COGNITIVE AND AFFECTIVE CORRELATES OF CAREER DECISION FACTORS: AN INTEGRATIVE APPROACH

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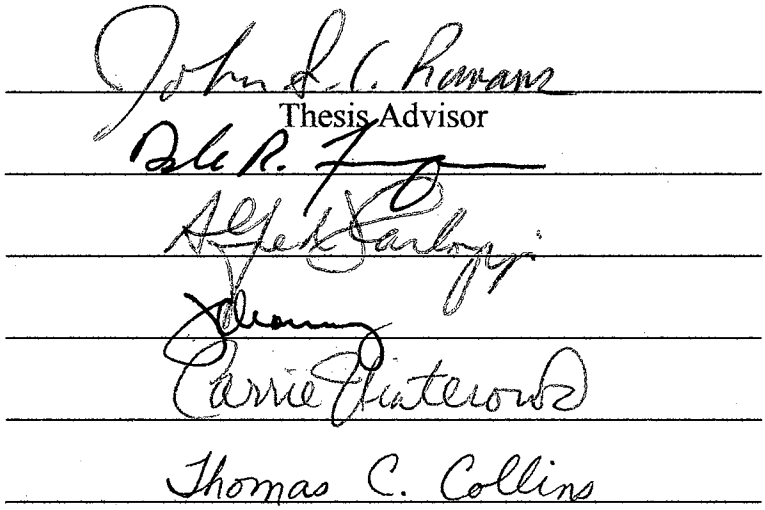

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CHAPTER I

INTRODUCTION

There have been many innovations over the past 20 years in the study of career development. New approaches have been introduced, and established theories have been refined. These theories and assessments have been applied in an attempt to understand the developmental course of vocational identity. In their 20-year review of the literature, Chartrand & Camp (1991) reported a high level of research interest in career maturity and development reflecting the influence of Donald Super (1980). They also noted high levels of interest in occupational choice reflecting a Parsonian perspective (Parsons, 1909).

Career decision-making (CDM) may be considered as a particular subset of processes residing within the larger domain of career development (Harren, 1979). Chartrand & Camp (1991) noted that research on CDM has been consistently popular over the period reviewed. Research on constructs and specific processes involved in making vocational choices peaked in the early 1980s. Chartrand & Camp's review maintains that three influential approaches have dominated the career decision-making literature:

(1) First, an examination of the serial nature of developmental stages. Instruments developed for this approach include the Assessment of Career Decision Making (ACDM; Harren, 1979), the Career Maturity Inventory (CMI; Crites, 1978), and the Career Development Inventory (CDI; Super, Thompson, Lindeman, Jordaan, & Myers, 1981).

(2) A second line of research has been grounded in classical decision theories that examine how decisions ought to be made (prescriptive) and how they actually are made (descriptive). Tiedeman & O'Hara (1963), Vroom (1964), and Janis & Mann (1977) are representative of those developing decision making models (see Jepson & Dilley (1974) for a review). A typical instrument representing this approach includes the Career Decision Simulation (Krumboltz, Scherbal, Hamel, Mitchell, Rude & Kinnier, 1979).

(3) The third approach has focused on identifying and explaining individual differences in CDM. This included differentiating between various subtypes among undecided students and identifying intrapersonal characteristics that influenced CDM. Instruments developed for this approach included the Career Decision Scale (CDS; Osipow, Carney, Winer, Yanico & Koshier, 1976), My Vocational Situation (MVS; Holland, Daiger, & Power, 1980), the Career Decision Profile (CDP; Jones, 1989) the Occupational Identity Scale (OIS; Melgosa, 1987), and the Career Factors Inventory (CFI; Chartrand, Robbins, Morrill, & Boggs, 1990).

Some researchers have approached individual differences in CDM by examining cognitive style (Harren, 1979; Jepson, 1974). Others have focused on identifying various sub-types of indecisive students, distinguishing between the undecided and the indecisive (Holland & Holland, 1977; Larson, Heppner, Ham & Dugan, 1988, Salomone, 1982). A separate group of researchers have applied Kelly's Personal Construct Theory (Kelly, 1955) to explain career indecision in terms of cognitive differentiation and integration, two components of what has come to be known as the vocational construct system (Cochran, 1983; Neimeyer, 1988). Others have investigated how affective variables, primarily anxiety, have been related to career indecision subtypes (Hartman, Fuqua & Blum, 1985; Fuqua, Seaworthy & Newman, 1988). Still others have applied self-efficacy theory as another cognitive approach to understanding individual variance in the CDM process (Luzzo, 1993; Taylor & Betz, 1983).

The current study utilizes an individual differences approach, and attempts to explain individual variations in career decision-making by examining specific cognitive and affective correlates to career indecision factors. The study is a trans-theoretical, multivariate approach to understanding the correlates of career decision status among college freshmen. As noted by Hartman, Fuqua, & Jenkins (1986) in their conclusions from a series of studies:

> ...career indecision is a complex, multidimensional construct. Unidimensional approaches to the problem are not likely to be

independently satisfactory in explaining the construct (p. 147).

This study intends to integrate four major lines of research appearing in the literature on this topic. These four areas of research include the relationship between career indecision and;

(1) cognitive structure as conceived by Kelly's Personal Construct Psychology,

(2) self-efficacy, as conceived by Bandura's Self-Efficacy Theory,

(3) affective states, and

(4) subtypes of career indecision.

Certainly, a sophisticated problem-solving task such as selecting a satisfying vocation must be influenced by a large number of internal and external factors operating in a dynamic, interactive fashion. Any attempt to explain individual variations will likely be hindered when single constructs are isolated for study. Research efforts designed to simultaneously study the interrelationships between cognitive structure, affect, and self-efficacy as they interrelate to career indecision have not been found in the literature. It is hoped that a more highly integrated approach to understanding individual differences in career decision-making will better explain what has come to be recognized as a highly complex construct.

Theoretical Overview

As mentioned, several theories have been proposed to guide our understanding of the career indecision construct. Most of these perspectives have been cognitive

in nature since decision-making, with the rise in popularity of the cognitive-behavioral paradigm in psychology over the last two decades, has been viewed as an information-processing task. The majority of studies examining individual differences in CDM from a strongly cognitive perspective have based their approach on Kelly's (1955) Personal Construct Theory and the use of the repertory grid he designed to provide several cognitive variables related to cognitive structure and complexity. The bulk of the relevant studies discussed in Chapter II provide evidence that a mature cognitive structure (highly differentiated and highly integrated) is inversely associated with career indecision.

Personal Construct Theory

Almost 40 years ago, George A. Kelly (1955) systematically elaborated a theory of personal constructs to explain how people interpret the events in their lives to derive meaning. This also came to be known as Personal Construct Psychology (PCP). It was Kelly's assertion that each individual creates a unique set of hierarchically arranged, bipolar dimensions of judgment in order to construct personal meaning in life. In other words, personal meaning is established through the process of perceiving contrast (e.g. "down" has no meaning without "up"; "sad" has no meaning without "glad").

A fundamental principle of PCP is that the most important reason for people to use these "dimensions of meaning", or constructs, is that they might better anticipate the world around them. Arnkoff (1980) compared an individual's

personal construct system to a map

> "...which constitutes the framework from which the individual interprets events and determines actions to be taken. The model both guides behavior and provides a structure for inferring the meaning of events (cited in Neimeyer, 1989)".

Although Kelly's (1955) interest was not primarily in the area of career development, he did describe the existence of a "vocational construct system" which was comprised of a finite set of occupationally relevant constructs (e.g. high salary vs. low salary; inside work vs. outside work) and used to discriminate between occupational alternatives. Kelly noted that vocational development is "one of the principal means by which one's life role is given clarity and meaning" (p 751). Every person is, therefore, the architect of their own system of judgments, and no two individual systems are exactly the same. It follows from Kelly's emphasis on the individual construction of meaning that people will vary with respect to the absolute number of constructs in their system, the degree to which constructs are interrelated, and the hierarchical structure imposed on the system.

It is for this reason that Kelly (1955) felt that standardized approaches to vocational assessment and intervention had limited relevance on an individual level. Kelly reasoned that personalized, tailor-made assessments would better facilitate our understanding of the underlying phenomenological processes being

invoked by any one individual. In an attempt to objectively measure these processes, Kelly operationalized his theory with an instrument he termed the repertory grid, a complex sorting test designed to measure various aspects of an individual's construct system, most importantly its content, structure, and flexibility.

It is believed that Kelly's (1955) approach has significant contributions to make to the understanding of career development in general and CDM processes in particular. As a measure of the individual's unique phenomenological world view, it serves as an important alternative to standardized assessments relying on normative comparisons for interpretation. A sample Cognitive Repertory Grid (CRG) is included in Appendix A. A more detailed discussion of repertory grid features, administration, scoring and interpretation is offered in Chapter III.

Self-Efficacy Theory

Another important, and more recent, line of research in the field of vocational uncertainty has utilized Bandura's (1977) self-efficacy theory. He defined self-efficacy expectations as estimates of a person's confidence in her or his ability to successfully master behaviorally specific tasks. Bandura's theory states that low self-efficacy expectations regarding a specific behavior lead to an avoidance of that behavior, and high self-efficacy expectations are likely to increase the initiation and implementation of that behavior (Luzzo, 1993). The suggestion is that low self efficacy will limit career aspirations.

Deciding on a career is an effort to predict and control one's life, to direct future activity and reduce uncertainty. Career decision making is a complex task requiring the cognitive processing of information that is multidimensional, ambiguous, and uncertain. Bandura states,

> "It is partly on the basis of self beliefs of efficacy that people choose what challenges to undertake, how much effort to expend in the endeavor, and how long to persevere in the face of difficulties" (Bandura, 1989, p 730).

Self-efficacy expectations are not innate human attributes, however. They are learned, and Bandura (1977) specified four sources of information through which self-efficacy expectations could be developed or modified;

(1) performance accomplishments - experiences of successfully performing the behaviors in question facilitate self-efficacy,

(2) vicarious learning or modeling - observation of others successfully performing the behaviors in question should facilitate self-efficacy,

(3) verbal persuasion - encouragement and support from others, others having confidence in you should facilitate self-confidence, and

(4) emotional arousal, e.g. anxiety, in connection with the behaviors in question.

Taylor & Betz (1983) pioneered the application of self-efficacy theory to the specific tasks and behaviors involved in the career decision making process. Their

efforts helped to support the existence of an inverse relationship between self-efficacy and career indecision.

Affect

Emotion is proposed as another dimension involved in the choosing of one's vocational path (Fuqua, Newman, & Seaworth, 1988; Hawkins, Bradley, & White, 1977). Selecting a career would seem to be a highly personal life-changing decision that is not likely to be resolved without the influence of an emotional component. The majority of studies in this area have focused on the relation between anxiety and career indecision. There has been little research, however, on how other affective states are related to CDM. The current study hopes to examine the relationship between two separate affective states and career decision status.

Career Indecision Subtypes

Career indecision among college students has been viewed as a widespread problem, and efforts to assist students have been impaired because workshops and courses for groups of these students fail to meet the differential needs of individuals (Jones, 1989). As discussed earlier, people experience career indecision for a variety of reasons, and no single program or intervention is likely to meet the diverse needs of this population. Early attempts to investigate career indecision utilized a dichotomous approach, defining subjects as either decided or undecided. An increasing emphasis has developed, however, toward further differentiation between both decided and undecided career decision makers. The

subtypes that have appeared in the literature have typically been generated through the combination of various dimensions of career indecision identified through empirical research and factor or cluster analyses.

Statement of the Problem

Career indecision is a problem faced by many college students (Carney, Savitz, & Weiskott, 1979). First year college students are typically faced with the task of choosing a major area of concentration for their studies. Many colleges and universities have clear deadlines by which this decision must be made often generating a sense of urgency and, at times, emotional distress for students. To meet the future needs of students, a college course is often either offered or required that is designed to expand students' awareness of their individual vocational interests, abilities, and values, teach them how to locate and organize information about different occupations, and help them develop social skills to interview for and secure employment. For some students, this may be the first time they will give serious consideration to their vocational future. For others, it is a mere formality since they have already decided on a career. Some students will choose a major, but with low levels of commitment and their decision is, consequently, highly tenuous.

Despite the research supporting the importance of self-efficacy as an attitudinal dimension of CDM and the seeming importance of emotional states, career counseling practices generally emphasize the use of rational, information-oriented

strategies (McAuliffe, 1992). This approach is suitable for the majority of students who, from a developmental perspective, are simply undecided. More comprehensive strategies may be needed for students who are more chronically indecisive due to some non-developmental cause or causes. Considerable effort has gone into differentially diagnosing the undecided, the indecisive, and even the decided into subtypes with the hope that effective interventions may be identified which match treatments to attributes.

There is a need to recognize the complex nature of career indecision, and to clarify the character of career indecision subtypes. Our understanding seems to have evolved to where we now perceive the need to crack open the career indecision construct and categorize the contents into subtypes. Now, after a number of studies, the field still remains in the exploratory rather than confirmatory stage of development. There is considerable overlap in the literature with regard to the factors identified as being associated with career decision status. What seems to be emerging now is the notion that subtypes may be complex, multidimensional constructs in their own right. A more satisfactory understanding of indecision subtypes may require an integrated approach to the problem. A parsimonious accounting for individual differences in CDM should facilitate the development of more effective interventions.

Significance of the Study

Career counselors at the university typically concern themselves with the

college major and/or vocational decision-making task immediately facing the student requesting assistance. Interventions include providing occupational information, assessing and reporting on individual interests and abilities, and possibly making a referral when a significant degree of emotional distress seems to be impairing individual effectiveness.

One important goal of career counseling is to help people make good career decisions (Cochran, 1980). It is hoped that clients will utilize counseling services to learn how to develop a personally relevant mechanism to collect, organize, and manage task-relevant information so that their decision-making skills are enhanced. It is also hoped that counseling services may arm students with the ability to face frustrating, anxiety-provoking, and discouraging circumstances with a more confident and successful approach by making them aware of internal and external factors that may influence their decisions.

External factors usually discussed in the career counseling context would include, but not be restricted to, occupational information such as job descriptions, market outlook, educational requirements, and salaries. Internal factors would include, but not be restricted to, aptitude, interests, abilities, values and other personality traits. Less frequently addressed are topics such as self-efficacy, cognitive structure, and the emotional disposition of the client although these psychological factors have repeatedly been shown to be related to CDM.

It seems reasonable that transforming these implicit influences into explicit

variables increases the degree to which clients may confront, deliberate over, and eventually control, accommodate, or modify those influences. Critical self-examination prepares clients for successful decision-making (Neimeyer, 1992). Individuals can be expected to exert little power over factors outside of their awareness. A career counselor's decision to heighten client awareness will rely on her or his familiarity with these implicit psychological factors.

This study will contribute information to the field by providing a more theoretically integrative approach to career decision-making which may be used by researchers and counselors to more effectively address the needs and concerns of clients facing the important life-task of selecting an appropriate and satisfying career.

Research Questions

1. How many factors (or constructs) underlie the 6 subscales of the Career Decision Profile, the 4 subscales of the Career Factors Inventory, and the 5 subscales of the Career Decision-Making Self-Efficacy Scale?
2. To what extent does Cognitive Differentiation, Cognitive Integration, Cognitive Conflict, Positive Affect, and Negative Affect account for the variance observed in the factors identified in question #1?

Organization of the Study

Chapter I includes a description of the purpose of the study and a general discussion of the theoretical orientations underlying the constructs that are used.

How the current research effort fits into the literature on career development and career indecision is clarified. The statement of the problem is elaborated upon, as well as how a better understanding of the problem may be practically significant in the field of career counseling. Finally, specific research goals are stated and an empirically testable hypotheses are offered. Chapter II includes a review of the literature pertaining to cognitive structure and career indecision, self efficacy and indecision, anxiety and career indecision, and career indecision subtypes. Chapter III will address the experimental design of the study, the selection of the sample, a rationale for the instrumentation, and the statistical methodology proposed to analyze the data. Chapter IV will include the analysis of the gathered data. Findings and conclusions from this study and implications for further research shall be presented in Chapter V.

CHAPTER II

REVIEW OF THE LITERATURE

Introduction

The literature on career indecision among college students is reviewed in this chapter. The first section will consist of a review of those studies exploring the cognitive dimensions of career indecision within the confines of Kelly's Personal Construct Theory. Following that, a review of the literature addressing the relationship between career indecision and self-efficacy will be presented. The next section will summarize the literature relating career indecision to affective states with a primary focus on anxiety. Finally, studies exploring the differentiation of various subtypes among decided and undecided students are reviewed.

Cognitive Structure Studies

To understand the findings discussed in this section, some description of the objective measures analytically derived from the Cognitive Repertory Grid (CRG) follow:

(1) occupational differentiation - the degree to which occupations are perceived

as functionally independent or different from each other. It should be noted that Kelly's use of the term differentiation should not be confused with John Holland's use of the term in his Theory of Careers (Holland, 1985).

(2) construct differentiation - the degree to which vocational constructs are perceived to be functionally independent or different from each other. For instance, will "high status vs.. low status" and "high income vs. low income" be perceived as separate dimensions or will they be applied as though they were the same construct?

(3) total differentiation - often referred to as cognitive structure and calculated by summing the two previous measures.

(4) integration - the extent to which the dimensions (constructs) are organized into an interrelated system of perceptions, regardless of the number of dimensions per se. Put differently, it is the level of perceived inter-relatedness between constructs.

(5) conflict - reflects the extent to which construct relations, as indicated by variance in common, are harmonious versus conflicting. In other words, conflict measures the extent to which common variance in a grid is negative or conflicting.

From among these measures, it was differentiation which early on became the subject of heated research in the field because it was believed to be central to effective and appropriate career decision making processes (Bieri, 1955; Bodden,

1970). Those individuals possessing a greater variety of perspectives, or dimensions of judgment, were reasoned to have an advantage over others when evaluating occupations.

Bodden (1970) was first to work on vocational differentiation, providing empirical evidence to support his hypothesis that highly differentiated individuals would be better able to make appropriate career decisions. Bodden used the phrase cognitive complexity to refer to the relative level of total differentiation measured in an individual. Integration, or the degree to which one perceived interrelationships between constructs in their vocational construct system, was not taken into consideration at that time.

Cochran (1977, 1983) emphasized the important role integration played in the vocational construct system. Cochran defined vocational integration as the overall degree of organization within the vocational construct system, or the extent to which personal constructs were perceived by an individual as being interrelated. Cochran maintained that higher levels of integration were related to more rapid and unambiguous career judgments.

Neimeyer's Vocational Development Model

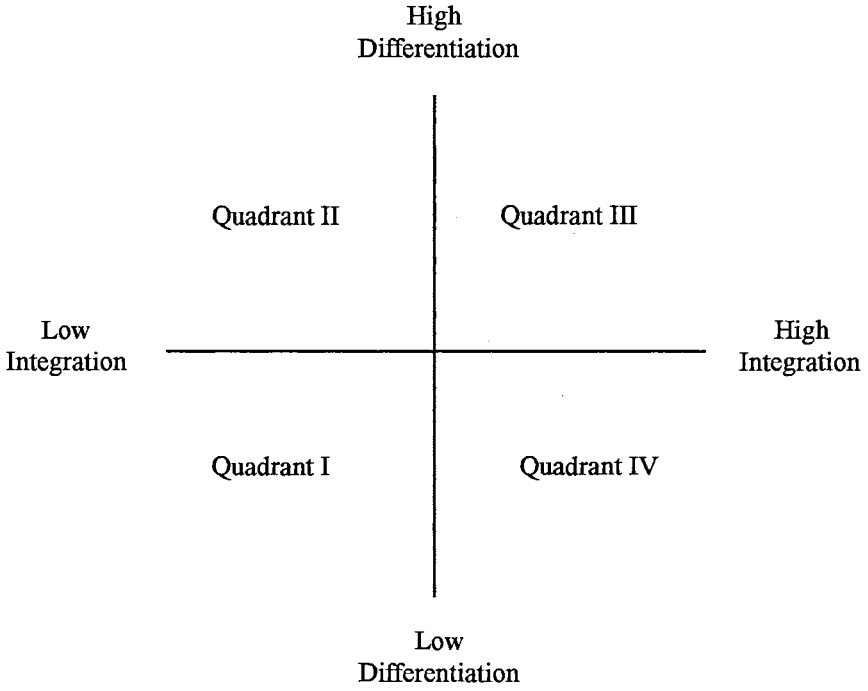
Combining cognitive differentiation and integration into a single system to explain how the vocational construct system relates to vocational development, Neimeyer (1988, 1989) constructed a two-dimensional model. Neimeyer draws certain assumptions from the model regarding career indecision (see figure 1).

This model follows Werner's (1957) Orthogenic Principle, and assumes that whenever development occurs in a system, that system demonstrates increasingly higher levels of differentiation and hierarchical integration. Borrowing from Landfield's conceptualization (cited in Neimeyer, 1988), he maintained that differentiation and integration are orthogonal variables.

Four quadrants are formed that sequentially represent the evolution of a career decision-making system from an undeveloped state of indecision and ambiguity to a cohesive and integrated career-evaluation mechanism. Individuals belonging to each quadrant are described as follows:

Figure 1

Neimeyer's Vocational Development Model



Quadrant I - Individuals have poorly integrated and poorly differentiated vocational systems with relatively few and weakly related constructs. Cognitive structure is at its lowest relative to the other quadrants.

Quadrant II - As interrelationships are increasingly recognized and better organization develops among existing constructs, more efficient and rapid decision making is possible. The quality of the decision may suffer due to an insufficient number of differentiated constructs, however. More appropriate and satisfying vocational choices will require more differentiation.

Quadrant III - Continued exploration by the client leads to the inclusion of additional constructs and increased differentiation without, however, a concomitant rise in integration. Neimeyer (1988) states that conditions in this quadrant (high differentiation/low integration) may be most likely to generate confusion and anxiety in career decision-making.

Quadrant IV - These are fully developed vocational construct systems characterized as being cohesive and comprehensive. Cognitive structure is at its highest level of sophistication relative to the other quadrants.

Neimeyer's (1988) model predicts that, compared to highly differentiated and integrated cognitive structures (Quadrant IV), less developed structures will result in relatively poorer career planning. Of interest to this discussion is Neimeyer's added prediction that individuals occupying Quadrant III may experience elevated

levels of anxiety and confusion (i.e. career indecision) relative to clients in other quadrants.

Neimeyer (1988) also reports that poorly differentiated vocational systems (Quadrants I and II were more likely to display high levels of foreclosure. Additionally, the highest levels of self efficacy were reported by those in Quadrant IV, highly integrated and highly differentiated. The highest levels of vocational identity were also in Quadrant IV.

Indecision and Vocational Construct Systems

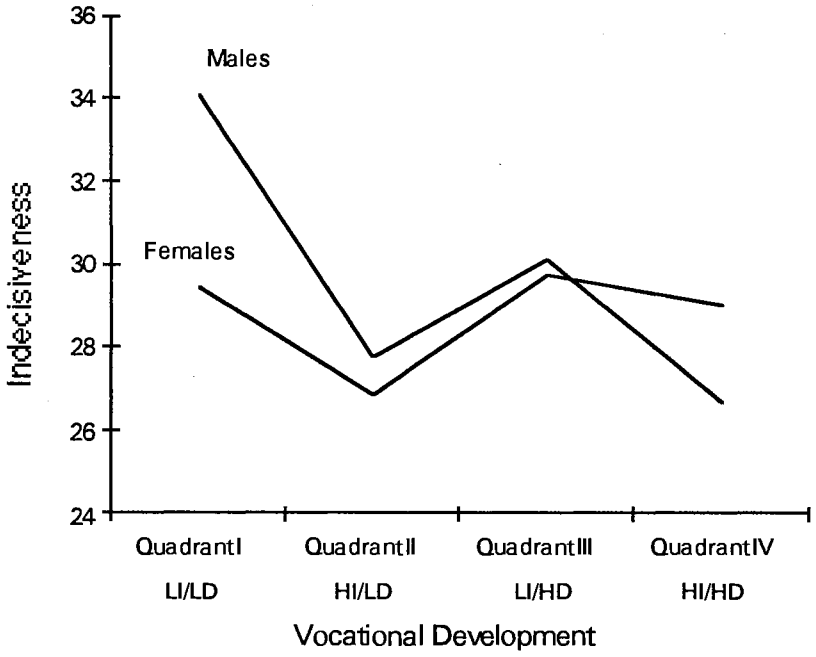
In an effort to more closely examine how differentiation and integration interact with indecisiveness as measured by the Career Decision Scale, Kortas, Neimeyer and Prichard (1992) conducted a study with almost 600 community college students. The Career Decision Scale (CDS: Osipow, et al., 1976), the Assessment of Career Decision Making (ACDM: Harren, 1984), and the Cognitive Differentiation Grid (CDG: Bodden, 1970) were consecutively administered over a 60 minute class period. Their findings support the important role played by the level of organizational complexity in the vocational construct system in career decisiveness. To be specific, less integrated, loosely organized vocational structures were related to significantly higher levels of indecisiveness, but this effect was limited to men. In addition, higher levels of indecision were related to significantly lower levels of vocational differentiation, but once again, only for men. Kortas, et al. then related career indecisiveness with Neimeyer's

developmental model of the vocational construct system (see Figure 2).

The authors suggest this gender interaction may be related to the possible gender bias built into the set of traditionally male-oriented occupational alternatives that come standard with Bodden's (1970) grid. The suggested interactive effects of gender requires further exploration to gain an understanding of why only men fit Neimeyer's model in this respect.

Figure 2

Gender Differences in Indecisiveness Across Levels of Vocational Development



Kortas et al. (1992) further examined how one's decision-making style relates to the four quadrants of Neimeyer's model (1988). They note that the cognitive processes of differentiation and integration possess their own unique assets and liabilities depending on their relative degree of presence in the construct system. The model holds that the structural evolution of the vocational construct system is marked by progressively higher levels of both differentiation and integration. Too high a level in either variable may be debilitating. For instance, exploration and experience bring increased numbers of differentiated perspectives on the world of work but also tax the integration of the prior system. One may respond by either reorganizing and accommodating the new constructs or by forming an increasingly less permeable, narrow, and tightly integrated structure, frustrating future attempts at diversification and stifling vocational maturation. With decreased flexibility in the system, one may resort to more polarized, dichotomous evaluations of vocational alternatives, possibly resulting in premature closure and poorer decisions.

Self-Efficacy Studies

One of the first attempt to systematically assess self-efficacy in vocationally undecided college students was the development of the Occupational Self-Efficacy Scale (OCSS; Betz & Hackett, 1981). Students' confidence levels in their capabilities to successfully perform the educational and job-task requirements of 20 different occupations were measured (e.g. "How capable are you of

successfully completing the educational requirements and performing the duties of a high school teacher, a physician, an executive secretary, etc.?"). Hackett and Betz (1981). They concluded that there was a positive relationship between self-efficacy and career motivation for both men and women.

One limitation to this study that has become apparent over time is that the students' responses were based on their subjective understanding of what each occupation's educational and job-task requirements were. It stands to reason that it would be difficult to estimate one's self-efficacy at being a commercial property appraiser, for example, if one is unfamiliar with how much schooling it takes and what a commercial property appraiser does on a daily basis. Failing to identify specific courses required and/or job tasks associated with the occupations may invite ambiguous response sets.

Later, Taylor & Betz (1983) would examine the usefulness of self-efficacy theory to understanding and treating career indecision. In that study they developed the Career Decision Making Self Efficacy scale (CDMSE), an instrument that was built on Crite's (1965) model of career maturity. It was designed to measure a person's level of self-efficacy expectations as they directly applied to five sequential career decision making tasks. Although a more thorough explanation of this instrument will appear in CHAPTER III, it can be said here that the CDMSE consists of five subscales corresponding to confidence levels in:

(1) accurate self-appraisal,

(2) gathering occupational information,

(3) goal selection,

(4) making plans for the future, and

(5) problem solving.

It is also of note that no gender differences have been found in CDMSE scores.

Taylor & Betz (1983) concluded that students generally expressed considerable levels of confidence in their abilities to complete the CDM tasks. In addition, they supported their hypothesis that career decision making self-efficacy was strongly and negatively related to career indecision as measured by overall scores on the CDS. It was also noted that Factor 1 of the CDS (lack of structure and confidence with respect to career decisions) most strongly typified this relationship.

What is problematic for the CDMSE is the very high level of correlation observed between the subscales representing the five factors. Taylor & Betz (1983) concluded that clear distinctions between the five scales were empirically unjustified.

In their review of the literature examining self-efficacy research as it applies to career development issues, Lent & Hackett (1987) concluded that there was a significant degree of empirical support for the application of self-efficacy theory to explaining and predicting the complex nature of career development.

Taylor and Popma (1990) established a significant relationship between

CDMSE scores and career indecision and internal locus of control. Similarly, Robbins (1985) established a significant, positive relationship between CDMSE scores and vocational identity. He was unable, however, to establish a significant relationship with anxiety. Luzzo (1993) examined the relations between CDM self-efficacy scores, CDM attitudes, and CDM skills. He found that high self-efficacy expectations were positively related to CDM attitudes, considered an affective construct. CDM self-efficacy scores were not found to correlate with CDM skills, however. By way of explanation, Luzzo suggests the possibility that CDM skill deficits may cause grossly overestimated confidence in CDM skills.

This notion echoes that of Sabourin & Coallier (1991) who suggested that vocational certainty and career indecision are related to self-deception and impression management. They believed there was a tendency to distort information about the self and deny psychologically threatening thoughts generating greater levels of vocational certainty and lower levels of career indecision. The majority of studies rely on student self-reports and perform analyses on those who admit being undecided. There may be a significant group of decided students who have either foreclosed or have engaged in self-deception who may never seek career counseling. The question arises, "Are we obliged in some way to help those who are unaware of their need for help?".

Believing that the relative merits of competing career behavior theories had been paid little attention to, Chartrand (1992) conducted a study to compare three

theoretically derived variables, viewed as pivotal to their respective theories, in the prediction of career indecision. These variables included:

(1) self-efficacy - defined as the beliefs about one's ability to organize and execute courses of action needed to successfully perform a given task or behavior; derived from Bandura's (1977) self-efficacy theory,

(2) interest congruence - defined as the correspondence between a person's interests and the interests of people in a particular major or career; derived from Holland's (1985) theory of career choice, and

(3) commitment - defined as a perceived obligation to carry out a chosen course of action even in the face of adverse feedback and criticism; derived from Janis & Mann's (1977) conflict theory of decision making.

Replicating the efforts of Lent, Brown & Larkin (1987), Chartrand (1992) discovered that interest congruence, rather than self-efficacy or level of commitment, was the only significant individual predictor of career indecision. Only 98 subjects were used in this study, and the range of scores was somewhat restricted. In contrast, another study conducted by Camp and Chartrand (1992) revealed no significant correlation between interest congruence and career indecision. Future comparative studies could help shed light on these results.

Another criticism of the research dealing with self-efficacy in CDM was put forth by Osipow (1991). He complained that most of the self-efficacy measures being used were "...homemade, unvalidated, of marginal or unknown reliability,

and sample and occupation specific" (p 325). Rooney & Osipow (1992) decided to build a skill-based, rather than occupation-based measure of self-efficacy they titled the Task-Specific Occupational Self-Efficacy Scale (TSOSS). In contrast to Hackett and Betz's (1981) OCSS, which is described by Osipow & Rooney as assessing general occupational prerequisites, the TSOSS was designed to measure self-efficacy expectations of specific tasks. Whereas Hackett & Betz's OCSS seems to be asking, "Do you believe you will successfully become a mathematician?", the TSOSS is asking, "Do you believe you will do well at algebra, trigonometry and calculus?" The distinction is one which Bandura (1978) clarified when he discussed the difference between self-efficacy expectations and outcomes expectations: "An outcome expectation is defined as a person's estimate that a given behavior will lead to certain outcomes. An efficacy expectation is the conviction that one can successfully execute the behavior required to produce the outcomes" (p. 240). Becoming a successful mathematician is more properly regarded as an outcome expectation. Confidence in one's math abilities more accurately meets Bandura's definition of efficacy expectations. Of the two instruments, Rooney and Osipow's seems to more accurately reflect the theory from which it was derived.

Through factor analysis, four dimensions in the TSOSS were discovered;

(1) Verbal/Interpersonal

(2) Quantitative/ Scientific/Business

(3) Physical Strength/Agility

(4) Aesthetic

Task-specific measures of self-efficacy may have the utility of being more globally useful across situations. The CDMSE scale, on the other hand, is more useful in measuring confidence levels with regard to specific career-decision making strategies. Comparing the two scales, the TSOSS assesses confidence in the ability to perform career-related skills while the CDMSE assesses confidence in the ability to complete the tasks required to make a career choice.

Directly related to the current study, CDMSE scale scores were found to be positively correlated to higher levels of cognitive structure as reported by Neimeyer & Metzler (1987). Because both career decision-making self-efficacy and cognitive structure are proposed herein to be important correlates to career indecision, the Neimeyer & Metzler study will receive a detailed examination.

Referring to the work of Erikson (1968) and Marcia (1966), the authors attempted to relate Neimeyer's Vocational Development Model (Neimeyer, 1988) to the identity status's of Marcia's model. It should be recalled that Marcia conceptualized vocational identity development as occurring along two dimensions;

(1) crisis - the active struggle to forge and articulate one's own occupational and ideological values, and

(2) commitment - the degree of certainty or level of investment one has in

maintaining current values.

Four "identity status's" were formed by these two dimensions

(1) Diffuse Identities - those who have yet to struggle to develop individual values or engage in adequate self-exploration (low crisis), nor have they committed to any set of values or vocational choice (low commitment),

(2) Foreclosed Identities - those who have yet to struggle with self-exploration (low crisis), but yet have settled a vocational choice (high commitment),

(3) Moratorium Identities - those who have made an active struggle to develop a set of personal vocational values (high crisis), but have yet to decide on a vocational identity (low commitment), and

(4) Achievement Identity - those who have struggled to develop an identity (high crisis) and have achieved it (high commitment).

This research effort was comprised of three separate, cross-sectional studies designed to generally test the notion that vocational development can be represented as a sequence of structural changes in cognitive schemas. These developmental changes were seen as moving from a state of relative globality to one of increasing differentiation and hierarchical integration. As discussed in the section titled "Cognitive Structure Studies", cognitive differentiation and integration have been identified as two independent but interacting components of the vocational construct system. It was asserted that high levels of both were related to successful career decision making.

Study 1 - The first study had 72 undergraduate subjects complete the Cognitive Differentiation Grid (CDG), the Extended Objective Measure of Ego Identity Status (EOM-EIS), and the Career Decision Making Self-Efficacy scale (CDMSE). The CDG and the CDMSE have already been discussed. The EOM-EIS was described as measuring one's overall, or general level of identity development. Analysis of the CDMSE revealed a significant interaction between integration and differentiation, $F(1,35) = 3.88$, $p < .05$. It was revealed that under conditions of high differentiation, highly integrated vocational structures were related to higher levels of CDMSE. It was concluded that highly differentiated structures resulted in lower self-efficacy expectations unless they were also accompanied by high levels of integration.

Study 2A - This phase of the experiment set scores on the My Vocational Situation (MVS; Holland, Daiger & Power, 1980) as the dependent variable instead of the EOM-EIS and used cognitive differentiation and integration as independent variables. Although this phase used a much larger subject pool (263 students), CDMSE scores were not analyzed. Vocational construct systems with both high differentiation and integration were associated with high levels of vocational identity.

Study 2B - A total of 97 students were recontacted from Study 2A, representing all four quadrants of Neimeyer's model of vocational development (1988). Subjects were first administered the Occupational Identity Scale (OIS; Melgosa,

1987), built on Marcia's (1966) theory of identity development and designed to objectively measure the level of identity development specifically within the occupational domain. The authors felt that the OIS combined the strengths of the MVS and the EOM-EIS by virtue of being; (1) vocationally specific and (2) capable of decoupling identity development into four stages. Subjects were then administered the CDMSE scale and the CDS respectively to examine relationships between these constructs and cognitive differentiation and integration.

A multivariate analysis of variance (MANOVA) was performed along the four subscales of the OIS (achievement, moratorium, diffusion and foreclosure) as well as along the CDMSE scale and the CDS. Cognitive differentiation and integration were set as the independent variables. Only a significant interaction effect was found so subsequent univariate ANOVAS were performed on each dependent variable to clarify the nature of the effects.

The authors found the following results with the Occupation Identity Scale:

(1) achievement subscale - significant interaction between differentiation and integration but no main effects. Greatest levels of occupational achievement were seen in individuals with high differentiation and high integration scores, while the lowest levels of achievement were associated with poorly differentiated and highly integrated subjects.

(2) moratorium subscale - there was a significant main effect for differentiation and a significant interaction effect. The direction of the

effect indicated that among highly integrated individuals, poorly differentiated individuals had higher scores on the moratorium subscale.

There were no significant main or interaction effects noted along the diffusion or foreclosure subscales of the OIS.

The authors found the following results with the Career Decision Making Self-Efficacy Scale:

(1) No main effects were noted, but a significant interaction was observed with the direction of the effect indicating that among highly integrated subjects, those also scoring highly on differentiation were observed to have high levels of self efficacy while poorly differentiated subjects did not.

(2) A closer examination of the five CDMSE subscales (self-appraisal, occupational information, goal selection, planning, and problem solving) using a series of univariate ANOVAs revealed that a significant interaction effect existed along all five subscales, although there were no main effects.

In every case the lowest levels of self-efficacy are reported by subjects with poorly differentiated and highly integrated cognitive schemas. Moderate levels of efficacy were characterized by those with highly differentiated but poorly integrated cognitive structures. Finally, the greatest levels of self efficacy were seen in those whose vocational construct systems were both highly differentiated and highly integrated or by individuals low in both.

With regard to the Career Decision Scale, the researchers once again observed

a significant interaction effect with no main effects. The direction of the effect indicated that among highly integrated subjects, those with highly differentiated schemas were less indecisive. Moderate levels of indecision were observed in subjects possessing highly differentiated and poorly integrated systems as well as those with low levels in both. There was no apparent effort made to conduct subsequent analysis to clarify the effects on the four factors making up the CDS.

The findings generally support the authors' hypothesized association between developmental levels of the vocational construct system and vocational identity development. Well-developed cognitive structures were consistently related to greater levels of vocational identity, but relatively undeveloped structures were somewhat less consistent.

The relationship established between cognitive structure and self efficacy is a bit weaker. As predicted, however, relatively elaborate cognitive structures were associated with higher levels of self efficacy. Additionally, the consistent pattern of interaction effects across all five subscales of the CDMSE is cited by the authors as supporting the idea that there is a similar developmental progression along the various dimensions of self efficacy. This conclusion seems somewhat premature, since the validity of the CDMSE subscales as independent dimensions of self efficacy remains suspect (Robbins, 1985).

The pattern of findings in Neimeyer and Metzler's (1987) study would suggest that individuals begin with a limited but well-organized set of constructs. Their

cognitive structure is ordered but vulnerable to anxiety because many experiences or expectations are likely to be new, falling outside of the range of convenience of their construct system. These people would be expected to have relatively low levels of self-efficacy. Motivated to relieve anxious distress, individuals increase the number of constructs in their vocational construct system. This places stress on the structural organization, however, resulting in a highly differentiated but poorly integrated system that has moderate feelings of self-efficacy. Finally, adequately high levels of both differentiation and integration are achieved resulting in relatively high levels of self efficacy.

By their own admission the interpretations generated by Neimeyer and Metzler (1987) are limited by the design of their study. Specifically, their research question focused on the nature of the developmental progression of vocational identity formation. The authors selected a cross-sectional design whereas a longitudinal approach may have been more appropriate.

Not commented upon was the odd finding that individuals low in both differentiation and integration were among those with the highest levels of self efficacy. It is possible that this group is partially made up of the type of individuals described by Sabourin & Coallier (1991) as self-deceptive and overly-concerned with impression management.

If one's vocational construct system is relatively underdeveloped and inadequate, I believe it is possible that self-reports of high self efficacy may

reflect:

(1) someone who feels psychologically threatened by the apparent enormity of the career decision making task. This threat could trigger a denial of inadequacy and the formation of a false sense of competency and security.

(2) someone highly concerned with other's opinions of their competence, or

(3) someone who truly believes him or herself to be prepared, but in reality poorly understands and misjudges the level of complexity inherent in the task.

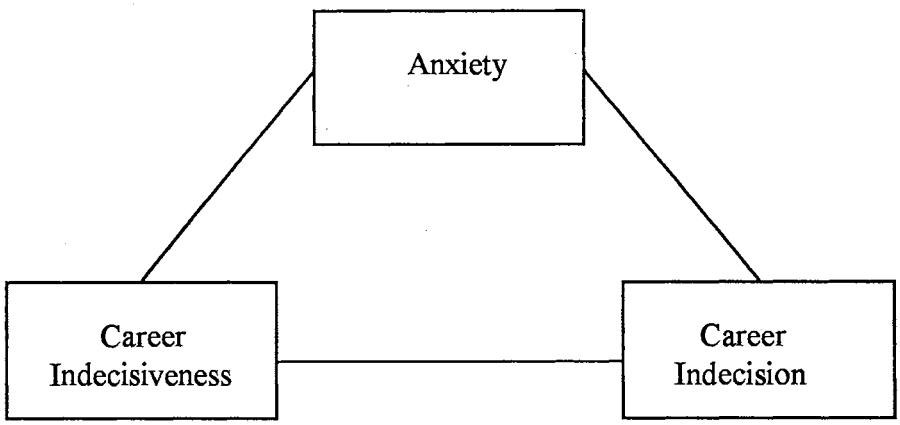
Affective Studies

The great majority of studies associated with the relationship between career indecision and affect have focused specifically on anxiety. Perhaps one of the earliest references in the literature is Bordin (1946) who identified anxiety as a major antecedent of vocational indecision. Goodstein (1965) proposed early on that rather than being a simple antecedent, the relationship between career indecision and anxiety was bi-directional. He reasoned that anxiety may be an antecedent (or causative) agent inhibiting the student's ability to implement problem solving strategies. Conversely, however, it may also prove to be an effect, occurring as a result of one's failure to develop or initiate the problem-solving skills required to make a career decision. Put another way, Goodstein hypothesized that career indecision and career indecisiveness are differentially related to anxiety. He conceived of anxiety as being an antecedent to career

indecisiveness and a consequence of career indecision. Goodstein's proposition is graphically represented in Figure 3.

Figure 3

Goodstein's Causal Loop Hypothesis



Crites (1974) later commented on the inhibitory effect of anxiety on the career decision making process as the primary role, suggesting that anxious affect tended to impair vocational identity development. The result could be one's becoming "stuck" or chronically indecisive.

Career indecision and anxiety have been positively correlated in several studies (Fuqua & Hartman, 1983; Fuqua, Newman, & Seaworth, 1988; Hawkins, Bradley, & White, 1977), demonstrating that undecided students are generally more anxious. In addition, it has been demonstrated that interventions aimed at managing anxiety have been effective in treating career indecision (Mendonca &

Seiss, 1976). Going beyond the limited interpretive value of correlation studies, causal explanations were explored by Hartman, Fuqua, & Blum (1985). The authors conducted a path-analytic study and reported that anxiety was related to career indecision along different paths. Their conclusions generally supported Jones & Chenery (1980) who had previously hypothesized that anxiety did not operate in a consistent manner across different subtypes.

In an effort to more directly examine the differential presence of anxiety across subtypes, Fuqua, Newman, & Seaworth (1988) correlated the 4 factor scores from the CDS with measures of state and trait anxiety. Anxiety was observed to be most strongly associated with Factor 1, described as a lack of information about self and occupation. The notion that greater levels of anxiety would be associated with personal and occupational ambiguity was thought to be reasonable. Somewhat lower correlations were found between anxiety and Factor 2 (uncertainty about appropriateness of degree of fit between self and career) and Factor 4 (specific barriers to a previous choice). No significant correlation, however, was found with Factor 3 (multiple interests/ approach-approach conflicts). These people were seen as being less concerned with personal inadequacies and more representative of those students who are merely undecided as opposed to being indecisive.

In his development of the Career Decision Profile, Jones (1989) examined the relationships between decidedness, comfort level, the reasons associated with

being decided/undecided or comfortable/uncomfortable, and trait anxiety. He concluded from the results of his analyses that "trait anxiety is not related to whether a person has decided on a career or not but to the reasons he or she has for being undecided" (p 484). As expected, Jones also found a relatively strong negative correlation (-.53) between trait anxiety and one's level of comfort with decisional status. A more detailed examination of the Career Decision Profile in Chapter III.

It should be relevant and useful to consider how anxiety is conceptualized by the two major theoretical orientations of interest to this study; (1) Kelly's Personal Construct Psychology, and (2) Bandura's Self-Efficacy Theory.

Personal Construct Psychology and Anxiety

Kelly (1955) maintained that anxiety results when people are failed by their personal construct systems and their ability to anticipate future events is subsequently diminished. He states, "Anxiety is the awareness that the events with which one is confronted lie mostly outside the range of convenience of his construct system." (p. 565). What Kelly implies is that a construct system can disintegrate somewhat under the pressure of invalidating or disconfirmatory evidence. This loss of conceptual structure and the clutter created during the process of reorganization results in anxious feelings. He predicts that anxious affect will be minimized with the presence of a stable yet permeable superordinate structure containing one's long-range goals and philosophical position. In other

words, a solid framework or skeletal core structure provides the secure base, while a more flexible, adaptive, outer structure allows for adjustment and growth.

It is normal for most of us to feel anxious as we adapt and grow by opening ourselves up to moderate amounts of confusion associated with the repeated revisions of our construct systems. Kelly (1955) suggests that one way anxiety may be inferred to be a problem for an individual is when the construct system becomes dilated and loose, taking more and more new constructs into account in an attempt to build a more comprehensive structure capable of successful prediction. The opposite response is also possible, the constriction and tightening of a system to seal out anxious affect. A healthier response to the anxiety created when one's predictions are not validated is to probe for better ways to anticipate the future while maintaining a stable core structure.

Neimeyer (1988) suggests that anxiety and confusion are likely to be generated by individuals who have, in essence, over-differentiated and under-integrated, failing to adequately form a cohesive vocational network. Recalling the two-dimensional model created by Neimeyer to explain vocational development, the two axes formed four quadrants that represented sequential stages involved in the evolution of vocational identity.

Although there seems to have been little effort in the personal construct literature to address the role of affective states, Neimeyer (1988) does suggest that anxiety is most likely to reach its greatest level in Quadrant III, where individuals

are characterized as possessing a large number of differentiated constructs but there is a poorly developed organizational system interrelating these dimensions of judgment. Neimeyer (1989) describes individuals in Quadrant III as possibly being flooded with an appreciation of the variety of approaches to vocational alternatives, but yet they lack the ability to relate these together into a systematic and unified interpretive framework. Nothing was found in the literature addressing the differential presence of anxiety in the 4 Quadrants of Neimeyer's (1988) model, so there is as yet no empirical support for the informal hypotheses offered by Neimeyer relating anxiety and vocational development.

Self-Efficacy Theory and Anxiety

Bandura (1989) maintains there is empirical support for the idea that self-efficacy has a role in the regulation of motivation, action, and affective arousal. He also proposes that differing levels of self-efficacy may enhance or impair cognitive functioning. Specifically, he proposes that;

> "People who believe strongly in their problem-solving capabilities remain highly efficient in their analytic thinking in complex decision-making situations. Those who are plagued by self-doubts are erratic in their analytic thinking. Quality of analytic thinking, in turn, determines the level of performance accomplishments" (Bandura, 1989, p 729).

Bandura (1989) believes that the amount of anxiety or depression experienced due to a threatening situation is mediated by one's belief in their capabilities.

Autonomic arousal follows one's belief that control cannot be exercised over the perceived stressors. The major source of emotional distress comes from the perceived inefficacy to turn off negative intrusive cognitions. These ruminative inefficacious thoughts tend to depress, distress, and constrain cognitive functioning according to Bandura.

Anxiety is viewed by Bandura (1977) as an inverse covariant with self-efficacy expectations. As the level and strength of self-efficacy expectations increases, anxiety should decrease and vice versa. The question arises as to whether interventions would be better aimed at lowering anxiety or at increasing self-efficacy. Bandura would maintain that increasing self-efficacy should increase approach behaviors and decrease avoidance behaviors, lowering anxiety in the process (Taylor and Betz, 1983).

Further empirical support exists for the argument that affective states may impair cognitive functioning. Slife & Weaver (1992) found that even mild states of depression may impair the higher mental processes, referred to as metacognitions, that enable us to accurately predict our future performance as well as accurately monitor our past performance. Deeper levels of depression were demonstrated to interfere with even more basic cognitive skills. Specifically, even mildly depressed students' appraisals of past performance and predictions of future performance on math problems turned out to be underestimations of actual performance. Deeper levels of depression effected actual performance. There was

nothing found in the literature on the relationship between depression and career indecision, but if the metacognitive processes that allow us to make accurate self-appraisals is indeed impaired, it should be reasonable to hypothesize that depression and career indecisiveness could be mutually reinforcing constructs for some subtypes.

Krumboltz (1992), another social learning theorist, discussed some possible sources of anxiety associated with career decision making. He proposed that anxiety may arise from;

(1) the negative connotations of the term "undecided",

(2) the social pressure to make some decision, any decision,

(3) the social pressure to choose prestigious occupations as goals whether or not the choice is well founded, and

(4) the absence of legitimate mechanisms in our society to teach career decision making skills.

Although understanding the process by which anxiety impairs or interferes with decision making tasks will no doubt be useful, it would also be very helpful to identify more sources of anxiety. Fruitful efforts in the future may well include an empirical investigation into the sources of career indecision related anxiety providing counselors with better information enhancing effective treatment selection.

Career Indecision Subtype Studies

Recognizing that the ultimate purpose behind studying career indecision is the development of effective interventions that will facilitate career decision making, Fretz (1981) proposed early on that little progress can be made in improving the effectiveness of career interventions until the interactions between client attributes and treatment interventions can be examined with some precision. It follows that a prerequisite for developing differentially effective interventions is the identification of subtypes among vocationally undecided students. A related conclusion reached in a study by Newman, Fuqua, & Seaworthy (1988) was that the individualization of counseling is a necessary paradigm shift away from generic approaches to career counseling.

The literature on career indecision presents a rich variety of models and definitions. Few would disagree that career decision making is a set of processes by which vocational decisions are made. The study of career indecision has been conceptualized by Chartrand & Camp (1991) as a microanalysis of career development. One might suggest that the stream of decisional and indecisional vocationally relevant behaviors across time is essentially what constitutes career development.

One approach to conceptualizing subtypes would be the application of Marcia's model of identity status. Marcia (1966) suggests, implicitly at least, that there are two subtypes among the undecided; those who are struggling (moratorium) and

those who are not (diffused). These stages are theorized by Marcia to be part of the natural process of vocational development, and though it is possible for development to become arrested at any stage, indecision is represented as a developmental issue. No consideration appears to have been given, however, with regard to the possibility that some individuals suffer the characterological impairment of being chronically indecisive. In addition, Marcia offers no discussion of how specific affective and cognitive factors may mediate the developmental process.

In an effort to operationalize Marcia's theory of vocational identity development, Melgosa (1987) developed an instrument he referred to as the Occupational Identity Scale (OIS). It was designed to measure the individual's level of vocational identity development. Although few researchers are known to have selected the OIS as their instrument of choice, it does directly address vocational indecision and offers an objective measure of occupational identity development. The OIS yields an individual score on each of the four identity status's, making it possible to more precisely identify individuals who appear to have characteristics of two or more status's. Melgosa makes the important point that some individuals may simultaneously possess attributes from more than one category or subtype, and that career indecision subtypes identified in the literature may be arbitrary categories that actually lie along a continuum.

In the similar vein of conceptualizing subtypes as lying along a continuum,

Hartman, Fuqua, and Jenkins (1986) and Savickas (1989) suggested that the qualitative nature of intrapersonal and interpersonal difficulties and distress will vary as levels of indecision rise. Increasing levels of state anxiety were believed to accompany these changes. Problem-solving skills were seen as becoming increasingly impaired, locus of control was thought to become increasingly external, and self-appraisals became increasingly unstable.

Several authors from the 1960s made note that career indecision was a complex notion, composed of multiple typologies of undecided individuals (Crites, 1969; Goodstein, 1965; Tyler 1961). Even so, as Chartrand & Camp (1991) point out in their review, most of the research studies during the early 1970s conceived of career indecision as a relatively simplistic, unidimensional construct. The landmark publication that prompted a string of factor analytic studies was the article by Osipow, Carney, Winer, Yanico, and Koshier (1976) wherein they empirically derived and developed the Career Decision Scale (CDS). This was the first systematic attempt to identify indecision subtypes through the identification of multiple antecedents of career indecision. An orthogonal exploratory factor analysis revealed four factors; (1) Lack of structure and confidence, (2) perceived external barriers, (3) positive choices (approach-approach) conflict, and (4) personal conflict.

Factor analytic studies of the CDS that followed yielded inconsistent results (see Shimizu, Vondracek, Schulenberg & Hostetler, 1988, for a review). The

inconsistencies prompted Osipow to contend that the CDS might best be interpreted as a unidimensional measure of career indecision (1980), and to later advise caution in the interpretation of CDS factor scores (1987). In their study, Vondracek, Hostetler, Schulenberg & Shimizu (1990) claimed their results supported the validity of the original CDS subscales, countering Osipow's reservations. A year later, Martin, Sabourin, Laplante & Coallier (1991) confirmed the adequacy of the four factor solution, but concluded that their results suggested a unidimensional model was most parsimonious.

The CDS was not selected in this study as a measure of the dependent variable, career indecision, because items in the scale have been observed to shift to different factors calling into question the meaningfulness of each factor (Chartrand, Robbins, Morrill & Boggs, 1990). It has admittedly been used extensively in past research efforts, but for the purposes of the current study, it is felt that the CDS represents little more than a reliable and valid measure of general indecisiveness.

Interest in subtypes of career indecision continued in the research literature. The Vocational Decision Making Difficulty scale (VDMD; Holland & Holland, 1977) and its successor the My Vocational Situation (MVS; Holland et al., 1980) were two more multidimensional instruments that contributed to the study of career indecision.

Building strongly on the work of Tiedeman (1961), Harren (1979) published a

landmark article, creating a career decision making model to act as a conceptual framework for understanding how decision makers process information and arrive at conclusions. His model postulated the presence of two intrapersonal characteristics that were influential in the decision-making process; (1) Vocational Self-Concept, and (2) Decision-Making Style. Decision-Making Style was further broken down into three characteristic ways of perceiving and responding to decision making tasks; (1) rational, (2) intuitive, and (3) dependent.

Harren (1979) went on to suggest that those with well-differentiated and integrated self-concepts utilizing rational decision-making styles were most successful at selecting appropriate and satisfying occupations. His model makes it possible for us to conceive of the vocationally undecided as being categorized into three decision-making style subtypes. Perhaps cognitive variables would account for individual differences among those employing a rational style, while affective variables might be more predictive among those utilizing intuitive styles. Individuals characterized as having dependent styles may possess more generalized, characterological impairments in decision-making.

In a study designed to investigate the existence of multiple subtypes through cluster analysis (Larson, Heppner, Ham and Dugan, 1988), researchers examined college sophomores utilizing the Career Decision Scale (CDS; Osipow, Carney, Winer, Yanico, and Koshier, 1976), the Problem-Solving Inventory (PSI; Heppner & Peterson, 1982), and the Vocational Preference Inventory (VPI; Holland, 1978).

They identified four clusters or subtypes of career indecision which they chose to label,

(1) Planless Avoiders - those with characteristically indecisive dispositions. This group represented 25% of the subjects,

(2) Informed Indecisives - a very small group deemed to be well informed, but undecided due perhaps to negative self-appraisals,

(3) Confident but Uninformed - those who are simply developmentally undecided, needing additional career information and lacking serious problem solving deficits, and

(4) Uninformed - similar to the previous subtype but less self-reliant and possibly needing more structured interventions.

Another important effort to identify subtypes came with the development of the Vocational Decision Scale (VDS; Jones & Chenery, 1980). These researchers allowed the development of the VDS to be guided by three questions counselors typically need to ask undecided students;

(1) How decided are you about your career choice?

(2) How comfortable are you with where you are in the process of making this choice? and

(3) For what reasons are you undecided or decided?

Jones & Chenery believed these three dimensions (decidedness, comfort, and reasons) formed a three-dimensional model of vocational indecision. It was

assumed that everyone, regardless of decisional status, occupied a position somewhere in the cube formed by these dimensions. Orthogonal exploratory factor analysis resulted in three factors which were subsequently labeled,

(1) Self uncertainty,

(2) Choice/Work Salience, and

(3) Transitional Self.

Jones (1987) later revised this instrument, renaming it the Career Decision Profile (CDP). Because Jones' proposal of a multi-dimensional model of career decision making is congruent with the philosophy of the current study, the development of the CDP will be discussed in some detail. The same three dimensions were used to form the VDS and the CDP models. The CDP consisted of a decidedness scale, a comfort scale, and a reasons scale. The reasons scale was initially developed with seven a priori categories in mind based on a review of the literature, but when factor analyzed only four factors appeared;

(1) Lack of Self-Clarity - how clearly respondents understand their interests, abilities, and personality and how they might fit with different occupations;

(2) Lack of Occupational/Educational Information - how well-informed respondents believe they are about occupations and educational programs that will fit their interests and abilities;

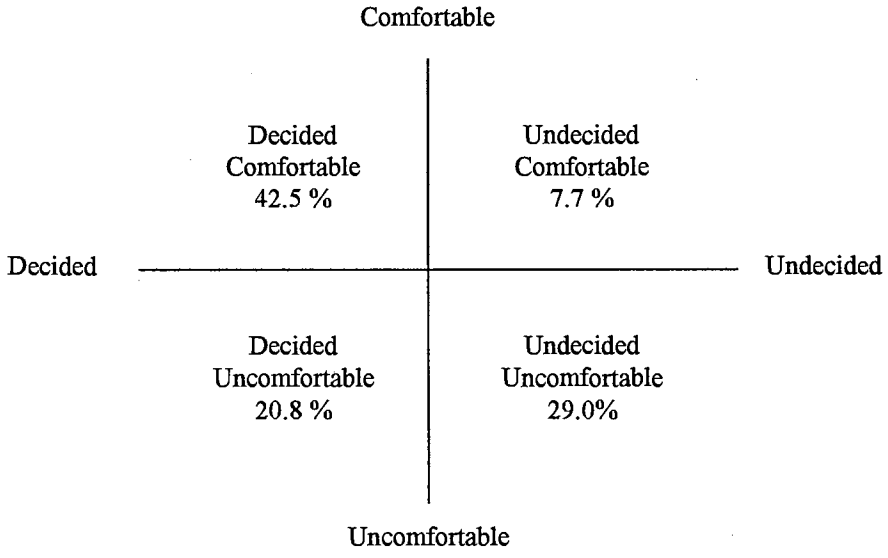
(3) Indecisiveness - respondents' appraisal of their ability to make decisions without unnecessary delay, difficulty, or reliance on others; and

(4) Choice/Work Salience - the extent to which respondents believe that choosing and working in an occupation is important at the time.

Jones then formed four subgroups by using the quadrants formed by the decidedness scale and the comfort scale. The groups and percentage distribution of subjects occupying each group appears in Figure 4.

Figure 4

Jones' Model of Career Indecision Subtypes



A two-way MANOVA (Decidedness x Comfort) was then performed on the Reasons scale, career salience, trait anxiety, and identity achievement to examine how these groups differed. The two main effects were found to be significant, but there was no significant interaction observed suggesting that the Decidedness and Comfort dimensions should be viewed separately. In other words, Jones was able

to identify significant differences with respect to the reasons given between decided and undecided subjects, and he was able to identify differences between comfortable and uncomfortable subjects, but he was not able to empirically support the four group profiles outlined in Figure 4.

Another effort to identify subtypes was Johnson's (1993) dissertation study using Jones (1989) Career Decision Profile, the Assertive Job-Hunting Survey (Becker, 1980), the Problem Solving Inventory (Heppner & Peterson, 1982), and the Career Decision-Making Self-Efficacy Scale (Taylor & Betz, 1983). Cluster analysis was employed on a total of 17 subscales with a four cluster solution finally adopted. Johnson labeled these subtypes:

(1) decided but low information processing - this group would seem to represent those with relatively immature cognitive structures who make premature vocational selections.

(2) decided but struggling - this group might be typified by those who felt the social pressure to decide, but whose commitment level is tentative for some reason.

(3) firmly decided and confident; and

(4) indecisive and skill deficient.

What seems unusual about Johnson's subtypes is that everyone is either decided or indecisive. There appear not to be any healthy undecideds in the group, those whose developmental unpreparedness is natural. That is, no one appears to be

undecided yet confident. In addition, it seems too simplistic to label someone as a member of one of the above subtypes, and assume that other important attributes are not equally useful as markers. In other words, the subtype profiles offered here seem somewhat thin. This same criticism may be leveled at many of the efforts to identify subtypes seen in the literature during the course of this review.

Chartrand, Robbins, Morrill, & Boggs (1990) developed the Career Factors Inventory (CFI), yet another multidimensional measure of career indecision. Their use of a rational approach to instrument development was emphasized because of the ambiguity in meaning and discrepancies that were generated through empirically derived factors in other studies. Their stated goal was to develop a psychometrically sound multidimensional instrument with a stable multiple factor structure containing items that represented only one factor each. In other words the authors wanted CFI subscales to be pure orthogonal domains demonstrating no crossover or item shifting. A confirmatory factor analytic methodology, used to test the factor structure of the CFI, revealed the presence of four orthogonal factors;

(1) Career Choice Anxiety,

(2) Need for Career Information,

(3) Need for Self-Knowledge, and

(4) Generalized Indecisiveness.

As alluded to earlier, there has recently been an increased call for additional research on valid assessment techniques for differentially diagnosing undecided students, citing an urgent need for decision-making rules to assist in the formulation of counseling plans. Slaney (1988) offered a criticism that remains pertinent today. He maintained that despite the common goal among researchers to identify differential treatments, precious few examine the effects of such treatments based on the correlates measured. This reflects, in part, the theoretical phase that this field still finds itself in.

Responding to this call for application, Lucas (1993) conducted a study which examined different levels of vocational identity among help-seeking indecisive subtypes. In the process they attempted to validate the clusters described in an earlier work (Lucas & Epperson, 1990). Five clusters were identified in that study:

(1) anxious and dependent students,

(2) students worried about juggling life roles,

(3) well-adjusted students needing information,

(4) independent and work-oriented students, and

(5) happy and playful students.

Lucas' analyses revealed Cluster 1 was identified as having the lowest levels of self-confidence, the highest levels of depression and anxiety, and the highest levels of emotionality. Overall, however, Lucas' findings were not generally supportive of the hypothesized clusters. Echoing the thoughts of Melgosa (1987), Lucas

notes that there may well be a sizable group of career counseling clients that do not fall neatly into a single subtype. There is little doubt that differentially diagnosing career indecisives should lead to more individualized and effective interventions, but it should be recognized that not everyone is likely to fit into categories that are too carefully defined.

In an effort to integrate some of the research on career indecision subtypes, and arrive at some common dimensions that might exist across instruments, Fuqua & Newman (1989) examined and compared 13 career subscales from 4 different instruments measuring career indecision. The authors compared the My Vocational Situation (MVS; Holland et al., 1980), the Career Decision Scale (CDS; Osipow et al., 1976), the Career Maturity Inventory-Attitude scale (CMI-A; Crites, 1973), and the Career Decision Profile (CDP; Jones, 1988). Their sample consisted of 31 male and 91 female students, predominantly white. Freshmen, sophomores, juniors, and seniors were all represented.

Employing principal components factoring with iteration, three factors were extracted. Factors 1 and 2 appeared to differentiate between students who were developmentally undecided and those who were more chronically indecisive, echoing Salomone's (1982) earlier suggestion that such a distinction exists. Factor 1 was seen to account for the largest portion of variance by far, suggesting that the major component of career indecision is developmental. Factor 3 was relatively small. It was interpreted as representing the degree of affective comfort with the

career state. The authors note that their results support the convergent validity of the subscales, but conclude that either; (1) career indecision may consist of fewer dimensions than the number of subscales designed to measure it, or (2) the three factor results are an artifact of a limited range of item content or constructs from which the scales were derived. They suggest a broader range of item content may be needed in future experimental attempts at developing multiscale career indecision instruments.

Another integrative effort deserving mention is a study conducted by Tinsley, Bowman, & York (1989). Seeking to compare the Career Decision Scale, My Vocational Situation, the Decision Rating Scale, and the Vocational Rating Scale, they factor analyzed the item responses using principal components analysis with varimax rotation. They interpreted the five factors derived as follows;

(1) Self-Clarity - familiarity with personal attributes;

(2) Certainty - the confidence with which one attributes traits to oneself or the conviction as to the kind of person one is;

(3) Indecision;

(4) Decision-Making Obstacles; and

(5) Informational Deficits - the need for personal or environmental information.

The first two factors were responsible for the greater amount of explained variance observed in the analysis, while the last three factors accounted for

relatively little. In their summary, the researchers maintained that the CDS was a relatively "pure" measure of career indecision, but the MVS was factor-complex. The authors offer the caveat that further investigation aimed at confirming the factor composition of the MVS is warranted before it can be advocated.

Responding to the call for further investigations regarding the factor structure of the MVS, Mauer & Gysbers (1990) performed a cluster analysis technique on the 18-item Vocational Identity (VI) scale and confirmed that the VI was not a unitary construct. Four clusters were identified and labeled as follows;

(1) anxiety,

(2) confidence,

(3) self-assessment, and

(4) occupational information.

In all fairness, however, Holland et al. (1980) originally described the vocational identity scale as measuring goals, interest, personality, and talents, obviously implying a factor-complex structure. Still it is useful to more clearly understand the nature of vocational identity subtypes.

Another cluster analysis performed by Fuqua, Blum, & Hartman (1988) attempted to identify homogenous groups of individuals based on their scores on the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970), the Identity Scale (Holland, Gottfredson, & Nafziger, 1975), Internal-External Locus of Control Scale (Rotter, 1966), and the Career Decision Scale (Osipow et

al., 1976). Four groups were identified in the analysis. By arranging the groups in a particular order, a trend seemed to appear representing increasingly more serious problems for the members. Among the many results obtained in this study, the authors pointed to the differences seen between groups 3 and 4 as most interesting. There were no significant differences observed between the groups with regard to level of career indecision (both relatively high), locus of control (both relatively external), or identity (relatively immature). What distinguished the two groups was their respective levels of anxiety. Group 4 had the highest levels of anxiety and was highly indecisive. Group 3 was highly indecisive, but had anxiety scores not significantly greater than Group 2 who had relatively low levels of indecision. It was suggested that Group 3 represented developmental indecision, while Group 4 represented chronic forms of indecision mediated by anxious affect. The authors suggest that underlying typologies of career indecision require further investigation.

Summary

Clearly, a variety of conclusions have been proposed by different researchers regarding the existence and nature of subtypes among career undecided students. There seems to be general agreement that there is some utility in identifying distinct typologies, and there is considerable overlap among the large number of clusters that have been hypothesized by various researchers.

There are several ways one could conceivably attempt to categorize correlates

alleged to be associated with career indecision. It is felt that the variety of career indecision attributes discussed throughout this review may fall within the framework of the following dimensions which pull together differing theoretical orientations and four lines of research;

(1) Cognitive Structure - this term is intended to describe the developmental maturity of the vocational construct system. It represents the degree of sophistication present in the structural organization of vocational schemata. High levels are associated with the possession (or the knowledge of how to gain possession) of problem solving strategies related to CDM.

(2) Self-Efficacy/Confidence - This factor was selected to represent the individual's confidence level in her or his capability to successfully initiate and implement the strategies required to choose an appropriate and satisfactory career. High levels are associated with greater degrees of self-clarity with regard to personal abilities, capabilities, interests, values, and goals. Though conceived of originally as a cognitive process, it seems to be easily modulated by various affective states because it represents an evaluative dimension of the vocational self.

(3) Positive (facilitative)/Negative (inhibitive) Affect - This factor was chosen to be one of the dimensions of the model for empirical, rational and intuitive reasons. Anxiety has been clearly related to indecision, and

depression has been demonstrated to impair metacognitive and cognitive functions. It remains to be seen whether other emotional states are related as well.

(4) Career Indecision - This dimension is clearly related to the career decision making task, but has too often been used to understand the decision making process from a unidimensional perspective. Still, one's level of indecision is recognized as an important component that affecting which subtype or group an individual will fall.

The interest in career indecision has evolved from simple dichotomous questions to more sophisticated approaches aimed at more accurately identifying and differentially diagnosing subtypes among the career undecided. The common goal seems to be the eventual development of interventions that will more effectively target the unique set of needs in each subtype population. Four major lines of research have been identified and reviewed in this paper. It is now clear that the career indecision construct is a highly complex, multidimensional phenomenon. There appears to be sufficient empirical support to justify a multi-theoretical approach to identifying the underlying dimensions of career indecision as well as the cognitive and affective variables that correlate with those dimensions.

CHAPTER III

METHODOLOGY AND DESIGN

Introduction

This is a quasi-experimental, exploratory study with an intact group of participants. This section will describe the instruments used in the study and the rationale behind their inclusion. The non-randomized sample will be described, as well as the procedure used with regard to data collection. The statistical analyses applied to answer the research questions posed in this study will then be discussed.

Participants

Participants were composed of 220 college students attending a moderately-sized Southwestern university. There were approximately equal numbers of males (108) and females (112). Class standing of participants broke down as follows; Freshmen (14.5%), Sophomores (18.6%), Juniors (36.4%), and Seniors (30.5%). Demographics related to ethnic background revealed participants were Black (2.3%), American Indian (7.7%), Hispanic (0.5%), Caucasian (88.6%), and Other (0.9%). Approximately half of the participants were drawn from a course designed to develop skills and strategies for making career decisions. Extra-credit was offered for participation and refusal to participate did not affect the student's

course grade. The rest of the participants were drawn from a variety of courses offered through the college of education, and the same conditions for participation were offered.

Instrumentation

Each variable will be operationalized with multi-scaled instruments. All measures are continuous variables. A measure of cognitive structure will be derived through the administration of a modified version of Kelly's Cognitive Repertory Grid (CRG; Kelly, 1955). Affective state measurements will be assessed through the Positive Affect-Negative Affect Schedule - Expanded (PANAS-X; Watson & Clark, 1994). These two instruments will be used to operationalize the cognitive and affective constructs hypothesized to be related to career decision status factors.

Factor analysis will be performed on the combined scale scores of the Career Decision Profile (CDP; Jones, 1988), The Career Factors Inventory (CFI, Chartrand, Robbins, Morrill, & Boggs, 1990), and the Career Decision-Making Self-Efficacy Scale (CDMSES; Taylor & Betz, 1985) in an attempt to identify underlying constructs which represent career decision status factors.

The Cognitive Repertory Grid (CRG)

The CRG (see Appendix A) is an idiographic matrix composed of a set of 10 career alternatives which the subject rates along a set of 10 bipolar dimensions of judgment based on a 7-point Likert-type scale (+3 +2 +1 0 -1 -2 -3). Career

alternatives (hereafter referred to as elements) and dimensions of judgment (hereafter referred to as constructs) may either be elicited from or selected by the subject (rather than provided) to form the 10 x 10 grid. This is done to assure the personal relevance of the CRG (Brown, 1987; Neimeyer et al., 1989). The structural and hierarchical organization of the vocational construct system, as conceived by Kelly (1955), is reflected in the manner by which subjects employed their individual constructs to rate alternative occupations.

The first phase in administering the CRG was to elicit elements (occupations) from the subjects. A group of undergraduate students were administered the CRG using Metzler & Neimeyer's (1988) protocol. Students were asked to generate a list of 10 occupations that satisfied the following criteria;

(1) An occupation you are currently considering

(2) An occupation you considered but rejected

(3) An occupation you have had that you liked most

(4) An occupation you have had that you liked least

(5) An occupation you might fall back on if current plans fall through

(6) An occupation of one of your parents

(7) The ideal occupation

(8) Another occupation (your choice)

(9) Another occupation (your choice)

(10) Another occupation (your choice)

Eliciting constructs was the next phase of grid administration. Students were instructed to examine any three occupations on their grid and think about the following question, "In what important way are two of these careers similar, yet different from the third?" (e.g. two careers involved mostly inside work while the third involved working outside). Students were then posed with the question, "If you were forced to choose between a job that was like this and one that wasn't, which would you prefer?" Students were instructed to place preferred constructs on the left side of your grid beneath the positive numbers (e.g. participant wrote "inside work"). The antithesis of the preferred construct was then placed on the right side of the grid beneath the negative numbers.

A wide range of analytical techniques have been applied to the grid since its inception, generating a plethora of indices, only three of which will be of interest to the current study;

(1) Total Differentiation - Construct Differentiation was the most common score derived from grids and originally used to measure cognitive structure by Bieri (1955). This index was believed to measure the number of different constructs (dimensions of judgment) used by a person. It determines how many functionally independent constructs are being applied by the participant. Participants with more highly differentiated constructs are viewed as relatively complex because they bring to bear a greater number of dimensions of meaning when making a decision. Finer discriminations between alternative careers are

thus predicted. Element Differentiation refers to how many functionally independent occupations exist within the grid. Total Differentiation is the sum of functionally independent constructs and elements in the 10 x 10 grid. A computer program called the PCGRID designed by Metzler & Magargal (1993) was used to analyze the pattern of ratings and determine the number of significantly different clusters of constructs and elements in the grid. Scores have a possible range of from 2 to 20 for a 10 by 10 grid.

(2) Integration - measured by what is referred to as an intensity score (Fransella & Bannister, 1977). Intensity is calculated by intercorrelating all construct ratings, squaring those correlations (to remove the sign), multiplying by 100 (to remove the decimal) and summing these scores. An integration score is designed to reflect the overall level of correlation within the construct system. It is meant to represent the organizational dimension of the system. Highly integrated systems are associated with more rapid and unambiguous career judgments (Cochran, 1977). Scores may range from 0 to 10,000.

(3) Conflict - an estimate of the degree to which the dimensions of judgment used to evaluate occupations (i.e. constructs) are harmonious or conflictual with each other. For example, if "high status" and "inside work" are both preferred attributes by a participant, and grid analysis reveals they are positively correlated with each other, then there is a harmonious relationship. If, on the other hand, they had been discovered to be negatively correlated with each other, then a

conflictual relationship would be presumed to exist in the cognitive structure of the participant. Total conflict is measured by squaring all negative correlations, multiplying by 100, adding them, and dividing by the Integration score (Cochran, 1983). Put differently, this ratio represents the degree to which common variance in a grid is negative.

The Positive Affect-Negative Affect Schedule - Expanded (PANAS-X)

Watson, Clark, & Tellegen (1988) originally constructed the PANAS to be a brief and easy to administer measure of what they believed were two primary, orthogonal dimensions of mood; positive and negative affect. Two 10-item scales comprised the entire instrument. The authors were quick to note that the two dimensions of affect were not to be considered opposites. Instead they appeared to be highly distinctive, orthogonal factors. Most studies have found NA and PA scales to have low or non-significant correlations with each other (see Watson et al.).

Positive Affect (PA) is defined as the extent to which a person feels enthusiastic, active, energetic, alert and full of concentration. Low PA is characterized by sadness and lethargy. Negative Affect (NA), on the other hand, reflects general distress subsuming "a variety of aversive mood states including anger, contempt, disgust, guilt, fear, and nervousness, with low NA being a state of calmness and serenity" (p. 1063). PA, therefore, seems to correspond roughly with extroversive personality traits, while NA appears to be associated with

anxious/neurotic traits.

Positive and negative components were found to account for most of the variance in self-rated affect (between 50 and 75%), but it was found that each of the two dimensions were comprised, in turn, of correlated but distinguishable emotional states. It was determined that a hierarchical structure existed with the higher levels (PA and NA) reflecting valence while lower levels reflected content. As a result, the original 20-item PANAS was expanded into a 60-item instrument that included the two original scales, but added 11 more measures of specific emotional states. Scales of the PANAS-X breakdown as follows;

General Dimension Scales

Negative Affect (10)*

Positive Affect (10)

Basic Negative Emotion Scales

Fear (6)

Hostility (6)

Guilt (6)

Sadness (5)

Basic Positive Emotion Scale

Joviality (8)

Self-Assurance (6)

Attentiveness (4)

Other Affective States

Shyness (4)

Fatigue (4)

Serenity (3)

Surprise (3)

*Note: The number of items comprising each scale is shown in parentheses.

Whether participants should be asked to report their emotional states over the "last few days", "last few weeks", or "last few months" is left by the authors to the discretion of the researcher. Using the time frame, "past few weeks", Cronbach's alpha coefficients measuring internal consistency for both PA and NA were .87. Intercorrelations for PA and NA were -.22. Test-retest reliabilities were .58 and .48 for PA and NA respectively. The authors derived convergent validity correlation values ranging from .89 to .95. All items loaded at .50 or above when item validity was assessed. External validity was assessed by comparing the PANAS to the Hopkins Symptom Checklist (HSCL), the Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, & Erbaugh, 1961), and the State-Trait Anxiety Inventory (STAI; Spielberger, Gorsuch, & Lushene, 1970). Participants used in the development of the PANAS were identified as undergraduate college students enrolled in various psychology courses at Southern Methodist University.

The PANAS-X scales provide the advantage of assessing both positive and negative affective states separately. This instrument appears to be a reliable, valid, and efficient method for measuring a range of mood states.

Support, as well as criticism, of the PANAS-X has appeared in the literature. Bagozzi (1993) examined the subscale measures of negative affect in the PANAS-X, reanalyzing Watson and Clark's (1992) data. He found strong support for the Negative Affect construct and the hierarchical representation of the content scales. Although convergent validity was well supported, efforts to establish discriminant validity met with weak results. Nevertheless, Bagozzi concludes that the measures of negative affect in the PANAS-X are very robust.

Green, Goldman, & Salovey (1993) argue that the theory behind the PANAS-X is flawed. It is suggested, instead, that PA and NA are not orthogonal, and that mood is a bipolar, unidimensional construct with joy at one end of the continuum and sorrow at the other. Green et al. admit there is ample support in several influential studies for the two-dimensional model, but they maintain that this is a statistical aritifact. The measurement error derived during assessment is not random. They found that when they adjusted for random and sytematic error, the independence of PA and NA failed to appear.

Being a relatively new instrument, there is little empirical support established at this time for the PANAS-X. Nevertheless, the bulk of the literature tends to endorse the two-dimensional nature of affect, and the PANAS-X is relatively

flexible in that it assesses both positive and negative states. In addition, Watson & Clark (1994) provide an abundant amount of descriptive, analytic, and normative data for their instrument.

Table 1

Correlations between the PANAS and the HSCL, BDI and STAI Scales

		Correlations with	
Measure	n	NA	PA
HSCL	398	.74	-.19
BDI	208	.58	-.36
A-State	203	.51	-.35

The Career Decision Making Self-Efficacy Scale (CDMSE)

Taylor & Betz's (1983) instrument is derived from Crites (1965, 1971) career maturity construct. The theoretical foundation for the development of the CDMSE is Bandura's (1977) Self-Efficacy Theory, It is made up of 50 items that are reported to measure an individual's perceived level of confidence with respect to the completion of five tasks necessary to make career decisions. The authors used factor analysis to develop the five subscales, each of which is composed of ten items. Subjects rate items according to a 10-point Likert-type scale ranging from 0 (no confidence) to 9 (complete confidence). Subscale and total scores are derived

by simply summing the relevant values.

Taylor and Betz (1983) reported the standardized coefficient alpha was .97 indicating high internal consistency. Reliability coefficients ranged from .86 to .89. for the five subscales. Taylor & Betz report no sex differences on either the subscales or the total CDMSE scores. Also, no significant correlations were observed between CDMSE and academic aptitude scores. Intercorrelations between the CDMSE and the CDS revealed that undecided students reported less confidence in their ability to complete decision making tasks. Factors 1, 2, and 3 of the CDS were all moderately and negatively related (-.24 to -.51) to all five CDMSE subscale scores. Validity has been also been demonstrated by positive relationships established between the CDMSE and self esteem measures (Robbins, 1985) and beliefs about specific occupations (Taylor & Popma, 1990). Robbins also discovered a relationship between the CDMSE and vocational identity. Further evidence supporting the scale's concurrent and predictive validity has been presented (Fukuyama, Probert, Neimeyer, Nevill, & Metzler, 1988).

The Career Decision Profile (CDP)

Several statistically sound scales have been developed to measure various aspects of career decisional status. Jones' (1988) Career Decision Profile was selected for this study because it met the statistical parameters required for inclusion, and because the philosophy behind its development is congruent with my own position that a tenable model of career indecision must have multiple

dimensions. As in this study, Jones' instrument is an attempt to explicate the multi-dimensional character of career decisional status. In addition, the subscale components of this instrument appear to be more independent than most other career indecision scales reviewed.

As a revision of the Vocational Decision Scale (VDS; Jones & Chenery, 1980). Jones (1989) constructed the CDP primarily: (1) to have greater reliability and validity, and (2) to have greater ability to differentiate between subtypes of undecided students. This self-scoring, paper and pencil scale is composed of a total of 16 items rated on a 8-point Likert-type scale. Seven scores may be derived from the CDP: (1) Decidedness - the sum of the first two items: (2) Comfort - the sum of the third and fourth items, (3) Reasons - the sum of items 5 - 16; (4-7) the four subscales of the Reasons dimension (Self-Clarity, Knowledge About Occupations and Training, Decisiveness, and Career Choice Importance). Each of the 4 subscales is composed of three items. Subscale values were derived by summing the ratings for the three items making up the scale and subtracting from 27. For example, if the 3 items comprising the Self-Clarity Subscale were marked 6, 7, and 8 then the sum total of 21 subtracted from 27 yields a scale value of 6. This procedure is designed to transform subscale scores such that high scores indicate positive perceptions and low scores indicate negative perceptions.

Test-retest Pearson-product moment correlations and alpha coefficients for the seven measures appear in Table 2. In addition, the intercorrelations between the

reasons subscales were generally low suggesting they are relatively independent subscales having divergent validity (see Table 3).

Concurrent validity was assessed by comparing the CDP to several other career decisional status measures including the Career Salience Questionnaire, Career Decision Scale, the Vocational Decision Scale, the Occupational Alternatives Questionnaire, and the Identity Achievement Scale. Satisfactory correlations in the proposed direction were demonstrated with every criterion measure. Construct validity was evaluated with the prediction that the decidedness and comfort scales would be positively associated since decided persons should be expected to feel more comfortable. The results were as expected ($r=.65$; $p<.0001$, $n=111$).

The Career Factors Inventory

Chartrand, Robbins, Morrill, & Boggs (1990) concentrated on designing a multiscaled instrument information factors, contrasted with the other two factors (Career Choice Anxiety and Generalized Indecisiveness) referred to as personal-emotional factors. A total of 21 items using a 5 point Likert-type scale remained in the final instrument.

The measurement characteristics of the instrument are very good. The Coefficient of Determination for the four factor model was 0.996 with a goodness of fit index of .936. As with a stable component structure. They used a rational approach to item selection abandoning the less stringent exploratory factor analytic approach. They chose, instead, a multiple confirmatory analytic procedure,

Table 2

Career Decision Profile Reliability and Internal Consistency

	reliability	coefficient alpha
Decidedness	.66	.85
Comfort	.76	.82
Self-Clarity	.80	.77
Knowledge About Occupations and Training	.67	.68
Decisiveness	.71	.79
Career Choice Importance	.78	.73
Total Reasons Scale	.80	.69

Table 3

Intercorrelations for the Career Decision Profile Reasons Subscales

	1	2	3	4
Reasons Scale				
1. Self-Clarity	---	.41	.22	.17
2. Knowledge About Occupations and Training	---	---	.19	.19
3. Decisiveness	---	---	---	.20
4. Career Choice Importance	---	---	---	---

arriving at a four factor model. Each scale was characterized as being a relatively pure measure of its respective factor. Two factors (Need for Career Information and Need for Self-Knowledge) were referred to as expected correlations between the two information factors were moderately high (r = .66). Personal-Emotional factors were also strongly correlated (r = .61), while correlations across the pairs were moderately low (r = .33). Test-retest scores ranged from .79 to .84, while Cronbach's alpha ranged from .73 to .86 for each scale.

Convergent validity estimates were established for the CFI scales and several established instruments that measured anxiety, vocational identity, self esteem, goal instability and career decidedness. Intercorrelations were significant and generally followed the predicted patterns.

Procedure

An oral solicitation was presented by the researcher to each class section. Informed consent forms (see Appendix B) were provided and collected. Participants were then administered the Cognitive Repertory Grid, the Career Decision Profile, and the PANAS-X. When necessary, individual instructors were trained to administer the Career Factors Inventory and the Career Decision Making Self-Efficacy Scale. The ease of administration and the objective nature of the instruments made this a simple task. Instructors were simply told to read the instructions of each instrument aloud, and remind each participant to provide the information requested (e.g. ID number). Although the first instrument

administered in all cases was the Cognitive Repertory Grid, the order of the other instruments was at the discretion of the students moderating potential sequencing effects.

Participants were also offered a blank copy of a Cognitive Repertory Grid for their possible later use and were shown how to score and make some basic interpretations. This was done with the hope that participants would see the CRG as a decision-making tool they could use in the future. Scores on the other instruments made available to all participants at a later date along with descriptive data for the entire sample for the participants' benefit.

Statistical Analyses

This study suggests that cognitive and affective components are important correlates to career decisional status. It should be made clear once again that this study is driven by a trans-theoretical orientation. Although theory guides this study, it remains an exploratory, focused inquiry. Beyond the descriptive statistics that will summarize the attributes of the sample, this study will also attempt to answer the research questions posed earlier. These questions and the statistical methodology proposed to address them follow

> Research Question # 1 - How many factors (or constructs) underlie the 6 subscales of the Career Decision Profile, the 4 subscales of the Career Factors Inventory, and the 5 subscales of the Career Decision-Making Self-Efficacy Scale?

To answer the first research question, factor analysis was applied to the subscale scores of the CDP, the CFI, and the CDMSES. This is a multivariate technique used to define the underlying structure in a data matrix. Because the literature suggests that correlations exist between the variables in these instruments, the need to analyze the structure of these inter-relationships develops. Factor analysis has two primary functions; (1) to summarize results, and (2) to facilitate data reduction. The underlying dimensions common to both the CDP, the CFI, and the CDMSES will be identified and referred to as "factors". These three vocational instruments were specifically selected for factor analysis because their subscales appear on the surface to have the least amount of overlap in terms of scale content compared to other instruments reviewed in this study. The descriptive labels for each instrument and its accompanying subscales are listed below:

The Career Decision Profile

(1) Decidedness - describes how decided your are about your choice of an occupation or a career.

(2) Comfort - describes how comfortable you feel with where you are in the process of making this choice.

(3) Lack of Self-Clarity - how clearly you understand your interests, abilities, and personality and how they might fit with different occupations.

(4) Lack of Occupational/Educational Information - how well informed you

believe you are about occupations and educational programs that will fit your interests and abilities.

(5) Decisiveness - Your appraisal of your ability to make decisions without unnecessary delay.

(6) Career Choice Salience - the extent to which you believe that choosing and working in an occupation is important at this time.

The Career Factors Inventory

(7) Need for Self-Knowledge - a person's need for self-definition. A person with low self-knowledge may have a confused identity with poor clarity of personal qualities such as capabilities and interests.

(8) Need for Career Information - a person's perceived need to acquire factual data and experience concerning various occupations prior to making vocational commitments.

(9) Generalized Indecisiveness - a person's inability to make decisions even when the necessary conditions to do so are present. High indecisiveness represents a lack of competence in formulating decisions.

(10) Career Choice Anxiety - the level of reported anxiety that is attached to the process of vocational decision-making.

The Career Decision-Making Self-Efficacy Scale

(11) Goal Selection - how confident you feel about your ability to select form goals.

(12) Planning - how confident you feel about your ability to plan for the future.

(13) Gathering Occupational Information - how confident you feel about your ability to find occupational information.

(14) Problem Solving - how confident you feel about your ability to master various vocational challenges.

(15) Self-Appraisal - how confident you feel about your ability to accurately assess your vocational strengths and weaknesses.

The common thread joining the 15 subscales above is that they all represent self-beliefs associated with career decision-making status. This study asks whether the differentiation within and across the 3 instruments above is justified and supported empirically. How many dimensions truly underlie self-beliefs regarding decision status? Once the 15 subscales are reduced to a few factors that can account for the great majority of observed variance, factor scores will be generated for each participant and subjected to further analysis. No hypothesis is offered regarding the specific number of factors expected from this part of the analysis. However, it is expected that subscales 5 and 8, both of which concern decisiveness, will both load on the same factor. Also, subscales 3 and 10, both relating to self-information needs are expected to load together, as should subscales 4 and 9 since they both relate to occupation-information needs. Subscales 2 (comfort level), 6 (sense of urgency), and 7 (anxiety level) would also be expected to load together. Self-efficacy scales were reported by Taylor & Betz

(1985) as highly inter-correlated, and may consequently all load on the same factor.

Research Question #2 - To what extent does Cognitive Differentiation, Cognitive Integration, Cognitive Conflict, Positive Affect, and Negative Affect account for the variance observed in the factors identified in question #1?

Multiple regression procedures will be used to address the second research question. This is a procedure that will determine how much variance each of the 5 predictor variables account for (by themselves and as a group) in each of the factors identified in question #1. Predictor variables will be entered in a stepwise fashion into the regression equation using sets of factor scores derived from factor analysis as criterion variables.

It is hypothesized that multivariate significance will be present for each regression equation, and that all 5 predictor variables will significantly contribute to one or more of the equations.

Summary

This chapter described the methodology and design of the study. It is a quasi-experimental, exploratory study with an intact group of participants who were drawn from several undergraduate classes at a large southwestern university. Participants were administered 5 instruments; the Career Decision Profile, the Career Factors Inventory, and the Career Decision-Making Self-Efficacy Scale, the

Cognitive Repertory Grid, the Positive Affect Negative Affect Scale - Revised. The first 3 instruments were factor analyzed and the resulting Factors were regressed onto variables derived from the fourth and fifth instruments.

CHAPTER IV

RESULTS

Introduction

This chapter presents the results of the study, addressing each research question in the order in which it was posed. Research question # 1 was answered through the use of factor analysis. The null hypothesis associated with research question # 2 was tested using multiple regression analyses. All statistical procedures were performed using mainframe and Microsoft Windows versions of SPSS.

Summary descriptive statistics, including means, standard deviations, and ranges for scores for males, females, and all participants combined appear in Table 4. Uncovering gender differences was not established as one of the goals of this study, but it is interesting to note that males and females had significantly different scores on four scales at the .05 level of confidence and one scale at the .01 level of confidence. Males described themselves as more decisive than females on the Career Decision Profile. Their CDM Self-Efficacy Scale scores indicated they were less confident in their abilities to plan for the future and gather occupational information when compared to females, however. Scores derived from the

TABLE 4

Descriptive Statistics for Males, Females, and Combined Participant's (n=220) Scores for All Variables

Instruments and Scales	Males	Females	Combined Participants	Range Min	Range Max
Age	22.18 (4.71)	22.05 (4.67)	22.11 (4.68)	17	50
Years of College	2.82 (0.97)	2.83 (1.07)	2.83 (1.02)	1	4
Career Factors Inventory					
Anxiety	14.93 (5.06)	14.82 (5.34)	14.88 (5.20)	6	30
Generalized Indecisiveness	12.80 (4.06)	13.53 (3.93)	13.18 (4.00)	5	25
Need for Career Information	17.45 (6.22)	16.38 (6.92)	16.90 (6.59)	6	30
Need for Self-Knowledge	10.89 (4.99)	9.91 (4.94)	10.39 (4.97)	4	20
Career Decision Profile					
Decidedness	13.84 (2.79)	14.06 (2.90)	13.95 (2.84)	2	16
Comfort	12.75 (3.06)	12.84 (3.29)	12.80 (3.17)	2	16
Lack of Self-Clarity	16.41 (5.71)	15.81 (5.86)	16.10 (5.78)	3	24
Lack of Occupational Info	16.83 (5.39)	16.87 (5.61)	16.85 (5.49)	3	24
Decisiveness	18.32 (4.79)	16.54 (5.98)*	17.42 (5.49)	3	24
Salience	21.31 (3.51)	21.35 (3.91)	21.33 (3.71)	3	24
CDM Self-Efficacy Scale					
Goal Selection	71.66 (11.15)	70.62 (10.70)	71.13 (10.91)	32	90
Planning	70.23 (11.33)	73.31 (10.20)*	71.80 (10.86)	43	90
Gathering Occupational Info	69.71 (12.07)	73.21 (11.54)*	71.49 (11.90)	31	90
Problem Solving	71.59 (11.52)	73.45 (10.52)	72.54 (11.04)	38	90
Self-Appraisal	74.23 (10.04)	76.64 (9.19)	75.46 (9.67)	43	90
PANAS-X					
Positive Affect	33.85 (6.85)	33.47 (6.85)	33.66 (6.71)	16	48
Negative Affect	20.67 (6.59)	20.35 (6.52)	20.50 (6.54)	10	44
Repertory Grid					
Differentiation	6.16 (3.07)	5.25 (2.55)*	5.70 (2.85)	2	17
Integration	1222 (457)	1224 (458)	1223 (458)	515	3381
Conflict	206 (25)	219 (20)**	213 (22)	14	282

* significant mean differences at the .05 level

** significant mean differences at the .01 level

Cognitive Repertory Grid indicated that Males were more highly differentiated ($p < .05$) and their cognitive structures were more conflicted ($p < .01$) than females. These differences suggest that there may well be gender effects which are not explicated by this study.

Before discussing the major hypotheses, another issue regarding the participants must be addressed. As mentioned in Chapter III, the participants used in this study came from two somewhat distinct populations. The first group ($n = 66$) was drawn from a college course specifically designed to aid students in the career decision making process, and was represented by a younger and more diverse (in terms of school majors) set of students. The second group was drawn from various pre-service teacher education courses, and consisted primarily of an older and less diverse set of students (i.e. pre-service teachers). What was of greatest concern was the possibility that the older group might have been much further along in the career decision making process, providing little variance on scales like Decidedness, Comfort, Anxiety, Salience, etc. The average participant's Decidedness scale score was 13.95 out of a possible 16 as compared to Jones' (1989) sample whose average score was only 9.50.

To determine whether the two groups in this study differed significantly along the variables of concern, a series of univariate ANOVAs were performed. The results, displayed in Table 5, make clear that these two groups of students differ along many variables. The Pre-Service Teacher (PST) group were almost 3 years

older on the average than the Career Decision Making Course (CDMC) group. They were also more decided and more comfortable with their career decision status. They felt they had less of a need for information about themselves and occupations, and less urgency

Table 5

Mean Differences Between Students in CDM Course and Pre-Service Teachers' Group

	Means			
	CDM Course (n=66)	PST Group (n=153)	F	F sig
Age	20.15	22.97	17.943	.0000**
Career Factors Inventory				
Anxiety	15.91	14.42	3.796	.0527
Generalized Indecisiveness	12.91	13.30	0.435	.5102
Need for Career Information	19.92	15.65	21.312	.0000**
Need for Self-Knowledge	11.32	10.02	3.160	.0767
Career Decision Profile				
Decidedness	12.83	14.44	15.624	.0001**
Comfort	11.95	13.14	6.568	.0111*
Lack of Self-Clarity	14.03	16.97	12.543	.0005**
Lack of Occupational Info	14.52	17.84	18.231	.0000**
Decisiveness	17.39	21.68	0.000	.9889
Salience	20.48	17.41	4.850	.0287*
CDM Self-Efficacy Scale				
Goal Selection	69.91	71.68	1.211	.2723
Planning	69.05	72.99	6.215	.0134*
Gathering Occupational Info	65.58	74.08	26.151	.0000**
Problem Solving	74.39	71.82	2.535	.1128
Self-Appraisal	74.58	75.88	0.839	.3607
PANAS-X				
Positive Affect	34.34	33.27	1.218	.2710
Negative Affect	19.95	20.75	0.669	.4143
Repertory Grid				
Differentiation	4.47	6.20	18.402	.0000**
Integration	1253.97	1212.20	0.366	.5458
Conflict	202.20	217.24	21.151	.0000**

* Significance level of .05

** Significance level of .01

about the need to make a decision. They were also more confident about their decision-making abilities. Finally, the older PST group had more highly differentiated and less conflicted construct systems than did the CDMC group. These group differences are reasonable and were not unexpected. As with the variable Sex, it appears there may be group effects here which are not being taken into consideration by the analytic procedures which follow. A follow-up study designed to investigate the effects of these differences may be useful.

A Pearson correlation matrix representing all the variables for all participants appears in Appendix C. This matrix helps clarify the nature of the relationships between the variables involved in this study. Bivariate Pearson correlation values ranged from -.64 to .79. It appears from the pattern of relationships in the matrix that the career status instruments (the CFI, CDP, and CDMSES) are moderately interrelated with each other and with the PANAS-X scales, while much weaker relationships emerged between the CRG scales (Differentiation, Integration, and Conflict) and those of other instruments. Positive but mild significant relationships arose between Differentiation and three other scales; (1) Comfort Level ($r = .16^*$), Lack of Self Clarity ($r = .14^*$), and Lack of Occupational Information ($r = .21^*$). A stronger and, as expected, negative correlation appeared between Differentiation and Integration ($r = -.40^{**}$). Integration was observed to negatively correlate with the Self-Appraisal scale ($r = .16^*$) from the CDMSES. Integration had a predictably negative correlation with Conflict $r = -.16^*$).

Of the three CRG variables, it was Conflict which demonstrated the greatest number of relationships with the other scales. Recall that conflict estimates common variance in a grid matrix that is negative of conflicting, and high conflict scores reflect low levels of conflict in one's cognitive system. Conflict correlated positively with all five CDMSE Scales. This suggests that lower levels of conflict in one's cognitive structure are associated with higher levels of career decision-making self-efficacy. There was also an expected correlation between Conflict and the Career Choice Anxiety scale (r = -.15*), suggesting that lower levels of conflict relate to lower levels of anxiety. Conflict also correlated positively with the first four scales of the CDP, Decidedness (r = .15*), Comfort Level (r = .20**), Lack of Self-Clarity (r = .19**), and Lack of Occupational Information (r = .18**). These correlations are what would have been expected, as well.

The strongest intra-scale correlations clearly appear within the CDMSE Scale, with bivariate correlation values ranging from r = .56 to r = .75. These strong correlations suggest that Taylor & Betz's (1983) warning concerning possible multicollinearity among the five CDMSE scales may be justified. Consequently, any attempt to treat separate subscales of the CDMSES as measures of independent constructs appear to be unsupported.

Research Question # 1

How many factors (or constructs) underlie the 6 subscales of The Career Decision Profile, the 4 subscales representing The Career Factor Inventory,

and the 5 subscales of The Career Decision Making Self-Efficacy Scale?

This was an exploratory phase of the study, designed to identify and interpret those latent variables or dimensions which underlie the subscales of the 3 career status instruments noted. As such, no a priori constraints were placed on estimations of the number of components to be extracted. This was an effort to summarize the data and minimize redundancy across the scales, parsimoniously explaining the total variance generated by individual differences in scale scores. To accomplish this end, a series of factor analyses were performed on the subscales making up the Career Factors Inventory (CFI), the Career Decision Profile (CDP), and the Career Decision-Making Self-Efficacy Scale (CDMSES).

Assumptions

There was a "cases to variables" ratio of approximately 15 to 1, placing this study in an acceptable range in terms of sample size needed to achieve normality (Stevens, 1992). In addition, a sufficient number of intercorrelations are needed in a data matrix to justify factor analytic procedures. The Bartlett Test of Sphericity, which provides the statistical probability that the correlation matrix has significant correlations among at least some of the variables, was calculated to be 1827.38 with significance = .00000. The Measure of Sampling Adequacy, another measure quantifying the degree of intercorrelation among the variables, was calculated to be 0.857. This value is considered meritorious and strongly indicates that factor analysis is an appropriate procedure (Stevens, 1992).

Factor Selection Criteria

Because this is an exploratory rather than a confirmatory study and because accounting for the maximum amount of variance with the minimum number of Factors was desired, Principal Components and Principal Axes extraction methods were applied (Gorsuch, 1983). Observed differences in the results were trivial, so only the Principal Axis Factor Analysis method is discussed below.

Because it could not be assumed that the Factors were uncorrelated, a Direct Oblimin rotation procedure was selected. When this oblique analytic rotation method is employed, a user-set parameter (Delta) producing solutions which range from highly correlated Factors (Delta = 0) to least correlated Factors (Delta = - 4) must be selected. Gorsuch (1983) suggests choosing a Delta value which produces correlations among the factors that are similar to the correlations among the highest loading variables for each of the factors. The correlation matrix of the four highest loading variables are Comfort, Self-Appraisal, Career Information Needs, and Decisiveness and their loadings range from -.30 to .34. A Delta value of -1 produced the factor correlation matrix which was most similar in magnitude to this range (-.36 to .33).

The next task involved determining the number of Factors to be used for interpretation. The Kaiser "Eigenvalue > 1.0" rule resulted in a 4 factor solution (see Table 6). The Eigenvalue rule can be conservative when less than 20 variables are used (Stevens, 1992). Halting the factoring process, as many

investigators do, when 75-85% of the total cumulative variance is accounted for provides a minimum 5 Factor solution (76.2%).

Table 6

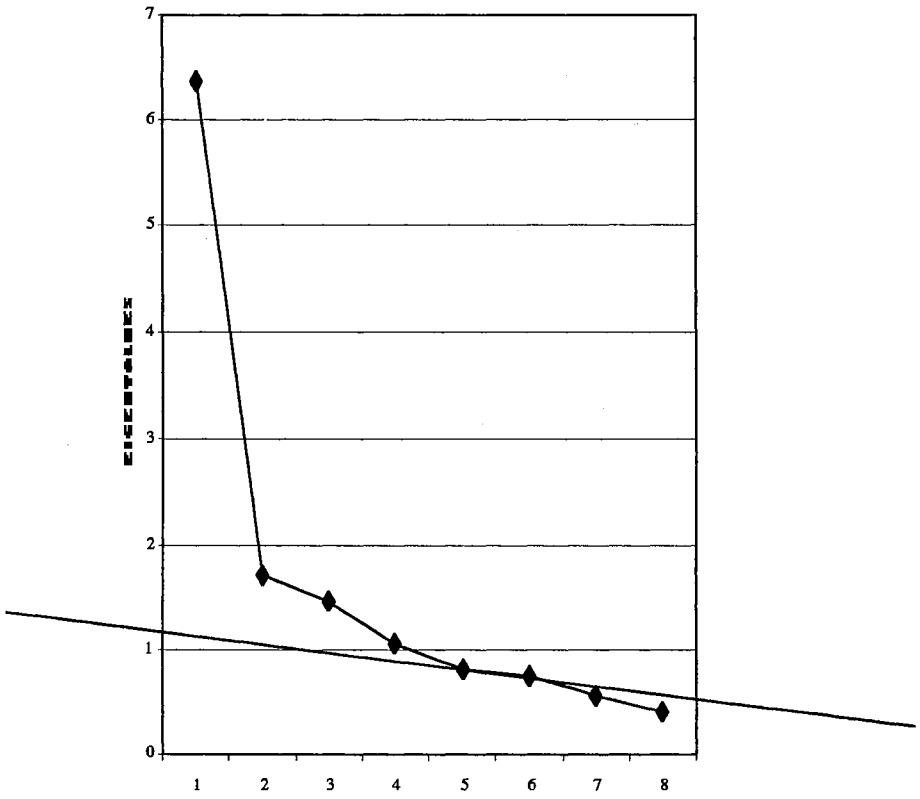
Eigenvalues, Communalities, and Variance Estimates for a Four Factor Solution: Initial Statistics

Variable	Initial Communality Estimates	Factor	Eigenvalue	Pct of Var	Cum Pct
ANXIETY	.49928	1	6.36335	42.4	42.4
CAREER INFO. NEEDS	.69115	2	1.73249	11.5	54.0
COMFORT LEVEL	.66515	3	1.46967	9.8	63.8
DECIDED	.61497	4	1.06065	7.1	70.8
DECISIVE	.49991	5	.80323	5.4	76.2
GOAL SELECTION	.60730	6	.73718	4.9	81.1
INDECISIVE	.55464	7	.56892	3.8	84.9
OCCU. INFORMATION	.64225	8	.39672	2.6	87.5
OCCU. KNOWLEDGE	.56653	9	.37734	2.5	90.1
PLANNING	.66193	10	.36026	2.4	92.5
PROBLEM SOLVING	.56228	11	.29497	2.0	94.4
SALIENCE	.24149	12	.24528	1.6	96.1
SELF APPRAISAL	.71243	13	.21901	1.5	97.5
SELF CLARITY	.47585	14	.20895	1.4	98.9
SELF KNOWLEDGE	.66638	15	.16198	1.1	100.0

A Scree test is plotted and appears in Figure 5. According to Stevens (1992), "The recommendation is to retain all Eigenvalues (hence components) in the sharp descent *before* the first one on the line where they start to level off" (p.378). Following this recommendation leads to four factors being extracted since the fifth and sixth Eigenvalues create a line with considerably less slope than the previous points generate.

Figure 5

Scree Plot of Eigenvalues



Gorsuch (1983) remarks that it may be useful to force the extraction of a number of different factors, noting which factors are rendered trivial by virtue of having only one or two variables loading onto them. Only a maximum of 4 Factors were possible using this approach as well.

The relatively objective factor selection methodologies above appear to favor a four factor solution. The final selection criterion to be considered relates to a more subjective and interpretative analysis of the meaning connected with the creation of each new factor. Adding a fifth factor failed to result in a component that added any meaningful interpretation to the analysis. Hence a four factor solution was adopted for the purposes of this study. Table 6 presents the Eigenvalues, initial communality estimates, and % variance figures from the 4 Factor Principal Axis factor analysis.

Factor Interpretation

Tables 8 and 9 display the Pattern Matrix and the Structure Matrix respectively, with factor loadings for each scale. The loadings in the Pattern Matrix represent the unique contribution of each variable to the factor, while the loadings in the Structure

Matrix are the simple correlations between the variables and the factors. Gorsuch (1983) recommends the use of the Structure Matrix for factor interpretation. He explains that interpreting from the Pattern Matrix would require that the meaning of the factors already be known. In addition, the overlap in variance between

correlated factors which is systematically excluded in the Pattern Matrix may be theoretically important.

It should also be noted that in order for a variable to be considered as significantly relating to a Factor, loadings had to be sufficiently high (i.e. salient). Gorsuch (1983) recommends using a figure which is at least twice the value of the minimum significant correlation from Appendix C. This translates into salient loadings being greater than 0.3 in value. The highest loading for each variable was well above 0.3.

Examining the Structure Matrix reveals that five of the six scales from the Career Decision Profile loaded onto Factor 1 with Decisiveness scale being the exception. Given the fact that the Comfort and the Decidedness scales loaded most heavily, Factor 1 may be best interpreted as a dimension that reflects the degree to which an individual perceives that he or she has successfully resolved the career decision-making task. It will be labeled "Decided", since higher values indicate greater levels of Decidedness and Comfort.

All 5 scales of the Career Decision-Making Self-Efficacy Scale had significant loadings on Factor 2, with Self-Appraisal and Problem Solving respectively demonstrating the highest loadings. It was decided to label this dimension "Self-Confident" since higher values indicate greater levels of self-efficacy or confidence. This finding was not unexpected since it was earlier predicted that the self-efficacy scales were highly intercorrelated.

Table 7

Factor Correlation Matrix:

	Decided	Self Confident	Information Needs	Indecisive
Decided	1.00000			
Self-Confident	.33239	1.00000		
Information Needs	-.26038	-.22628	1.0000	
Indecisive	-.35763	-.33521	.31221	1.0000

Table 8

Pattern Matrix for the 4 Factor Solution

	Factor 1	Factor 2	Factor 3	Factor 4
COMFORT	.81309	.05851	-.04246	-.01880
DECIDED	.73480	.10984	.01134	.00304
OCC_KNOW	.58926	.01526	-.18148	-.12749
SALIENCE	.44382	.04706	.04139	-.07813
SLF_CLAR	.43246	.06383	-.16279	-.19581
SLF_APPR	.05078	.86034	-.06187	-.01222
PROB_SOL	-.05976	.75532	.04408	-.12212
PLANNING	.05603	.74068	-.10058	-.11795
OCC_INFO	.19342	.72428	-.06086	-.00385
GOAL_SEL	.24958	.57680	-.11415	-.10883
CAR_INFO	-.07175	.02481	.94308	-.01627
SLF_KNOW	.07854	-.06759	.80508	.08992
DECISIVE	.08325	-.03746	-.01942	-.77839
INDECISI	.02820	-.14865	.05801	.73617
ANXIETY	-.27507	-.15543	.27535	.26420

Table 9

Structure Matrix for the 4 Factor Solution

	Factor 1	Factor 2	Factor 3	Factor 4
COMFORT	.85032	.34468	-.27329	-.34245
DECIDED	.76727	.35049	-.20390	-.29303
OCC_KNOW	.68719	.29493	-.37817	-.40001
SLF_CLAR	.56609	.31005	-.35098	-.42270
SALIENCE	.47662	.21140	-.10922	-.23971
SLF_APPR	.35723	.89531	-.27359	-.33810
PLANNING	.37059	.82159	-.31959	-.41767
OCC_INFO	.45139	.80363	-.27632	-.33482
PROB_SOL	.22349	.76642	-.14940	-.34017
GOAL_SEL	.50994	.72206	-.34363	-.42707
CAR_INFO	-.30324	-.20699	.95106	.29551
SLF_KNOW	-.18572	-.25380	.82800	.33585
DECISIVE	.35423	.25553	-.27564	-.80166
INDECISI	-.29959	-.39917	.31414	.79402
ANXIETY	-.49292	-.39774	.46464	.50065

Factor 3 had loadings from only two scales. These were the Need for Career Information and Need for Self-Knowledge scales from the Career Factors Inventory. It is felt that Factor 3 can be meaningfully interpreted and labeled as "Information Needs".

Factor 4 has three scales which loaded onto it, two of which represent participants' beliefs regarding their ability to be decisive or not. The third variable was the Anxiety scale from the Career Factors Inventory. The Anxiety scale, however, was found to load fairly evenly across several Factors and did not

"belong" to any single Factor. Consequently, it was decided that Factor 4 would be labeled as the "Indecisive" Factor since higher values indicate greater levels of indecisiveness.

A Pearson correlation matrix demonstrating inter-correlations between the 4 Factors appears in Table 7. "Decided" and "Self-Confident" were positively correlated to each other, while being negatively correlated with "Information Needs" and "Indecisive". It seems reasonable that these relationships would emerge. Those who report being indecisive and in need of information would not be expected to also describe themselves as self-confident or decided.

In summary, the answer to Research Question #1 is that the variance observed across the 15 subscales of the CFI, CDP, and CDMSES may be most parsimoniously accounted for by 4 Factors or dimensions which underlie the conceptual structure of the instruments. These Factors in order of variance accounted for are referred to as (1) Decided, (2) Self-Confident, (3) Information Needs, and (4) Indecisive.

Research Question # 2

To what extent does Differentiation, Integration, Conflict, Positive Affect, and Negative Affect account for the variance observed in the Factors identified in question #1?

This question represents the primary question addressed in this study; specifically, "What is the nature of the relationships between the underlying

constructs of career decision-making status and a select group of cognitive and affective variables?" The null hypothesis associated with this question assumes the observed variance in each of the factors will not be adequately explained by the predictor variables.

In preparation for multiple regression analyses, factor scores were generated for each participant. This means that if a participant were to score highly on the subscales that happened to load onto a particular factor, that participant would also receive a relatively high factor score for that factor. Several methods for calculating factor scores are available. The regression method was selected since Gorsuch (1983) states that it is a particularly appropriate choice for component factor analyses.

Four separate multiple regression equations were used to test Research Question #2, one for each of the four factors identified in Research Question #1. This procedure allowed Factors 1 through 4 to be set as criterion (or dependent) variables, while measures of Cognitive Differentiation, Cognitive Integration, Cognitive Conflict, Positive Affect, and Negative Affect served as independent (or predictor) variables. Table 10 displays the zero order correlations between the predictor variables and the four Factors.

In all regression equations, the Stepwise entry method was utilized. Pedhazur (1982) describes this procedure as a variation on the Forward Selection Method. He states that a serious shortcoming of the Forward procedure ". . is that predictors

Table 10

Simple Correlations Between Dependent and Independent Variables Used in Multiple Regression Analyses

	Differentiation	Integration	Conflict	Positive Affect	Negative Affect
Factor 1 (Decided)	.18**	-.11	.22**	.21**	-.23**
Factor 2 (Self-Confident)	.06	-.11	.25**	.29**	-.29**
Factor 3 (Info. Needs)	-.04	.01	-.10	-.12	.17**
Factor 4 (Indecisive)	-.09	.05	-.14*	-.29**	.39**

entered into the equation are retained despite the fact that they have lost their usefulness in view of contributions made by variables entered at later stages. In Stepwise Selection, tests are performed at each step to determine the contribution of each predictor already in the equation if it were to enter last." (p. 160). It was further determined that forward and stepwise approaches provided identical results.

It is also important in regression analysis to insure that there are not excessive levels of multicollinearity. High intercorrelations between the independent variables are confounding and can lead to serious distortions in the estimation and interpretation of regression coefficients. One approach to detecting

multicollinearity is to examine the determinant of the correlation matrix of the predictor variables. No correlations whatsoever will result in a determinant of 1.00. The determinant for the independent variables' correlation matrix is 0.74. SPSS provides at least two other indicators to assist in the detection of this problem. The Tolerance of a variable is the proportion of its variance not accounted for by other independent variables in the equation. A variable with very low tolerance contributes little information to a model according to Pedhazur (1982). Tolerances for the independent variables used here ranged from 0.82 to 0.95. The Variance Inflation Factor (VIF) for a predictor variable indicates whether there is a strong linear association between it and all the remaining predictors. Stevens (1992) warns that VIFs which exceed 10 are cause for at least some concern. VIF values for the variables in question ranged from 1.05 to 1.21. Together, these three indicators provide some assurance that multicollinearity is within acceptable levels for the regression analyses performed in this study.

All four regression analyses were found to be significant when all 5 of the predictor variables were entered. Table 11 summarizes the results of these analyses. The first multiple regression was performed on Factor 1 (Decided), with Negative Affect, Conflict, Differentiation, and Positive Affect making significant contributions. Looking at the R Square statistic, one can see that only about 13.4 % of the variance in Factor 1 (Decided) was accounted for by the four predictor variables in this equation.

Regressing the independent variables onto Factor 2 (Self-Confident) resulted in three predictor variables emerging as significant; Positive Affect, Conflict and Negative Affect. The R Square value rose, however, to approximately 17.6 %.

Factor 3 (Information Needs) differed from the previous two. Only Negative Affect made a significant contribution toward accounting for variance in this Factor. With only one independent variable remaining in the equation, R Square was only about 2.9 %.

The final regression analysis using Factor 4 (Indecisive) as the criterion variable was marked by having only affective variables successfully enter the regression equation (Negative Affect and Positive Affect). Collectively, they accounted for approximately 18.6 % of observed variance in the Factor. Surprisingly, Cognitive Integration failed to achieve significance as an independent variable in any of the four regression equations.

In summary, the answer to Research Question # 2 is that Differentiation (D), Conflict (C), Negative Affect (NA), and Positive Affect (PA) are each related to one or more of the four Factor Scores assigned to the participants in this study.

The standardized beta coefficient values for the independent variables in Table 11 may be used to compare the relative strength of the relationships between the predictor variables and the associated Factor. An examination of these beta weights demonstrates that affective variables account for more overall variance and have a stronger relationship to the proposed underlying constructs of career

decision-making than do cognitive variables for this sample. Negative Affect, specifically, appears to have the strongest overall relationship with the criterion variables, with Positive Affect significantly appearing in three out of the four regression equations. Cognitive Differentiation was significantly related only to Factor 1 (Decided). Cognitive Conflict (which is reversed scored) was significantly related to Factors 1 (Decided) and Factor 2 (Self-Confident).

Supplemental Exploratory Analysis

Testing Neimeyer's Hypothesis

Neimeyer's Vocational Development Model was discussed earlier in this study as comprising 2-dimensions, Differentiation and Integration. The 4 Quadrants generated by this model are believed to represent different developmental stages in the career decision-making process. Specifically, Neimeyer suggests that individuals occupying Quadrant 3, marked by high levels of Differentiation and low levels of Integration, would be more likely to have feelings of anxiety.

From the Correlation Table in Appendix C it can be seen that the correlation between the Career Choice Anxiety subscale and Cognitive Differentiation is non-significant (- .07). The correlation between Career Choice Anxiety and Integration is also non-significant (.02). As suspected, a two-way ANOVA produced non-significant main and interaction effects for Differentiation and Integration as well. Negative Affect had a moderately strong correlation with Career Choice Anxiety (.32**), and was considered as another variable with the potential to distinguish

TABLE 11

Multiple Regression Analyses of Scores on Differentiation, Integration, Conflict, Negative Affect, and Positive Affect on 4 Sets of Regression Factor Scores

Factor 1 (Decided)

Variable Entered	Mult R	R^2	R^2 Chg	Adj R^2	F(eqn)	Sig F	F Chg	Sig F Chg	b	Beta	Zero Order Correlation
Neg. Aff.	.2277	.0519	.0519	.0475	11.761	.0007	11.761	.0007	- .024	- .172	- .23
Conflict	.3000	.0898	.0379	.0813	10.551	.0000	8.908	.0032	.006	.168	.22
Total Diff.	.3400	.1156	.0258	.1031	9.280	.0000	6.223	.0134	.047	.145	.18
Pos. Affect	.3659	.1339	.0183	.1175	9.193	.0000	4.477	.0355	.019	.139	.21
Integration	.3668	.1345	.0006	.1140	6.559	.0000	0.1535	.6956	.000	- .028	- .11
Total R^2		.1339									

TABLE 11

Multiple Regression Analyses of Scores on Differentiation, Integration, Conflict, Negative Affect, and Positive Affect on 4 Sets of Regression Factor Scores (con't)

Factor 2 (Self-Confident)

Variable Entered	Mult R	R^2	R^2 Chg	Adj R^2	F(eqn)	Sig F	F Chg	Sig F Chg	b	Beta	Zero Order Correlation
Pos. Affect	.2915	.0850	.0850	.0807	19.969	.0000	19.969	.0000	.031	.219	.29
Conflict	.3732	.1393	.0543	.1313	17.319	.0000	13.507	.0003	.008	.198	.25
Neg. Affect	.4189	.1755	.0362	.1639	15.113	.0000	9.349	.0025	- .029	- .204	- .29
Integration	.4256	.1812	.0057	.1657	11.727	.0000	1.470	.2268	.000	- .077	- .11
Total Diff.	.4256	.1812	.0000	.1618	9.337	.0000	0.001	.9793	.000	- .002	.06
Total R^2		.1755									

TABLE 11

Multiple Regression Analyses of Scores on Differentiation, Integration, Conflict, Negative Affect, and Positive Affect on 4 Sets of Regression Factor Scores (con't)

Factor 3 (Information Needs)

Variable Entered	Mult R	R^2	R^2 Chg	Adj R^2	F(eqn)	Sig F	F Chg	Sig F Chg	b	Beta	Zero Order Correlation
Neg. Affect	.1697	.0288	.0289	.0243	6.374	.0123	6.374	.0123	.020	.139	.17
Pos. Affect	.1873	.0351	.0063	.0261	3.891	.0219	1.397	.2385	- .011	- .079	- .12
Conflict	.2023	.0409	.0059	.0274	3.031	.0303	1.299	.2558	- .015	- .075	- .10
Total Diff.	.2051	.0421	.0011	.0240	2.328	.0573	0.252	.6163	.000	- .043	- .04
Integration	.2062	.0425	.0005	.0198	1.874	.1001	0.100	.7527	.000	- .023	.01
Total R^2		.0288									

TABLE 11

Multiple Regression Analyses of Scores on Differentiation, Integration, Conflict, Negative Affect, and Positive Affect on 4 Sets of Regression Factor Scores (con't)

Factor 4 (Indecisive)

Variable Entered	Mult R	R^2	R^2 Chg	Adj R^2	F(eqn)	Sig F	F Chg	Sig F Chg	b	Beta	Zero Order Correlation
Neg. Affect	.3877	.1503	.1503	.1464	38.040	.0000	38.040	.0000	.045	.329	.39
Pos. Affect	.4310	.1857	.0354	.1781	24.405	.0000	9.301	.0026	- .025	- .189	- .29
Total Diff.	.4407	.1942	.0085	.1828	17.109	.0000	2.235	.1365	- .025	- .082	- .09
Conflict	.4461	.1990	.0047	.1839	13.171	.0000	1.286	.2580	.003	- .071	- .14
Integration	.4461	.1990	.0000	.1801	10.487	.0000	0.002	.9642	.000	.003	.05
Total R^2		.1857									

between the four quadrants of Neimeyer's model. The correlations between Negative Affect and Differentiation (.03) and between Negative Affect and Integration (-.03) were also too low to reach statistically significant levels. Details of these two-way ANOVA procedures appear in Tables 12 and 13.

Table 12

Summary ANOVA Table Setting Career Choice Anxiety as the Dependent Variable

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig of F
Main Effects	35.299	2	17.649	.655	.521
Integration	6.779	1	6.779	.252	.617
Differentiation	34.956	1	34.956	1.252	.256
Interaction Effects	6.799	1	6.799	.252	.616
Integ x Diff	6.799	1	6.779	.252	.616
Explained	41.301	3	13.767	.511	.675
Residual	4607.636	171	26.945		
Total	4648.937	174	26.718		

Table 13

Summary ANOVA Statistics With Negative Affect as the Dependent Variable

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Square	F	Sig of F
Main Effects	121.639	2	60.820	1.655	.194
Integration	69.318	1	69.318	1.886	.171
Differentiation	92.321	1	92.321	2.512	.115
Interaction Effects	12.278	1	12.278	.334	.564
Integ x Diff	12.278	1	12.278	.334	.564
Explained	133.145	3	44.382	1.207	.309
Residual	6395.417	174	36.755		
Total	6528.562	177	36.885		

Thus, it appears that the data extracted from the individuals in this sample lends no support to Neimeyer's supposition regarding the relationship between his Vocational Development Model and anxiety.

Summary

Chapter IV has presented the results of statistical analyses designed to answer the two research questions posed in Chapter I. Factor analysis results suggested the existence of four fundamental constructs underlying the Career Factor Inventory, Career Decision Profile, and the Career Decision Making Self-Efficacy Scale. These Factors were labeled, (1) Decided, (2) Self-Confident, (3) Information Needs, and (4) Indecisive. Multiple regression analyses revealed that significant amounts of variance observed in factor scores could be accounted for by various combinations of cognitive and affective variables associated with the Cognitive Repertory Grid and the Positive-Affect Negative-Affect - X Scales. In addition, exploratory analyses were performed and it was determined that empirical results failed to support Neimeyer's proposed relationship between anxiety and his Model of Vocational Development.

CHAPTER V

SUMMARY, CONCLUSIONS, AND DISCUSSION

This chapter presents a summary of the study, conclusions and discussion based on the results, implications for theory and practice, and recommendations for future research.

Summary

The purpose of this study was to answer questions related to the identification of individual differences in the career decision-making status of college undergraduates, and to investigate how cognitive and affective variables might relate to that status. These questions were approached from a trans-theoretical perspective, integrating four lines of research in the literature that have tried to identify correlates and explain variance among individuals who are faced with the important task of selecting a career. This issue has been examined from; (1) a cognitive perspective using Personal Construct Theory as a theoretical framework, (2) a self-efficacy perspective using Bandura's theoretical paradigm, and (3) an affective perspective focused primarily on how anxiety relates to career indecision. No studies to date have attempted to synthesize these approaches to better grasp

the character of how such a diverse set of variables may relate to the career decision-making process.

A supplemental exploratory investigation was also carried out which addressed a hypothesis concerning the relationship between anxious affect and Neimeyer's Vocational Development Model.

A total of 220 university students enrolled in various courses were administered the Career Factors Inventory (CFI), the Career Decision Profile (CDP), the Career Decision-Making Self-Efficacy Scale (CDMSES), the Positive Affect - Negative Affect Scale - Revised (PANAS-X), and the Cognitive Repertory Grid (CRG). The Grid was always administered first, but the order in which the other instruments were taken varied. Participants were allowed to complete instruments at home and return them within 1 week. All data was collected between March and December of 1995. Following is a restating of the research questions and their accompanying results from the statistical analyses:

Research Question # 1

How many factors (or constructs) underlie the 6 subscales of Career Decision Profile, the 4 subscales of the Career Factors Inventory, and the 5 subscales of the Career Decision-Making Self-Efficacy Scale?

Four factors were found to account for approximately 70 percent of the variance observed in the career decision status scores obtained on CFI, CDP, and CDMSES. These factors were labeled, (1) Decided, (2) Self-Confident, (3)

Information Needs, and (4) Indecisive. A principal axis factoring procedure was used to extract factors which were then obliquely rotated. The resulting structure matrix indicated that the 15 subscales loaded onto the four identified factors in the following manner:

Factor 1 (Decided)	Factor 2 (Self-Confident)
Level of Decidedness (CDP)	Goal Selection (CDMSES)
Level of Comfort (CDP	Planning (CDMSES)
Level of Self-Clarity (CDP)	Gathering Occu. Info. (CDMSES)
Level of Occu. Knowledge (CDP)	Problem Solving (CDMSES)
Level of Salience/Urgency (CDP)	Self-Appraisal (CDMSES)

Factor 3 (Information Needs)	Factor 4 (Decisive)
Need for Career Information (CFI)	Level of Decisiveness (CDP)
Need for Self-Knowledge (CFI)	Generalized Indecisiveness (CFI)

The Career Choice Anxiety (CFI) subscale's loadings were equivocal, appearing to be relatively evenly spread across all four Factors.

Research Question # 2

To what extent does Differentiation, Integration, Conflict, Positive Affect, and Negative Affect account for the variance observed in the factors

identified in research question #1?

The null hypothesis generated by this question would state that the variances observed in each of the four identified factors may not be adequately accounted for by the variables of Differentiation, Integration, Conflict, Positive Affect, and Negative Affect. Multiple regression analyses using the stepwise method of entry indicated that the variance could be partially accounted for by a combination of the variables employed. Thus the null hypothesis was rejected.

Listed in the order of the magnitude of their relationship with the identified factors, Factor 1 (Decided) was found to be a function of Negative Affect, Conflict, Differentiation, then Positive Affect accounting for 13.4% of the variance. Factor 2 (Self-Confident) was found to be a function of Positive Affect, Conflict, then Negative Affect accounting for 17.6% of the variance. Factor 3 (Information Needs) was found to be a function of Negative Affect alone accounting for 2.9% of the variance. Factor 4 (Indecisive) was found to be a function of Negative Affect and Positive Affect accounting for 18.6% of the variance.

Supplemental Analyses

This procedure related to an informal hypothesis put forward by Neimeyer (1985) regarding the relationship between his Vocational Development Model and anxiety. Neimeyer suggested that anxiety levels would be highest among those in Quadrant 3 of his model. These were individuals whose construct systems were

characterized as being highly differentiated and poorly integrated. A two-way ANOVA was performed Using Differentiation and Integration as the independent variables and anxiety as the dependent variable. Negative Affect was also inserted as a dependent variable. No group differences were found along measures of Career Choice Anxiety or Negative Affect. Thus, the data gathered in this study does not support Neimeyer's prediction.

Limitations

The conclusions obtained from the data analyses reported in Chapter IV are offered with the understanding that several limitations apply. For example, the sample in the present study may not be a representative sample of the general undergraduate population nor would it necessarily be representative of other populations (e.g. non-students). The sample is relatively homogeneous with respect to ethnicity, major area of study, and socio-economic status. Therefore, they may not reflect the greater variance in the general population. All data used in this study was gathered using paper and pencil self-report instruments. This method of data collection is subject to a variety of biased response sets which could lead to spurious results.

As noted earlier, significant group differences were noted along several variables based upon sex and based upon which classes students were drawn from. A full understanding of these group effects could substantially modify the conclusions drawn from the current results.

There is also some concern that for many students, career indecision may be somewhat artificially induced by the educational institution which requires that majors be declared and clear, academic direction be determined. Some students may be developmentally unprepared for these decisions, but under pressure may choose an academic direction that is ill-suited to their abilities and/or interests.

Conclusions and Discussion

The results of the present study provide empirical support for the existence of four dimensions (or factors) which underlie career decision status. The manner in which the various subscales loaded onto the factors revealed that (1) the majority of subscales of the Career Decision Profile collapsed into Factor 1, labeled "Decided", (2) all of the subscales of the Career Decision-Making Self-Efficacy Scale collapsed into Factor 2 and was labeled "Self-Confident", (3) the third dimension labeled "Information Needs" was composed of only two subscales, both of which came from the Career Factors Inventory, and (4) two subscales loaded onto Factor 4 which was labeled "Decisive".

It appears therefore that there was very little crossing over among subscales during the factor analyses. Instruments, for the most part, simply collapsed unto themselves to form three of the four factors eventually derived. Only Factor 4 was composed of two subscales from different instruments, (1) Level of Decisiveness (CDP), and (2) Generalized Indecisiveness (CFI). By way of explanation, it should be remembered that these three instruments were originally selected for this

study in part because their respective subscales were perceived as non-redundant exhibiting little crossover in terms of common constructs. So perhaps it is not so surprising that the factor structure matrix developed as it did.

Clearly , the average participant in this study had considerably higher scores on the Decided subscale of the CDP compared to the instrument norms. Average self-efficacy scores were also higher, while needs for information were lower than established norms. All this suggests that the sample used for this study was either faking good or they were, as a group, farther along in the career decision-making process than the sample used to norm the instruments which were factor analyzed.

It was also interesting to note that one subscale failed to load unequivocally onto any of the four factors, namely the Career Choice Anxiety subscale from the Career Factors Inventory. It seemed, instead, to load somewhat evenly across all of the factors. Though its correlations did not reach significant levels, trends were observed in the expected directions. Anxiety correlated negatively with Decided and Self-Confident while correlating positively with Information Needs and Indecisive. This finding indicates that anxiety may be a considerably pervasive component of the career decision-making process.

The results of the multiple regression analyses provided some unexpected findings. Much of the research on career decision-making has focused on the cognitive aspects rather than the affective correlates. Nevertheless, the predictor variables that were able to account for the greatest amount of variance observed in

Factors 1 through 4 were typically found to be Negative Affect and Positive Affect. Negative Affect was the most powerful indicator in most cases. Positive Affect appeared in three out of four of the regression equations. This finding suggests that any efforts aimed at helping individuals resolve career decision-making dilemmas may risk being ineffective unless the individual's emotional state is taken into consideration. At the least, it indicates that any battery of assessments administered to a career client should include an instrument designed to identify emotional states.

Other findings from the regression analyses suggest that Conflict as measured by the Cognitive Repertory Grid accounted for significant levels of variance in Factors 1 and 2, Decided and Self-Confident. Specifically, lower levels of Cognitive Conflict were associated with higher levels of Decided and Self-Confident. It certainly makes intuitive sense to reason that conflicted cognitive structures are likely to undermine decision-making and one's confidence level. Also interesting, however, is the finding that Conflict contributed nothing toward explaining individual differences with regard to Information Needs or Indecisiveness. This seems a bit counter-intuitive in the sense that those with conflicted cognitive structures might be expected to express a strong need for information. Similarly, Factor 4 (Decisive) was expected to be at least partly a function of conflicted cognitive structures.

It was also surprising to find that Differentiation only helped explain individual

differences observed in Factor 1 (Decided). One implication is that attempts to increase clients' levels of differentiation may contribute to their developing a sense of decidedness, but it will not affect their level of self-confidence, their perceived need for information, or their feelings of indecisiveness. It seems particularly odd that Differentiation would not account for variance in Information Needs. Those who report higher levels of Differentiation would be expected to have a lower need for occupational and self-related information, but that did not turn out to be the case.

Also interesting was the finding that Cognitive Integration failed to appear in any of the regression equations, indicating that none of the variance in any of the four underlying dimensions of career status could be explained by Integration scores. Once again, this finding is contrary to expectations given the empirical evidence pointing to Integration as a primary dimension of Career Development (Neimeyer, 1988). Recall that Integration represents the level of organization within the vocational construct system. Because higher levels of Integration have been related to more rapid and unambiguous career judgments (Cochran, 1977, 1983), it was especially anticipated that this variable would appear in the regression equations for Decidedness and Decisiveness.

Although the results of the multiple regression analyses relating to research question #2 were significant, it must be noted that the proportion of variance accounted for in the four identified factors ranged from only 2.9 to 18.6 percent.

As such, the bulk of the variance observed in the four career status dimensions remains unaccounted for. It may be that another, as yet unidentified, variable or set of variables is responsible for the unexplained variability in the measures.

With regard to the supplemental exploratory phase of this study, findings failed to support Neimeyer's (1988) suggestion that individuals in Quadrant III (highly differentiated / poorly integrated) of his Vocational Development Model might be most vulnerable to feelings of anxiety.

Although findings were not entirely unequivocal, the majority of the conclusions drawn from this study form a relatively coherent picture of career status. Findings also suggest that a trans-theoretical approach is useful and a more explanatory model which integrates cognitive and affective components is feasible.

Implications

Perhaps the most challenging aspect of research lies in assembling all the myriad bits of information scattered throughout the study into a form that facilitates the implementation of effective interventions. The essence of this study lies in its conclusion that affect may play a larger role in the career decision-making process than is generally considered to be the case. What does this mean for career counselors? Firstly, it means that administering a battery of instruments and providing the client with an array of scores and details from that battery may not be the most appropriate first step. If clients are suffering from excessively high levels of Negative Affect or excessively low levels of Positive Affect, they

may be less likely to develop confidence in their ability to perform career decision-making tasks. They may then come to perceive themselves as indecisive and, as a result, their vocational development is delayed leaving them undecided and uncomfortable.

During an informal discussion at a university career counseling center, the supervisor commented that she was quite aware that students come into the center feeling anxious. She was curious about the sources of that anxiety and how it could be addressed and ameliorated. The question then arises, "Is it the role of the career counselor to deal with clients' emotional problems?"

In terms of identifying the source(s) of anxiety associated with career indecision, it would certainly be possible to design an instrument with a variety of career decision-making variables such as those used in this study, including scales for mood state. An examining of the correlations between Negative Affect and the other scales should help identify specific areas which may be sources of anxiety. It may also be the case, of course, that negative affect is related to other issues in the client's life.

With respect to the second point regarding the role of the career counselor, it seems reasonable to assume that a psychologist specializing in career counseling will also be competent to help a client work with emotional issues. If the negative affect can be clearly linked to career decision-making issues (e.g. a lack of self-clarity or a need for occupational information), then it may be quite appropriate to

help clients examine how their emotions are affected by and how they affect the career decision-making process. If, on the other hand, the primary source of anxiety appears relatively unrelated to career decision-making variables (e.g. a divorce or financial difficulties), then it may more appropriate to refer the client.

Directions for Future Research

Several questions have been raised in conjunction with this research effort that point to important new avenues for inquiry. This section will outline four specific areas that deserve the future attention of investigators in this field.

(1) The first issue has to do with the assessment instrument used to measure differentiation, integration, and conflict. It is believed that the manner in which researchers have been administering and interpreting the Cognitive Repertory Grid may be methodologically flawed. The difficulty lies in the grid's failure to account for how individuals assign more value to some dimensions of judgment than others. For example, "high income vs. low income" as a dimension of judgment is likely to hold more weight for some when compared to another dimension of judgment such as "inside work vs. outside work". Kelly (1955) was addressing this issue when he recognized and elaborated upon the hierarchical nature of the Personal Construct System. Some attention has been paid to this problem (Cochran, 1980; Metzler & Neimeyer, 1988) but nothing substantive has been offered in the way of a revised methodology. Unless participants are asked to assign weights to the constructs they use to judge occupations, the resulting data

matrix is essentially one which lacks the dimension of personal meaning.

(2) The second area that deserves further investigation regards the replication of this study and the development of a career status model that reflects the four Factors identified in this study through factor analyses (Decided, Self-Confident, Information Needs, and Indecisive). This model should also reflect how the cognitive and affective variables identified as significant predictor variables relate to the underlying career status dimensions. Other variables that are capable of accounting for larger proportions of variance also need to be identified. It is further recommended that an instrument be designed to operationalize the model. This would be an instrument that would provide career counselors with a more comprehensive career status profile for individuals. Such a profile would serve to guide and improve the quality of career counselor interventions.

(3) It is also recommended that the relationship between the factors identified in this study and the Positive-Affect Negative-Affect Scale be studied in more depth. In particular, the 11 subscales of the PANAS-X need to be analyzed to determine how specific mood states (e.g. shyness, guilt, sadness) relate to career indecision. Given the important roles the higher order scales of positive and negative affect played in explaining individual differences with regard to career status, pursuing the relative importance of the lower-order mood states seems advisable.

(4) Finally, it is recommended that a more qualitative approach be undertaken

to more fully understand the nature of the career-decision making process. One could, for example, make a detailed examination of the qualitative content of the occupational constructs provided by participants on the Cognitive Repertory Grid. It would be interesting to see, for one thing, whether career status subtypes can be characterized in terms of the kinds of occupational constructs that are elicited from them? Would individuals who describe themselves as decisive and self-confident, for example, tend to generate a cluster of occupational constructs relatively unique onto themselves? It might also prove interesting to determine how people vary in terms of which constructs they judge as being most influential in their decision.

This field of endeavor is still in the exploratory phase of development, and much has still to be determined before consensus can be achieved. Still, significant progress towards explaining and understanding the career decision-making process has been made. This study provides important new directions for inquiry that will aid in the development of effective interventions for those individuals seeking help with issues of career indecision.

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APPENDICES

APPENDIX A

THE COGNITIVE REPERTORY GRID

The Cognitive Repertory Grid

ID # _____

Positive very somewhat slightly +3 +2 +1											Negative slightly somewhat very - 1 - 2 - 3

Freshman ___
Sophnore ___
Junior ___
Senior ___

Age ___

Sex ___

Black ___
Caucasian ___
Asian ___
Hispanic ___
Native American ___

APPENDIX B

INFORMED CONSENT FORM

Informed Consent Form

"I, _____, hereby authorize or direct John Romans, Ph.D., or associates or assistants of his choosing, to perform the following procedure;"

In this study, you are asked to complete (1) The Cognitive Repertory Grid, (2) The Career Decision Making Self-Efficacy Scale, (3) The Positive Affect-Negative Affect Schedule-Expanded, (4) the Career Decision Profile, and (5) the Career Factors Inventory. The entire procedure should take a total of approximately 80 minutes. You are also asked to provide the researcher with your Myers-Briggs Personality Inventory type and your Holland Code. You will be asked to provide a 4 digit number that will be easy for you to remember and use that number as your ID# on all instruments. This will insure complete confidentiality.

This research is done as part of an investigation entitled, "Cognitive and Affective Correlates to Career Decisional Status: An Integrative Approach". The purpose of this procedure is to examine how the structure of our thought processes, our sense of confidence, and our emotional states work together to influence the career decision-making process. It is hoped that the results of this study will help to clarify how career-undecided students differ from each other so that career counselors can more effectively facilitate the vocational decision making task.

"I understand that participation is voluntary, that there is no penalty for refusal to participate, and that I am free to withdraw my consent and participation in this project at any time without penalty after notifying the project director.

I may contact William L. Badger at telephone number (405)-744-4170 should I wish further information about the research. I may also contact Ms. Jennifer Moore at University Research Services, 001 Life Sciences East, Oklahoma State University, Stillwater, OK 74078; telephone (405)-744-5700.

I have read and fully understand the consent form. I sign it freely and voluntarily. A copy has been given to me."

Date: _____ Time: _____ (a.m./p.m.)

Signed _____
(Signature of subject)

"I certify that I have personally explained all elements of this form to the subject or his/her representative before requesting the subject or his/her representative to sign it."
Signed _____
(Project director or his/her authorized representative)

APPENDIX C

CORRELATION MATRIX - ALL VARIABLES

Pearson Correlation Matrix for the Total Sample, All Variables

	CFI-2 General Indecisive -ness	CFI-3 Career Info Needs	CFI-4 Self Info Needs	CDP-1 Decided -ness	CDP-2 Comfort Level	CDP-3 Lack of Self-Clarity	CDP-4 Lack of Occu. Info.	CDP-5 Decisive-ness	CDP-6 Salience/ Urgency	SES-1 Goal Selection	SES-2 Planning	SES-3 Occu. Info. Gathering	SES-4 Problem Solving	SES-5 Self-Appraisal
CFI-1 Choice Anxiety	-.57**	-.46**	-.39**	-.37**	-.49**	-.39**	-.46**	-.36**	-.24**	-.46**	-.40**	-.26**	-.46**	-.42**
CFI-2 General Indecisive-ness	1.00	.31**	.32**	-.31**	-.33**	-.31**	-.28**	-.64**	-.15*	-.41**	-.37**	-.40**	-.42**	-.37**
CFI-3 Career Info Needs		1.00	.79**	-.27**	-.30**	-.31**	-.39**	-.26**	-.12	-.34**	-.27**	-.14**	-.29**	-.25**
CFI-4 Self-Info Needs			1.00	-.16*	-.22**	-.31**	-.27**	-.30**	-.10	-.32**	-.26**	-.19**	-.32**	-.28**
CDP-1 Decidedness				1.00	.75**	.37**	.44**	.27**	.42**	.47**	.42**	.26**	.33**	.34**
CDP-2 Comfort Level					1.00	.41**	.58**	.30**	.37**	.51**	.39**	.26**	.37**	.35**
CDP-3 Lack of Self-Clarity						1.00	.64**	.39**	.31**	.41**	.37**	.19**	.36**	.36**
CDP-4 Lack of Occup Info							1.00	.37**	.33**	.42**	.38**	.20**	.35**	.32**
CDP-5 Decisiveness								1.00	.27**	.38**	.27**	.27**	.34**	.26**
CDP-6 Salience/									1.00	.24**	.26**	.17*	.23**	.23**
SES-1 Goal Selection										1.00	.63**	.56**	.64**	.68**
SES-2 Planning											1.00	.60**	.72**	.72**
SES-3 Gathering Occu. Info.												1.00	.62**	.70**
SES-4 Problem Solving													1.00	.75**
SES-5 Self-Appraisal														1.00

Pearson Correlation Matrix for the Total Sample, All Variables (continued)

	CFI-1 Choice Anxiety	CFI-2 General Indecisive-ness	CFI-3 Career Info Needs	CFI-4 Self-Info Needs	CDP-1 Decided-ness	CDP-2 Comfort Level	CDP-3 Lack of Self-Clarity
Positive Affect	-22**	-.26**	- .11	-.12	.15*	.20**	.13
Negative Affect	.32**	.31**	.13*	.25**	-.18**	-.27**	-.22**
Total Differentiation	-.07	-.04	-.05	-.01	.09	.16*	.14*
Adj. Total Differentiation	-.09	-.26**	.04	-.02	-.04	.09	.05
Total Integration	.02	.03	.00	-.04	-.02	-.11	-.09
Adj. Total Integration	.02	.04	-.04	-.06	-.03	-.12	-.09
Total Conflict	-.15*	-.12	-.09	-.09	.15*	.20**	.19**
Adj. Total Conflict	.03	.11	.13	.13	-.12	-.05	-.05
Students' Age	-.10	-.05	-.24**	-.12	.10	.04	-05
Students' Sex	-.01	.09	-.08	-.10	.04	.01	-.05
Students' Ethnicity	-.00	.00	-.09	-.08	.06	.05	-.09
Years of College	-.14*	-.05	-.41**	-.25**	.22**	.20**	.19**

Pearson Correlation Matrix for the Total Sample, All Variables (continued)

	CDP-4 Lack of Occu. Info.	CDP-5 Decisive-ness	CDP-6 Salience/ Urgency	SES-1 Goal Selection	SES-2 Planning	SES-3 Occu. Info. Gathering	SES-4 Problem Solving	SES-5 Self-Appraisal
Positive Affect	.22**	.25**	.09	.29**	.21**	.27**	.26**	.31**
Negative Affect	-.18**	-.36**	.05	-.23**	-.20**	-.26**	-.32**	-.29**
Total Differentiation	.27**	.11	.04	.12	.11	-.01	.02	.08
Adj. Total Differentiation	.08	.27	.03	.14*	.03	.12	.08	.12
Total Integration	-.12	-.06	-.05	-.08	-.10	-.03	-.03	-.16*
Adj. Total Integration	-.10	-.05	.04	-.06	-.09	-.01	-.04	-.14*
Total Conflict	.18**	.10	.12	.19**	.25**	.24*	.15**	.24**
Adj. Total Conflict	-.02	-.14	-.12	-.14*	-.10	-.02	-.17**	-.02
Students' Age	.05	.08	.02	.09	.08	.18**	.04	-.00
Students' Sex	.00	-.16*	.00	-.05	.14*	.15*	.08	.12
Students' Ethnicity	.01	-.03	.04	-.05	-.00	.01	-.09	-.05
Years of College	.29**	.05	.22**	.18**	.17*	.25**	-.03	.12

Pearson Correlation Matrix for the Total Sample, All Variables (continued)

Positive Affect	Negative Affect	Total Differentiation	Total Integration	Total Conflict	Age	Sex	Ethnicity	Years of College
Positive Affect	-.28**	.04	-.04	.07	.04	-.03	.07	.07
Negative Affect		.03	-.03	-.13	.00	-.02	-.02	.12
Total Differentiation			-.40**	.12	.07	-.16*	-.02	.09
Adj. Total Differentiation			-.25**	-.11	.05	-.14*	-.21**	-.12
Total Integration				-.16*	.06	.00	.08	.01
Adj. Total Integration				-.19**	.06	.01	.07	.01
Total Conflict					-.08	.28**	-.01	.03
Adj. Total Conflict					-.13	-.01	.04	-.07
Age						-.01	.13*	.42*
Sex							.05	.00
Ethnicity								.12

APPENDIX D

OKLAHOMA STATE UNIVERSITY INSTITUTIONAL REVIEW BOARD FOR HUMAN SUBJECTS RESEARCH

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 04-05-95 **IRB#:** ED-95-063

Proposal Title: COGNITIVE AND AFFECTIVE CORRELATES TO CAREER DECISIONAL STATUS: AN INTEGRATED APPROACH

Principal Investigator(s): John Romans, William L. Badger

Reviewed and Processed as: Exempt

Approval Status Recommended by Reviewer(s): Approved

APPROVAL STATUS SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING.
APPROVAL STATUS PERIOD VALID FOR ONE CALENDAR YEAR AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Reasons for Deferral or Disapproval are as follows:

Provisions received and approved.

Signature: _____ Date: April 18, 1995
Chair of Institutional Review Board

OKLAHOMA STATE UNIVERSITY
INSTITUTIONAL REVIEW BOARD
HUMAN SUBJECTS REVIEW

Date: 04-05-95 **IRB#:** ED-95-063

Proposal Title: COGNITIVE AND AFFECTIVE CORRELATES TO CAREER DECISIONAL STATUS: AN INTEGRATED APPROACH

Principal Investigator(s): John Romans, William L. Badger

Reviewed and Processed as: Modification

Approval Status Recommended by Reviewer(s): Approved

ALL APPROVALS MAY BE SUBJECT TO REVIEW BY FULL INSTITUTIONAL REVIEW BOARD AT NEXT MEETING, AS WELL AS ARE SUBJECT TO MONITORING AT ANY TIME DURING THE APPROVAL PERIOD.
APPROVAL STATUS PERIOD VALID FOR DATA COLLECTION FOR A ONE CALENDAR YEAR PERIOD AFTER WHICH A CONTINUATION OR RENEWAL REQUEST IS REQUIRED TO BE SUBMITTED FOR BOARD APPROVAL.
ANY MODIFICATIONS TO APPROVED PROJECT MUST ALSO BE SUBMITTED FOR APPROVAL.

Comments, Modifications/Conditions for Approval or Disapproval are as follows:

Modification received and approved.

Signature: _____ Date: October 26, 1995
Chair of Institutional Review Board

VITA

William Scott Badger

Candidate for the Degree of

Doctor of Philosophy

Thesis: COGNITIVE AND AFFECTIVE CORRELATES OF CAREER DECISION FACTORS: AN INTEGRATIVE APPROACH

Major Field: Applied Behavioral Studies

Specialization: Counseling Psychology

Biographical:

Education: Graduated from Marion High School, Marion, Indiana in May 1968; received Bachelor of Arts degree in Biology from Indiana University, Bloomington, Indiana in May, 1978. Completed the requirements for the Masters in Business Administration degree at Indiana University, Bloomington, Indiana in December, 1980. Completed the requirements for the Doctor of Philosophy degree at Oklahoma State University in August, 1997.

Experience: Co-Owner and operator of Aerotherm, Inc., an engineering firm utilizing infrared technology to provide preventive maintenance services to medium-sized and large corporations. Employed by Indiana University and Oklahoma State University as a graduate teaching assistant. Currently employed by the Lewisville Independent School District as an Associate Psychologist.

Professional Memberships: American Psychologists Association, National Association of School Psychologists.