Development section.

### **Social Cognitive Career Theory**

SCCT was developed to integrate the wide body of career theories developed by and used within the career development field through the nineties. SCCT incorporates personal, contextual, and behavioral inputs to the career development process and has provided the field with a parsimonious and operationalizable theory upon which to effectively conceptualize career development difficulties and to effectively intervene (Lent & Brown, 1996). SCCT builds from Bandura's (1977, 1986) concept of the triadic and reciprocal relationship between person, behaviors, and environment and thereby acknowledges the dynamic and causal interactions that take place between personal factors (i.e., age, gender), environmental influences (i.e., supports and barriers), and actions a person takes within his or her environment (Brown & Lent, 1996; Lent & Brown, 1996; Lent et al., 1994).

Within the person, the theory proposes three main social cognitive variables: self-efficacy, outcome expectations, and personal goals (Lent & Brown, 1996; Lent et al., 1994). Research in the past decade and a half appears to indicate that career self-efficacy

beliefs are related to both interests and outcome expectations, as hypothesized in SCCT (Betz, 2007; Betz & Luzzo, 1996; Lent et al., 1994). LEs are theorized to be the sources of both self-efficacy and of outcome expectations (Lent & Brown, 1996).

Self-efficacy was discussed in detail previously. *Outcome expectations* are a person's beliefs about the likely result (or outcome) of their performing a particular behavior (Lent et al., 1994; Lent & Brown, 1996). *Personal goals* include a person's intention to participate in a specific behavior and are considered a central aspect of agency leading to behavior (Lent et al., 1994). Outcome expectations are theorized to be strongly influenced by self-efficacy beliefs (Lent & Brown, 1996). Lent and Brown further theorized that people develop career interests as a result of the interaction between self-efficacy and outcome expectations. Namely, a person's beliefs in his or her ability to perform career-related tasks directly influence his or her expectations that taking these actions will yield successful outcomes. Personal goals are in turn influenced by both outcome expectations and self-efficacy beliefs. Due to the apparently foundational role of self-efficacy in the SCCT model, the factors responsible for influencing self-efficacy bear rigorous and focused empirical investigation; however, without an instrument designed to measure them, this course of research remains largely unexplored to date.

### **The Need for Standardized Measurement to Support Research of Theory**

As Anderson and Betz (2001) noted, "little research on self-efficacy expectations has focused on their sources, in contrast to considerable research focused on correlates or outcomes of self-efficacy" (p. 99). For example, self-efficacy has been studied as a mediator between gender and goals of diverse college-aged women—an examination of the path between several of the major variables in SCCT (Lent et al., 2005). They found a

good fit to the model, confluent with SCCT. However, the study omitted the LEs as mediating variables between gender and self-efficacy because there is no standardized form of measurement as yet. A number of other studies validating the path of the SCCT model have suffered from the same omission including a recent large-scale, national sample of Black and White undergraduates (Lent, Lopez, Sheu, & Lopez, 2011) and a longitudinal study of 116 diverse engineering students (Lent, Sheu, & Wilkins, 2010). Without a measure of CDLEs, full SCCT model testing remains impossible.

The founders of SCCT may have a role in the small number of LE instruments generated to date. In their article providing guidelines for conceptualizing and assessing social cognitive constructs in career research, they inexplicably omit LEs from what they focus on as the core constructs of SCCT, despite the fact that the LEs are the direct source of two of the four core constructs focused on in their best practices article and are the indirect source of the remaining core SCCT constructs (Lent & Brown, 2006). Regardless of the explanation for this oversight, the lack of a scale specifically developed and validated to measure individual differences in career decision LEs makes the results of existing studies on career decision making tenuous at best, for the following reasons.

**Lack of domain-specific LE measurement.** A key feature of self-efficacy theory, and relatedly the theorized mechanisms through which LEs work, is that they are domain-specific (Bandura, 1977, 1982; Lent et al., 1994). Without domain-specific LE measures, studies throughout the CDSE literature have been constrained to using general measures the LEs. For example, in a study of 112 college freshmen, general anxiety measures were used to detect emotional arousal (Peng, 2005), because no measure was available to capture anxiety related to career decision-making. Because a central tenet of

SCCT is that self-efficacy and its sources are domain-specific, the CDLE will provide researchers and clinicians an instrument specifically targeted at the domain of career decisions, enabling greater refinement in measurement of the construct.

**Constrained ability to validate SCCT.** Without a standardized measure, we cannot examine mediating effects of LEs between person inputs like culture or gender and self-efficacy. In individual studies of CDSE, for example, the LE of social persuasion has been theorized to have more impact in people from communal cultures compared to the importance of the LE performance accomplishments for individualistic cultures. At face value, this makes sense—in cultures where community is central and decisions are made with respect to their effects on others, the opinions of respected others (social persuasion) would seem to be more influential. Research may support this rationale. For instance, a study of 128 Latino youth revealed a connection between participant's integration with their ethnic group and level of CDSE (Gushue, Clarke, Pantzer, & Scanlan, 2006). In that study, the more connected the students were to their culture, the higher their level of CDSE. In a different study, Native American participant's CDSE was related to values and community commitment (Brown & Lavish, 2006). Another study showed that a group of Vietnamese students' CDSE increased as a result of peer support (Patel, Salahuddin, & O'Brien, 2008). If these youth value input from respected others and peers in their community, then it is possible that LEs like social persuasion and vicarious learning could have greater impact on their self-efficacy than intrapersonal LEs like performance accomplishments and emotional arousal. Without a standardized measure of LEs, culture-based differences in LE needs remain hypothetical at best.

Based on the existing research, there also appears to be a relation between the person input of gender and CDSE. Betz and Hackett (1986) originally theorized that because women have less exposure to experiences with and models of other women participating in traditionally male-dominated professions (such as mechanics and construction), women would understandably have lower CDSE in those areas, and subsequently they have lower interests and goals related to male-dominated professions.

In total, such studies indicate a link between CDSE and culture as well as CDSE and gender. However, a literature analysis of the relation between person inputs and CDSE revealed that there was no direct effect between CDSE, culture, or gender (Lindley, 2006). This is not surprising, given that the model includes LEs as a mediating influence between person inputs, background context, and CDSE. Lacking a standardized measure with which to quantify LEs, studies of mediation cannot be performed and our understanding of the relation between person inputs, background and context and variables that appear later in the SCCT model (after LEs), such as self-efficacy and outcome expectations, cannot be empirically determined.

Following the development and validation of a career interest LE scale (Schaub, 2003), Betz and Hackett's (1986) hypothesis became testable. Researchers indeed found that women had exposure to fewer LEs related to Realistic career interest areas (e.g., mechanics and construction), and relatedly they had lower interest in that area (Schaub & Tokar, 2005). Studies such as these are made possible by having measures that connect all of the components of SCCT theory to each other. An LE instrument designed for career decision-making will enable empirical investigation of the direct path between LEs, self-efficacy, and outcome expectations as well as the indirect path between person

inputs and background context with self-efficacy and outcome expectations in the domain of career decision making.

### **The Need for Standardized Measurement to Support Research of Interventions**

Not only does the lack of standardized measurement of LEs impede research of theory, but it also impedes the research of clinical practice. For instance, in existing CDSE intervention research, baseline LE levels have not been determined prior to the introduction of an intervention, which obscures researchers' ability to detect the level of true effects due to an intervention. Also, throughout the CDSE intervention literature, researchers describe LEs designed into their interventions; however, their presence cannot be confirmed beyond the researchers' stated intentions and anecdotal reports. Furthermore, there is no existing means by which to validate whether and to what extent LE components targeted in CDSE interventions are actually being tapped. Finally, without a standardized measure of CDLEs, we lack the ability to fine-tune interventions based on what works well for whom and under which conditions. These issues will be discussed in more detail below.

**Inability to determine LE baseline.** Without a standardized measure of CDLEs, baseline LE levels cannot be determined prior to the introduction of an intervention. This obscures the researcher's ability to detect true effects that were due to an intervention. If participants' previous LEs remain unknown at the start of an intervention study, researchers cannot accurately determine the amount of variance that is uniquely accounted for by the intervention compared to the amount that is pre-existing within each individual. Given the prevalent use of within-subjects designs in the study of CDSE and

related interventions, the lack of a standardized LE measure confounds the results of a large portion of existing CDSE research.

In a study of a 6-week career-counseling approach that was specifically developed around the four LEs, treatment and control groups did not differ in CDSE at pretest, but they did significantly differ by an SD of 2 years in age (Sullivan & Mahalik, 2000). Without a CDLE measure available to provide baseline levels at pretest, the researchers had no way of detecting whether having an average of 2 more years of exposure to LEs played a role in the results at the end of the intervention (which showed that the treatment group had significant differences on the CDSE compared to the 2-year younger control group). This confound is quite plausible given the plasticity recently noted in the executive functioning areas of the brain in 18-24 year olds (National Institutes of Mental Health [NIMH], 2010)—four out of the five career decision making processes are executive functions (self appraisal, goal selection, planning, and problem-solving; Crites, 1976; Taylor & Betz, 1983).

**Lack of manipulation check.** Throughout the CDSE intervention literature, researchers describe the LEs targeting CDSE that were designed into the interventions. However, without a standardized measure of CDLEs, the presence of the LEs cannot be confirmed beyond the researchers' stated intentions and anecdotal reports. Furthermore, their perceived impact (by the participant) remains unknown. Even if the researchers provide a rational argument that each LE is being represented in their intervention, there is currently no standardized method to determine if and to what extent the participants have perceived the aspects of the intervention as effective. Cognitive appraisal of LEs is a key component of their influence on self-efficacy (Bandura, 1977, 1986). Consider this

example. Researchers conducted a control-group comparison of two interventions that targeted CDSE in veterans (Krieshok, Ulven, Hecox, & Wettersten, 2000). In one intervention, participants developed their resume in an individual counseling setting, arguably providing them with performance accomplishment and social persuasion experiences and reducing negative emotional arousal (Krieshok et al., 2000). In the other intervention, participants received personalized feedback, related to their career goals, on the assessment instruments they were administered, arguably providing them with a form of social persuasion and reducing negative emotional arousal. The authors briefly noted in the discussion section that these three LEs may have been tapped by their interventions, then yielded that “neither of their studies directly tested these basic tenets” (Krieshok et al., 2000, p. 279) and encouraged future researchers to do so. A CDLE measure will enable this.

In the previously mentioned study of 61 college women (split into treatment and control groups), a group career self-efficacy intervention provided women in the treatment group with experiences writing vocational histories that detailed their past successes (i.e., performance accomplishments), interviewing women successful in the participants’ desired fields (i.e., vicarious learning), encouragement from the group facilitators (i.e., social persuasion), and relaxation training (i.e., emotional arousal control; Sullivan & Mahalik, 2000). Despite the significant changes detected in CDSE in the treatment group compared to the control group, it remains unknown if the LEs were responsible for the change. Also, replicability of the program and of the study are complicated by the inability to standardize the operationalization of the LEs beyond these researchers and facilitators.

**Impeded cross-validation.** There is currently no standardized manner in which to validate whether and to what extent LE components targeted in CDSE interventions are being tapped. With over 400 studies conducted on CDSE during the past two decades, researchers' inability to quantitatively measure LEs, the sources of CDSE, impedes consumers' ability to rely on the conclusions drawn about the findings. Further, the effects of inconsistencies in the ways that LEs are designed into interventions remain unknown and therefore interfere with our ability to develop replicable and evidence-based vocational interventions. This limitation also creates an inability to compare interventions across studies.

Recent examples include several within-groups investigations of career course interventions (Fouad et al., 2009; Grier-Reed & Skaar, 2010; Reese & Miller, 2006). Career decision self-efficacy and career decision difficulty were used as the major dependent variables in each study. Although self-efficacy and outcome expectations (e.g., difficulty) are the two components of SCCT that LEs directly contribute to, the authors neglected to design their career courses using the LEs. Furthermore, without a measure of the LEs, they were unable to determine the contribution of each LE to the results, leaving future researchers unable to both replicate their findings and to improve upon them.

**Inability to fine-tune interventions.** Without a standardized measure of CDLEs, we lack the ability to fine-tune interventions based on what works well for whom and under which conditions. As research and intervention development advances in any field, the design complexity of the studies increases (Frazier, Tix, & Barron, 2004). Research begins with testing means comparisons in within-groups and between-groups designs with control group conditions. Such studies help determine what factors are modifiable

and what interventions seem to modify them. Over time, enough means comparisons have been conducted that these conclusions become sufficiently established. The next step is for researchers to determine what works best, for whom, and why by conducting mediation analyses (Frazier et al., 2004).

In the field of vocational and counseling psychology, it is well established that CDSE is modifiable in a variety of settings and using a variety of interventions (Betz, 2007, 2008), indicating the field's readiness to progress to the next level of complexity in this line of research—mediation testing with the LEs and full-scale model verification of the SCCT. As noted previously in this proposal, it remains unknown which interventions work best, for whom they work, and why. It also remains unknown the extent to which the LEs play a role within the SCCT model. With a psychometrically validated instrument that measures CDLEs, researchers will be able to conduct large-scale quantitative examinations of the mediators of CDSE, thereby advancing SCCT theory and clinical practice.

### **Scale Development**

Domain-specific constructs like CDSE require specialized measures to aid in their examination. To develop that measure, already existing measures that have been psychometrically validated and used widely in the literature will be used (Worthington & Whittaker, 2006). In the proposed dissertation, the Career Decision Learning Experiences scale (CDLE) will include items derived from a combination of items from existing measures of LEs and measures of CDSE. This process will be discussed in detail in the Method section of the proposal. The practice of obtaining content and structure from psychometrically validated instruments that are conceptually similar to the scale under

development is recommended (Clark & Watson, 1995; Worthington & Whittaker, 2006). Two innovations, based on extensive review of the literature, will be incorporated as part of the proposed project. First, the scale will be written for use with all young adults, not just those who attend college, which is a major limitation of existing scales. Given that work-bound high school students have significantly greater career decision-making difficulty (Creed, Patton, & Hood, 2010), career decision-related instruments that include them are needed. Second, the emotional arousal section of the scale will be expanded to include positive emotion. The rationale for these innovations will be discussed in the subsection that follows.

**Developing the scale for a young adult population.** The CDLE will be developed for use with young adults, ages 18 to 24 years old. The rationale for this is twofold. First, Super's (Super, Savickas, & Super, 1996) developmental theory of life span and careers posits that students who do not adequately complete the exploration stage of career development, which is theorized to take place from ages 15-24, will experience difficulties in making the transition to the adult career roles that follow. Acknowledging that career development is not a strictly linear process, Super et al. (1996) proposed that the exploration of careers begins in an organized fashion during this time in a young adult's life.

While in the exploration stage, specifically while crystallizing, people develop what Super et al. (1996) called *career maturity*, or a person's readiness to make appropriate decisions about his or her education and career. Career maturity is said to develop when students follow their curiosity and interests by exploring themselves and job roles, planning their career development, gathering information, and making initial

career decisions. More recently, the term has been changed to *career adaptability* to accommodate the reality that adults in today's world commonly find themselves re-crystallizing, -specifying, and -implementing career choices multiple times during the course of their work lives (Savickas, 1997; Super et al., 1996).

Despite the name-change and extension of this portion of the theory beyond early young adulthood, there is possibly a neuropsychological support for Super's original application of his theory and this concept to emerging young adults. Namely, there is a growing body of literature in neuropsychology evidencing a surge in development in the prefrontal cortex during late adolescence, specifically during the late teens and early twenties (NIMH, 2010). Arguably, because the growth spurt during this developmental period takes place in the portion of the brain responsible for executive functions (NIMH, 2010), there exists the unique potential to affect changes in career decision self-efficacy (e.g., making plans, setting goals, solving problems, making decisions, etc.). Research has shown that adults in college (over age 25) have greater CDSE than young adult college students (Creed & Patton, 2001; Gianakos, 1994). Such findings tend to support this theorized idea of a developmental progression of career decision-making ability, which coincides with the neurobiological changes experienced by 18 to 24 year olds. Given the plasticity of the brain, this developmental period appears to be an ideal time to provide support for young adults' career decision-making process.

**Expanding the emotional arousal LE.** Emotional arousal is the least widely studied LE and to date appears to have the smallest contribution to CDSE in particular, and in self-efficacy across domains (e.g., Gainor, 2006). However, emotional arousal's true contribution to self-efficacy may be obscured because to date only the absence of

negative affect has been measured. Positive affect has been neglected, arguably leaving out half of the construct. This is understandable because throughout the field of psychology, until recently, researchers commonly presumed that the absence of negative emotions indicated the presence of positive emotions (Frederickson, 2001, 2005; Frederickson & Branigan, 2005).

However, empirical investigations based on Frederickson's Broaden and Build Theory of Positive Emotions reveal that positive emotions and negative emotions have completely different mechanisms, locations, and outcomes. Negative emotions limit cognitive and behavioral repertoires to survival-focused reactions. For example, when scared the sympathetic nervous system becomes hyperaroused and people respond in a fight-flight-freeze manner that calls upon pre-existing, survival-focused set of behavioral responses. On the other hand, when positive emotions are engendered and sustained, research is showing that people's emotional, cognitive, and behavioral repertoires deepen and expand both in the moment and long-term (Fredrickson, 2001; Fredrickson & Branigan, 2005).

The affective-cognitive-behavioral capacities that are differentially possible during positive and negative emotional states may be of critical importance to distinguish when studying the development of self-efficacy. In fact, they might be already playing a pivotal role in career decision-making, it is just unknown to date. Researchers have recently hypothesized that positive past experiences (i.e., performance accomplishments interpreted as beneficial, social persuasion felt as pride-building) increase approach behavior in future situations and conversely negative past experiences increase avoidance

behavior (Hammond, Lockman, & Boling, 2010), which may indicate that emotional arousal plays a mediating role in the influence of the three other LEs.

This argument is supported by Bandura's theory in that emotional states can affect a person's appraisal of experiences. Depending on the emotional state of the person as they experience them or even as they reflect back on them, other learning experiences (performance accomplishments, vicarious learning, and social persuasion) may be interpreted as successes or failures (Bandura, 1997). Recently, a path analysis examining several SCCT variables, including self-efficacy, contained a measure of positive and negative emotional states (Rottinghaus, Jenkins, & Jantzer, 2009). The results showed that negative affect did not significantly relate to self-efficacy, but positive affect did (Rottinghaus et al., 2009). Such findings are intriguing and because to date the study of this fourth LE (emotional arousal) has largely been limited to negative affect. Positive affect will be added to the proposed scale to determine if its presence makes a unique contribution to self-efficacy.

### **Purpose of the Current Study**

Several studies have shown that increasing CDSE improves young adults' career decisions and reduces the difficulty they have making career-related decisions (Betz, 2007, 2008; Gati et al., 1996; Paulson & Betz, 2004; Solberg et al., 1995). A variety of interventions effectively increase CDSE (Betz, 2007, 2008; Brown et al., 2003), but the active agents of their critical ingredients remain unknown. Further, with rare exceptions (i.e., Foltz & Luzzo, 1998; Sullivan & Mahalik, 2000), it is uncommon for a study on career decision self-efficacy to include all four self-efficacy LEs as variables or even to address them in the narrative (Betz, 2007). Further, although there is a small group of

CDSE experiments that incorporated the LEs in the intervention (Gainor, 2006), to date there has been no formal measure of them developed, which greatly reduces the rigor of LE-related findings in our field.

To help close this gap, the proposed dissertation seeks to provide researchers and clinicians with a psychometrically validated measure of the learning experiences associated with career decision making through the development and validation of the Career Decision Learning Experiences scale (the CDLE). The proposed study will include an examination of factor stability, temporal reliability, and convergent and discriminant validity in a racially, educationally, and geographically diverse sample of 18 to 24 year old people.

The proposed scale will include two innovations: (a) the inclusion of positive affect as a unique component of emotional arousal and (b) the use of language and content that enables application of the scale beyond young adults attending college. (The popular CDSE measure includes items specific to college students.) This scale will accurately measure young adults' prior learning experiences related to making career-related decisions in four theoretically based areas (performance accomplishments, vicarious learning, social persuasion, and emotional arousal) across five career decision-making processes (self-appraisal, occupational information, goal selection, planning, and problem-solving; Crites, 1976).

**Hypotheses.** Because there are five career decision-making processes (Crites, 1976) and these processes represent the factor structure of the CDSE scale used to develop the CDLE items, a five-factor solution is hypothesized: (a) self-appraisal, (b) occupational information, (c) goal selection, (d) planning, and (e) problem-solving. A

five-factor solution is possible for the LEs if positive affect and negative affect item scores load differentially instead of as a single emotional arousal factor, as argued in Frederickson's (2001, 2005) Broaden and Build Theory. In this case, the factors would be: (a) performance accomplishments, (b) vicarious learning, (c) social persuasion, (d) negative emotional arousal, and (e) positive emotional arousal. There is also the possibility that the LEs will load onto four factors, based on the four LEs theorized by Bandura (1977, 1986) or onto two factors, as they have in validation studies of previous LE instruments (Anderson & Betz, 2001; Schaub, 2004; Schaub & Tokar, 2005): (a) direct experiences (including performance accomplishments, social persuasion, and emotional arousal) and (b) indirect experiences (vicarious learning).

There are four other hypotheses. First, it is hypothesized that the CDLE will have an internal consistency coefficient of .70 or greater. Second, it is hypothesized that the CDLE scores will remain similar after two weeks. Third, it is hypothesized that the CDLE scores will positively correlate with two measures of convergent validity (e.g., the PANAS and the CDSE-SF) and will negatively correlate with a measure of career decision difficulty. Finally, it is hypothesized that the CDLE scores will not correlate with a measure of discriminant validity (the Career Decision Difficulty Questionnaire).

## CHAPTER III

### METHOD

#### **Participants**

Of 929 total participants, 183 identified as male (19.7%), 741 as female (79.9%), and four (0.4%) as transgender. Participants (96.7%) were predominantly drawn from two Mid-western universities (one large and one mid-sized) in the United States. The mean age was 20.48 ( $SD = 1.65$ , range = 18 - 24). Seven hundred and seventy-seven (83.9%) participants self-identified as White, 60 (6.5%) as African American, 51 (5.5%) as Asian American, 26 (2.9%) as Latino/a, nine (0.9%) as Native American, and three (0.3%) as Middle Eastern descent. To date, participants' highest level of education completed included General Equivalency Diploma (GED) ( $n = 57$ , 6.1%), high school diploma ( $n = 696$ , 75.2%), Associate's ( $n = 40$ , 4.3%), Bachelor's ( $n = 123$ , 13.3%), and Master's ( $n = 9$ , 1.1%). Three hundred and seventy participants (39.8%) were not working while attending school, 511 (55.1%) were working part-time, and 48 (5.1%) were working full-time. Three-hundred and twenty-seven (35.2%) were among the first-generation in their family to attend college.

After the sample was randomly split (discussed in Results), the two samples were compared on scale scores and demographics. No significant between-sample differences were found. The 464-participant sample for Study 1 included 372 women, 90 men, and two participants who identified as transgender; 96.0% were from the Midwest. The

average age was 20.46 years ( $SD = 1.66$ , range = 18 - 24). Three hundred and eighty-seven (83.5%) were White, 31 (6.7%) African American, 26 (5.6%) Asian American, 16 (3.4%) Latino/a, three (0.6%) Native American, and one (0.2%) as Middle Eastern. To date, participants' highest level of education completed included GED ( $n = 26$ , 5.6%), high school diploma ( $n = 352$ , 75.9%), Associate's ( $n = 24$ , 5.3%), Bachelor's ( $n = 56$ , 12.1%), and Master's ( $n = 5$ , 1.1%). One hundred and seventy-nine participants (38.5%) were not working while attending school, 262 (56.5%) were working part-time, and 23 (5.0%) were working full-time. One-hundred and seventy-one (36.9%) were first-generation college students.

The 465-participant sample for Study 2 included 368 women, 93 men, and two participants who identified as transgender; 97.1% were from the Midwest. The average age was 20.50 years ( $SD = 1.63$ , range = 18 - 24). Three hundred and ninety (83.8%) were White, 29 (6.1%) African American, 25 (5.3%) Asian American, 10 (2.1%) Latino/a, six (1.3%) Native American, and two (0.4%) as Middle Eastern. To date, participants' highest level of education completed included GED ( $n = 31$ , 6.7%), high school diploma ( $n = 344$ , 74.5%), Associate's ( $n = 16$ , 3.5%), Bachelor's ( $n = 67$ , 14.4%), and Master's ( $n = 4$ , 0.9%). One hundred and sixty-nine participants (36.3%) were not working while attending school, 268 (57.6%) were working part-time, and 28 (6.0%) were working full-time. One hundred and fifty-six (33.5%) were first-generation college students.

## **Measures**

**CDLE.** The CDLE was designed to assess the learning experiences young adults have had related to career decision-making. The item pool consisted of 127 items. This

equals five items for each of the four learning experiences (plus 5 more for positive emotional arousal) for each of the five decision-making processes (Crites, 1976). The CDLE also included two validity items asking participants to select strongly disagree in the middle of the item pool and to select strongly agree near the end. Participants were asked to rate the extent to which they agreed or disagreed with each statement on a 5-point Likert-style scale where 1 was “strongly disagree” and 5 was “strongly agree”. Internal consistency of the original 125-item measure for this sample was .96. See Appendices A and B for alternate forms of the CDLE item pool.

**Demographics questionnaire.** The demographic questionnaire asked about participants’ general descriptive factors including: age, gender, job status (part-time, full-time, none), school status (part-time, full-time, none), family’s education level, and geographic location. See Appendix D for the demographics questionnaire.

**Career Decision Self-Efficacy Scale-Short Form.** The Career Decision Self-Efficacy scale (CDSE) measures the degree to which an individual believes she or he can succeed in making career decisions (Betz & Luzzo, 1996). The original CDSE was a 50-item scale and used a 10-point Likert-style response scale. The short form (CDSE-SF) has 25 items (Betz, Klein, & Taylor, 1996) and recent research has provided reliability using a 5-point, Likert-style response scale (used in this study) that is commensurate with reliability in studies using the 10-point scale (Betz, Hammond, & Multon, 2005). Like the long version, the CDSE-SF has five subscales, based on Crites’ (1976) career choice competencies, with the following alpha values: (a) Self-appraisal (.73), (b) Occupational information (.78), (c) Goal selection (.83), (d) Planning (.81), and (e) Problem-solving

(.75). The CDSE-SF has an overall alpha of .94 (Betz et al., 1996). Internal consistency reliability for this sample was .93.

The CDSE-SF was developed using principal components analysis with an orthogonal rotation, relying on the eigenvalues to select items for each factor. The scale is widely used and has demonstrated concurrent and discriminant validity. The CDSE-SF subscales correlate moderately and in expected directions with career certainty and indecision, with ranges from -.47 to -.66 (Betz et al., 1996). Similarly, the CDSE-SF subscales correlate moderately in a positive direction with vocational identity, with ranges from .40 to .66. Moderate correlations demonstrate that the constructs measured in the CDSE-SF overlap with the similar constructs identified above (i.e., career certainty and vocational identity), but that there is a unique contribution made by the CDSE-SF.

Miller, Roy, Brown, Thomas, & McDaniel, (2009) conducted a confirmatory factor analysis of the CDSE-SF in two samples of diverse undergraduates. Their findings indicated support for the five-factor model that emerged from Betz et al.'s (1996) exploratory factor analysis (Miller et al., 2009). It should be noted that rival factor models that underwent confirmation in previous studies were also supported by Miller et al.'s analysis. However, they noted that Betz et al.'s (1996) remains the factor structure with a solid theoretical, rather than just statistical, basis. Therefore Miller et al. selected the original five-factor structure as the best fitting model.

In a recent study of undergraduates in the Midwest taking a career explorations class, internal consistency on the CDSE-SF was .95, and on the subscales was strong as well: Self-appraisal .83, Occupational Information .83, Goal selection .85, Planning .79, and Problem-solving .72 (Fouad, Cotter, & Kantamneni, 2009).

**Career Decision Difficulties Questionnaire.** The Career Decision Difficulties Questionnaire (CDDQ) is a 34-item measure developed to assess that amount and type of difficulty the respondent is having making career decisions (Gati et al., 1996). Difficulties fall into three broad dimensions: (a) Lack of Readiness, (b) Lack of Information, and (c) Inconsistent Information, which contain ten types of decision-making difficulties (Gati et al., 1996). Higher scores indicate greater difficulty making career-related decisions.

The CDDQ was developed using both an Israeli and American sample of men and women ages 19 to 24 years old. Alpha coefficients on the three subscales were comparable for the two groups: Lack of Readiness (.70 and .63, respectively), Lack of information (.93 and .95), and Inconsistent Information (.91 and .89) as were total score alphas (.95 for both groups; Gati et al., 1996). Three-day test-retest analysis yielded an aggregate correlation of .67, .74, and .72 for the subscales and an acceptable .80 for the total scale score. Internal consistency reliability for the total scale score for the sample in the present study was .91.

Like the CDSE-SF, the CDDQ is widely used and has demonstrated concurrent validity (Osipow & Gati, 1998). Specifically, the CDDQ scores correlate moderately to highly with career indecision. Additionally, CDDQ subscale scores also correlate moderately to highly and in expected direction with Crites' (1976) five decision-making processes (as measured by the five subscales of the long form of the CDSE). Bergeron and Romano (1994) found that CDSE had a significant relation with difficulty deciding on a job and on a major, regardless of gender. Recent studies have shown a negative correlation between decision-making self-efficacy and difficulty (Reese & Miller, 2006)

and a predictive relationship between self-efficacy and difficulty (Creed, Patton, & Bartrum, 2004).

**Positive Affect – Negative Affect Schedule.** The Positive Affect Negative Affect Schedule (PANAS) is a 20-item measure of a person's level of both positive and negative affect, which load as independent factors on the scale (Watson, Clark, & Tellegen, 1988). Watson et al. (1988) developed the scale based on their prior research and selected terms that loaded high on each one of the affect domains and had zero loadings on the other. Responses are made on a 5-point, Likert-style scale ranging from 1 (very slightly or not at all) to 5 (extremely).

During development, the PANAS was validated with large mostly independent samples (586 – 1002) as both a state-level measure, capturing mood (in the moment, today, past few days) and as a trait-level measure, capturing emotional or affective structure (in general, on average), by varying the instructions per the parenthetical notations (Watson et al., 1988). State-level responses yielded alphas of .88 - .90 on the Positive Affect (PA) subscale and .85 - .87 on the Negative Affect (NA) subscale, with a -.15 intercorrelation between the subscales. Trait-level scores obtained coefficient alphas of .88 for PA and .87 for NA, with a -.17 intercorrelation (Watson et al., 1988). The PA subscale has low negative correlations with varied psychological symptomology, depression, and anxiety, while the NA subscale has high positive correlations with varied psychological symptomology and moderate positive correlations with depression and anxiety. Two-month test-retest was moderate for state-level results (.54 for PA and .45 for NA) and sufficient for trait-level results (.68 for PA and .71 for NA). Internal consistency reliability for this sample was .91 for PA and .87 for NA.

Crawford and Henry (2004) conducted further validation of the PANAS using confirmatory factor analysis. Although the items did not load onto a single factor, analysis revealed that the PA and NA scales are not entirely independent. The best fitting model was one in which PA and NA were entered as correlated factors, with correlated error entered into the model (Crawford & Henry, 2004).

### **Procedure**

Institutional Review Board approval was obtained from both Mid-western universities. Campus-wide emails were sent to students aged 18-24 containing included a brief description of the study, an announcement of the incentives, and the survey link. The link took potential participants to the secure online survey, the first screen of which consisted of informed consent. At the bottom of that screen, participants were required to confirm that they were between 18-24 years of age. Those who did were then prompted to complete the rest of the survey. Those who did not, were re-directed out of the survey. Participation was voluntary.

As noted previously, two validity items were included in the CDLE item pool to ensure that participants were reading the items while responding (e.g., “Select *strongly disagree* for the response to this item.”). Twelve hundred and thirty-nine respondents correctly answered at least one item, but a total of 208 cases were removed for having over 10% of data missing on the CDLE (which was the focus of the studies), and 87 were removed for responding incorrectly to the validity items, resulting in a total of 944 cases entered into initial analysis.

## **Scale Development**

The constructs underlying the CDLE were based on established theory derived from an extensive review of the literature to ensure that the scale has a sound conceptual foundation (Worthington & Whittaker, 2006, p. 813). The theoretical frameworks used for development of the CDLE item pool were Bandura's (1977, 1986) Social Learning Theory, in which he outlined four learning experiences that contribute to the development of self-efficacy: mastery experiences, vicarious learning, social persuasion, and emotional arousal. As noted previously, the emotional arousal domain was expanded to include items that assess both positive affect and negative affect—a decision that has its theoretical basis in Fredrickson's (2001, 2005) Broaden and Build Theory of Positive Emotions. To meet the SLT theory requirement of domain specificity when developing self-efficacy-related instruments (Bandura, 2006), domain-specific content was based on the theoretical foundations of Betz and Hackett's (1986) construct of career self-efficacy and of Crites' (1976) career development theory, specifically the portion that addresses career maturity. This process is described in detail below, with support provided in the Appendices, as noted.

**Item pool generation.** In generating the item pool, domain-specific information was drawn directly from already existing, well-established, and psychometrically validated instruments (i.e., Betz, Klein, & Taylor, 1996; Betz & Luzzo, 1996; Schaub, 2004). These included Anderson and Betz's (2001) scale measuring antecedents of social self-efficacy related to career development, Schaub's (2004; Schaub & Tokar, 2005) Learning Experiences Questionnaire (LEQ), and Lent, Lopez, and Bieschke's (1991) math self-efficacy antecedents scale (see also Usher & Pajares, 2009). The practice of

referencing content and structure from psychometrically validated instruments that are conceptually similar to the scale under development is recommended (Clark & Watson, 1995; Worthington & Whittaker, 2006). For example, in Schaub's LEQ Mastery Experiences items began with the stems "I have successfully ..." and "I am good at ...", and in the CDSE domain-specific content includes "...writing a resume" and "...finding information about careers that interest me." So, each CDLE item combined an antecedent-related stem with a domain-specific ending: "I have successfully [...] written a resume." and "I am good at [...] finding information about work that interests me."

*LE measures.* Following the steps applied by earlier researchers (e.g., Lent et al., 1991; Schaub, 2004; Anderson & Betz, 2001), self-report items have been written based on the theoretical definitions of the LEs (Bandura, 1977; 1982; 1986) and on existing LE scales. Two existing scales measure LEs of career-related self-efficacy measures. The measures are the Learning Experiences Questionnaire (LEQ; Schaub, 2004; Schaub & Tokar, 2005) and the Source of Social Efficacy Expectations (SSEE), which Anderson and Betz (2001) demonstrated was related to CDSE and other SCCT constructs. These two instruments were developed to measure the presence of content-related LEs in the career domain. Schaub's (2004) scale measures LEs of career interest self-efficacy, and Anderson and Betz's (2001) assesses LEs of social self-efficacy.

To develop items for the CDLE, the subscales of the LEQ and the SSEE were examined for patterns. There are four subscales on each measure, one for each LE: Mastery Experiences, Vicarious Learning, Social Persuasion, and Emotional Arousal. To determine wording for the proposed scale's items, these existing scales were read and patterns were noted in the question openers, or stems. Based on these patterns, a list was

compiled for use as stems for the subscales of the CDLE. For example, stems eliciting responses under Mastery Experiences include “I have successfully . . .” and “I have always done well at . . .”. Items beginning with these stems would elicit learning experiences related to previously successful (or unsuccessful) domain-relevant tasks. Stems for Vicarious Learning include “People I admire have . . .” and “Growing up, I saw my parents . . .”. Items beginning with these stems would elicit learning experiences related to witnessing respected superiors succeed at domain-relevant tasks. Stems for Social Persuasion include “My friends have told me I would be good at . . .” and “My parents encouraged me to . . .”. Items beginning with these stems would elicit learning experiences related to receiving encouragement from respected others about one’s ability to succeed at domain-relevant tasks. Finally, stems for Emotional Arousal include “I always get nervous when . . .” and “I never feel comfortable when . . .”. Items eliciting positive emotional states will be added in the CDLE, such as “I feel proud when I . . .” and “I am enthusiastic about . . .”. Items beginning with these stems would elicit learning experiences related to emotional arousal states experienced during domain-relevant tasks.

***CDSE measures.*** The CDLE items for each subscale begin with LE-related stems, as described above. For domain-relevant content, specifically content to elicit career decision self-efficacy LEs, the CDSE-Short Form was used. Recall that the CDSE-Short Form is based on Crites’ (1976) Career Maturity Theory. According to Crites, there are five processes related to making competent career choices, and these processes formed the content component of the proposed scale. Crites’ five career decision-making processes are: (a) self-appraisal, (b) occupational information, (c) goal selection, (d) making future plans, and (e) problem solving. The short form of the CDSE scale, which

consists of 25 items that load onto five unique factors mirror Crites' five decision-making processes. Betz et al.'s items and the subscales provided the content basis for the CDLE.

For example, items related to Crites' (1976) process of Self-Appraisal include ability to "accurately assess my abilities." and "determine what my ideal job would be." Items related to Occupational Information include "finding out employment trends for a field of interest." Items under Goal Selection include "choose a career that fits my preferred lifestyle." Items in the Planning subscale include "make a plan of my goals for the next five years." Finally, items for Problem Solving include "change occupations if I am not satisfied with the one I enter."

As noted earlier, the CDLE was developed by combining stems derived from the LE measures with career decision-related content derived from the CDSE subscales. As an example, a Mastery Experiences item for the career process Self-Appraisal combined the stem "I have successfully" with the content "determined what my ideal job would be." There were five LEs represented in the CDLE (the four conventional LEs plus an additional emotional arousal LE that targets positive emotion). Each of the five LEs were measured under each of the five decision-making processes (5 LEs x 5 CDSE processes = 25), and there were five items written for each of those intersecting areas of interest (5 x 25 = 125). Ideally, the item pool will reduce to 70 (three items for each intersecting area: LE x CDSE process) after an exploratory factor analysis is conducted in Study 1.

***Emotional arousal component.*** Words reflecting positive and negative emotional states were selected from results of a pilot conducted with 18-22 year olds ( $n = 12$ ) taking a career course at a large Mid-western university. The Positive Affect-Negative Affect Schedule was administered to these students with the instruction line: "This measure

consists of words that describe different emotions. Read each item and then use the scale to indicate to what extent you have felt this way about your career-decision-making process during the past two weeks.” Participants responded on a 5-point Likert-style scale where 1 = *very slightly or not at all* and 5 = *extremely*.

The means of the emotion words were examined for extremity, with item means near 1 indicating floor effects and items means near 5 indicating ceiling effects. The standard deviations were examined to detect items with low variability, indicated by standard deviations below 1. Extreme items and those with low variability were eliminated from consideration of inclusion in the Emotional Arousal component of the CDLE. The negative emotions that met criteria were *distressed, scared, nervous, jittery,* and *afraid*. The positive emotions that met criteria were *excited, strong, enthusiastic, proud, inspired, active, and alert*.

Next, a correlation was conducted on these items to determine the relations among the items. Items that met criteria for inclusion in the CLDE Emotional Arousal stems had moderate to high correlations with emotions in their group (e.g., negative with negative), based on the rationale that these words will be used in the item stems as, ideally, synonymous cues for negative emotional arousal throughout the scale. For example, an item asking if the person feels nervous about writing a resume would ideally elicit a similar response as if the item had asked if the person feels scared or afraid.

The correlation results were also examined to find items with low to no correlation with emotions in the other group (e.g., negative with positive). Recall that the addition of positive emotional arousal items is based on Broaden and Build Theory that positive and negative emotions each provide unique contributions to a person’s

experience; they are not just opposite feeling states (Frederickson 2000, 2005). As such, emotional words from different groups met criteria if they had (a) moderate to high correlations with emotions in their own group and (b) low to no correlation with emotions in the other group. The final group of words chosen for use in the CDLE Emotional Arousal stems were *nervous*, *scared*, and *afraid* (the negative descriptors) and *excited*, *enthusiastic*, and *inspired* (the positive descriptors).

The final CDLE item pool contained 125 content items and two validity items for a total of 127 items.

### **Data Analysis**

Missing data analysis was conducted prior to exploratory and confirmatory factor analysis was performed. For data missing completely at random (MCAR) or missing at random (MAR), regression substitution was used to impute missing values (Schlomer, Bauman, & Card, 2010). Then analysis was conducted to determine univariate and multivariate outliers. Normality was determined using skewness and kurtosis critical value of |3.3| and homoscedasticity as well as homogeneity of variance-covariance assumptions were examined (Tabachnick & Fidell, 2005).

**Exploratory Factor Analysis.** Principal Axis Factoring (PAF) was used as the factor-extraction method with a promax rotation (Costello & Osborn, 2005; Worthington and Whitaker, 2006). Three methods were triangulated to determine number of factors to extract: the scree plot, eigenvalues, and parallel analysis. Initial item retention/deletion criteria included (a) retaining items with factor loadings above .5, (b) removing items with cross-loadings with a difference of less than .15 between highest and lowest loading, and (c) removing cross-loaded items with greater than .5 loading on two or more factors.

The loading values specified in (a) and (c) are more conservative than traditional recommendations (Tabachnick & Fidell, 2007; Worthington & Whittaker, 2005) and were set after a 19-factor solution resulted from a PAF conducted with loadings set at .35 with no factors specified (discussed in Results). There were no cross-loaded items after the factor loading minimum was set at .5, so the latter two criteria were not needed.

**Convergent and Discriminant Validity.** One-tailed bivariate correlations were used to determine convergent validity of the final 40-item CDLE with career decision self-efficacy. One-tailed bivariate correlations were also performed with the emotional arousal items of the CDLE and the total scores on the two PANAS subscales (positive emotion and negative emotion) to determine the validity of those subscales. A one-tailed bivariate correlation was also used to determine discriminant validity between the CDLE and career decision difficulty.

**Confirmatory Factor Analysis.** For the CFA, a sample size to item ratio of just of 10:1 was employed, which is considered optimal (Worthington & Whittaker, 2006). Because the Chi-squared overall test of fit for SEM models is sensitive to large sample size (Field, 2005; Tabachnick & Fidell, 2001; Worthington & Whittaker, 2006), goodness of fit was assessed using three additional indices recommended by Kline (2005) and supported by Worthington and Whittaker (2006). The indices are considered conservative in the field and more appropriate than the two-index alternative recommendation (Fan & Sivo, 2005). Indices used were the comparative fit index(CFI), the root-mean-square error of approximation (RMSEA), and the standardized root-mean-square residual (SRMR). The CFI is an incremental fit index, which means that the proposed model is compared to a null model—a model that assumes no correlation between observed

variables. The CFI is robust to large sample size. RMSEA and SRMR are absolute fit indices, which means they test the fit of the proposed model to a perfect-fitting population model. The SRMR is also robust to large sample size. Critical values used were as follows: CFI excellent fit  $\geq .95$ , good fit = .90 to .94, adequate fit = .80 to .89, poor fit = .60 to .79, very poor fit  $< .60$  (Kline, 2011; Meyers et al., 2006); RMSEA close approximate fit  $\leq .05$ , reasonable appropriate fit = .05 to .08, and poor fit  $\geq .10$  (Kline, 2011; Worthington & Whittaker, 2006); and SRMR  $\leq .10$  (Kline, 2011).

**Test-retest Reliability.** At the end of the survey, participants were offered the option of volunteering to participate in a brief two-week follow-up consisting of the 127 CDLE items. Participants received a numerical code to preserve their confidentiality while enabling the author to match their Time 1 and Time 2 scores. Volunteers were contacted two weeks after completing the initial survey. Responses were retained for analysis from those who completed the retest within two weeks of the invitation. Three hundred and four responses were useable.

## CHAPTER IV

### RESULTS

#### **Missing Value Analysis**

It was determined that 2.47% of data were missing for 944 participants for the 210 items (483/19,530). Sixty-seven percent of participants had no missing values; 22% had one missing value; the remaining 11% of participants were missing values for between 2 and 8 items total ( $M = 2.7$ ,  $SD = 1.3$ , median = 2, mode = 2). Using Little's Missing Completely At Random (MCAR) Test, missing data were determined to be MCAR for the Career Decision Difficulties Questionnaire ( $X^2_{(1151, N=944)} = 1199.21$ ,  $p = .16$ ), but not for the Positive Affect-Negative Affect Schedule ( $X^2_{(374, N=944)} = 593.52$ ,  $p < .001$ ), the Career Decision Self-Efficacy Scale-Short Form ( $X^2_{(546, N=944)} = 636.63$ ,  $p < .01$ ), and the CDLE ( $X^2_{(15890, N=944)} = 16,524.37$ ,  $p < .001$ ).

No missing values exceeded 1%, so formal Missing at Random (MAR) analyses were inconclusive (Schlomer et al., 2010). Therefore, the missing value total was calculated for each participant ( $N = 944$ ) and ANOVAs were used to determine if missing values varied significantly by group. If so, data could be said to be Missing at Random (MAR) and missing value substitution would be appropriate (Field, 2005). Results indicated that there were no significant differences in total missing values by gender, age, English being first or additional language, highest education to date, or current education level. There were significant differences based on racial and ethnic background:  $t(938) =$

-2.85,  $p < .01$ . Specifically, participants who self-identified as racial or ethnic minorities had significantly more missing values ( $n = 154$ ,  $M = 0.72$ ,  $SD = 1.18$ ) than participants who self-identified as White, non-Hispanic ( $n = 786$ ,  $M = 0.47$ ,  $SD = 0.92$ ). As a result of the finding that randomness differed by group, missing values were determined to be MAR and multiple imputation was conducted to replace missing values using a program called NORM (Schafer, 1999).

### **Identifying Outliers**

Data were then analyzed to determine the presence of univariate and multivariate outliers. First, to test for univariate outliers, scale scores were transformed into standardized values using  $z$ -scores. Twelve cases along the five measures had  $z$ -scores exceeding  $|3.3|$  and were therefore identified as univariate outliers. To identify multivariate outliers, Mahalanobis distance was calculated using the four scales. The critical value of 20.515 was set using a chi-squared chart plotting five  $df$  at  $p < .001$  significance level (i.e. .999). Mahalanobis distance exceeded 20.515 critical value for six cases that were identified as multivariate outliers. In total 18 outlier cases were removed from further analysis.

### **Testing Assumptions**

Scale scores were then examined to determine if they met the multivariate assumptions of normality, homogeneity of variance-covariance, homoscedasticity, multicollinearity, and singularity. To determine normality of scores along the measures, skewness and kurtosis were examined; values greater than 3.3 are problematic. Skewness and kurtosis for all scales were below 1, confirming the assumption of normality. Next, Box's M Test was used to determine homogeneity of the variance-covariance matrices.

This test tends to be highly conservative and is far too strict with large samples of data (Field, 2005). Therefore, an alpha level of  $p < .01$  was used. The test was not significant (Box's  $M = 62.38, p = .03$ ), confirming the presence of homogeneity in the variance-covariance matrices.

The assumption of homoscedasticity was also confirmed, by examining the patterns of scatterplots using the CDLE as the  $y$ -axis and each of the three remaining measures as the  $x$ -axis. Finally, a bivariate correlation was run on all scale scores to determine the absence of multicollinearity and singularity. No correlations were above .90, indicating no multicollinearity. All scales correlated with at least one other scale, indicating no singularity. Data met this assumption as well. Because the scores on the measures meet assumptions, no transformations were needed.

### **Equivalence of Alternate Forms**

Given the large number of items in the CDLE, alternate forms were used to reduce the potential for fatigue or practice effects. At Time 1, 538 participants completed Form A and 337 participants completed Form B. A  $t$ -test determined that there was no statistically significant difference between Time 1 CDLE scores on Form A and Form B ( $t_{(927)} = 0.15, p = .88$ ). Cases were therefore combined for all future analyses. The data were then combined for a total  $N$  of 929. The data were randomly split and 464 cases were randomly selected for Study 1 and 465 were randomly selected for Study 2. Participants were randomly divided into two equal samples for the remaining analyses.

### **Study 1: Initial Psychometric Evaluation**

Study 1 was conducted using 464 participants from the original sample. SPSS 20.0 was used to conduct all analyses. First, three methods were used to determine the

number of factors to extract (examination of scree plot, eigenvalues greater than or equal to 1, and parallel analysis). Next, EFA was conducted on the range of factors suggested by the previous analysis using Principal Axis Factoring (PAF) with a promax rotation. Finally, one-tailed bivariate correlations were run to determine convergent validity (of the CDLE with the CDSE, of CDLE negative scale items with the PANAS negative scale items, and of the CDLE positive scale items with the PANAS positive scale items) and to determine divergent validity of the CDLE with the CDDQ.

### **Determining Number of Factors**

Based on recommendations from the literature (Worthington & Whittaker, 2006; Tabachnick & Fidell, 2005), three methods were triangulated to determine the number of factors to extract. First, eigenvalues were calculated utilizing the proposed EFA method (PAF with promax rotation) without specifying a number of factors; a 19 factor solution was suggested, explaining 69.37% of the variance (see Table 1). Next, the scree plot was examined (see Figure 1), and six factors appeared to be the solution. Finally, parallel analysis was conducted using syntax provided by O'Connor (2000). In parallel analysis, actual eigenvalues extracted from the raw data are compared at 95% percentile to eigenvalues extracted from datasets generated randomly (based on the same number of participants and variables as the raw dataset; Hayton, Allen, & Carpello, 2004). As documented in Table 2, the results of the parallel analysis suggest a three-factor solution. Because a 19-factor solution lacks parsimony, even for a 125-item scale, EFA was conducted by extracting three, four, five, and six factors respectively and examining the results through the proposed theoretical lens provided by Bandura's (1977, 1986) Social Cognitive Theory.

## Exploratory Factor Analysis

Based on Kaiser-Meyer-Olkin (KMO) value of .92, CDLE data were determined to be suitable for EFA. Specifically, values close to 1 indicate compact correlations, which means that factor analysis is likely to reveal reliable factors that are distinct from one another (Field, 2005; Tabachnick & Fidell, 2001). Results of Bartlett's test of sphericity indicate that the  $R$  matrix differs significantly from an identity matrix ( $X^2_{(7750, N=464)} = 48,396.58, p < .0001$ ), which is desirable because it confirms that there are some factorable relationships among the variables.

Based on the results of the examination of the scree plot, eigenvalues, and parallel analysis, EFA was conducted by extracting three, four, five, and six factors respectively. See chart entitled Relevant Characteristics of Initial Exploratory Factor Analysis (Table 3) for a visual comparison of variance explained, total items retained, and items retained by theorized subscale (the LEs). Parallel analysis suggested a three-factor solution. This three-factor solution explained 41.53% of the variance and no for two of the LEs (Mastery Experience and Positive Emotional Arousal) were not represented when loadings of .6 and higher were retained. The four-factor solution accounted for 5.5% more variance; however when loadings of .5 and higher were retained, no Mastery Experience items remained. The six-factor solution accounted for 52.94% of the variance and yielded five factors based on the LEs and a sixth factor comprised of three of the Positive Emotional Arousal items, two of which were cross-loaded with other factors. The sixth factor disappeared when .6 and .7 loadings were specified while the five factors based on the LEs remained stable. Therefore, the five-factor solution using .7 loading criteria was deemed most parsimonious and most conceptually sound as it accounted for

50.04% of the variance, reduced the item pool to 56, and contained five factors—one for each of the LEs.

Subsequent analyses were conducted using 56 items. Items with loadings below .7 were then removed and PAF with promax rotation was re-run. Based on Kaiser-Meyer-Olkin (KMO) value of .94, CDLE data were determined to be suitable for EFA. Results of Bartlett's test of sphericity indicate that the  $R$  matrix differs significantly from an identity matrix ( $X^2_{(1891, N=464)} = 21,860.95, p < .0001$ ). This 56-item, five-factor solution explained 59.83% of the variance. All specified items loaded at .5 loading criteria except one Negative Emotional Arousal item, so that item was removed and the EFA was re-run. (The loading was kept at .5 for the initial analysis with the reduced item pool to provide a greater likelihood that all reduced items would be retained. Because one of the five Mastery Experience items loaded at .565, the decision was made to keep .5 as loading criteria, as subscales are most reliable when they have five items minimum (Worthington & Whitaker, 2006). Further item deletion was conducted on the scales with more items (12-18), removing items loading below .7 to create a more parsimonious solution. The final, 40-item, five-factor solution explained 64.99% of the variance. The factors, in order specified by the output, and number of items were: Social Persuasion (13), Negative Emotional Arousal (10), Positive Emotional Arousal (7), Vicarious Learning (5), and Mastery Experiences (5). See Table 4. CFA in Study 2 was run on this 40-item solution with the second half of the randomly split sample, discussed later.

### **Reliability**

Internal consistency reliability was then assessed for the 40-item CDLE scale and for the five subscales using Cronbach's alpha. For the full scale, Cronbach's alpha was

.88. For the subscales, alphas were as follows: Social Persuasion .96, Negative Emotional Arousal .94 Positive Emotional Arousal .91, Vicarious Learning .85, and Mastery Experiences .83.

### **Convergent and Discriminant Validity**

One-tailed bivariate correlations were used on the reduced item pool to determine convergent validity between the CDLE and career decision self-efficacy, and to determine discriminant validity between the CDLE and career decision difficulty. Cohen's (1992) guidelines were used to interpret small ( $r = .10$ ), medium ( $r = .30$ ), and large ( $r = .50$ ) effect sizes. CDLE scores were significantly, though moderately, correlated with career decision self-efficacy in the predicted direction ( $r_{(464)} = .45, p_{(\text{one-tailed})} < .0001$ ). As hypothesized, the CDLE was not correlated with career decision difficulty ( $r_{(464)} = -.11, p_{(\text{one-tailed})} < .0001$ ).

It was hypothesized that the positive and negative items on the CDLE would converge with the positive and negative items on the PANAS, respectively, based on Frederickson's (2005) Broaden and Build Theory of Positive Emotions. One-tailed bivariate correlations were therefore used to determine convergent validity between the positive items on the CDLE and the positive items PANAS and between the negative items on the CDLE and the negative items on the PANAS. As hypothesized, positive emotion scores significantly correlated on these two measures in the predicted direction ( $r_{(464)} = .59, p_{(\text{one-tailed})} < .0001$ ), and negative emotion scores significantly correlated on these two measures in the predicted direction ( $r_{(464)} = .54, p_{(\text{one-tailed})} = .03$ ).

## Study 2: Confirmatory Psychometric Evaluation

The Study 1 EFA yielded a five-factor model consisting of 40 items. Because CFA is considered an appropriate next step to confirm a factor structure determined using EFA methods, an SEM model was used to conduct a CFA in Study 2. A CFA of the 40-item CDLE was conducted using the maximum likelihood estimation method available in Amos software 20.0. Using the critical values established for the three fit indices described in the Method section, the results of the first model were as follows. The Chi-squared for overall model fit was significant, as can be expected with a large sample size ( $\chi^2(730, N = 465) = 1958.21, p < .000$ ). The values for the remaining fit indices were CFI = .89, RMSEA = .058 ( $CI = .051 - .062$ ), and SRMR = .05. While the Chi-squared and SRMR indicate a good fitting model, it is recommended to translate the outcome of the fit indices in a conservative manner (Kline, 2005), meaning this is a model of adequate or reasonable appropriate fit, based on the CFI and RMSEA values, respectively.

With the intention of finding a good or excellent fitting model, the Modification Indices were examined. Using Wald's criteria (Tabachnick & Fidell, 2001), it was determined that the removal of the 11th item from the Social Persuasion scale could potentially improve the model. This was done and the CFA was re-run with 39 items. The Chi-squared for overall model fit was significant, as can be expected with a large sample size ( $\chi^2(692, N = 465) = 1786.86, p < .000$ ). The values for the remaining fit indices were CFI = .90, RMSEA = .058 ( $CI = .055 - .062$ ), and SRMR = .04. This improved the CFI from an appropriate fit to a good fit; the RMSEA value remained reasonably appropriate.

A third analysis was run after removing the 12th item from the Social Persuasion scale based on Wald's Modification Index criteria. This was done and the CFA was re-

run with 38 items. The Chi-squared for overall model fit was significant ( $X^2(655, N = 465) = 1626.81, p < .000$ ). The values for the remaining fit indices were CFI = .91, RMSEA = .057 ( $CI = .053 - .060$ ), and SRMR = .04. The RMSEA value remained at comparable levels to the previous models, and therefore the model is considered a reasonable appropriate fit (Kline, 2011).

A final analysis was run after removing the 13th item from the Social Persuasion scale based on Wald's Modification Index criteria. This was done and the CFA was re-run with 37 items. This model would not specify, meaning that it was not recognized as a valid model by the software and therefore no results were generated. See Table 7 for a summary of indices for the three models.

In order to compare the three models to choose a final model, the Bayesian Information Criterion (BIC) index examined. This is a standardized index and therefore used for non-nested models, such as the three models tested in this study (Kline, 2011). (If the latter two models had been nested in the first model, it would have been appropriate to compare the Chi-squared difference, CFI, REMSEA, and SRMR of the three models because those indices are unstandardized, or based on the specifics of the data entered; Kline, 2011). For the BIC, the absolute value is not relevant; the importance is the comparison of the BIC value between models (Burnham & Anderson, 1998; Raftery, 1995). Specifically, the model with the lowest value for this index is considered the best-fitting model, with differences in these values between models commonly falling in the thousands (Kline, 2011). The results for the BIC were: Model 1 = 2511.00, Model 2 = 2327.36, Model 3 = 2155.02. Because none of the alternate models improved the fit

significantly beyond Model 1 (the 40-item adequate solution), the 40-item solution was selected for the final measure.

### **Study 3: Test-Retest Reliability**

#### **Missing Value Analysis**

In preparation for conducting test-retest validity analysis, missing data on Time 2 responses was analyzed on 304 cases. Two cases with 10 or more missing values were removed, leaving a test-retest  $N$  of 302. Little's Missing Completely At Random (MCAR) Test was conducted, and missing data were determined not to be MCAR ( $\chi^2_{(4698, N=302)} = 5060.05, p < .001$ ).

To determine if missing values were MAR, a one-way ANOVA was used to see if total missing varied by group. There were no significant differences in total missing values by gender, racial/ethnic background, English being first or additional language, highest education to date, or current education level. There were significant differences based on age:  $F(6) = -2.33, p < .05$ . Tukey's post-hoc comparisons of the seven groups indicate that 23 year olds ( $M = 0.48, 95\% \text{ CI } [0.01, 0.96]$ ) were significantly more likely to have missing values than participants in other age groups. As a result of the finding that randomness differed by group, missing values were determined to be MAR and missing values were imputed using regression substitution.

#### **Identifying Outliers**

Four cases on the Time 2 CDLE measure had  $z$ -scores exceeding  $|3.3|$  and were therefore identified as univariate outliers. Mahalanobis distance was calculated using the Time 1 and Time 2 CDLE scales. The critical value of 13.816 was determined using a chi-squared chart plotting two  $df$  at  $p < .001$  significance level (i.e. .999). Five additional

cases exceeded that critical value and were therefore identified as multivariate outliers. In total nine outlier cases were deleted.

### **Test-retest Reliability**

A one-tailed bivariate correlation was used to determine 2- to 4-week test-retest reliability between Time 1 and Time 2 scores on the CDLE. As hypothesized, Time 1 CDLE scores were significantly and strongly correlated with Time 2 CDLE scores in the predicted direction ( $r_{(291)} = .60, p_{(\text{one-tailed})} < .01$ ) for the reduced 40-item measure. The reliability score for Time 1's 40-item measure was .88 and for Time 2 it was .85.

## CHAPTER V

### DISCUSSION

The purpose of this study was to develop and psychometrically validate a measure of the learning experiences theorized to foster career decision self-efficacy. As Bandura (1977, 1986) proposed over four decades ago, it appears that in the realm of career decision making, prior experiences, opinions of respected authority figures, observing peers, and the absence of negative emotional arousal are formative factors that relate significantly to self-efficacy. As Lent, Brown, and Hackett (1994) implied by placing the LEs in a central role in their model, they would agree. “Knowing how to build self-efficacy and how it works provides further guidelines for structuring experiences that enable people to realize desired personal and social changes” (Bandura, 2006, p. 319). The development of a reliable and valid measure of CDLE will allow psychologists interested in career decision self-efficacy to accurately determine the mechanisms of change in their interventions—what works for whom, why, and under what conditions.

The CDLE demonstrated satisfactory psychometric properties when used with a sample of college-aged students attending universities in the Midwest. An exploratory factor analysis yielded a 40-item measure with a five-factor solution. The five factors fell along the hypothesized domains based on Bandura’s (cite) four learning experiences with the addition of a fifth learning experience of positive emotional arousal, based on Fredrickson’s (2001; 2005) work. The five factors were named: Social Persuasion,

Negative Emotional Arousal, Positive Emotional Arousal, Vicarious Learning, and Mastery Experiences. This model was supported as adequately fitting by a CFA conducted using an independent sample. Internal consistency estimates of the CDLE and its scales were high, and two- to four-week test-retest reliability scores were strong.

Some factor-level results occurred, and they bear closer examination in this discussion. As hypothesized, positive emotional arousal resulted in a unique factor. Additionally, social persuasion emerged as the most influential factor. These results will be discussed now.

### **Validation of Positive Emotional Arousal as a Uniquely Contributing Factor**

As Fredrickson (2005; 2011) recently proposed, it appears that in addition to the realms she and other researchers are exploring (e.g., Burton & King, 2010; Mikulincer & Shaver, 2009), positive emotions also contribute uniquely to the career decision-making process. Given both Fredrickson's theory that critical thinking is potentiated by positive emotional arousal and Crites' (1976) delineation of the critical thinking skills needed to successfully make career decisions, this result seems logical.

As prior research observed, a workshop for non-traditional female students that included an anxiety-reduction component increased career decision self-efficacy (Foltz & Luzzo, 1998). More recent research reported reductions in anxiety following completion of a career exploration course without specifically targeting anxiety with a specific component (Peng, 2004). Sullivan and Mahalik's (2000) 6-week career-counseling approach included instruction in relaxation and stress reduction to help students reduce negative emotional arousal. Perhaps future research will explore the effect of increasing positive emotion on career decision self-efficacy and other career-related outcomes.

Others have postulated positive emotion as central to therapeutic change (Fitzpatrick & Stalikas, 2008), and therefore could potentially play a role in effective career counseling as well.

Researchers have also established an empirical connection between parental attachment and positive emotion (Miculincer & Shaver, 2009). Future research might explore the links between positive emotion, parental attachment, and social persuasion using the CDLE. This future direction is explored next.

### **Social Persuasion as the Highest Loading Factor**

In the current study, authority figures played a strong influence in the career decision self-efficacy of this 18 to 24 year old sample. Previous studies on middle-school students have demonstrated the importance of parental influence on that population (Keller & Whiston, 2008). Given the life stage of the participants in this study, though, it was surprising that prior success (expressed through Mastery Experiences items) was not more influential than Social Persuasion. Additionally, given the proximity of this population to adolescence, it was expected that observing peers (expressed through Vicarious Learning items) would have been more influential than Social Persuasion. In fact, these two groups of items (Mastery Experiences and Vicarious Learning) were the lowest loading and least influential factors in the scale.

Perhaps authority figures—those respected by the participants, as Bandura (1977; 1986) specified—have more influence than previously thought. Social persuasion may be the reason that the personalized feedback generated by assessment results is a critical ingredient to effective interventions (Brown et al., 2003; Luzzo & Day, 1999). It is possible that feedback from an authority, whether live or online, is needed. Another study

showed that feedback from a computer program, when immediate, generates significant improvements in CDSE and decision-making ability (Betz & Borgen, 2010). Future research can determine which source of authority has the most impact.

It is possible that secure attachment to one's parent underlies this response to authority. Others in the counseling psychology field have noted, "secure attachment to parents is postulated to facilitate or enable adolescent exploratory activity including that related to career exploration" (Anderson & Betz, 2001). Since that time, several studies have investigated this relation. In one study, secure attachment with the mother, in particular, correlated with career decision self-efficacy (Germeijs & Verschueren, 2009). The other study revealed that parental attachment significantly predicted career decision self-efficacy in undergraduate women, but not men (Lease & Dahlbeck (2009). Considering the results of the present study, future research can now explore the role of parental attachment *with the LEs* within the SCCT model.

### **Mastery Experiences and Emotional Arousal**

There is a body of research showing that self-reported Mastery Experiences is the leading predictor of students' academic, math, and science self-efficacy beliefs (Hampton & Mason, 2003; Lopez & Lent, 1992; Usher & Pajares, 2008). This research aligns with the importance of Mastery Experiences in Bandura's general theory of self-efficacy (1977; 1986). However, in the current study on the domain of career decision self-efficacy, Mastery Experience was the weakest of the five factors.

In the present study, 9% of variance in the Mastery Experience factor related to Positive Emotional Arousal and 13% related to Negative Emotional Arousal. It may be possible that the emotional valence of a Mastery Experience is key to fostering self-

efficacy (rather than the experience itself). Bandura (1977; 1986) somewhat touched upon this possibility by specifying that it is the person's self-perception of mastering an experience that yields its salience (or lack thereof). However by making negative emotional arousal separate from mastery experiences, he may have missed an important point. Perhaps the CDLE will enable future researchers to explore if the salience of a mastery experience is mediated by its emotional valence.

Consider the link between gender and career self-efficacy. Across a variety of career-related variables, gender plays a significant role in self-efficacy differences (Betz & Hackett, 1981; Lent & Hackett, 1987). Women have lower career self-efficacy than men, particularly in fields viewed as traditionally male (e.g., math, finance, decision making, and problem solving; Marlino & Wilson, 2003). Therefore, it seems significant to be able to learn which LE contributes most to self-efficacy differentially for gender. For example, a young man and woman may both succeed at a given mastery experience; but what if their emotional response to that success differs? What if emotional response to mastery experience is the key component for women? This might be the case, as a recent study found that women in MBA programs who had comparable mastery experiences with male counterparts still had low self-efficacy (Wilson, Kickul, & Marlino, 2007). With this measure of the LEs, exploration of questions like these on a more discrete level is now possible.

### **Components of Each Factor**

Also interesting is the make-up of each factor based on Crites' five processes related to career decisions. According to Crites' (1976) Career Maturity Theory, there are five processes: (a) self-appraisal, (b) occupational information, (c) goal selection, (d)

making future plans, and (e) problem solving. Groupings of these processes combined in several of the factors. Goal selection and self-appraisal items exclusively comprised both of the final Emotional Arousal factors. Planning was the key component of Mastery Experiences, comprising four of the five items retained on that factor. Only two occupational information items contributed to the final measure.

First, it is interesting that Crites' processes grouped together logically in any of the factors as this has not been the case in any confirmatory factor analyses conducted on the Career Decision Self-Efficacy Scale-Short Form regardless of population (Chaney, Hammond, Betz, & Multon, 2007; Gaudron, 2011; Jin, Ye, & Watkins, 2012). Second, an interesting grouping was the composition of Mastery Experiences: four of the five items retained were from the Planning subscale of the CDSE (Thus far in life, I have succeeded at: determining steps to complete my chosen training; preparing a good resume; identifying employers, firms, and institutions relevant to my career possibilities; and managing the job interview process) plus one occupational information item (Thus far in life, I have successfully: found information about graduate or professional schools or training programs). These are functional tasks with a clear outcome that has been concretely accomplished, compared to self-appraisal mastery (accurately assess my abilities) or goal selection (choosing a major that will fit my interests)—both of which might change over time and may therefore result in the accomplishment feeling tenuous for the future, despite being successful in the past.

A third and final grouping of interest was that both Emotional Arousal factors (positive and negative) were comprised solely of self-appraisal and goal selection items (Crites, 1976). Emotional valence appears to be important for items that express tasks

that do not have a concrete outcome—assessing one’s abilities or interests and selecting goals that might change over time (and would likely do so in direct relation to changes in one’s abilities or interests). Given the tenuousness of such outcomes, it is possible that people turn to what may feel like more of a tangible, longer-term residual effect—their emotional recall of those tasks. If this is the case, then career counseling that addresses the emotional component of past experiences related to career decisions seems warranted. This also suggests the utility of incorporating self-reflection of emotional responses to career decisions and activities, which can also be done in a class. Given the growing research based on the positive cognitive outcomes yielded from writing about emotions—both positive (Burton & King, 2009) and negative (Baik & Wilhelm, 2005)—this points to a useful future direction and one that can now be measured by the CDLE.

### **Limitations**

There are several limitations to this study. Although representative of the universities from which the population was drawn, the participants were not broadly representative of the college-aged population as a whole in racial and ethnic background or gender. The study also did not include college-age individuals not attending college. Participants were self-selected; therefore it is unknown if those who chose not to participate in the study would have responded in a manner that resulted in a different factor structure. Finally, the CDLE was administered as a 127-item measure to all participants, which can raise validity concerns, especially given that the CFA was conducted using less than two-thirds of the total CDLE items responded to by the participants. Future research should administer the final 40-item measure to assess the stability of the factor structure resulting from the present analyses.

## **Future Directions**

The confirmation of the CDLE's five-factor structure now fully potentiates future SCCT research. A key piece of the model is now reliably and validly measureable. With the psychometric validity of this important tool, key questions in our field can be begin to be explored that will be outlined below.

First, to what extent is the CDLE psychometrically valid with different populations? Future studies can explore the CDLE five-factor and item-level structure on participants from a variety of populations not adequately represented in this sample. One example is young adults who do not attend college. A valid measure for this population would be especially useful considering the finding that work-bound students have more difficulty making career decisions than college-bound students (Creed et al., 2010). Validating the measure with racially diverse samples can also help explain the differential results discovered to date on the relation between the LEs and career decision self-efficacy (e.g., Brown & Lavish, 2006; Gushue, 2006; Patel et al., 2008; Peterson, 1993). Gender differences in CDSE development and modification can also be explored more fully, based on the important work done to date (e.g., Betz, Borgen, & Hammer, 1996; Betz & Hackett, 1986; Schaub & Tokar, 2005) as can the interaction between multiple factors (person inputs, background-environmental influences, and CDLEs.) now that there is a valid measure of the CDLEs.

Second, how valid is the full SCCT model? As Anderson and Betz (2001) noted, "little research on self-efficacy expectations has focused on their sources, in contrast to considerable research focused on correlates or outcomes of self-efficacy" (p. 99). A number of studies validating the path of the SCCT model have suffered from the

omission of valid measurement of the LEs (e.g., Lent, Lopez, Sheu, & Lopez, 2011; Lent, Sheu, & Wilkins, 2010). A recent meta-analysis made a similar attempt (Choi et al., 2012). Now that there is a psychometrically validated measure of CDLEs, full SCCT model testing is possible in studies that apply the model to career decision-making.

Third, to what extent are the LEs truly predictive of career decision self-efficacy? Future research can explore this question by performing regression models. Correlations demonstrated a moderate relation between the two constructs; further research is needed to determine the weight of each LE's impact on career decision self-efficacy. Additional studies can be performed comparing undecided students and students who have declared a major. Career counseling can direct undecided students toward experiences shown to be most impactful based on results from students who have declared a major.

Fourth, which LE is most influential in a given intervention? Numerous studies have been published determining the effects of various interventions on improvements in career decision self-efficacy (Betz, 2008; Fouad et al., 2009). Now a measure exists to determine the role of an intervention in providing a palpable influence on various LEs. By measuring baseline then post-intervention levels of the LEs, researchers can now determine which LE is most influenced by a specific outcome. Finally, by determining which LEs a student is most lacking, effective interventions can be targeted to meet students' actual needs.

Finally, what types of LEs for which groups actually contribute to career decision self-efficacy and to what extent? Future research can explore this connection by entering this missing piece into structural equation models. Finally, the missing piece in the SCCT model can be reliably and validly measured and entered into the model. Studies thus far

have skipped this important step and jumped from personal and environmental variables directly to career decision self-efficacy, when the true SCCT model specifies the LEs as a mediator. A number of studies have presumed the impact of LEs on different populations (e.g., gender, Scott & Ciani, 2008; racial and ethnic diversity, Grier-Reed & Skaar, 2010; Grier-Reed & Ganuza, 2011) without having a measure of the LEs. Now, with the CDLE, the model can be effectively tested in the manner it has been designed, which is perhaps most fascinating to those of us in the field of Counseling Psychology due to the primacy placed on availing research and treatment to all populations.

### **Conclusion**

Development of the CDLE represents the next step toward the validation and advancement of SCCT research and intervention. Now that there is a psychometrically validated measure of CDLEs, full SCCT model testing is possible in studies that apply the model to career decision-making. The CDLE will facilitate future advancements in understanding the potentially differential role that learning experiences play for different populations in the development of their career decision self-efficacy.

The findings from the present research have the potential to provide a foundation for future research that can inform the development and refinement of intervention strategies based on the SCCT model. With a more refined measurement and understanding of the contribution of learning experiences to career decision-making, counseling psychologists and vocational specialists can play a pivotal role by supporting today's youth with research and interventions designed to reduce difficulties for young adults as they face career decisions for the first time.

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*Appendix A. The CDLE Item Pool, Form A*

**Using the following scale, select the number corresponding to your response to each statement. Please respond to ALL of the statements.**

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

So far in life, I have succeeded at...

- \_\_\_\_\_ 1. using the internet to find information about occupations that interest me.
- \_\_\_\_\_ 2. selecting one major or field from a list I am considering.
- \_\_\_\_\_ 3. making a plan of my goals for the next five years.
- \_\_\_\_\_ 4. determining the steps to take if I am having trouble with an aspect of my training.
- \_\_\_\_\_ 5. accurately assessing my abilities.
- \_\_\_\_\_ 6. selecting one occupation from a list of potential occupations I am considering.
- \_\_\_\_\_ 7. determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ 8. persistently working at my major or career goal even when I get frustrated.
- \_\_\_\_\_ 9. determining what my ideal job would be.
- \_\_\_\_\_ 10. finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ 11. choosing a career or job that will fit my preferred lifestyle.
- \_\_\_\_\_ 12. preparing a good resume.
- \_\_\_\_\_ 13. changing majors or training programs if I did not like my first choice.
- \_\_\_\_\_ 14. deciding what I value most in an occupation.
- \_\_\_\_\_ 15. finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ 16. making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ 17. changing jobs if I am not satisfied with the one I enter.
- \_\_\_\_\_ 18. figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ 19. talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ 20. choosing a major or field that will fit my interests.
- \_\_\_\_\_ 21. identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ 22. defining the type of lifestyle I would like to live.
- \_\_\_\_\_ 23. finding information about graduate or professional schools or training programs.
- \_\_\_\_\_ 24. managing the job interview process.
- \_\_\_\_\_ 25. identifying some reasonable major or career alternatives if I am unable to get my first choice.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

I feel excited, enthusiastic, or inspired about ...

- \_\_\_\_\_ 1. using the internet to find information about occupations that interest me.
- \_\_\_\_\_ 2. selecting one major or field from a list I am considering.
- \_\_\_\_\_ 3. making a plan of my goals for the next five years.
- \_\_\_\_\_ 4. determining the steps to take if I am having trouble with an aspect of my training.
- \_\_\_\_\_ 5. accurately assessing my abilities.
- \_\_\_\_\_ 6. selecting one occupation from a list of potential occupations I am considering.
- \_\_\_\_\_ 7. determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ 8. persistently working at my major or career goal even when I get frustrated.
- \_\_\_\_\_ 9. determining what my ideal job would be.
- \_\_\_\_\_ 10. finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ 11. choosing a career or job that will fit my preferred lifestyle.
- \_\_\_\_\_ 12. preparing a good resume.
- \_\_\_\_\_ 13. changing majors or training programs if I did not like my first choice.
- \_\_\_\_\_ 14. deciding what I value most in an occupation.
- \_\_\_\_\_ 15. finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ 16. making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ 17. changing jobs if I am not satisfied with the one I enter.
- \_\_\_\_\_ 18. figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ 19. talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ 20. choosing a major or field that will fit my interests.
- \_\_\_\_\_ 21. identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ 22. defining the type of lifestyle I would like to live.
- \_\_\_\_\_ 23. finding information about graduate or professional schools or training programs.
- \_\_\_\_\_ 24. managing the job interview process.
- \_\_\_\_\_ 25. identifying some reasonable major or career alternatives if I am unable to get my first choice.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

Adults I admire have let me know I am capable of ...

- \_\_\_\_\_ 1. using the internet to find information about occupations that interest me.
- \_\_\_\_\_ 2. selecting one major or field from a list I am considering.
- \_\_\_\_\_ 3. making a plan of my goals for the next five years.
- \_\_\_\_\_ 4. determining the steps to take if I am having trouble with an aspect of my training.
- \_\_\_\_\_ 5. accurately assessing my abilities.
- \_\_\_\_\_ 6. selecting one occupation from a list of potential occupations I am considering.
- \_\_\_\_\_ 7. determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ 8. persistently working at my major or career goal even when I get frustrated.
- \_\_\_\_\_ 9. determining what my ideal job would be.
- \_\_\_\_\_ 10. finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ 11. choosing a career or job that will fit my preferred lifestyle.
- \_\_\_\_\_ 12. preparing a good resume.
- \_\_\_\_\_ 13. changing majors or training programs if I did not like my first choice.
- \_\_\_\_\_ 14. deciding what I value most in an occupation.
- \_\_\_\_\_ 15. finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ 16. making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ 17. changing jobs if I am not satisfied with the one I enter.
- \_\_\_\_\_ 18. figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ 19. talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ 20. choosing a major or field that will fit my interests.
- \_\_\_\_\_ 21. identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ 22. defining the type of lifestyle I would like to live.
- \_\_\_\_\_ 23. finding information about graduate or professional schools or training programs.
- \_\_\_\_\_ 24. managing the job interview process.
- \_\_\_\_\_ 25. identifying some reasonable major or career alternatives if I am unable to get my first choice.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

I feel anxious, nervous, afraid, or worried about ...

- \_\_\_\_\_ 1. using the internet to find information about occupations that interest me.
- \_\_\_\_\_ 2. selecting one major or field from a list I am considering.
- \_\_\_\_\_ 3. making a plan of my goals for the next five years.
- \_\_\_\_\_ 4. determining the steps to take if I am having trouble with an aspect of my training.
- \_\_\_\_\_ 5. accurately assessing my abilities.
- \_\_\_\_\_ 6. selecting one occupation from a list of potential occupations I am considering.
- \_\_\_\_\_ 7. determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ 8. persistently working at my major or career goal even when I get frustrated.
- \_\_\_\_\_ 9. determining what my ideal job would be.
- \_\_\_\_\_ 10. finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ 11. choosing a career or job that will fit my preferred lifestyle.
- \_\_\_\_\_ 12. preparing a good resume.
- \_\_\_\_\_ 13. changing majors or training programs if I did not like my first choice.
- \_\_\_\_\_ 14. deciding what I value most in an occupation.
- \_\_\_\_\_ 15. finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ 16. making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ 17. changing jobs if I am not satisfied with the one I enter.
- \_\_\_\_\_ 18. figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ 19. talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ 20. choosing a major or field that will fit my interests.
- \_\_\_\_\_ 21. identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ 22. defining the type of lifestyle I would like to live.
- \_\_\_\_\_ 23. finding information about graduate or professional schools or training programs.
- \_\_\_\_\_ 24. managing the job interview process.
- \_\_\_\_\_ 25. identifying some reasonable major or career alternatives if I am unable to get my first choice.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

I have seen friends, co-workers, and other people like me...

- \_\_\_\_\_ 1. using the internet to find information about occupations that interest them.
- \_\_\_\_\_ 2. selecting one major or field from a list of potential majors they are considering.
- \_\_\_\_\_ 3. making a plan of their goals for the next five years.
- \_\_\_\_\_ 4. determining the steps to take if they are having trouble with an aspect of their chosen training.
- \_\_\_\_\_ 5. accurately assessing their abilities.
- \_\_\_\_\_ 6. selecting one occupation from a list of potential occupations they are considering.
- \_\_\_\_\_ 7. determining the steps they need to take to successfully complete their chosen major or training.
- \_\_\_\_\_ 8. persistently working at their major or career goal even when they get frustrated.
- \_\_\_\_\_ 9. determining what their ideal job would be.
- \_\_\_\_\_ 10. finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ 11. choosing a career that will fit their preferred lifestyle.
- \_\_\_\_\_ 12. preparing a good resume.
- \_\_\_\_\_ 13. changing majors or training programs if they did not like their first choice.
- \_\_\_\_\_ 14. deciding what they value most in an occupation.
- \_\_\_\_\_ 15. finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ 16. making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ 17. changing jobs if they are not satisfied with the one they enter.
- \_\_\_\_\_ 18. figuring out what they are and are not ready to sacrifice to achieve their career goals.
- \_\_\_\_\_ 19. talking with a person already employed in a field they are interested in.
- \_\_\_\_\_ 20. choosing a major or career that will fit their interests.
- \_\_\_\_\_ 21. identifying employers, firms, and institutions relevant to their career possibilities.
- \_\_\_\_\_ 22. defining the type of lifestyle they would like to live.
- \_\_\_\_\_ 23. finding information about graduate or professional schools or training programs.
- \_\_\_\_\_ 24. managing the job interview process.
- \_\_\_\_\_ 25. identifying some reasonable major or career alternatives if they are unable to get their first choice.

Appendix B. The CDLE Item Pool, Form B

Using the following scale, select the number corresponding to your response to each statement. Please respond to ALL of the statements.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

I feel excited, enthusiastic, or inspired about ...

\_\_\_\_\_ determining the steps to take if I am having trouble with an aspect of my training.

\_\_\_\_\_ persistently working at my major or career goal even when I get frustrated.

\_\_\_\_\_ changing majors or training programs if I did not like my first choice.

\_\_\_\_\_ changing jobs if I am not satisfied with the one I enter.

\_\_\_\_\_ identifying reasonable major or career alternatives if I am unable to get my first choice.

I have seen friends, co-workers, and other people like me...

\_\_\_\_\_ determining the steps to take if they are having trouble with an aspect of their training.

\_\_\_\_\_ persistently working at their major or career goal even when they get frustrated.

\_\_\_\_\_ changing majors or training programs if they did not like their first choice.

\_\_\_\_\_ changing jobs if they are not satisfied with the one they enter.

\_\_\_\_\_ identifying reasonable major or career alternatives if unable to get their first choice.

So far in life, I have succeeded at...

\_\_\_\_\_ determining the steps to take if I am having trouble with an aspect of my training.

\_\_\_\_\_ persistently working at my major or career goal even when I get frustrated.

\_\_\_\_\_ changing majors or training programs if I did not like my first choice.

\_\_\_\_\_ changing jobs if I am not satisfied with the one I enter.

\_\_\_\_\_ identifying reasonable major or career alternatives if I am unable to get my first choice.

Adults I admire have let me know I am capable of ...

\_\_\_\_\_ determining the steps to take if I am having trouble with an aspect of my training.

\_\_\_\_\_ persistently working at my major or career goal even when I get frustrated.

\_\_\_\_\_ changing majors or training programs if I did not like my first choice.

\_\_\_\_\_ changing jobs if I am not satisfied with the one I enter.

\_\_\_\_\_ identifying reasonable major or career alternatives if I am unable to get my first choice.

I feel anxious, nervous, afraid, or worried about ...

\_\_\_\_\_ determining the steps to take if I am having trouble with an aspect of my training.

\_\_\_\_\_ persistently working at my major or career goal even when I get frustrated.

\_\_\_\_\_ changing majors or training programs if I did not like my first choice.

\_\_\_\_\_ changing jobs if I am not satisfied with the one I enter.

\_\_\_\_\_ identifying reasonable major or career alternatives if I am unable to get my first choice.

\_\_\_\_\_ Select the response “neutral” for this item.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

So far in life, I have succeeded at...

- \_\_\_\_\_ using the internet to find information about occupations that interest me.
- \_\_\_\_\_ finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ finding information about graduate or professional schools or training programs.

Adults I admire have let me know I am capable of ...

- \_\_\_\_\_ using the internet to find information about occupations that interest me.
- \_\_\_\_\_ finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ finding information about graduate or professional schools or training programs.

I have seen friends, co-workers, and other people like me...

- \_\_\_\_\_ using the internet to find information about occupations that interest them.
- \_\_\_\_\_ finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ talking with a person already employed in a field they are interested in.
- \_\_\_\_\_ finding information about graduate or professional schools or training programs.

I feel anxious, nervous, afraid, or worried about ...

- \_\_\_\_\_ using the internet to find information about occupations that interest me.
- \_\_\_\_\_ finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ finding information about graduate or professional schools or training programs.

I feel excited, enthusiastic, or inspired about ...

- \_\_\_\_\_ using the internet to find information about occupations that interest me.
- \_\_\_\_\_ finding out the employment trends for an occupation over the next ten years.
- \_\_\_\_\_ finding out about the average yearly earnings of people in an occupation.
- \_\_\_\_\_ talking with a person already employed in a field I am interested in.
- \_\_\_\_\_ finding information about graduate or professional schools or training programs.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

Adults I admire have let me know I am capable of ...

- \_\_\_\_\_ selecting one major or field from a list I am considering.
- \_\_\_\_\_ selecting one occupation from a list I am considering.
- \_\_\_\_\_ choosing a career that will fit my preferred lifestyle.
- \_\_\_\_\_ making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ choosing a major or career that will fit my interests.

So far in life, I have succeeded at...

- \_\_\_\_\_ selecting one major or field from a list I am considering.
- \_\_\_\_\_ selecting one occupation from a list I am considering.
- \_\_\_\_\_ choosing a career that will fit my preferred lifestyle.
- \_\_\_\_\_ making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ choosing a major or career that will fit my interests.

I feel anxious, nervous, afraid, or worried about ...

- \_\_\_\_\_ selecting one major or field from a list I am considering.
- \_\_\_\_\_ selecting one occupation from a list I am considering.
- \_\_\_\_\_ choosing a career that will fit my preferred lifestyle.
- \_\_\_\_\_ making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ choosing a major or career that will fit my interests.

I feel excited, enthusiastic, or inspired about ...

- \_\_\_\_\_ selecting one major or field from a list I am considering.
- \_\_\_\_\_ selecting one occupation from a list I am considering.
- \_\_\_\_\_ choosing a career that will fit my preferred lifestyle.
- \_\_\_\_\_ making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ choosing a major or career that will fit my interests.

I have seen friends, co-workers, and other people like me...

- \_\_\_\_\_ selecting one major or field from a list they are considering.
- \_\_\_\_\_ selecting one occupation from a list they are considering.
- \_\_\_\_\_ choosing a career that will fit their preferred lifestyle.
- \_\_\_\_\_ making a career decision and then not worrying whether it was right or wrong.
- \_\_\_\_\_ choosing a major or career that will fit their interests.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

I have seen friends, co-workers, and other people like me...

- \_\_\_\_\_ accurately assessing their abilities.
- \_\_\_\_\_ determining what their ideal job would be.
- \_\_\_\_\_ deciding what they value most in an occupation.
- \_\_\_\_\_ figuring out what they are and are not ready to sacrifice to achieve their career goals.
- \_\_\_\_\_ defining the type of lifestyle they would like to live.

I feel anxious, nervous, afraid, or worried about ...

- \_\_\_\_\_ accurately assessing my abilities.
- \_\_\_\_\_ determining what my ideal job would be.
- \_\_\_\_\_ deciding what I value most in an occupation.
- \_\_\_\_\_ figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ defining the type of lifestyle I would like to live.

I feel excited, enthusiastic, or inspired about ...

- \_\_\_\_\_ accurately assessing my abilities.
- \_\_\_\_\_ determining what my ideal job would be.
- \_\_\_\_\_ deciding what I value most in an occupation.
- \_\_\_\_\_ figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ defining the type of lifestyle I would like to live.

So far in life, I have succeeded at...

- \_\_\_\_\_ accurately assessing my abilities.
- \_\_\_\_\_ determining what my ideal job would be.
- \_\_\_\_\_ deciding what I value most in an occupation.
- \_\_\_\_\_ figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ defining the type of lifestyle I would like to live.
- \_\_\_\_\_ Select the response “agree” for this item.

Adults I admire have let me know I am capable of ...

- \_\_\_\_\_ accurately assessing my abilities.
- \_\_\_\_\_ determining what my ideal job would be.
- \_\_\_\_\_ deciding what I value most in an occupation.
- \_\_\_\_\_ figuring out what I am and am not ready to sacrifice to achieve my career goals.
- \_\_\_\_\_ defining the type of lifestyle I would like to live.

<i>Strongly Disagree</i>	<i>Disagree</i>	<i>Neither Disagree nor Agree</i>	<i>Agree</i>	<i>Strongly Agree</i>
<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>

I feel anxious, nervous, afraid, or worried about ...

- \_\_\_\_\_ making a plan of my goals for the next five years.
- \_\_\_\_\_ determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ preparing a good resume.
- \_\_\_\_\_ identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ managing the job interview process.

Adults I admire have let me know I am capable of ...

- \_\_\_\_\_ making a plan of my goals for the next five years.
- \_\_\_\_\_ determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ preparing a good resume.
- \_\_\_\_\_ identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ managing the job interview process.

So far in life, I have succeeded at...

- \_\_\_\_\_ making a plan of my goals for the next five years.
- \_\_\_\_\_ determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ preparing a good resume.
- \_\_\_\_\_ identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ managing the job interview process.

I have seen friends, co-workers, and other people like me...

- \_\_\_\_\_ making a plan of their goals for the next five years.
- \_\_\_\_\_ determining the steps they need to take to successfully complete their chosen training.
- \_\_\_\_\_ preparing a good resume.
- \_\_\_\_\_ identifying employers, firms, and institutions relevant to their career possibilities.
- \_\_\_\_\_ managing the job interview process.

I feel excited, enthusiastic, or inspired about ...

- \_\_\_\_\_ making a plan of my goals for the next five years.
- \_\_\_\_\_ determining the steps I need to take to successfully complete my chosen training.
- \_\_\_\_\_ preparing a good resume.
- \_\_\_\_\_ identifying employers, firms, and institutions relevant to my career possibilities.
- \_\_\_\_\_ managing the job interview process.

*Appendix C. Recruitment Email: To Potential Participants*

Hello,

I am writing to invite you to participate in an online study of a questionnaire that will be used to evaluate career programs for 18-24 year olds. In exchange for 30-40 minutes of your time filling out the anonymous online questionnaires, you will be entered into a \$100 giftcard raffle (three cards will be raffled off). Click this link to read more about the study and to participate: [link here].

Thank you,

Denise Bike, M.S.

*Appendix D. Recruitment Email: To Alumni Representatives*

Hello,

My name is Denise Bike. I am a doctoral student at the University of Missouri developing a measure that will help evaluate programs focused on 18-24 year olds' career development. I am writing to ask you to forward the email invitation below to graduates of the [high school] class of [year] so that they may participate in the study. You may contact me with any questions about this study or simply forward the email below to your class.

Thank you,

Denise

[Text to forward]

I am writing to invite you to participate in an online study of a questionnaire that will be used to evaluate career programs for 18-24 year olds. In exchange for 30-40 minutes of your time filling out the anonymous online questionnaires, you will be entered into a \$100 giftcard raffle (three cards will be raffled off). Click this link to read more about the study and to participate: [link here].

Thank you,

Denise Bike, M.S.

*Appendix E. Demographics Questionnaire.*

**Age:** \_\_\_\_\_

**Gender:** \_\_\_\_\_

**Racial/ethnic background**

African American  
 Latino/Latina, non-white  
 Caucasian  
 Middle-eastern

Alaskan Native/Native American  
 Asian/Pacific Islander  
 Other (please specify)

**Employment status**

Not employed  
 Part-time  
 Full-time

**Education status**

Not in school  
 High school  
 GED program  
 2-year college, part-time  
 2-year college, full-time

4-year college, part-time  
 4-year college, full-time  
 graduate school, master's or professional  
 graduate school, doctoral program  
 other (please specify) \_\_\_\_\_

**Family's education** (choose highest level completed for family members that apply)

Mother	Diploma/GED	some college	Associate's	BA/BS	MA/MS/JD	PhD/MD
Father	Diploma/GED	some college	Associate's	BA/BS	MA/MS/JD	PhD/MD
Step-mother	Diploma/GED	some college	Associate's	BA/BS	MA/MS/JD	PhD/MD
Step-father	Diploma/GED	some college	Associate's	BA/BS	MA/MS/JD	PhD/MD

Figure 1. Scree Plot

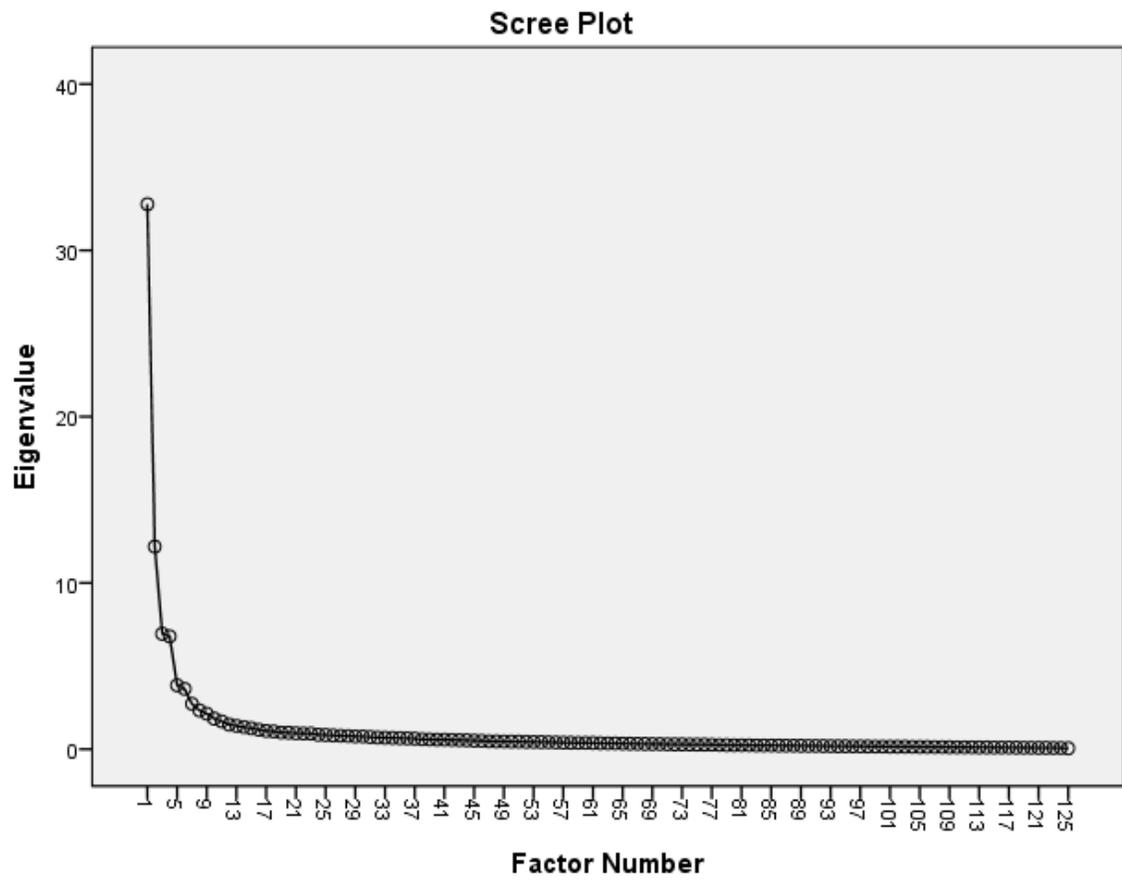


Table 1. Eigenvalues and % of Variance of Initial 125-item Solution

Factor	Initial Eigenvalues		
	Total	% of Variance	Cumulative %
1	32.78	26.22	26.22
2	12.19	9.75	35.97
3	6.95	5.56	41.53
4	6.79	5.43	46.96
5	3.85	3.08	50.04
6	3.63	2.91	52.94
7	2.73	2.19	55.13
8	2.34	1.87	57.00
9	2.13	1.71	58.70
10	1.84	1.47	60.17
11	1.68	1.34	61.52
12	1.48	1.18	62.70
13	1.40	1.12	63.82
14	1.33	1.07	64.89
15	1.26	1.01	65.89
16	1.17	0.94	66.83
17	1.10	0.88	67.71
18	1.08	0.86	68.57
19	1.00	0.80	69.37

Note. Principal Axis Factoring with promax rotation

*Table 2. Parallel Analysis Results*

<u>Factor</u>	<u>Raw Data</u>	<u>Means</u>	<u>Percentile</u>
1.	1.588954	.227145	.288290
2.	1.306593	.157156	.200112
3.	1.245705	.099190	.131944
4.	-.068414	.053167	.081483
5.	-.126576	.007129	.036292
6.	-.146941	-.032966	-.002464
7.	-.164708	-.075041	-.046860
8.	-.214592	-.120849	-.088461
9.	-.220682	-.172395	-.134034

Table 3. Relevant Characteristics of Initial Exploratory Factor Analysis

Factors Specified	Variance Explained	Loading Cut-off	Items Retained	Items Per LE			
None	69.37%	.35	125	ME = 25/11f	SP = 25/7f	VL = 25/7f	EAn = 25/5f
				EAp = 25/9f			
Three	41.53%	.50	93	ME = 0	SP = 25	VL = 23	EAn = 25
				EAp = 20*			
		.60	64	ME = 0	SP = 24	VL = 14	EAn = 23
				EAp = 3*			
		.70	40	ME = 0	SP = 21	VL = 1	EAn = 18
				EAp = 0			
Four	46.96%	.50	98	ME = 0	SP = 25	VL = 23	EAn = 24
				EAp = 24			
		.60	90	ME = 0	SP = 24	VL = 18	EAn = 22
				EAp = 24			
		.70	56	ME = 0	SP = 20	VL = 6	EAn = 12
				EAp = 18			
Five	50.04%	.50	106	ME = 12	SP = 25	VL = 23	EAn = 24
				EAp = 22			
		.60	89	ME = 7	SP = 24	VL = 16	EAn = 23
				EAp = 19			
		.70	56	ME = 5	SP = 18	VL = 5	EAn = 16
				EAp = 12			
Six	52.94%	.50	109	ME = 12	SP = 25	VL = 23	EAn = 24
				EAp1 = 22	EAp2 = 3**		
		.60	89	ME = 9	SP = 25	VL = 14	EAn = 22
				EAp1 = 18	EAp2 = 1		
		.70	60	ME = 5	SP = 20	VL = 6	EAn = 17
				EAp1 = 12	EAp2 = 0		

Note. ME = Mastery Experience, SP = Social Persuasion, VL = Vicarious Learning, EAn = Negative Emotional Arousal, EAp = Positive Emotional Arousal

\* EAp items load with VL items

\*\* two items cross-loaded with EAp1

Table 4. Items, Factor Loadings, Community Estimates, Item-Total Correlations, Means, and Standard Deviations

Scale and Item	1	2	3	4	5	$h^2$	Item-total $r$	$M$	$SD$
Social Persuasion									
Adults I admire have let me know I am capable of ...									
GS1 selecting one major or field from a list I am considering.	<b>.77</b>	.00	-.01	.13	-.06	.63	.62	3.88	1.06
PL1 making a plan of my goals for the next five years.	<b>.81</b>	.03	-.05	.02	.05	.66	.63	3.69	1.15
PS1 determining the steps to take if I have academic trouble with an aspect of my training.	<b>.82</b>	.05	-.05	.01	.02	.63	.62	3.72	1.08
SA1 accurately assessing my abilities.	<b>.81</b>	-.08	.03	-.05	-.05	.66	.58	3.82	1.02
GS2 selecting one occupation from a list I am considering.	<b>.84</b>	-.01	.00	-.01	-.02	.69	.63	3.72	1.07
PL2 determining the steps I need to take to successfully complete my training.	<b>.79</b>	.07	-.04	-.02	.14	.67	.65	3.75	1.06
PS2 persistently working at my major or career goal even when I get frustrated.	<b>.78</b>	.05	-.04	.08	-.07	.57	.59	3.88	1.12
SA2 determining what my ideal job would be.	<b>.80</b>	-.03	-.02	-.04	.05	.65	.60	3.66	1.10
OI2 finding out the employment trends for an occupation over the next ten years.	<b>.75</b>	.05	-.02	-.09	.01	.50	.54	3.44	1.29
GS3 choosing a career or job that will fit my preferred lifestyle.	<b>.82</b>	-.09	.03	.04	-.11	.69	.60	3.76	1.09
SA3 deciding what I value most in an occupation.	<b>.73</b>	-.01	.08	-.01	.03	.61	.61	3.68	1.12
SA4 figuring out what I am and am not ready to sacrifice for my career goals.	<b>.78</b>	-.01	.03	-.03	.04	.64	.61	3.55	1.18
SA5 defining the type of lifestyle I would like to live.	<b>.73</b>	-.02	.10	-.01	-.03	.59	.59	3.73	1.12
Negative Emotional Arousal									
I feel anxious, nervous, afraid, or worried about ...									
GS1 selecting one major or field from a list I am considering.	-.01	<b>.81</b>	.06	-.03	.01	.63	.13	2.42	1.27
SA1 accurately assessing my abilities.	-.01	<b>.75</b>	.03	-.02	.04	.54	.12	2.53	1.20
GS2 selecting one occupation from a list I am considering.	-.01	<b>.81</b>	.02	.05	-.01	.65	.13	2.63	1.30
SA2 determining what my ideal job would be.	-.05	<b>.81</b>	-.05	.06	.05	.67	.08	2.70	1.35
GS3 choosing a career or job that will fit my preferred lifestyle.	-.03	<b>.80</b>	-.01	-.02	-.05	.69	.05	2.59	1.26
SA3 deciding what I value most in an occupation.	-.03	<b>.82</b>	.01	-.02	.07	.65	.11	2.38	1.22
GS4 making a career decision and then not worrying whether it is right or wrong.	.02	<b>.71</b>	.02	.02	-.08	.54	.10	2.92	1.32
SA4 figuring out what I am and am not ready to sacrifice for my career goals.	.02	<b>.78</b>	.03	-.03	-.06	.63	.10	2.61	1.23

GS5 choosing a major or field that will fit my interests.	.06	<b>.79</b>	-.03	.02	-.09	.67	.11	2.39	1.28
SA5 defining the type of lifestyle I want to live.	.07	<b>.82</b>	-.05	-.04	.08	.64	.15	2.31	1.23

Positive Emotional Arousal

I feel excited, enthusiastic, or inspired about ...

GS1 selecting one major or field from a list I am considering.	.00	-.04	<b>.75</b>	-.04	.04	.59	.39	3.61	1.10
SA1 accurately assessing my abilities.	.07	.04	<b>.70</b>	-.01	.02	.52	.44	3.56	1.05
GS2 selecting one occupation from a list I am considering.	.05	-.02	<b>.77</b>	-.04	.06	.66	.45	3.60	1.06
SA2 determining what my ideal job would be.	.03	.06	<b>.79</b>	.01	.02	.63	.47	3.94	0.99
GS3 choosing a career or job that will fit my preferred lifestyle.	-.02	.00	<b>.81</b>	.05	-.06	.63	.42	3.96	1.01
SA3 deciding what I value most in an occupation.	.01	.03	<b>.76</b>	.02	.02	.59	.44	3.61	1.04
GS5 choosing a major or field that will fit my interests.	-.09	-.03	<b>.77</b>	.06	-.05	.55	.35	4.05	0.96

Vicarious Learning

I have seen friends, co-workers, and other people like me...

GS2 selecting one occupation from a list they are considering.	.00	.01	-.03	<b>.77</b>	.03	.59	.35	3.55	0.94
PL2 determining the steps they need to take to successfully complete their training.	-.02	.04	-.09	<b>.75</b>	.19	.61	.36	3.56	0.94
PS2 persistently working at their major or career goal even when they get frustrated.	-.04	.04	.05	<b>.66</b>	-.02	.43	.29	3.59	0.95
GS3 choosing a career or job that will fit their preferred lifestyle.	.07	-.04	.05	<b>.74</b>	-.08	.58	.37	3.61	0.93
GS5 choosing a major or field that will fit their interests.	-.01	-.03	.07	<b>.72</b>	-.09	.52	.32	3.79	0.87

Mastery Experiences

So far in life, I have been successful at...

PL2 determining the steps I need to take to successfully complete my training.	.07	-.05	.04	.05	<b>.66</b>	.07	.35	3.71	1.03
PL3 preparing a good resume.	-.03	.07	.02	-.03	<b>.72</b>	-.03	.27	3.42	1.18
PL4 identifying employers, firms, and institutions relevant to my career possibilities.	.02	-.04	.06	-.01	<b>.71</b>	.02	.30	3.49	1.19
OI5 finding information about graduate or professional schools or other training programs.	.01	-.03	-.10	.08	<b>.67</b>	.01	.24	3.49	1.28
PL5 managing the job interview process.	-.02	-.02	.03	-.06	<b>.68</b>	-.02	.23	3.32	1.19

OI= Occupation Information, SA = Self-appraisal, GS = Goal Selection, PL = Planning, PS = Problem Solving

Table 5. Subscale Intercorrelations for Studies 1 and 2

	1	2	3	4	5
Social Persuasion	--	-.37	.36	.40	.39
Negative Emotional Arousal	-.24	--	-.38	-.18	-.37
Positive Emotional Arousal	.46	-.27	--	.19	.25
Vicarious Learning	.32	-.10	.28	--	.26
Mastery Experiences	.38	-.36	.31	.25	--

*Note.* Pearson correlation coefficients below the diagonal are from Study 1 ( $N = 464$ ), and those above the diagonal are from Study 2 ( $N = 465$ ).

All correlations significant at  $p < .01$ .

Table 6. Descriptive Statistics and Reliability Estimates for Samples in Studies 1-3

	Study 1			Study 2			Study 3						
	EFA ( <i>N</i> = 464)			CFA ( <i>N</i> = 465)			Time 1 ( <i>n</i> = 291)			Time 2 ( <i>n</i> = 291)			<i>r</i>
	$\alpha$	<i>M</i>	<i>SD</i>	$\alpha$	<i>M</i>	<i>SD</i>	$\alpha$	<i>M</i>	<i>SD</i>	$\alpha$	<i>M</i>	<i>SD</i>	
CDLE	.88	3.39	0.46	.85	3.39	0.40	.86	3.38	0.42	.83	3.37	0.34	
Social Persuasion	.96	3.71	0.90	.94	3.76	0.84	.95	3.73	0.88	.92	3.61	0.70	.65
Negative Emotional Arousal	.94	2.54	1.43	.94	2.46	0.97	.93	2.46	0.96	.93	2.57	0.90	.63
Positive Emotional Arousal	.91	3.76	0.83	.90	3.76	0.80	.89	3.76	0.78	.87	3.86	0.64	.56
Vicarious Learning	.85	3.62	0.73	.84	3.65	0.68	.80	3.60	0.63	.84	3.67	0.69	.66
Mastery Experiences	.83	3.48	0.90	.82	3.53	0.85	.82	3.51	0.86	.80	3.36	0.80	.68

*Table 7.* Goodness-of-Fit Indicators for the Competing Models of the CDLE

	<i>df</i>	$\chi^2$	CFI	RMSEA (CI)	SRMR	BIC
Model 1: 40 items	730	1958.21	.89	.060 (.057 - .063)	.05	2511.00
Model 2: 39 items	692	1786.86	.90	.058 (.055 - .062)	.04	2327.36
Model 3: 38 items	655	1626.80	.91	.057 (.053 - .060)	.04	2155.02

*Note.* CFI = comparative fit index; RMSEA = root-mean-square error of approximation; CI = 90% confidence interval; SRMR = standardized root-mean-square residual; BIC = Bayesian information criterion

## VITA

Denise Bike was born and raised with her siblings John and Lowell in Fairfield, Connecticut, to parents Maureen and John. At age 17, she moved to Texas to attend college at the University of Dallas. After earning her undergraduate degree in Psychology, she earned an Elementary Education Teaching Certificate at the University of Texas at Austin and proceeded to teach kindergarten for several years, which she loved. Denise remained in Austin and joined one of the parent's educational new media firms in the mid-1990s initially as a data enterer and rose to production manager. She pursued a new media management career for several years in New York City before moving back to Austin to start a freelance curriculum development business, which she ran full-time until entering graduate school and maintained part-time during much of her doctoral training.

Although happy and successful as a writer and entrepreneur, Denise wanted more out of life. She returned to her first love, psychology. Because she enjoyed the small class sizes and values-based education found at her undergraduate Jesuit college, Denise enrolled in a Master's Program in Counseling Psychology, on the Practitioner Track at Loyola University Maryland. While there, she became a Writing Fellow and initiated a number of programs to assist graduate students with their writing process and products. She also became involved in research on a national level, and her mentor, Heather Lyons, encouraged her to continue her education in a doctoral program. This experience deepened her interest in career psychology. Denise then met her future doctoral advisor on a panel on multicultural competence in research that Denise co-chaired at the American Psychological Association's Annual Conference in San Francisco, which led

her to the University of Missouri. While there, Denise learned to apply her personal interest in mindfulness through a collaboration with Lynn Rossy at *Healthy for Life*, the university's employee wellness program and while training at an intensive outpatient program at Boone Hospital. Denise looks forward to returning to Loyola University Maryland to teach and to partnering with Heather Lyons in her private practice.