Choosing a college major: Factors that might influence the way students make decisions

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Dedication

This dissertation is dedicated foremost to my parents as it would not have been possible without their sacrifice and unconditional support. I also would like to dedicate this dissertation to my grandparents, who are no longer with us.

Abstract

This current study investigated Janis and Mann's (1977) Conflict Model of Decision Making. Specifically, Janis and Mann's model was tested to examine decision-making styles (coping patterns) and students who either have already decided or who have yet to decide on their college major. Furthermore, the current study is aimed to expand Janis and Mann's model by testing the relationship between coping patterns and other personal variables. The personal variables included in the study were self-esteem, career decision making, self-efficacy, goal instability, personal growth initiative, and vocational interests. Undergraduate students (N = 230) from introductory psychology courses participated in the study. The results showed that the coping patterns from Janis and Mann's (1977) model were not related to any of the personal variables. Therefore, the current study did not find the personal variables played a role in students' decision-making coping patterns when choosing majors. In addition, vocational interests were not related to coping patterns, which meant that, when using Janis and Mann's (1977) model, Holland's vocational interests could not be categorize into rational and irrational types.

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CHAPTER I: Introduction and Review of Literature

Decision making is hailed by researchers to be one of the most imperative elements of career development (Gati & Tikozki, 1989; Miller & Miller, 2005). Career decision-making models, according to Harren (1979), have a more specific focus on decision making than other career development models. Also, decision-making models tend to be more life-stage focused than other career development models. Harren (1979), for example, argued that decisions such as choosing a career are more likely to occur at a particular time in the life span.

Student-clients, seeking services from college counseling centers, frequently express concerns to their counselors about making decisions regarding their academic majors. In fact, many of these clients seek counseling because they do not know their vocational interests. However, these clients also often mention personal issues (such as generalized lack of motivation) that interfere with making a decision on a college major. These issues are frequently associated with personal characteristics (e.g., low self-confidence) or interpersonal relationships (e.g., conflicts with parents).

Choosing an academic major is part of the process of making a career decision. For many people, the college major they choose leads them to their future careers. Recently, universities around the country have started to urge students to decide on their academic majors early in their college careers. The rationale for this move is that once the students determine their majors, they will be able to focus on graduating within a four-year time period. Some people might hypothesize that the pressure to choose an academic major places a strain on students that leads to stress, which may be manifested

in psychological or physiological reactions such as anxiety, depression, or panic. If a decision is made without carefully looking into different alternatives and thorough investigation, the student runs the risk of making a "bad" decision. Furthermore, according to Heppner and colleagues (1995), negative coping behaviors could be detrimental to a person's physical and psychological well-being. The decision-making process of college students is a crucial occurrence and needs to be examined.

Despite the universal need for college students to choose a major, research has focused little on the actual process college students use to decide on an academic major. Most of the vocational decision-making literature focuses on career decisions instead of academic major decisions. The research on career decision making, as applied to academic decision making, remains minimal, although one might assume that the literature could be generalized to apply to college major decisions. Given that making a decision on a college major might be the first big decision with the potential for life-long consequences for a student, the process warrants a closer examination.

Harren (1979) suggested that the career decision-making models lack focus on the decision makers' characteristics, in which a person's developmental maturity and personality could play a big role in the decision-making process. This study aims to add some personal characteristic elements to a specific decision-making model. Janis and Mann's (1977) Model of Decisional Conflict was applied in this study. Janis and Mann's (1977) model is not specific to any particular type of decision making. According to the authors, their model could be applied to all types of decision making, such as career decisions, marital decisions, and international crisis resolution decisions. However, this model by Janis and Mann (1977) provides several types of coping strategies of decision

making applicable to deciding on a college major. Additionally, the model lends itself to the incorporation of personal characteristics that could be useful for counselors when helping students choose their majors.

This study will first review the literature of models of decision making and the main focus of the study, Janis and Mann's (1977) model. The literature review also includes several personal characteristics focused on by the current study, demonstrating the reasons for the inclusion of these personal characteristics and the incorporation into Janis and Mann's (1977) model.

Overview of Major Career Decision-making Models

Vroom's Expectancy Model

Vroom's Expectancy Model (1964) is one of the earliest theoretical models to focus on an individual's career decision-making process. Some have claimed that it is "one of the most influential decision-making models" (Brown, 1990). The Expectancy Model contains three main constructs: Valence, Instrumentality, and Expectancy and is sometimes referred to as the VIE model. Vroom (1964) defines *valence* as the attitudes that people hold toward outcomes or rewards (affective reactions toward an outcome), and valence is often referred to as "preference." *Instrumentality* refers to the probability of obtaining the desired outcome (Van Eerde & Thierry, 1996). *Expectancy*, on the other hand, refers to the set of beliefs about whether these preferences can be realized (Brown, 1990). The VIE model is viewed as a within-subject model of decision making because the model focuses on the internal processes of the decision maker instead of external forces (Van Eerde & Thierry, 1996; Lord, Hanges & Godfrey, 2003). A formula was

proposed by Vroom to describe the VIE model: the instrumentality is weighted by valence and then summed across a number of outcomes (Van Eerde & Thierry, 1996). After weighing the outcomes related with different possibilities and choices, the decision maker chooses an option that generates the greatest reward or possibility of having desirable results, (Brown, 1990). Vroom's model also advises decision makers to think about primary and secondary outcomes of their career choices because these outcomes determine the preference (valence) of a particular career (Brown, 1990).

Past research has examined the utility of Vroom's model as a career choice process model. Despite overall support for the use of Vroom's model, the usefulness of the model is limited to a well-educated population (Brown, 1990). One oft-criticized assumption of the model is that decision makers have sufficient and necessary information to make the optimal decision (Lord, et al., 2003). Recent research testing Vroom's model focuses less on career decision making but more on contexts outside of vocational decision making literature, such as in selection decision making. In recent years, Vroom's model has been modified and applied to motivation. Van Eerde and Thierry (1996) conducted a meta-analysis on the VIE model with motivated behaviors. The authors suggested that the three components of the VIE model should be used in research instead of the model itself because the correlations between work-related criterion variables and the VIE model were lower than average. In other words, the three individual components of the VIE models seem to have stronger research evidence than when research tests the model as a whole.

Mitchell's Career Decision Model

Mitchell (1975) presented a career decision-making model that assumes a decision maker will create a set of preferences or priorities when considering possible alternatives. These preferences will help the decision maker distinguish between choices based on the values assigned to possible alternatives. These preferences are (a) absolute constraints (characteristics or aspects of a possible alternative must be either present or absent before one can consider this particular alternative); (b) negative characteristics (undesirable characteristics of variable degrees); (c) positive characteristics (desirable characteristics of variable degrees); and (d) neutral characteristics (irrelevant characteristics). Mitchell re-conceptualized earlier work by Restle (1961), whose model proposed that a decision maker chooses an alternative based on the comparison between alternatives and an "ideal" situation (Mitchell, 1975; Brown, 1990) constructed in the decision maker's mind which might be different from reality (Mitchell, 1975). However, Mitchell (1975) noted that an "ideal" situation generally does not occur because decision makers might not have an "ideal" situation in mind or might not know enough about the alternatives to construct an "ideal" situation.

Harren's Decision-making Model

Harren (1979) proposed a model of career decision making tailored to college students. This model, derived from several sources such as Tiedeman and his colleagues' work (Tiedeman, 1961; Tiedeman & O'Hara, 1963) and Janis and Mann's (1977) Conflict Model, views career decision-making from a developmental perspective (Berger-Gross, Kahn & Weare, 1983). Similar to most developmental models, Harren's model incorporates multiple stages. The four stages that describe the sequential decision-

making process are: Awareness, Planning, Commitment, and Implementation (Harren, 1979). Harren proposed that different concerns and issues arise in each stage and that certain behaviors are used to resolve these issues. Kortas, Neimeyer, and Prichard (1992) called Harren's model "one of the most influential approaches" in career decision-making literature (p.202). The limitation of this model is that, according to Harren (1979), the postulates are less applicable to non-college student populations. Nevertheless, this model provides a detailed look into processes involved in college-age students making a career decision. Harren also developed an instrument named the Assessment of Career Decision Making to measure three decision-making styles: Rational, Intuitive, and Dependent. Johnson (1987) reported that the instrument can be effectively and appropriately used in career planning.

Expected Utility Model and *Sequential Elimination Model*

The Expected Utility Model (EU) long has been viewed as a rational model and the most appealing model because it is designed to reach the best outcomes through mathematically derived principles (Gati & Tikotzki, 1989; Lichtenberg, Shaffer, & Arachting,1993). The EU model proposes that any alternative or choice can be computed into numeric values which represent the subjective value of the choice/alternative (Litchenberg, et al., 1993). The "best" alternative is chosen if EU has the greatest expected utility value (Litchtenberg, et al., 1993). However, Gati's (1986) research indicated that the EU model is only useful when a small number of alternatives are presented. Furthermore, Janis and Mann (1997) noted that the EU model is time-consuming and is not cost-effective because the model requires too much effort to gather and evaluate all information needed to reach the most optimal decision.

Instead of weighing all possible outcomes and choosing the most "optimal" option like the EU model, the Sequential Elimination Approach (SEA) proposes that all alternatives are weighed at the same time (Gati, 1986). Furthermore, the SEA states that every possible alternative has its own set of characteristics. A characteristic (e.g., high income) of a career alternative (e.g., pharmacist) is chosen by the decision maker in any given stage. Career alternatives that the decision maker might be considering will contain this particular characteristic while other career alternatives lack the characteristic. The alternatives that do not contain this particular characteristic will be eliminated. However, if the characteristic is present in all alternatives, no career alternatives will be eliminated. The process continues until one single choice remains. Currently, only a few studies have tested SEA and its applicability. Nonetheless, some researchers argue that the SEA is more useful than the EU model (Brown, 1990). Most researchers claim it has the potential to be valuable because the SEA model is more realistic than models like EU, and could be very helpful in situations where a large number of alternatives are available.

Janis and Mann's Decisional Conflict Model

Janis and Mann (1977) proposed a model of decision making that encompasses every aspect of life decisions. The premise of their model is that conflicts arise when important life decisions are being made, and anxiety and stress are the products of these conflicts. To cope with the stress that comes with such conflicts, people resort to five different coping patterns when trying to make the decisions: unconflicted adherence, unconflicted change, defensive avoidance, hypervigilance, and vigilance. *Unconflicted adherence* and *unconflicted change* occur when decision makers do not experience any form of conflict, or experience very low levels of stress when they are faced with

alternatives. During these situations, decision makers ignore important information and accept options without questioning or considering the potential risks of these particular decisions. Janis and Mann focus mainly on the other three types of coping patterns because their theory is based on the assumption that the process of making an important decision creates feelings of conflict between alternatives. Defensive avoidance refers to situations when decision makers procrastinate or rationalize when facing alternatives, or pass the responsibility of decision making to others. The goal of these decision makers is to avoid conflict and the least objectionable alternatives are frequently employed as the result. In hypervigilant situations, the decision makers are met with time pressures and impulsively choose an alternative that could provide immediate relief from stress produced by the decision-making process. The decisions made by employing unconflicted adherence, unconflicted change, defensive avoidance, and hypervigilant coping patterns are considered by Janis and Mann as "defective" or non-rational decisions. Vigilance, as described by Janis and Mann, is the only coping pattern that will result in rational decisions. In a vigilant situation, the decision maker carefully examines and weighs all possible alternatives by using a variety of strategies before reaching the final decision.

Part of Janis and Mann's model that has attracted some attention is the use of a balance sheet to help make decisions (Janis & Mann, 1977). The authors advocate using the balance sheet to help people weigh their alternatives and consequences to these alternatives. The balance sheet contains four categories of anticipations/consequences of the possible alternatives when people are evaluating alternatives. The four categories include utilitarian gains and losses for self, utilitarian gains and losses for significant

others, self-approval or self–disapproval, and approval or disapproval from significant others. Once all four categories are considered and a positive answer can be provided for each of the categories, the authors believe that the decision maker would be the least likely to make a "defective" decision. A study conducted by Janis and Mann (1982) showed that by giving college seniors a balance sheet, the process of completing the balance sheet helped these seniors widen the range of possible alternative career options and provided an increased awareness of potential consequences when making decisions.

Some researchers suggest that the Conflict Model is useful in the applied setting to help clients make important life decisions. Brown (1990) suggests that the coping patterns in Janis and Mann's model could assist career counselors in identifying "maladaptive approaches to career decision making" (p.407). The Conflict Model has generated few research studies, even though the model has been cited in many of the decision making research studies and reviews on decision making models. However, most of the empirical studies that applied Janis and Mann's model focused on the use of balance sheets (Brown, 1990). Janis and Mann also have conducted studies to provide evidence of validity for Harren's model (1979), which was partly derived from the work of Janis and Mann (1977). However, more recent studies that examine this model cannot be found. Thus, the applicability of this model for the current population is still unknown.

Summaries of the Models

Career decision-making models such as these proposed by Vroom, Mitchell, Harren, Gati and colleagues, and Janis and Mann have been categorized into descriptive and prescriptive/normative. The distinction between the two types of models is that

descriptive models illustrate the process of the actual decisions being made and prescriptive/normative models use theoretical frameworks to show how the most "optimal decision" is made (Gati & Tikotzki, 1989). Furthermore, the distinction implies that the prescriptive/normative models would produce more "rational" decisions. Harren (1979) stated that career decision-making models are not to be confused with career development models. According to Harren (1979), career development models are, in essence, broader than decision-making models and do not focus on the type of process individuals employ to "successfully resolve" developmental tasks.

The aforementioned models provide different views of career decision making in both general and specific contexts. Despite the previously mentioned researchers' efforts to examine people's style of making career decisions, the researchers have yet to pay much attention to the strategies people employ to make important decisions such as choosing a college major. In the process of understanding why people make certain decisions, it is imperative to attempt to understand what people do when trying to come to a decision. The strategies people use when making decisions have tremendous impact on the quality of the decisions, and therefore have serious implications in their lives.

Janis and Mann's (1977) model, however, does hypothesize coping patterns/strategies that occur during the decision-making process. This paper is designed to examine the utility of the Conflict Model for choosing academic majors and to explore the relationship of several factors with the Janis and Mann model that might play important roles in an individual's decision-making process as suggested by the current literature. Although Janis and Mann's Conflict Model does not specifically target the college population, this current study intends to apply the model to this specific

population. Based on the premise that stress and conflict arise whenever an individual must make important decisions in life, choosing an academic major would fall under such a condition. Research has shown that anxiety related to stress has a negative impact on an individual's ability to make a sound decision. Thus, by observing the coping patterns people use to deal with the stress of making an important decision, the model could help counselors and counseling psychologists to identify the most appropriate interventions when working with career counseling clients.

Variables under Investigation

Many personal characteristics and attitudes might play a role in the process of decision making. This section examines how certain variables play a role in an individual's decision-making process. These variables include vocational interests, self-esteem, career decision making self-efficacy, goal instability, and personal growth initiative. Most of the existing literature focuses on career decision making, rather than academic major decision making. The current study is designed to apply knowledge from career decision-making research to the college major decision-making process.

Self-Esteem

Research has shown that self-esteem does play a role in the vocational decision-making process (Korman, 1967). Rosenberg and Pearlin (1978) refer to self-esteem as a concept of self-worth and "a global positive or negative attitude toward the self" (p.67). Self-esteem is hypothesized to be an evaluative part of self-concept and has been shown to predict a collection of psychological variables such as depression, anxiety disorders and dropping out of school (Swann Jr., Chang-Schneider, & McClarty, 2007).

Specifically, people who have low self-esteem are more likely to suffer from depression or anxiety disorders, or drop out of school. Additionally, self-esteem has been shown to predict adaptation to adult life of teenagers 14 years after they were first assessed (Swann Jr. et al., 2007). Korman (1967) was among the first researchers to examine how self-esteem affected vocational choice. He hypothesized that self-esteem worked as a moderating variable for vocational choice and self-perceived abilities (1967). Specifically, he stated that people who have high self-esteem would be more likely to seek out and accept choices that fit with their perceptions of their abilities. However, Korman did not talk about specific vocational behaviors that might be associated with self-esteem. Other researchers who tested Korman's ideas agreed with him and further stated that people who have high self-esteem tend to have more consistent behaviors related to their self-concepts and are more intrinsically motivated than people with low self-esteem (Leonard, Walsh, & Osipow, 1978).

Barrett and Tinsley (1977) reviewed research that focused on this topic and concluded that self-esteem is involved in the career decision-making process. The authors found that individuals with low self-esteem had less crystallized vocational identities, which resulted in uncertainty in career choice or lack of clarity in decision making. Maier and Herman (1977) also found that undecided freshmen students who were categorized as "dependent" (e.g., seek advice from others when making decision) seemed to have lower self-esteem than the students who had made decisions about their majors. Low self-esteem has been found to be related to career indecision (Bacanli, 2006). Specifically, people who have low self-esteem tend to be more indecisive in making career choices. The author also found that individuals with low self-esteem tend

to exhibit external locus of control and a higher level of irrational beliefs. However, Bacanli's study did not specify whether self-esteem plays a moderating role in career indecision. Instead, self-esteem was grouped with other personal characteristics such as locus of control when investigating career indecision. This current paper seeks to investigate how self-esteem correlates with career decision making. Self-esteem will also be examined as a moderator between decision-making styles and variables such as locus of control, personal growth initiative, and goal instability.

Career Decision Making Self-Efficacy

Bandura's (1971) construct of self-efficacy, which refers to an individual's confidence in her or his ability to be successful in performing a task (Taylor & Popma, 1990), has been widely studied within the realm of vocational psychology. Self-efficacy is often associated with human behaviors and behavioral change (Taylor & Betz, 1983). An important theoretical development of decision-making research was to apply the concept of self-efficacy to career decision-making models. Taylor and Betz (1983) were among the first researchers to investigate this topic. They devised a Career Decision Making Self-Efficacy (CDMSE) scale that explicitly measured people's perceptions of their ability to make such decisions. Research suggests that lack of confidence and structure is one of the main factors that influence college students to avoid or delay making decisions (Taylor & Betz, 1983). They also found that levels of self-efficacy could predict the level of career indecision, and the relation between self-efficacy and career indecision is moderately strong. Specifically, the less confidence students have in their decision making self-efficacy, the less likely they are to complete the tasks required

to reach a decision (i.e. self-appraisal, occupational information, planning, goal selection, and problem solving).

Another study that examined several factors and their relationships with career decision making self-efficacy confirmed results from Taylor and Betz' work (Taylor & Popma, 1990). The authors claim that students who had already made decisions on their academic majors or who already had chosen a career tended to have higher scores on measurement of self-efficacy than their counterparts. They also found that career decision making self-efficacy had a significant negative relationship with locus of control, with external locus of control corresponding to lower career decision making self-efficacy. However, they did not find other variables (e.g., career salience) to be predictive of career indecision. These studies suggest that self-efficacy has an important association with career decision making.

Despite evidence supporting the assumption that career decision making self-efficacy might predict career indecision, some studies showed contradictory results (Lent, Brown & Larkin, 1987). For example, Lent et al. (1987) examined career-relevant behavior in college students with science and engineering majors by looking at self-efficacy, interest congruence, and consequence thinking (i.e., anticipation of consequences of making a decision). Results from this study showed that self-efficacy was the most powerful variable in predicting grades and persistence in the chosen majors. Additionally, the range of perceived career options was predicted by self-efficacy and interest congruence and the three variables (self-efficacy, interest congruence and consequence consideration) are interrelated. Interestingly, consequence consideration was taken from the Janis and Mann (1977) model on which the current proposal focuses.

Results from the Lent et al. (1987) study showed that individuals with higher self-efficacy tended to have less negative consequences thinking about their primary career choice than those with lower self-efficacy. Unlike previous studies that suggest self-efficacy helps to explain career indecision, interest congruence was the only variable in the Lent et al. (1987) study that explained career indecision. The results from the Lent et al. (1987) study offer another view of the question of whether self-efficacy could influence career decision making at first glance. Nevertheless, the authors explained the conflicts with previous findings by suggesting that their measure of self-efficacy was different from the instrument created by Taylor and Betz (1983). Specifically, Lent et al. (1987) measured self-efficacy by assessing students' perceived academic competence rather than by measuring self-efficacy as perceived competence in tasks relevant to career decision making. Nonetheless, career making self-efficacy still seems to be an important factor in career decision making.

Few studies on career decision making self-efficacy have been conducted in recent years. Thus, this current proposal intends to examine career decision making self-efficacy and to explore the extent to which career decision making self-efficacy influences decision-making patterns. Based on the research, career indecision could be predicted by levels of career decision making self-efficacy. Therefore, activities linked to career indecision such as lack of exploration might also have a relationship to career decision making self-efficacy. Additionally, the current study aims to investigate whether career decision making self-efficacy is a moderating variable between coping patterns and variables such as goal instability, that are included in the current study.

Goal Instability

Goal instability is a construct that comprises difficulty initiating action, setting goals, and maintaining the drive to complete such goals (Casillas et al, 2006). This construct was derived from Kohut's (1971 & 1977; cited from Robbins, 1989) developmental theory of "Psychology of the Self." According to Robbins (1989), Kohut hypothesized that the self develops from both narcissism and self-development. Narcissism helps an individual to produce a healthy sense of worth and eventually create strong self-esteem and ambition, whereas self-development, described as "idealization" by Robbins (1989), creates a sense of direction and security. Idealization also includes an individual's options and plans (and implementation of the plans) such as marriage, vocation and education (Robbins & Patton, 1985). Idealization is a variation of goal-directedness, which has been connected to variables such as personal competence, self-esteem, and the ability to carry out several career development tasks (Robbins & Patton, 1985; Blustein, 1989). For example, Robbins and Patton (1985) tested whether goal instability has a relationship with self-esteem and career indecisiveness. The results showed that high goal instability scores are associated with low self-esteem and high career indecisiveness.

Robbins and Patton (1985) constructed the Goal Instability Scale (GIS) based on the concept of idealization from Kohut's theory of self. Goal instability also is viewed as generalized motivation by some (Casillas et al., 2006). Robbins and Patton (1985) applied Kohut's theory to college-age students and found that the theory did explain some variance in student behavior and vocational development. Goal instability, one of the focuses of this current proposal, was found to have a significant but negative

relationship with self-esteem. Specifically, low self-esteem was associated with high goal instability (Robbins & Patton, 1985). Furthermore, the researchers found that the participants who scored high on goal instability lacked a sense of firm goal-setting beliefs. Along with the Superiority Scale (which measures "narcissism"; Robbins and Patton, 1985), goal instability was found to predict the level of career decisiveness in the sample. Explicitly, higher scores in goal instability relates to higher career indecision.

Blustein (1989) sought to investigate the role of goal instability and career self-efficacy on career exploratory behavior in college students. He cited research that suggests that when people have internalized goals, they are more likely to engage in self-initiated activities such as career exploration. Blustein (1989) argued that because goal instability often was used to evaluate general motivation, using goal instability is a logical step in examining how motivation could influence career exploration. The study by Blustein (1989) examined the relationship between goal instability, career decision making self-efficacy, and career exploratory behaviors with canonical correlation. The results indicated that goal instability played a part in career exploration by aiding these exploratory behaviors. However, in this particular study, career self-efficacy was found to be more relevant in career exploration than goal instability. Blustein (1989) explains that career self-efficacy is a domain-specific factor and that goal instability is a more global factor.

Furthermore, Multon, Heppner and Lapan (1995) surveyed the career counseling literature and concluded that goal instability is related to vocational identity. Goal instability also is associated with career uncertainty and career dissatisfaction with career choice that related to the difficulty of choosing from career alternatives when a goal is

absent. Multon and colleagues (1995) studied a group of high school students with different degrees of career decisiveness and concluded that goal instability is related to career decisiveness. They found that different degrees of career decisiveness have an impact on people in different ways when they have high goal instability. If individuals have high goal instability and are undecided in their career goals, they tend to have high anxiety, externality, personal issues, and self-perception problems. These individuals also tend to be indecisive (pervasively) in general and indecisive in career decision making. The participants who scored high on goal instability but had clear career direction were more likely to exhibit anxiety and more likely to be lacking in self-efficacy. Multon and colleagues (1995) suggest that individuals who exhibit high goal instability but who have clear career direction might be more susceptible to a foreclosure of alternatives due to lack of goals when making decisions.

Research on goal instability has yet to focus on a decision-making model for college students. Additionally, few recent studies have re-visited the effect of this variable on the current college population. Research studies have investigated goal instability and its relationship with several characteristic variables, such as self-esteem. The current study seeks to further examine the role of goal instability in influencing college student decision-making patterns. Specifically, this current study is designed to examine to what extent goal instability predicts the types of decisional pattern/strategies a decision maker employs.

Personal Growth Initiative

One of the factors that contributes to the understanding of people's decision making process is Personal Growth Initiative (PGI). PGI is defined as "active intentional

engagement in the process of personal growth" (Robitschek, 1998, p.184). Prochaska and DiClemente (1986) were among the first to hypothesize that personal growth includes development, environmental, and intentional processes, with intentional process being the most essential. The development process involves unconscious personal growth or changes; the environmental process of personal growth states that the individual is aware of the changes but resists these changes; the intentional process occurs when the individual is consciously aware of, and willingly and actively involved in, the process of change (Robitschek, 1998). Robitschek states that the intentional process is the most important part of personal growth because the intentional process allows an individual to be fully aware the changes are occurring. Additionally, the intentional process leads this individual to be actively and willing engaged in the process of growth. A validation study of PGI presented evidence to support the assumption that PGI is an active and intentional process (Robitschek, 1999). Furthermore, Robitschek and Cook (1999) reported that those who have score high on measures of PGI are aware of their own change and development over time, and they also are proactive (i.e. they want to make changes happen) and capitalize on opportunities for this personal development.

Robitschek (1998) notes that the cognitive aspects of self-efficacy are included in the construct of PGI and these self-efficacy aspects such as values, beliefs, and attitudes help to support personal growth. Additionally, PGI also includes the behavioral aspects of self-efficacy, and these behavioral aspects help to implement the cognitions of personal growth. Research has shown that PGI is related to several variables within the career development domain (Robitschek, 1998, 1999; Robitschek & Cook, 1999; Bartkey

& Robitschek, 2000; Hardin, Weigold, Robitschek, & Nixon, 2007). Robitschek (1998) ran correlations of PGI against assertiveness, internal and chance/external locus control, and instrumentality during the process of constructing the Personal Growth Initiative scale. For both genders, those who scored higher on PGI tended to score higher on measures of assertiveness, instrumentality, and internal locus of control. Additionally, Robitschek found that people who score high on PGI tend to have lower levels of external locus of control. The results also showed that men who score high on PGI are more assertive and score higher on internal locus of control than do women who score high on PGI. Part of the Robitschek (1998) study also touched on personal growth of people of different ages. Robitschek concluded that college students scored higher than midlife adults because college is a time of "conscious growth" (p.195).

Some stages of Harren's career decision-making model were used to examine the relationship between PGI, career exploration, and vocational identity (Robitschek & Cook, 1999). The two stages included in the Robitschek and Cook study were awareness and planning. The rationale for using only these two stages provided by Robitschek and Cook (1999) was that career exploration and vocational crystallization would occur after these two stages take place. Career exploration and vocational crystallization are part of the essential components of career decision making, which might be influenced by certain personal characteristics such as self-concept and decision-making style (Robitschek & Cook, 1999). The study showed that PGI predicted higher environmental exploration and stronger vocational identity, which supported the assumption that people who score high on measures of PGI would be proactive and intentionally engaged in the process of change. The authors also suggested that college students with high scores on

PGI are likely to gather more career information about their environment and are likely to have more success in shaping their vocational identities than their counterparts. Results also showed that PGI had a significant positive relation to reflective coping style (problem solving) and negatively related to suppressive coping style (avoidance). The authors argued that the instrumentality ("masculine" personality trait) presented in both the PGI and reflective coping styles provided logical sense that the two variables would be related. On the other hand, part of PGI is to be proactive, and the suppressive coping style is on the opposite end of proactive. Overall, PGI seems to be a vital element in the college student decision-making process.

Vocational Interests and Decision-making Styles

People respond to different career interventions because of individual differences. As suggested earlier by Janis and Mann (1977), people who have diverse decision-making patterns respond to different interventions. For example, those who tend to procrastinate when making important decisions might need interventions that target the reasons procrastination occurs and strategies to alleviate it. Miller and Miller (2005) ponder the same issue – namely, that one counseling intervention does not fit all. The authors suggest that personal characteristics such as vocational interests or personality might interact with one's decision-making styles (Miller & Miller, 2005). Miller and Miller (2005) argue that the understanding of the relationship between vocational interests and decision-making styles will help counselors tailor interventions that fit each client.

Recently, Miller and Miller (2005) suggested an interesting approach to investigating the relationship between John Holland's interest types and people's decision

making styles. In the vocational literature, Holland's theory, which pertains to vocational interests, is one of the most widely studied and supported. Holland's six vocational types are the following: Realistic, Investigative, Artistic, Social, Enterprising, and Conventional. In their review article, Miller and Miller (2005) examined Johnson's (1978) decision-making model, which divides decision making styles into two dimensions: systematic and spontaneous, sometimes called internal and external respectively, in relation to Holland's themes.

The analysis by Miller and Miller (2005) suggests that Holland's types can be divided in accordance to Johnson's decision-making styles. Realistic, Investigative and Conventional types fit with the systematic decision-making style. People who have the vocational personality styles of these three types tend to prefer activities that involve data analysis and methodical strategies. On the other hand, Artistic, Social, and Enterprising types correspond to the spontaneous style (Miller & Miller, 2005). People with these three interest types tend to be more open to ambiguity and change. Miller and Miller (2005) suggest that this information would be helpful to career counselors because the counselors then can match interventions or approaches with people who have specific vocational types. For example, Realistic, Investigative, and Conventional interests might fit better with more rational approaches, such as inviting students to gather and analyze information; students with Artistic, Social and Enterprising interest types might be better suited for less rational approaches, such as coming up with creative decision-making skills when facing decisions. Additionally, Gordon (1984) mentioned the characteristics of undecided students to be more creative and intellectually curious.

Vocational interests appear to have an association with decision-making styles based on Miller and Miller's (2005) analysis. However, Johnson's model was employed in their analysis. The premise of the current proposal is to employ Janis and Mann's (1977) Conflict Model of Decision Making with Miller and Miller's (2005) analysis. The Conflict Model fits into the equation because the vigilance coping pattern could be viewed as rational and all other coping patterns are viewed as irrational or maladaptive. Therefore, Janis and Mann's model will be used in the current study to examine whether Miller and Miller's (2006) analysis will be supported.

Overview of the Current Project

The majority of the extant college student career development research focuses on career, rather than college major, decision making. In recent years, students were advised to choose a major early during their college education or to start exploring possible college major options early (e.g., Onestop guide "How to graduate in four years"). Yet the decision-making process of choosing college majors seems to have been largely ignored by research. The current research project was designed to add empirical knowledge to the existing career decision making literature. Janis and Mann's Conflict Model of Decision Making would be tested on college students and their decision-making patterns when choosing a college major. Variables that were the focal points of the current project seemed to have significant impact on the career development of college students, based on the literature. Therefore, the current study aimed to expand Janis and Mann's model. Specifically, variables such as self-esteem, career decision making self-efficacy, goal instability, locus of control, and personal growth initiative were

incorporated into Janis and Mann's model to observe possible relations among these variables. Finally, Janis and Mann's coping patterns were examined in relation to vocational interests. Research and theory suggested that people who have certain vocational interests have specific ways of making career decisions. The current study tested this assumption with empirical methods.

Hypotheses

Hypothesis 1

Students who have decided on their academic majors would be more likely to have adaptive decision-making strategies than will those who have not decided on their majors. Consequently, students who have yet to decide on their majors will be more likely to have maladaptive decision making strategies (buckpassing, procrastination, and hypervigilance) than those who have already made the decision. Adaptive decision-making strategies referred to the Vigilant coping pattern of Janis and Mann's model for this current study; maladaptive strategies referred to defensive avoidance and hypervigilance, which consists of the following three variables: buckpassing, procrastination, and hypervigilance. Hypothesis 1 was based on the assumption that using maladaptive decision-making strategies tends to result in defective decisions or in difficulty making decisions.

Hypothesis 2

Participants who have decided on their academic major will tend to score higher on measures of self-esteem, self-efficacy, internal locus of control, low goal instability, and high personal growth initiative than will participants who have yet to choose a major.

The literature on career indecision supports the direction of the hypothesis. For example, Bacanlli (2006) found that career indecision was related to low self-esteem and external locus of control.

Hypothesis 3

Students who have higher self-esteem will be more likely to use the vigilant coping pattern, while students with lower self-esteem will be more likely to use maladaptive coping patterns. Mann et al. (1998) suggested that self-esteem was used as a "decision maker" because the western individualistic societies value a strong personal reputation and competence. Past research supported the hypothesis that low self-esteem predicts career indecision. Additionally, those who have lower self-esteem tend to be more easily influenced by external sources (Leonard et al., 1973). Along with information on maladaptive coping patterns (e.g., where people either avoid making decisions or experience panic in making decisions), self-esteem was hypothesized to have associations with the types of decision-making patterns that students employ.

Hypothesis 4

Students with higher scores of self-efficacy would also score higher on measures of the vigilance coping pattern than students who score lower on self-efficacy measure, and the scores of maladaptive coping patterns would be higher among those who have lower self-efficacy. Taylor and Betz (1983) noted that college students who lack self-efficacy in their ability to make career decisions typically will either avoid or delay making career decisions. Specifically, Taylor and Betz (1983) suggested that these students might be lacking in problem-solving skills, such as goal selection and planning, which are essential to an adaptive coping pattern. Furthermore, research has shown that

self-efficacy is related to the range of perceived career alternatives (Lent et al., 1987). Therefore, Hypothesis 4 investigated the relationship between self-efficacy and decision-making styles (coping patterns).

Hypothesis 5

Hypothesis 5 stated that students with high goal instability scores will employ more maladaptive coping patterns than students who scored low on goal instability. Research showed that people who scored high on goal instability tend to lack goal-setting beliefs, which in turn relate to career indecision (Robbins & Patton, 1985). Specifically, an individual who lacked goal stability was less likely to have internalized goals, which promote self-initiative activities like career exploration. Moreover, when a goal is absent or unstable, people tend to have trouble choosing between alternatives. Foreclosure of possible alternatives was also a possible consequence of goal instability as suggested by Multon et al. (1995). The behaviors associated with goal instability seem to fit the description of defensive avoidance and hypervigilant coping strategies.

Hypothesis 6

Students who score lower on a measure of Personal Growth Initiative (PGI) will employ more maladaptive coping patterns (i.e., defensive avoidance and hypervigilance) than students who scored higher on PGI; conversely students who scored higher on PGI will be more likely to employ a vigilant coping pattern than those who score lower. Research shows a correlation between career development and PGI (Robitscheck & Cook, 1998). A central part of PGI is intentional engagement in the process of change, and decision making is part of the process of change. The authors found that college students who score high on PGI gather more information about their career alternatives

than do their counterparts. Additionally, individuals with high PGI scores had more problem-solving coping skills. The differences in coping styles exhibited by the participants of Robitscheck and Cook's (1998) study seem to suggest a possible link between career decision-making strategies and PGI. Specifically, PGI scores would likely predict which coping pattern students employ.

Hypothesis 7

Hypothesis 7 is that participants with Realistic, Investigative and Conventional types of vocational interests would be more likely to use vigilant coping patterns. At the same time, the current study explored whether participants with Artistic, Social, and Enterprising interests would be more likely to engage in maladaptive coping patterns. Miller and Miller (2005) suggested that people who were categorized as Realistic, Investigative and Conventional interest types responded better to rational approaches of career counseling based on traits associated with these three types (data analyzing or gathering). On the other hand, people with Artistic, Social and Enterprising types of interests responded better to less rational approaches (e.g., more spontaneous). The vigilant coping pattern of Janis and Mann's (1977) model was considered a rational approach, and the remaining coping patterns were considered as less rational approaches. However, Miller and Miller's assumption has yet to be tested empirically. Therefore, the current study intended to test Miller and Miller's analysis using Janis and Mann's model on whether such hypothesis would be useful in counseling students who need help choosing their college majors.

CHAPTER 2: Method

Power Analysis

A power analysis was run prior to the recruitment of the participants. The purpose of using a power analysis is to decrease the likelihood of making a Type II error, thus correctly rejecting a false null hypothesis (Howell, 2002). For the current study, power was calculated using a power analysis calculator called G*Power. To reach a power level of .80, alpha level at .05, and medium effect size of .50 (i.e., $R^2 = .09$), the current study would require 128 participants. Specifically, if the study could recruit at least 128 participants, the risks of having a Type II error would be about 20%, which Howell (2002) suggests is a reasonable level.

Participants

Undergraduate classes from the psychology department that participated in the Research Experience Program (REP) were recruited. These classes included Introductory to Psychology, Introductory to Clinical Psychology, and Introductory to Abnormal Psychology. The students received REP points for returning the packets. Originally, roughly 300 packets were distributed to students of a large Midwestern university, and 264 packets were returned. Out of the 264 packets, 257 had all of the questionnaires completed. The inclusion criteria for participating in the current study were as follows: The students had to self-identify as enrolled in their first or second year in college (lower classmen), and fall within an age range of 18 to 22 years. After applying the inclusion criteria, 230 participants were eligible for data analysis. Sixty-seven percent of the sample were female students (N = 154) and 33% were male students (N = 76). The

freshman class comprised 187 participants (81.3%) and 43 (18.7%) participants came from the sophomore class. The sample had 86.1 percent of participants from the 18-19 age range, with 13.9 percent of the participants were between the ages of 20 and 22. One hundred and fifty-seven (68.3%) participants indicated their desired majors while 73 (31.7%) did not indicate their desired majors. When looking at categories of majors from participants that indicated desired majors, 6.5% were psychology, 5.7 were education, 26.1% were science/engineering, 19.6% were business/management, 6.1% were social science, and 4.3% were arts/designs and other miscellaneous liberal arts majors. Of the entire sample, 82.6% were self-identified as Caucasian/White Americans, 7.4 percent were self-identified as Asian/Asian Americans, 3.0% were self-identified as Black/African/African Americans, 1.7% were self-identified as Native Americans/American Indians, 0.9% were self-identified as Latino/Hispanic, and 4.3% were self-identified as biracial/multiracial individuals.

Measures

The criterion variable coping pattern was measured by the Melbourne Decision Making Questionnaire (DMQ-II; decision making coping pattern). The predictor variables were measured using the Decision-making Questionnaire I (DMQ-I; self-esteem), the Career Decision Making Self-Efficacy Scale (CDMSE), the Goal Instability Scale (GIS), the Personal Growth Initiative Scale (PGI), and the Strong Interest Inventory (SII).

Demographic Information

A survey was created to assess the participants' relevant background information. Information such as age, gender, ethnicity, years in college, and whether academic major has been chosen were included in the survey (Appendix A).

Decision-making Strategies/Coping Patterns

Coping strategies were measured with the Melbourne Decision Making Questionnaire (DMQ-II; Mann, Burnett, Radford, & Ford, 1997). The DMQ-II is a 22-item self-reported scale that measures three of the five coping patterns of Janis and Mann's conflict model: defensive avoidance, hypervigilance, and vigilance (see Appendix B). Mann et al. (1998) stated that the reason for not including unconflicted avoidance and unconflicted change in the instrument is that these two patterns do not involve conflict, which is the central theme of their model. The DMQ-II measures two facets of defensive avoidance: buckpassing (avoidance) and procrastination (delay making decisions). Originally, the DMQ-II was named the Flinders Decision-making Questionnaire (Mann et al., 1997) but factor analysis studies showed that some of the items and subscales did not fit well into the original factors; thus the questionnaire was shortened, revised and renamed the Melbourne Decision Making Questionnaire or the DMQ-II (Mann et al., 1997). The DMQ-II Vigilance scale consisted of items such as "I consider how best to carry out a decision," the Hypervigilance scale had items like "I cannot think straight if I have to make a decision in a hurry," the Buckpassing scale included items like "I avoid making decisions," and the Procrastination scale consisted of items such as "I delay making decisions until it is too late." The DMQ-II was answered using the following format: true for me (score of 2), sometimes true (score of 1), and not

true for me (score of 0). Higher scores reflected higher levels of coping patterns. For each individual scale, Cronbach's alpha reliability coefficient was the following: vigilance, .80; buckpassing, .87; procrastination, .81; and hypervigilance, .74 (Mann et al., 1998). The alpha coefficients for the current study sample were the following: vigilance, .72; buckpassing, .88; procrastination, .78; hypervigilance, .66. When compared to the alphas from Mann et al. (1997) study, vigilance and hypervigilance appeared to be somewhat lower for the current study. However, buckpassing and procrastination seemed comparable. The DMQ-II score was calculated by adding the items that corresponded to the subscale. For example, the Vigilance score was the sum of items 1 through 6.

Self-Esteem

The Melbourne DMQ also included a six-item self-esteem scale (DMQ-I) that measured decision making self-esteem (see Appendix B). Sample statements included "I feel confident about my ability to make decisions" and "I think I am a good decision maker." The scoring key was the same as the DMQ-II; however, three of the items were reverse-scored. A cross-cultural study (Mann et al., 1998) resulted in Cronbach's alpha coexistent of .74 for the DMQ-I. The alpha for the current sample was .72, which seemed comparable to the alpha provided by Mann et al. (1998). The DMQ-I score was the sum of all six items.

Career Decision Self-Efficacy

Taylor and Betz (1983) constructed the Career Decision Making Self-Efficacy Scale (CDMSE) to measure self-efficacy in career-related decision-making tasks. The CDMSE was a 50-item questionnaire that uses a 10-point Likert scale for item responses

(0 is Not Confident, and 10 is complete confidence; see Appendix C). This instrument was further divided into five subscales that include accurate self-appraisal, gathering occupational information, goal selection, making future plans and problem solving (Taylor & Popma, 1990). Taylor and Popma (1990) reported a high alpha coefficient of .97 for CDMSE, which suggests high internal consistency reliability. Sample items included "make a plan of your goals for the next five years" and "choose a career that will fit your preferred life style." The current sample's alpha coefficient was .96, which seemed similar to the one provided by Taylor and Popma (1990). The CDMSE could have scores range from 90 to 450 because the total score was the sum of all 50 items.

Goal Instability

The 10-item Goal Instability Scale (GIS; Robbins & Patton, 1985) measured goal instability, which also is referred to as generalized motivation (Appendix D). According to Casillas et al. (2006), the purpose of the scale was for use in educational settings to explore the relation of students' generalized motivation to their career development. The GIS had an alpha coexistent of .85 from a college sample (Robbins & Pattons, 1985). The authors also reported a two-week test/retest reliability of .75 from the same sample (Robbins & Pattons, 1985). A six-point Likert Scale was used for the GIS items with a response of 1 representing "*strongly agree"* and a response of 6 responding "*strongly disagree*." Some of the items were "I don't seem to make decisions by myself," and "I wonder where my life is headed." The alpha coefficient of the current sample was .88, which was more robust than the alpha from Robbins and Pattons' (1985) study. The GIS was scored by adding all of the item scores together.

Personal Growth Initiative

The Personal Growth Initiative Scale (PGIS; Robitschek, 1998) was designed to measure this target variable. PGIS was a nine-item self-reporting questionnaire that uses the six-point Likert scale (Appendix F). Sample items included "I take charge of my life" and "I have specific action plans to help me reach my goals." Robitschek (1999) reported internal consistency coefficients ranged from.78 to .90 for college students and adults in mid-life transitions. She also cited the test/retest reliabilities that ranged from .74 to .84 over a four-week period. The alpha for the sample of the current study was .89, which seemed to be slightly higher than the ones offered by Robitschek (1999). The PGI score was the sum of all items.

Vocational Interests

The Strong Interest Inventory (SII; Hansen & Campbell, 1985; Harmon, Hansen, Borgen & Hammer, 1994) was used to measure vocational interest. The SII included three subscales that assess vocational interest: the General Occupational Themes (GOT), the Basic Interest Scales (BIS), and the Occupational Scales (OSs). The SII is scored by a complex scoring program that was designed for this particular instrument. The SII is one of the most widely used interest measurements and has strong evidence of reliability and validly for use with college populations (Hansen & Swanson, 1983; Hansen & Tan, 1992). The SII is a self-reported questionnaire with three response keys: dislike, indifferent, and like to items such as an occupation or an activity. Hypothesis 8 specifically examined whether the six GOTs were related to the coping patterns of Janis and Mann's (1977) model. Therefore, the GOTs were the only scales used in the current study because the research was interested in the relationship between the six vocational

themes and the decision-making patterns of students. The GOTs (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) assess the six basic categories of vocational interests proposed by Holland (Hansen & Campbell, 1985; Holland, 1997). On their own, the GOTs provided strong validity and reliability evidence. For example, the GOTs correlated highly with another instrument (the Vocational Preference Inventory; Holland, 1985) that also measures Holland's six types, which demonstrated good construct validity (Hansen & Campbell, 1985). The internal consistency reliability (alpha) for the GOTs ranges from .90 to .95 (Hansen & Campbell, 1985).

Study Design and Procedure

The design of the study employed a quantitative descriptive design/survey research. The purpose of using this design was to investigate relations among target variables. No manipulation of variables was involved.

The freshmen and sophomore students from the introductory psychology classes that participate in the REP pool were recruited. Students were told that the study intended to investigate student decision-making processes involved in choosing their academic majors. The researcher used flyers, in-person announcements, and Internet posting at the REP website to recruit students. Most of the participants were recruited through in-person announcements at the beginning of their classes. Students who decided to participate in this study received a packet that contained all of the questionnaires and a consent form for the study. The research packet consisted of all instruments mentioned above. Because the Decision Making Questionnaire (Mann at el.,

1997) was not designed specifically to measure students' decision making process when choosing a major, the research packet also contained a reminder slip to prime participants to answer questions thinking about the decision making process for college major. The instruments were randomized in three different sets of order. Randomizing the order of the instruments was an attempt to minimize order effect, which might affect how questions were answered. These instruments were in paper-and-pencil format. The participants were told that they would receive three REP points upon the completion of the packet. Participants were asked to return the packet to the researcher immediately upon completion.

Analyses

To test the study's hypotheses, Pearson's correlation was first used to determine the relatedness of the independent variables (level of decidedness, vigilance, buckpassing, procrastination, and hypervigilance), dependent variables (the GOTs of SII, self-esteem, self-efficacy, goal instability, and personal growth initiative), and their relatedness with each other.

Multiple regressions were used to analyze all hypotheses but Hypothesis 7, which employed Pearson's correlation. Multiple regression analysis was chosen because the research was interested in observing the predicted relationship between the independent variables and the dependent variables. Regression analysis is generally used to provide more information on the predictor variable (independent variable) and the criterion variable (dependent variable).

Hypothesis 7 focused solely on whether the dependent variable correlated with the vocational interests. Therefore, Pearson's product-moment correlation coefficient served as a useful technique to investigate this hypothesis. A commonly used statistical method, Pearson's correlation provides information on whether two variables have a linear relationship with each other.

CHAPTER 3: Results

The present analyses have two goals. First, the relationship between Janis and Mann's coping patterns and personal variables (self-esteem, self-efficacy, personal growth initiative, goal instability, and vocational interest) will be investigated. Janis and Mann's (1977) model has yet to be tested within the framework of academic major decision making. Therefore, the results will provide the utility of such use of Janis and Mann's (174) model with college students' academic major decision making. Second, the relationship between the levels of decidedness on college major and personal variables, and relationship between the levels of decidedness with coping patterns will also be examined. Outliers were checked before running the entire statistical analyses. The removal of outliers in the study did not have an impact on the results. The statistical significance remains unchanged for all of the hypotheses.

Descriptive Statistics

The means (M) for all of the dependent and independent variables were calculated, as well as the variance and standard deviation (SD). Table 1 illustrated the results. For the adaptive coping pattern Vigilance, the mean score for the entire sample was higher (M = 9.42; SD = 2.07; Variance = 4.28) than the mean scores of the maladaptive coping patterns, Buckpassing (M = 5.47; SD = 2.90; Variance = 8.40), Procrastination (M = 3.04; SD = 2.20; Variance = 4.86), and Hypervigilance (M = 3.99; SD = 2.20; Variance = 4.82). Mann et al. (1998) reported similar mean scores and SD for all four variables when comparing with the current study. In the Mann et al. (1998) study

using college students in Australia, Vigilance had a mean score of 9.41 and SD of 2.22; Buckpassing had a mean score of 4.85 and SD of 2.93; Procrastination had a mean score of 3.88 and SD of 2.93; Hypervigilance had a mean score of 4.61 and SD of 2.26. Analyses to test the mean score differences were conducted. Variance scores between the current sample and the study sample from Mann et al. (1998) were not statistically different; however, the differences between the mean scores for the other three coping patterns appeared to be statistically significant for the two samples. For the independent variables, the current sample showed that Self-esteem had a mean score of 8.69 (SD = 2.29; Variance = 5.23); Goal Instability had a mean score of 39.69 (SD = 8.85; Variance = 78.39); Personal Growth Initiative had a mean score of 37.13 (SD = 8.13; Variance = 66.09); Self-efficacy had a mean score of 335.23 (SD = 52.88; Variance = 2795.96).

Tables 2 and 3 provided the correlation analyses results for both the dependent and independent variables. For the dependent variables, Vigilance did not correlate with the other three maladaptive coping patterns. Based on Janis and Mann's (1977) model, Vigilance is referred to as an adaptive coping pattern, and therefore, should not be correlated with the maladaptive coping patterns (Buckpassing, Procrastination, and Hypervigilance). Data showed that Vigilance had close to zero correlation with Buckpassing, Procrastination, and Hypervigilance (respectively, r = .08, -.08, .10; See Table 2). The correlations for independent variables, reported in Table 3, were highly correlated with each other, with the exception of Self-esteem which appeared to have close to zero correlation with Goal Instability (GIS), Personal Growth Initiative (PGI), and Career Decision Making Self-Efficacy (CDMSE) (respectively, r = .05, .04, .04; See

Table 3). GIS was positively correlated with PGI (r = .46, p < .01) and CDMSE (r = .36, p < .01), and the correlation between PGI and CDMSE was .29 (p < .01).

Analyses of Hypotheses

Hypothesis 1

The results of Hypothesis 1 yielded non-significance. The analysis indicated that the coping patterns, both adaptive and maladaptive, did not correlate significantly with the level of decisiveness. Therefore, the regression analysis did not find any statistical significance. Multiple regression results indicated that the adaptive coping pattern – Vigilance and the level of decisiveness had a poor fit (R^2_{adj} =.003) and the result was not significant ($F_{1,227}$ = .75, p = .39). The results were similar for the maladaptive coping patterns – Buckpassing ($F_{1,227}$ = .02, p = .89), Procrastination ($F_{1,227}$ = .04, p = .85), and Hypervigilance ($F_{1,227}$ = .01, p = .98). These three coping patterns had the same poor fit (R^2_{adj} = -.004), and the standardized regression coefficients were not significant. The correlation table for the level of decisiveness and the coping patterns can be found in Table 4.

Hypothesis 2

Pearson's correlation analysis showed that level of decidedness had a statistically significant relationship with the dependent variables. Level of decidedness was correlated with Personal Growth Initiative (r = .25, p < .001), and goal instability (r = .16, p < .01), but not with self-esteem (r = .03, p < .30) and self-efficacy (r = -.03, p < .30). However, the direction of the hypothesis stated that level of decidedness would associate with a higher level of personal growth initiative and lower level of goal

instability. The results indicated, however, that the level of decidedness was positively associated with both scores, meaning that the direction of the hypothesis was not correct for goal instability. Instead, the findings indicated that a higher level of decidedness is associated with higher level of goal instability. Despite statistical significance, the effect size for the regression analysis was small ($R^2 = .008$).

Multiple regression analysis was used to analyze Hypothesis 2. The results indicated that the regression was a poor fit with $R^2_{adj} = .06$, despite the results being significant ($F_{4,224} = 5.07$, $p < .001$). The relationship between Goal Instability ($\beta = .10$, $p = .21$) and Self-esteem ($\beta = .02$, $p = .71$) were not significant because the standardized regression coefficients were not significant. The standardized regression coefficient ($\beta = .25$, $p < .01$) associated with the relation between Personal Growth Initiative and level of decidedness was significant. The significant result indicated that part of Hypothesis 2 was supported; the students who scored higher on Personal Growth Initiative were more likely to have a higher level of decidedness of their college major. The standardized regression coefficient ($\beta = -.14$, $p < .05$) associated with the relation between Self-efficacy and the level of decidedness was significant. However, the direction of the significance was in the opposite direction of the hypothesis which stated that students with higher self-efficacy score would be more likely to have a higher level of decidedness.

Hypotheses 3 through 6

Multiple regression analyses were employed to analyze Hypotheses 3 to 6. The relationship between dependent variables – coping patterns and the independent variables (IVs; i.e., Self-esteem, Goal Instability, Personal Growth Initiative, and Self-efficacy) were computed through four separate multiple regression analyses. Based on the results from regression analyses, none of the hypotheses (3 to 6) were supported by the results. Regression analyses showed poor model fit for every dependent variable when computed against all four IVs. The fit (R^2_{adj}) for Vigilance and the IVs was -.01; R^2_{adj} = -.02 for Buckpassing and the IVs; R^2_{adj} -.003 for Procrastination and the IVs; R^2_{adj} = -.008 for Hypervigilance and the IVs. The relationship between Vigilance and the IVs were not significant ($F_{4,224} = .41$, $p = .80$). The regression coefficient further confirmed the results. Tables 12 through 15 displayed the standardized regression coefficient for the IVs, which did not have a significant relationship with the coping patterns; the β appeared to be close to zero for most of them. Table 11 displayed the correlation matrix between the independent and dependent variables.

Hypothesis 7

Hypothesis 7 was analyzed by Pearson product-moment correlation. The results showed that vigilance, buckpassing, procrastination, hypervigilance, and maladaptive patterns were not significantly related to all six vocational themes (Realistic, Investigative, Artistic, Social, Enterprising, and Conventional) at the .05 level. As listed in Table 17, coping patterns and the GOTs had close to zero correlation, which indicated

that these variables almost had no relation with one another linearly. The largest correlation was between Hypervigilance and Conventional, which was -.12.

CHAPTER 4: Discussion

Major Findings

Hypothesis 1

The statistical analysis did not support Hypothesis 1, which stated that those who have decided on their academic majors will be more likely to have adaptive decision-making strategies than will those who have not decided on their majors. On the other hand, students who have yet to decide on their major will be more likely to have maladaptive decision-making strategies than those who have already made the decision. The results showed that none of the coping patterns have any statistically significant relations with the level of decidedness, and the correlation analyses also showed that none of the coping patterns were related to the level of decidedness. Additional analyses were conducted due to the non-significant results. Participants who indicated that they had selected a college major (N = 157) were examined separately from those who had not selected a major (i.e., were undecided; N = 53). No significant correlations were found between decidedness and the coping patterns for those participants who had declared a major; for those who had not declared a major, the results were also not significant (See Table 22).

The non-significant results could mean that decision on a college major was not influenced by the types of decision-coping patterns or decision- making styles and vice versa. Specifically, students were using both adaptive and maladaptive methods of decision making when deciding on their academic majors. The implication of such a conclusion could mean that other factors might be more likely to have an impact on students' decision-making coping patterns and how decisive they were of their academic

majors. One of such possible factors could be parental influences. Schultheiss (2000) indicated that parental relationships could influence the types of decision-making styles (adaptive or maladaptive) used by the students. Schultheiss (2000) reviewed several studies that examined attachment to parents and commitment to career choices, and suggested that more attachment to parents could lead to higher commitment to their career choices.

Hypothesis 2

Hypothesis 2 stated that participants who scored higher on measures of self-esteem, self-efficacy, low goal instability, and high personal growth initiative would have a higher level of decidedness on their academic major and the opposite was hypothesized for participants who had a lower level of decidedness. The results showed some support for Hypothesis 2. Personal growth initiative and goal instability had a significant relation with level of decidedness, while self-efficacy and self-esteem did not have a significant relation with the level of decidedness. However, goal instability was correlated with the level of decidedness, but the correlation was a positive one, which was in conflict with the hypothesis. The regression result did not yield any significance for goal instability and the level of decidedness. Therefore, despite having a linear relationship between the two variables, goal instability did not predict the level of decidedness of students when choosing a major. Personal growth initiative is the only variable that was found to support Hypothesis 2, which followed the direction of the hypothesis and was positively association with level of decidedness. Specifically, students who have high personal growth initiative would tend to be more decided on their college majors. Additionally, the regression result for self-efficacy was surprising because no correlation was found

between this variable and the level of decidedness. Literature suggests that those who have higher self-efficacy would be more decided (Lent et al., 1987). However, the Lent et al. (1987) study was focusing on career decision making. The current study focused on the decision of a college major. One possible explanation for self-efficacy being statistically significant despite having no significant correlation could be that of a suppression variable. An examination of the results suggests that personal growth initiative may be the culprit of such findings because self-efficacy contributed to personal growth initiative (Robitschek,1998).

The implication for the findings of the current study was that choosing an academic major might be different from deciding on a career. Self-esteem has no affect on the students' decidedness on their majors. Higher goal instability seemed to associate with higher level of decidedness, but without predicted value. Nevertheless, the effect size was too small for the results to be meaningful, and the result interpretation would need to be examined with caution. For now, it is difficult to say whether the result from the current study was different from the previous literature because the current one focused on college major decision making. More studies need to be conducted to reach such a conclusion. Nevertheless, Personal Growth Initiative appeared to be a personal attribute that could be meaningful in working with students who have to decide on their major.

Hypotheses 3 to 6

Hypothesis 3 to Hypothesis 6 were discussed together due to the way in which the analyses were run. Figure 1 and 2 provided visual illustration of these 4 hypotheses. Hypothesis 3 was that students who have higher self-esteem would be more likely to use

the vigilant coping pattern and students who have lower self-esteem would be more likely to use maladaptive coping patterns. The results of the regressions analyses did not support Hypothesis 3. Additionally, the results showed that none of the coping patterns were related to self-esteem.

The results suggested that, contrary to past research findings, self-esteem was not related to decision-making coping patterns. Maier and Herman (1977) found that students who tend to have lower self-esteem would be more likely to categorize as "dependent," one who looks for help from others when making decisions. Based on the findings of the current study, self-esteem had no role in such process and also was not correlated with decision-making coping patterns. Regardless of students' level of self-esteem, they could use either adaptive or maladaptive styles to make decisions on their majors. The implication of this result is that factors other than the concept of self could lead students to use either adaptive or maladaptive ways when choosing their majors.

Hypothesis 4 was that students with higher scores of self-efficacy would also score higher on measures of the vigilance coping pattern, and scores of maladaptive coping patterns would be higher among those who have lower self-efficacy. Multiple regression analyses did not find self-efficacy to have significant relationship with Janis and Mann's (1977) coping patterns. Additionally, the correlations indicated that none of the coping patterns were related to self-efficacy. The instrument, used to measure self-efficacy, was designed to measure career decision making self-efficacy instead of self-efficacy for choosing a major. It is possible that the instrument did not capture certain elements of choosing a college major.

The impact of the non-significant finding could be that career counselors might not need to assess self-efficacy when helping students who might have difficulty making decisions or who might be making "defective" decisions. Self-efficacy might be more important for students when they need to make a career decision than a college major decision. Past research has supported the hypothesis that self-efficacy for career decision making could determine whether students would avoid, delay or make rational decisions (Taylor & Betz, 1983). However, other factors might have a larger role than the students' personal attributes. These factors will be discussed later.

Hypothesis 5 stated that students with high goal instability scores would employ more maladaptive coping patterns than students who scored low on goal instability. The statistical analyses did not find the hypothesis to be supported. The results showed that none of the coping patterns had significant relationship with GIS. Furthermore, GIS was not related to any of the coping patterns based on the correlation analysis. While goal instability might influence vocational identity or other career developmental tasks, in the current study, this was not the case. The results suggested that contrary to previous findings, GIS did not seem to play a role in what decision-making strategies students employed when choosing a major. The non-significant finding could mean that goal and motivation might not be as influential for choosing a college as they are for choosing a future career.

Hypothesis 6 stated that students who scored lower on measure of Personal Growth Initiative (PGI) would employ more maladaptive coping patterns (i.e., defensive avoidance and hypervigilance) than those students who scored higher on PGI; conversely students who scored higher on PGI would be more likely to employ the vigilant coping

pattern than those who scored lower on PGI. The findings did not yield statistically significant results to support the hypothesis. Based on the data analyses, PGI scores were not different for the students who scored higher on the PGI scales and the students who scored lower on the scale. While the previous research might suggest that PGI would be related to the coping patterns, it did not appear to be the case for the current study. PGI did not appear to be related to coping patterns.

An additional question arising from the results led to conducting analyses with status of major decision (i.e., declared or not declared). Correlations between personal variables and coping patterns were examined using the status of major decision. For those who did not declared a college major, a significant correlation was found between self-esteem and procrastination ($r = .26$). In other words, the participants who are scored high on self-esteem scale would be more likely to procrastinate. The hypothesis stated the opposite, which was that those with higher self-esteem would be less likely to procrastinate. Goal instability results are also difficult to interpret because the correlations are in the wrong directions. The results showed that participants who had higher goal instability would be less likely to have buckpassing ($r = -.30$) and procrastination behaviors ($r = -.29$), which would be opposite to the hypothesis. Nevertheless, the results for personal growth initiative seemed to correspond to the hypothesis partially. Hypervigilance was found to negatively correlate with personal growth initiate ($r = -.25$), which suggested that those who scored high on personal growth initiative would be less likely to exhibit hypervigilant coping pattern. However, one should be cautioned to draw conclusion based on the significant correlations because of the small to moderate effect sizes in addition to the small sample ($N = 73$). Status of

major was also used as a moderator of the relationship between the independent and dependent variables. Despite some significant correlations findings, results from a multiple regression analysis did not show any significant findings when the moderator was introduced. None of the independent variables (coping patterns) were found to have significant relationship with the dependent variables (personal variables). The non-significant results from multiple regression analysis could be due to multicollinearity because both some of the variables are correlated with each other. Based from the results of the additional analyses, status of major did not seem to have a moderator effect on both the personal variables and coping patterns.

The meaning of the non-significant findings was that the process of choosing a major might not involve the intentional and active components that are central to PGI. Specifically, according to Robitscheck (1998) PGI also is defined as willingness to engage in the process of growth; the results suggest that choosing a major might not include that process of growth. If choosing a major was influenced more by other external resources such as parents and teachers, PGI might not be as important in decision-making process for choosing a major when compared with choosing a future career.

Implications for Hypotheses 3 through 6

Several implications could be cited for the mostly non-significant findings of the current study. First, we might need to look more into how college students make decision on their majors separate from career decision making. Current research on decision-making styles/patterns was centered on career decision making. Much of the

current study was based on findings from the career decision making literature. If the career decision-making process is different from that of choosing a college major, more attention needs to be focus on studies that examine the process of college major choice. Second, other factors that might influence students' college major decisions need to be studied. As suggested in previous paragraphs, family seems to play a large role in determining students' choice of majors, whether it be relationship with parents, parental occupation, and socioeconomic status (SES). Researchers might need to examine to what extent family influences students' decision-making process. According to Leppel, Williams and Waldauer (2001), parental occupation and family's socioeconomic status have some influence in determining students' decision on their majors. For example, they suggested that students from lower SES background tend to choose more "lucrative fields of study" (Leppel et al., 2001, p. 375). Therefore, the possibility that students feel decided on their majors because their parents helped them to make such decision could be high.

Hypothesis 7

The results did not support Hypothesis 7, which stated that all four coping patterns (vigilance, buckpassing, procrastination, and hypervigilance) would have a significant correlation with the six GOTs. Specifically, Realistic, Investigative, and Conventional themes would be significantly correlated with the adaptive coping pattern (vigilance), whereas Artistic, Social, and Enterprising themes would be significantly correlated with maladaptive coping patterns (buckpassing, procrastination, and hypervigilance). One of the possibilities that the results did not support Hypothesis 8 could be that the structure of Johnson's (1978) model as applied in Miller and Miller's

(2005) analysis was different from Janis and Mann's (1977) model. Johnson's (1978) model could possibly be more suitable for such analysis due to its labeling of the factors. Janis and Mann's model (1977) was not categorized explicitly as rational or irrational like Johnson's (1978) model. Johnson's (1978) model was specifically divided into the two categories, which seemed to fit the GOTs more logically. Another possibility for the insignificant result could be because Miller and Miller (2005) based their suggestions on analyzing other literature instead of directly investigating the variables in a study, such as examining the relationship between the GOTs and decision-making styles. The final possibility that the hypothesis was not supported could be that no correlation could be found between the six GOTs and Janis and Mann's (1977) model. While Miller and Miller's (2005) analysis seemed to be interesting and logical, it is possible that for some students the interests were independent from their decision-making process.

Given the popularity of SII in career counseling settings, it would be valuable to use the SII when counseling students who might have a difficult time making decision or who might be making "defective" decisions. The implication for such findings would mean that career counselors might need to rely on other traits or information to help students who might be employing maladaptive coping patterns when choosing a major. For example, career counselors might need to rely more on information gathered from the intake process, such as childhood background and educational history, to help students with different ways of making decisions.

If the results were significant, the implications would be twofold. First, the Janis and Mann (1977) model could be comparable to Johnson's model. The second implication would be a practical one. The significant results could provide support for

the use of the Janis and Mann (1977) model in the field of career counseling. When using the SII with client, adding decision-making patterns into the counseling process could help the students to choose strategies that better suited their styles or their needs. For example, for those who are interested in the artistic career field, using more creative ways of brainstorming and targeting maladaptive coping patterns might be more helpful than with someone who might be more interested in a conventional career field.

General Conclusion

The mostly non-significant findings of the current study could be further explained by closely examining Janis and Mann's model. The independent variables, which came from Janis and Mann's (1977) model, did not yield any statistically significant results with any one of the dependent variables. There is a significant possibility that the questionnaire (DMQ-II), derived from their model, might not be appropriate for the current population. Specifically, the model might not work as well for college major decision-making as it does for career decision-making. The instrument used to assess the coping patterns were only applied in a handful of studies (Mann et al., 1997, and Mann et al., 1998). These studies were conducted in Australia and the samples of the studies were drawn from the student population in Australia. Despite the current study also sampled from university students, questions could be raised on whether the results would generalize to student populations in a different country, such as the United States. Additionally, no further studies were conducted to replicate the two studies by Mann and colleagues (1997 & 1998). Reliability of this questionnaire is still unclear. Furthermore, the questionnaire has only been studied by the authors that were associated

with the theoretical model. Therefore, researcher alliance might have had an impact on the results. According to Heppner and colleagues (1999), one of the limitations for survey studies is that the quality of the instruments could determine the outcome of the study. Lastly, the measure of Janis and Mann's variables, adaptive and maladaptive coping patterns, seemed to be measuring traits of decision-making where as the original Janis and Mann model focused on the process o decision-making. In other words, there are questions about the construct validity of the instruments on career decision-making, more explicit priming of participants vis a vis college major decision-making may be necessary to elicit meaningful responses from the participants.

Based on past research studies, the model by Janis and Mann (1977) seemed to be a good fit to examine the personal attributes (self-esteem, self-efficacy, goal inability, and personal growth initiative) and vocational interests. The coping patterns appeared to be similar to variables used by other models to examine the decision-making process. As mentioned previously, Miller and Miller (2005) analyzed the relationship between vocational interests and decision-making styles. These decision-making styles appeared to be similar in definition to Janis and Mann's (1977) model. Logically, Janis and Mann's (1977) model could be used to examine relationship between vocational interests and decision-making styles. However, other models that were applied in past literature, such as Johnson's (1987) and Harren's (1979) models might be more suited for the proposed research questions due to concerns mentioned earlier regarding the nature of the instrument used to measure the coping patterns.

Methodological Limitations of the Current Study

Several limitations of the current study were noted. The aforementioned measures that were used in the study were all in a self-report format. Constantine and Ladany (2000) showed that self-report measures are often associated with social desirability. Students in the current study could have chosen more socially desirable answers instead of the answers that matched them the best. Therefore, the results may have been affected by such measurement concern. For the current study, the measuring of personal variables could lead students wanting to present themselves in more positive light. The Vigilance decision coping pattern (adaptive) had the highest mean (9.42) comparing to the three maladaptive coping patterns, which had an average mean around 4 (scores ranged from 0 to 12). The possibility that most students would choose to use the adaptive coping pattern when making a decision over maladaptive ones remained unclear.

The sample of the study might also have played a role in determining how the results could be applied. The sample of the current paper consisted only of students from several psychology classes of a large Midwestern university. The generalizability for the current study is limited because of the restriction of sampling to one particular school. Additionally, the ratios for gender, year in school, and race/ethnicity were uneven for the entire sample. While the race/ethnicity might reflect the demographic representation of the region, the uneven sample number for both gender (67% women versus 33% men) and year in school (86.1% freshmen versus 13.9% sophomore) could have had an impact on the results. The large discrepancy between freshmen and sophomores was particularly critical. If size of the sophomore sample had been similar to the size of the freshmen sample, the results might have changed appreciably. The sophomores had been in school

a little longer than the freshmen, and would possibly have gone through more extensive college major decision-making processes than their counterparts. Thus, additional multiple regression analyses were conducted to evaluate whether comparing the data between genders and years in college would have any impact on the results. The analyses indicated that comparing between genders and years in college did not result in significant findings for coping patterns and the personal variables (See Tables 14 to 21). Therefore, the non-significant findings lead us to question whether equal numbers of between genders and years in college would change the outcome of the results.

Future Research Directions

This study examined Janis and Mann's (1977) model of decision making and other personal variables that might be related to the college major decision-making process. Based on previous research studies, these factors seem to have some relationship with each other. Although the results did not support most hypotheses, future research studies could apply a similar concept by using different methods and materials. For example, future studies could apply other decision models or theories, such as Harren's (1979) model, which seemed to be designed specifically for college students, instead of using Janis and Mann's model.

Additionally, qualitative research methods also could be used to examine the process of college students' decision making and whether these personal attributes (Goal instability, Personal Growth Initiative, Self-esteem, and Self-efficacy) play a role in how decisions are made. Few empirical research studies have been done in this area. Therefore, qualitative methods might help to examine whether the premise of the current

study could be established. Case studies or other qualitative methods could help accumulate data for further quantitative analysis. Qualitative study also could provide information that a quantitative study could not, for example, individual factors such as parental influence. The balance sheet derived from Janis and Mann's (p. 407, 1974) model could also be studied to incorporate into the qualitative method.

Furthermore, different methods of data gathering could be employed in the future. For example, instead of recruiting students from classes that participated in the Research Experience Program (REP), students could be recruited from a variety of settings, such as at the career centers and orientation classes. Collecting data from multiple colleges might also provide valuable information. For example, results from a four-year college sample might be different than results from a community college sample because the student population of community colleges tends to be very different from that of a four-year college, where there are more "traditional" students.

CHAPTER 5: Summary

The current study examined Janis and Mann's (1977) model of decision making to investigate possible relations between the coping patterns proposed by this model and some of the personal factors that might influence choice of college major. Previous research seemed to indicate that all of the independent variables: self-esteem, self-efficacy, goal instability, and personal growth initiative, play a role in the process of decision making. However, most of the previous studies were focused on the process of career decision making instead of the process of choosing a college major. Therefore, one of the goals for the current study was to add to the decision-making literature of academic major choice. Additionally, based on an analysis study by Miller and Miller (2005), vocational interests were examined to determine the types of decision-making styles that students employed when making decisions on a career or a major were related to interests. The current study sought to provide empirical data to support such analyses.

Two hundred and thirty participants were recruited for the study, which only included lower classmen (freshmen and sophomores). The students were asked to complete a packet with several self-reported surveys in exchange for research credits (REP points). Multiple regression analysis and Pearson product-moment correlation were used to examine the hypotheses.

Unfortunately, results from the current study were largely not statistically significant. Despite promising hypotheses based on results from previous studies, the results of the current study did not support any of the hypotheses derived from earlier studies. Factors such as parental influences might be more important in the process of

choosing a major than are the personal variables that were examined in the study. Additionally, the limitations of the study might have contributed to the mostly non-significant results. Finally, the results suggested that the use of Janis and Mann's (1977) decision-making coping patterns on college students' choice of major might not be recommended.

TABLES

Table 1

Descriptive Statistics of All Variables (N = 230)

	Minimum	Maximum	Mean	SD
Level of Decidedness	1	7	4.76	1.65
Self-Esteem	1	12	8.69	2.29
GIS	13	54	39.69	8.85
PGI	0	54	37.13	8.13
CDMSE	120	448	335.23	52.88
Vigilance	3	12	9.42	2.07
Buckpassing	0	14	5.47	2.90
Procrastination	0	10	3.04	2.20
Hypervigilance	0	10	3.99	2.19

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 2

Intercorrelation Matrix among Independent Variables (N = 230)

	1	2	3	4
1. Vigilance	–	0.08	-0.08	0.10
2. Buckpassing		–	0.57**	0.49**
3. Procrastination			–	0.52**
4. Hypervigilance				–

** $p < 0.01$

Table 3

Intercorrelation Matrix among Personal Variables (N = 230)

	1	2	3	4
1. Self-Esteem	–	0.05	0.04	0.04
2. GIS		–	0.45**	0.36**
3. PGI			–	0.29**
4. CDMSE				–

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy
** $p < 0.01$

Table 4

Correlation between Level of Decidedness and Coping Patterns (N = 230)

	Vigilance	Buckpassing	Procrastination	Hypervigilance
Decidedness	-0.06	-0.01	-0.01	0.00

Table 5

Correlation between Level of Decidedness and Personal Variables (N = 230)

	Self-Esteem	GIS	PGI	CDMSE
Decidedness	0.03	0.16**	0.25**	-0.03

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 6

Summary of Multiple Regression for Personal Variables Predicting Level of Decidedness (N = 230)

Variable	B	SE B	β
Self-Esteem	0.02	0.05	0.02
GIS	0.02	0.01	0.09
PGI	0.05	0.01	0.25**
CDMSE	0.00	0.00	-0.14*

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy
** $p < 0.01$; * $p < 0.05$

Table 7

Correlation among Dependent and Independent Variables (N =230)

	Self-Esteem	GIS	PGI	CDMSE
Vigilance	-0.04	-0.01	-0.01	-0.08
Buckpassing	0.01	-0.05	-0.02	-0.02
Procrastination	0.02	-0.11	-0.07	0.00
Hypervigilance	0.01	-0.02	-0.08	0.01

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 8

Summary of Multiple Regression Analysis for Personal Variables Predicting Vigilance Coping Pattern (N = 230)

Variable	B	SE B	β
Self-Esteem	-0.03	0.06	-0.03
GIS	0.01	0.02	0.03
PGI	0.00	0.02	0.00
CDMSE	0.00	0.00	-0.08

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 9

Summary of Multiple Regression Analysis for Personal Variables Predicting Buckpassing Coping Pattern (N = 229)

Variable	B	SE B	β
Self-Esteem	0.02	0.08	0.01
GIS	-0.02	0.03	-0.05
PGI	0.00	0.03	0.00
CDMSE	0.00	0.00	0.00

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 10

Summary of Multiple Regression Analysis for Personal Variable Predicting Procrastination Coping Pattern (N = 230)

Variable	B	SE B	β
Self-Esteem	0.02	0.06	0.02
GIS	-0.03	0.02	-0.11
PGI	-0.01	0.02	-0.03
CDMSE	0.00	0.00	0.06

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 11

Summary of Multiple Regression for Personal Variables Predicting Hypervigilance Coping Pattern (N =230)

Variable	B	SE B	β
Self-Esteem	0.01	0.06	0.01
GIS	0.00	0.02	0.01
PGI	-0.03	0.02	-0.10
CDMSE	0.00	0.00	0.05

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 12

Correlation Matrix among General Occupational Themes (GOTs; N = 230)

	1	2	3	4	5	6
1. Realistic	–	0.53**	0.23**	0.12	0.25**	0.35**
2. Investigative		–	0.35**	0.31**	-0.05	0.24**
3. Artistic			–	0.36**	0.03	-0.01
4. Social				–	0.31**	0.36**
5. Enterprising					–	0.69**
6. Conventional						–

** $p < 0.01$

Table 13

Correlation between Coping Patterns and the SII General Occupational Themes (N = 230)

	R	I	A	S	E	C
Vigilance	-0.08	-0.06	-0.10	0.00	-0.05	-0.06
Buckpassing	-0.01	-0.06	0.03	-0.06	-0.03	-0.07
Procrastination	0.06	-0.03	0.05	0.04	0.09	0.06
Hypervigilance	0.01	-0.08	0.00	0.04	0.01	-0.12

Note. R = Realistic; I = Investigative; A = Artistic; S = Social; E = Enterprising; C = Conventional

Table 14

Summary of Multiple Regression for Personal Variables Predicting Vigilance Coping Pattern by Gender (N = 230)

Variable	B	SE B	β
Male (N = 76)			
Self-Esteem	0.09	0.10	0.11
GIS	0.04	0.04	0.15
PGI	-0.01	0.04	-0.04
CDMSE	0.00	0.01	-0.04
Female (N = 154)			
Self-Esteem	-0.10	0.08	-0.11
GIS	0.00	0.02	-0.01
PGI	0.00	0.02	0.01
CDMSE	0.00	0.00	-0.10

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 15

Summary of Multiple Regression for Personal Variables Predicting Buckpassing Coping Pattern by Gender (N = 230)

Variable	B	SE B	β
Male (N = 76)			
Self-Esteem	0.25	0.14	0.20
GIS	-0.09	0.05	-0.23
PGI	0.05	0.05	0.13
CDMSE	0.00	0.01	-0.06
Female (N = 154)			
Self-Esteem	-0.13	0.10	-0.10
GIS	0.01	0.03	0.03
PGI	-0.01	0.03	-0.04
CDMSE	0.00	0.00	0.02

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 16

Summary of Multiple Regression for Personal Variables Predicting Procrastination Coping Pattern by Gender (N = 230)

Variable	B	SE B	β
Male (N = 76)			
Self-Esteem	0.06	0.11	0.07
GIS	-0.05	0.04	-0.19
PGI	0.01	0.04	0.05
CDMSE	0.00	0.01	-0.09
Female (N = 154)			
Self-Esteem	0.00	0.08	0.00
GIS	-0.02	0.02	-0.08
PGI	-0.01	0.02	-0.04
CDMSE	0.00	0.00	0.12

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 17

Summary of Multiple Regression for Personal Variables Predicting Hypervigilance Coping Pattern by Gender (N = 230)

Variable	B	SE B	β
Male (N = 76)			
Self-Esteem	0.02	0.11	0.02
GIS	0.00	0.04	-0.01
PGI	-0.01	0.04	-0.03
CDMSE	0.00	0.01	0.02
Female (N = 154)			
Self-Esteem	0.00	0.08	0.00
GIS	0.01	0.02	0.02
PGI	-0.03	0.02	-0.13
CDMSE	0.00	0.00	0.05

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 18

Summary of Multiple Regression for Personal Variables Predicting Vigilance Coping Pattern by Year in College (n = 230)

Variable	B	SE B	β
Freshmen (N = 187)			
Self-Esteem	-0.05	0.07	-0.06
GIS	0.01	0.02	0.04
PGI	0.00	0.02	0.01
CDMSE	0.00	0.00	-0.10
Sophomore (N = 43)			
Self-Esteem	0.15	0.18	0.15
GIS	-0.03	0.05	-0.12
PGI	0.00	0.05	0.00
CDMSE	0.00	0.01	0.04

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 19

Summary of Multiple Regression for Personal Variables Predicting Buckpassing Coping Pattern by Year in College (N = 230)

Variable	B	SE B	β
Freshmen (N = 187)			
Self-Esteem	-0.01	0.09	-0.01
GIS	-0.02	0.03	-0.07
PGI	-0.01	0.03	-0.04
CDMSE	0.00	0.00	0.02
Sophomore (N = 43)			
Self-Esteem	0.23	0.22	0.17
GIS	-0.03	0.06	-0.11
PGI	0.10	0.06	0.33
CDMSE	-0.01	0.01	-0.27

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy

Table 20

Summary of Multiple Regression for Personal Variables Predicting Procrastination Coping Pattern by Year in College (N = 230)

Variable	B	SE B	β
Freshmen (N = 187)			
Self-Esteem	0.03	0.07	0.03
GIS	-0.02	0.02	-0.09
PGI	-0.01	0.02	-0.03
CDMSE	0.00	0.00	0.06
Sophomore (N = 43)			
Self-Esteem	0.08	0.15	0.09
GIS	-0.06	0.04	-0.31
PGI	0.03	0.04	0.15
CDMSE	0.00	0.01	-0.07

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy
* $p < 0.05$

Table 21

Summary of Multiple Regression for Personal Variables Predicting Hypervigilance Coping Pattern by Year in College (N = 230)

Variable	B	SE B	β
Freshmen (N = 187)			
Self-Esteem	0.05	0.07	0.05
GIS	0.00	0.02	-0.01
PGI	-0.02	0.02	-0.09
CDMSE	0.00	0.00	0.02
Sophomore (N = 43)			
Self-Esteem	-0.27	0.17	-0.27
GIS	0.07	0.05	0.30
PGI	-0.04	0.05	-0.17
CDMSE	0.00	0.01	0.04

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy
* $p < 0.05$

Table 22

Correlation Matrix between Level of Decidedness and Coping Patterns by Status of Major (Major Declared or No Major Declared; N = 230)

	Coping Pattern			
	Vigilance	Buckpassing	Procrastination	Hypervigilance
Level of Decidedness				
Major Declared (N = 157)	0.00	-0.02	0.10	-0.10
No Major Declared (N = 53)	-0.14	0.00	0.18	0.23

Table 23

Correlation between Personal Variables and Coping Patterns by Status of Major (Major Declared or No Major Declared; N = 230)

	Coping Patterns			
Personal Variables	Vigilance	Buckpassing	Procrastination	Hypervigilance
Major Declared (N = 157)				
Self-Esteem	-0.02	0.21	0.26*	0.18
GIS	-0.11	-0.29*	-0.28*	-0.16
PGI	-0.10	-0.01	-0.04	-0.24*
CDMSE	-0.10	0.06	0.03	0.06
No Major Declared (N = 53)				

Self-Esteem	-0.03	-0.07	-0.07	-0.05
GIS	0.06	0.07	-0.02	0.05
PGI	0.04	-0.02	-0.08	-0.00
CDMSE	-0.06	-0.06	-0.01	-0.00

Note. GIS = Goal Instability; PGI = Personal Growth Initiative; CDMSE = Career Decision Making Self-Efficacy
* $p < 0.05$

FIGURES

Figure 1

Adaptive coping pattern

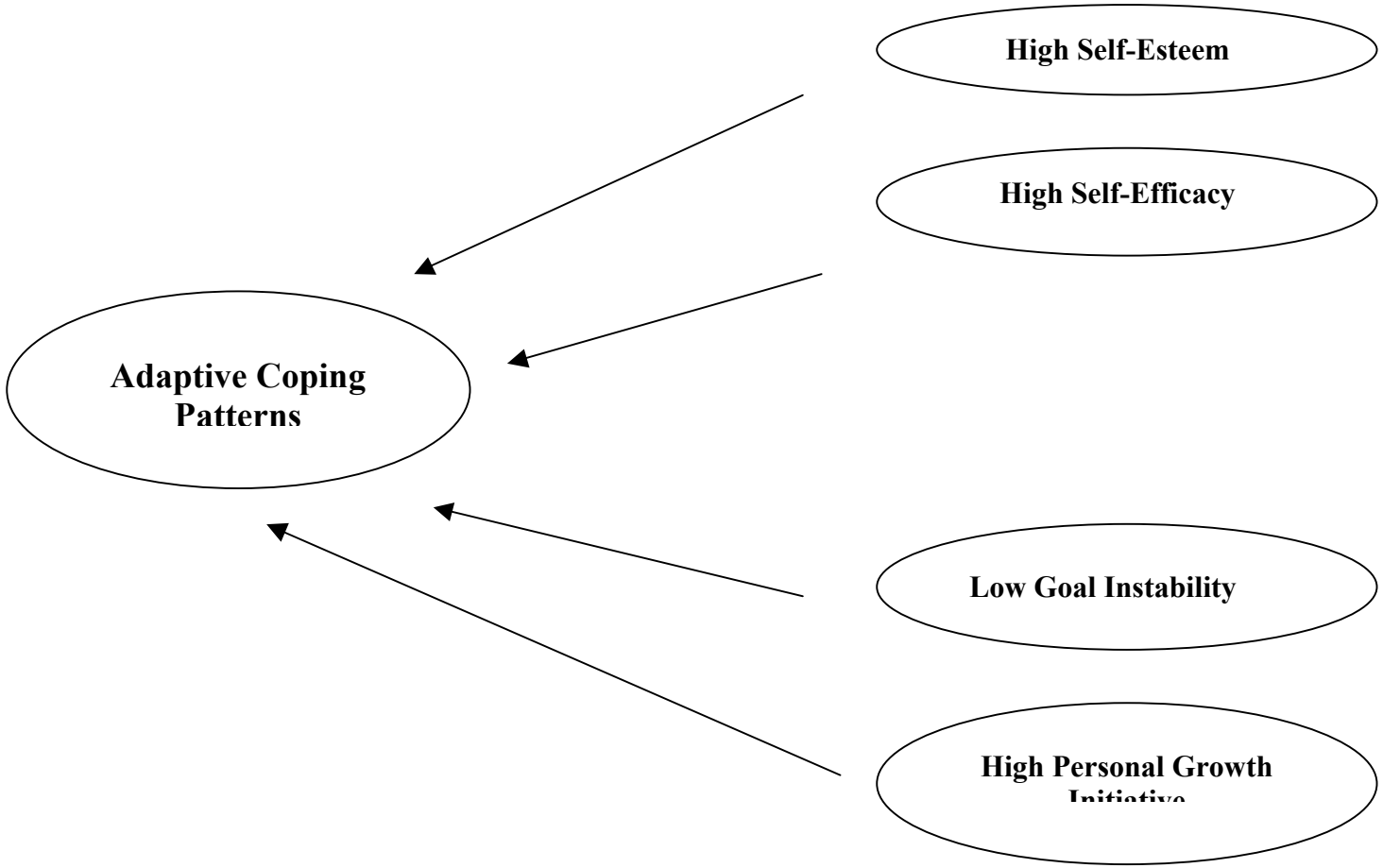
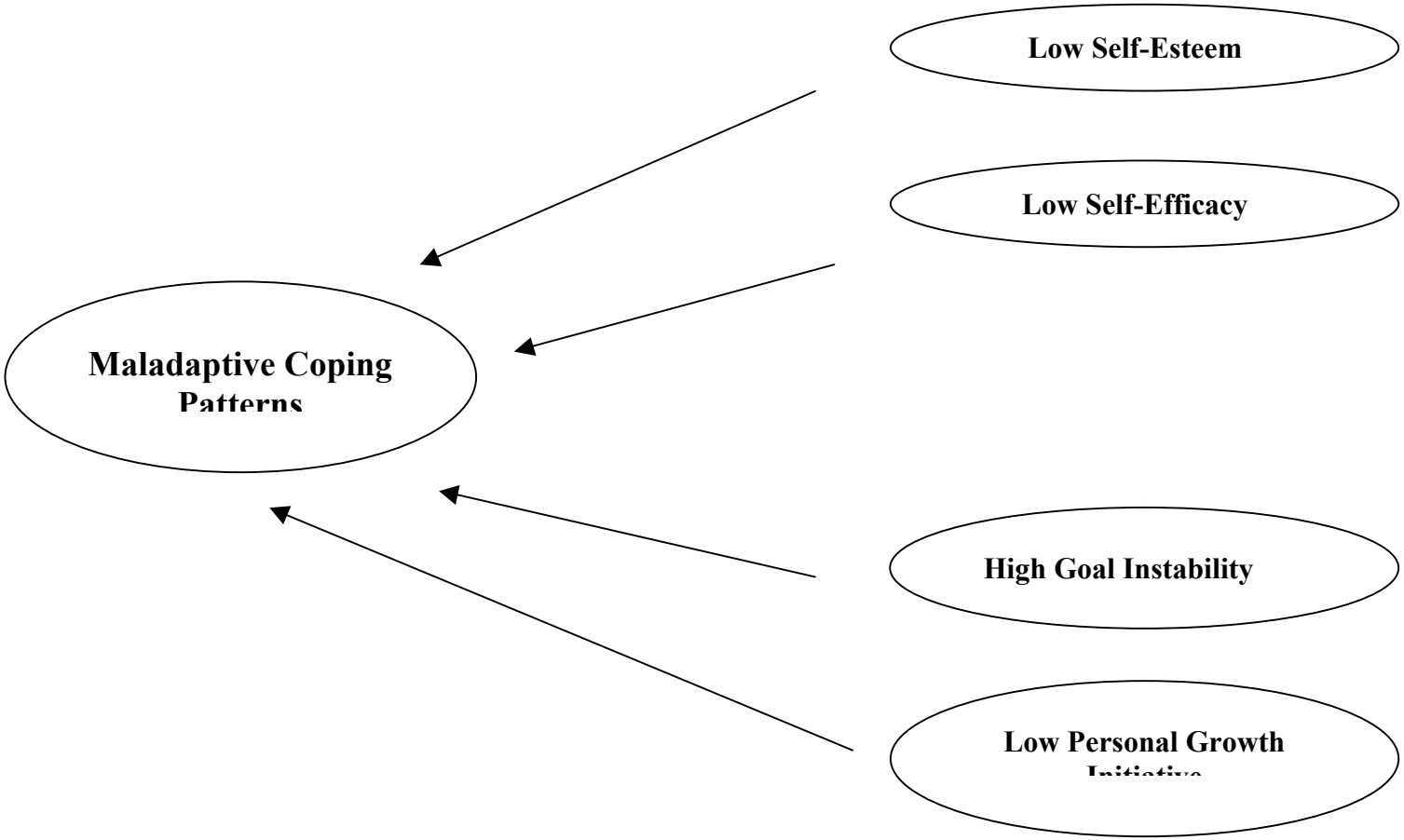


Figure 2

Maladaptive coping patterns



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APPENDIX

Questionnaires

DEMOGRAPHIC INFORMATION

Please fill out this Demographic Information Form BEFORE continuing the rest of the questionnaires.

Name:_____
Date:_____

Gender:_____
Age:_____

Race/Ethnicity (please check **ALL** apply):

_____ White/Caucasian American

_____ Black/African/African American

_____ Middle Eastern

_____ Native American/American Indian

_____ Asian/Asian American

_____ Latino/Hispanic

_____ Pacific Islander

_____ Alaskan Native

_____ Biracial/Multiracial, Please specify_____

_____ Others, Please specify_____

Years in college (please check **ONE**):

_____ 1st _____ 2nd _____ 3rd _____ 4th+

How decided (or certain) are you about choosing your major? Please circle the number that fits you the best at this time.

1	2	3	4	5	6	7
Completely Undecided			Somewhat decided			Completely decided

If you have declared or are certain about your major(s), please list here:

_____

Decision Making Questionnaire & Melbourne Decision Making Questionnaire

Instructions: Rate how true each statement is for you.

2- True for me
1- Sometimes true
0- Not true for me

Decision Making Questionnaire I

____ Q1. I feel confident about my ability to make decisions.

____ Q2. I feel inferior to most people in making decisions.

____ Q3. I think that I am a good decision maker.

____ Q4. I feel so discouraged that I give up trying to make decisions.

____ Q5. The decisions I make turn out well.

____ Q6. It is easy for other people to convince me that their decision rather than mine is the correct one.

Melbourne Decision Making Questionnaire (DMQ-II)

____ Q1. I like to consider all of the alternatives.

____ Q2. I try to find out the disadvantages of all alternatives.

____ Q3. I consider how to best carry out a decision.

____ Q4. When making decisions I like to collect a lot of information.

____ Q5. I try to be clear about my objectives before choosing.

____ Q6. I take a lot of care before choosing.

____ Q7. I avoid making decisions.

____ Q8. I do not make decisions unless I really have to.

____ Q9. I prefer to leave decisions to others.

____ Q10. I do not like to take responsibility for making decisions.

____ Q11. If a decision can be made by me or another person I let the other person make it.

____ Q12. I prefer that people who are better informed to decide for me.

____ Q13. I waste a lot of time on trivial matters before getting to the final decision.

____ Q14. Even after I have made a decision I delay acting upon it..

____ Q15. When I have to make a decision I wait a long time before starting to think about it.

____ Q16. I delay making decision until it is too late.

____ Q17. I put off making decisions.

____ Q18. Whenever I face a difficult decision I feel pessimistic about finding a good solution.

____ Q19. I feel as if I am under tremendous time pressure when making decisions.

____ Q210The possibility that some small thing might go wrong causes me to swing abruptly in my preference.

____ Q22. I cannot think straight if I have to make a decision in a hurry.

____ Q22. After a decision is made I spend a lot of time convincing myself it was correct.

Career Decision-Making Self Efficacy Model (CDMSE)

Instructions: Rate your confidence in your ability to do each of the following tasks.

0	1	2	3	4	5	6	7	8	9
No Confidence At All.									Complete Confidence

____ Q1. Make a career decision and then not worry about whether it was right or wrong.

____ Q2. Find information about companies who employ people with college majors in English.

____ Q3. Come up with a strategy to deal with flunking out of college.

____ Q4. Go back to school to get a graduate degree after being out of school 5-10 years.

____ Q5. Find information about educational programs in engineering.

____ Q6. Make a plan of your goals for the next five years.

____ Q7. Choose a major or career that your parents do not approve of.

____ Q8. Prepare a good resume.

____ Q9. Change occupation if you are not satisfied with the one you enter.

____Q10. Choose the major you want even though the job market is declining with opportunities in this field.

____Q11. Accurately assess your abilities.

____Q12. Get letters of recommendation from your professors.

____Q13. Determine the steps to take if you are having academic trouble with an aspect of your chosen major.

____Q14. Choose a career in which most workers are the opposite sex.

____Q15. Identify some reasonable major or career alternatives if you are unable to get your first choice.

____Q16. Change majors if you did not like your first choice.

____Q17. Figure out whether you have the ability to successfully take math courses.

____Q18. Figure out what you are and are not ready to sacrifice to achieve your career goals.

____ Q19. Find and use the placement office on campus.

____Q20. Determine what your ideal job would be.

____Q21. Select one occupation from a list of potential occupations you are considering.

____Q22. Describe the job duties of the career/occupation you would like to pursue.

____Q23. Successfully manage the job interview process.

____Q24. Select one major from a list of potential majors you are considering.

____Q25. Apply again to graduate schools after being rejected the first time.

____Q26. Find information in the library about occupations you are interested in.

____Q27. Find out the employment trends for an occupation in the 1980s.

____Q28. List several majors you are interested in.

____Q29. Move to another city to get the kind of job you really would like.

____Q30. Decide what you value most in an occupation.

____Q31. Persistently work at your major or career goal even when you get frustrated.

____Q32. Choose a career that will fit your preferred lifestyle.

____Q33. Plan course work outside your major that will help you in your future career.

____Q34. Determine the academic subject you have the most ability in.

____Q35. Identify employers, firms, institutions relevant to your career possibilities.

____Q36. Resist attempts of parents or friends to push you into a career or major you believe is beyond your abilities.

____Q37. Determine the steps you need to take to successfully complete your chosen major.

____Q38. List several occupations that you are interested in.

____Q39. Choose a major or career that will suit your abilities.

____Q40. Decide whether or not you will need to attend graduate or professional school to achieve your career goals.

____Q41. Choose a major or career that will fit your interests.

____Q42. Choose the best major for you even if it took longer to finish your college degree.

____Q43. Get involved in a work experience relevant to your future goals.

____Q44. Find information about graduate or professional schools.

____Q45. Find out about the average yearly earnings of people in an occupation.

____Q46. Ask a faculty member about graduate schools and job opportunities in your major.

____Q47. Talk to a faculty member in a department you are considering for a major.

____Q48. Define the type of lifestyle you would like to live.

____Q49. Determine whether you would rather work primarily with people or with information.

____Q50. Talk with a person already employed in the field you are interested in.

Goal Instability

Instructions: Rate how strongly you agree with each statement.

1	2	3	4	5	6
Strongly Agree					Strongly Disagree

_____ 1. It's hard to find a reason for working.

_____ 2. I don't seem to make decisions by myself.

_____ 3. I have confusion about who I am.

_____ 4. I lose my sense of direction.

_____ 5. It's easier for me to start than to finish projects.

_____ 6. I don't seem to get going on anything important.

_____ 7. I wonder where my life headed.

_____ 8. After a while, I lose sight of my goals.

_____ 9. I don't seem to have the drive to get my work done.

Personal Growth Initiative Scale

Please read the following statements and consider how much you agree or disagree with each. In the blank to the left of each statement, write the number from the list below that corresponds to your level of agreement.

Disagree Strongly					Agree Strongly	
0	1	2	3	4	5	6

1. _____ I know how to change specific things that I want to change in my life.

2. _____ I have a good sense of where I am headed in life.

3. _____ If I want to change something in my life, I initiate the transition process.

4. _____ I can choose the role that I want to have in a group.

5. _____ I know what I need to do to get started toward reaching my goals.

6. _____ I have a specific action plan to help me reach my goals.

7. _____ I take charge of my life.

8. _____ I know what my unique contribution to the world might be.

9. _____ I have a plan for making my life more balanced.