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UMI®
AN EXAMINATION OF MODELS OF EFFICACY AND ESTEEM PATHWAYS TO DEPRESSION IN YOUNG ADULTHOOD

A Dissertation

Presented in Partial Fulfillment of the Requirements for

the Degree Doctor of Philosophy in the

Graduate School of The Ohio State University

By

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* * * * *

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ABSTRACT

Previous research has demonstrated the relationship of various beliefs of self-efficacy to indices of psychological adjustment, including shyness, career indecision, and depression. The present study involved the proposal and evaluation, with a sample of college undergraduates, of casual models of efficacy, sociocognitive, and esteem pathways to depression in young adulthood. The variables examined within the proposed model included social self-efficacy, career decision self-efficacy, shyness, career indecision, global self-esteem, and depression. The results indicate that the expanded model incorporating both self-efficacy and self-esteem pathways to depression accounted for a greater proportion of the variance in depression, career indecision, and shyness than did the model containing only efficacy-based predictors. The data suggest that both cognitive (efficacy) and affective (esteem) aspects of self-worth are essential components of human agency.

In particular, high self-esteem contributed directly to low levels of depression. Global self-esteem and social self-efficacy also contributed significantly to depression through their relationships with shyness and career indecision, while career decision self-efficacy did so solely through its relationship with career indecision. Gender differences in the causal structure of the models were obtained. Specifically, global self-esteem played a more significant role in the prediction of depression for females than for males,
and social self-efficacy contributed to depression in females through its relationships with shyness and career indecision, whereas for males, social self-efficacy only contributed to depression through its relationship to shyness. Implications of the proposed models for counseling and future research are discussed.
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CHAPTER 1
INTRODUCTION

The application of constructs from the field of social psychology to counseling psychology has had implications for both the research and practice of counseling psychologists. Historically, the influx of social psychological ideas into counseling psychology stemmed from the recognition that counseling is a process of social influence (Strong, Welsh, Corcoran, & Hoyt, 1992). One social psychological principle that has received extensive empirical investigation and that possesses particular potential for useful therapeutic applications within counseling psychology is social cognitive theory. Formulated by Bandura (1977, 1986, 1997), social cognitive theory emphasizes the importance of strong personal self-efficacy expectations for competence in interpersonal contexts. As a significant determinant of one's performance of a given behavior, self-efficacy functions separately from the abilities that one possesses, although both skills and self-efficacy beliefs are necessary for competent functioning. Self-efficacy may be defined as a person's evaluation of his or her ability to perform a given behavior. In other words, self-efficacy expectations are concerned not with an individual's actual skills but with a person's perceptions of his or her behavioral capacity (Bandura, 1986).
Moreover, perceived self-efficacy is distinguished from outcome expectations or judgments of the consequences likely to be produced by a behavior. As such, a person may anticipate a positive outcome for a particular action, but fail to engage in the behavior because of low self-efficacy beliefs. Because the pursuit of one's outcome expectations is therefore contingent upon one's perceived efficacy, self-efficacy expectations are critical mediators of behavior and behavior change (Bandura, 1977, 1986, 1997).

According to Bandura (1977, 1986, 1997), perceived self-efficacy predicts behavior in three specific domains (right side of Figure 1). First, self-efficacy expectations influence whether a person will approach or avoid a behavior. A person will tend to avoid behaviors and situations judged to be beyond his or her capabilities and will attempt behaviors about which he or she feels a sense of confidence. Perceived self-efficacy also affects the quality of a person's performance, or namely whether the behavior is performed successfully. Third, self-efficacy expectations influence whether a person will pursue a behavior in the presence of obstacles or aversive experiences, with greater perceived self-efficacy increasing the likelihood that an individual will persist until he or she succeeds.

In turn, Bandura (1977, 1986, 1997) asserts that self-efficacy expectations for a particular domain of behavior develop through and are modified by four sources of information (left side of Figure 1). These sources consist of performance accomplishments or past successes in completing the behavior, vicarious learning or observing others performing the behavior, level of emotional arousal, especially one's
Figure 1

Bandura's Model of Perceived Self-Efficacy
(Based on Bandura, 1977; as adapted by Betz, 1992)
experience of anxiety, and verbal persuasion or encouragement from others. Of the four sources of self-efficacy information, performance accomplishments exert the most influence on the development of self-efficacy beliefs (Bandura, 1997).

One way to gain a better understanding of the nature of self-efficacy is to distinguish it from other aspects of self-concept, the heading under which self-appraisal has traditionally been conceptualized. A composite view of the self formed through direct experience and evaluations by significant others, self-concept is a global self-image that does not fully account for specific judgments of self-efficacy (Bandura, 1986). Similarly, self-efficacy is distinct from global self-esteem, which consists of an affective rather than cognitive evaluation of self-worth (Betz & Klein, 1996). Examining the relationship among domain-specific measures of career self-efficacy, generalized self-efficacy, and global self-esteem in two samples of college students, Betz and Klein (1996) found support for this assumption. Specifically, their results indicated a stronger relationship between measures of particular types of career self-efficacy and ratings of generalized self-efficacy than between domain-specific self-efficacy and global self-esteem.

However, the smaller but still significant correlations between various measures of career self-efficacy and self-esteem (e.g., \( r = .39 \) and \( r = .43 \) with career decision self-efficacy for females and males, respectively) suggests that some relationship does exist between cognitive and affective self-evaluations. Perhaps the overlap between judgments of self-efficacy and self-esteem can be better accounted for by specific aspects of self-esteem rather than by a global evaluation of self-worth. Fleming and Courtney (1984)
conceive of self-esteem as a multilayered, hierarchical attribute, with the four specific domains of academic, social, emotional, and physical self-esteem located beneath global self-esteem in the hierarchy. They suggest that domain-specific aspects of self-esteem are more sensitive in predicting the performance of a particular behavior than are ratings of global self-worth.

A parallel exists between such a multilayered conceptualization of self-esteem and the way in which self-efficacy is operationalized within social cognitive theory. That is, although self-efficacy theory allows for a consideration of a generalized feeling of personal efficacy, perhaps a more useful characteristic is its applicability to a wide range of specific behaviors. Accordingly, researchers have investigated perceived self-efficacy for such domains as career decision-making (Taylor & Betz, 1983), mathematics (Betz & Hackett, 1983), career search activities (Solberg et al., 1994), and the six themes of Holland's (1997) theory of vocational development (Betz, Harmon, & Borgen, 1996).

One area that has received less attention but that may have important implications for career development, personal adjustment, and counseling applications is that of perceived self-efficacy in social situations. Social self-efficacy may be defined as a person's confidence in his or her ability to engage in the social interactional tasks necessary to initiate and maintain interpersonal relationships (Smith & Betz, 2000).

While research on social self-efficacy in college student and adult samples has been fairly limited, studies that have been conducted suggest some potentially important relationships between it and various indices of personal adjustment and career development. For instance, in an investigation employing three different adolescent
samples, Connolly (1989) found significant correlations between social self-efficacy and several aspects of self-concept, including perceived social acceptance, general self-worth, cognitive and physical competence, and self-esteem. Other researchers have found significant relationships between perceived social self-efficacy and such variables as social adjustment, shyness, and academic performance (e.g., Ferrari & Parker, 1992; Patterson & O'Brien, 1997; Smith & Betz, 2000) and have linked strong social self-efficacy beliefs to positive career development (Niles & Sowa, 1992). Studies have also related low social self-efficacy to symptoms of depression in child, adolescent, and adult samples (Anderson & Betz, 2001; Bandura, Barbaranelli, Caprara, & Pastorelli, 1996; Betz, Schifano, & Kaplan, 1999b; McFarlane, Bellissimo, Norman, and Lange, 1994).

Recognizing the potential contribution of perceived social self-efficacy expectations to adjustment indices such as depression, Bandura, Pastorelli, Barbaranelli, and Caprara (1999) proposed and tested a causal model examining how social self-efficacy and academic self-efficacy interact with a network of sociocognitive influences in childhood depression. The researchers analyzed the model with a sample of 282 children (148 boys and 134 girls) with a mean age of 11.5 years. Results of the path analysis indicated that low expectations of social and academic self-efficacy contributed to depression both directly and indirectly through their impact on academic achievement, prosocialness, and problem behaviors.

Given the wide prevalence of depression in adulthood (American Psychiatric Association [APA], 1994; Nevid, Rathus, & Greene, 1994), the formulation of an analogous casual model aimed at accounting for the relationships among dimensions of
perceived efficacy, sociocognitive factors, and adult depression is warranted.

Accordingly, the purpose of the present study was to outline and evaluate a causal model of pathways that contribute to depression in young adulthood. The study endeavored to replicate and extend, in a sample of college students, the model proposed by Bandura et al. (1999). The variables examined within the proposed model included social self-efficacy, career decision self-efficacy, shyness, career indecision, global self-esteem, and depression.
CHAPTER 2
LITERATURE REVIEW

The present chapter reviews literature related to the variables contained within the proposed model. First, Bandura’s (1977, 1986, 1997) self-efficacy theory and the construct of social self-efficacy are revisited. Research relating social self-efficacy to various adjustment and career development indices is presented. A causal model proposed by Bandura et al. (1999) that accounts for relationships among aspects of self-efficacy beliefs, sociocognitive variables, and depression in children is then described. The analogous model postulating pathways to adulthood depression that is the subject of the present research is outlined, and research related to the variables contained within the proposed model, namely social self-efficacy, career decision self-efficacy, shyness, career indecision, global self-esteem, and depression is presented. The relationship between self-efficacy theory and the development of counseling interventions is explored. Finally, the chapter concludes with a summary and reiteration of the purposes of the present study.
Self-Efficacy Theory

**Bandura's Model**

Originating from within social cognitive theory, Bandura's (1977, 1986, 1997) theory of self-efficacy has received much empirical attention from those within the field of counseling psychology in recent years. Perceived self-efficacy may be understood as an individual’s confidence in his or her ability to perform a given behavior. As outlined by Bandura (1977, 1986, 1997), perceived self-efficacy develops through and is modified by four sources of information (left side of Figure 1). These sources consist of performance accomplishments or past successes in performing the behavior, vicarious learning or observing others completing the behavior, emotional arousal, especially one’s level of anxiety, and verbal persuasion or encouragement from others. Of the four sources of self-efficacy information, performance accomplishments exert the most influence on the development of perceived self-efficacy (Bandura, 1997).

In turn, self-efficacy expectations predict behavior in three particular domains (right side of Figure 1). Perceived self-efficacy influences whether a person will approach or avoid a behavior, whether the behavior is performed successfully, and whether an individual will persist at a behavior in the face of adversity (Bandura, 1977, 1986, 1997).

Bandura's (1977, 1986, 1997) model of self-efficacy has been validated with respect to a wide range of specific behaviors. For instance, Bandura (1997) reviews research relating perceived self-efficacy to cognitive functioning, academic performance, health-related behaviors, anxiety, depression, eating disorders, alcohol and drug abuse.

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athletic performance, political behavior, and vocational development. The applicability of self-efficacy theory to vocational behavior was first suggested by Hackett and Betz (1981; Betz & Hackett, 1981). Over the subsequent 30 years, researchers have investigated the relevance of perceived self-efficacy to several specific career-related behavioral domains. As reviewed by Betz (2000), these have included self-efficacy expectations for scientific/technical careers (Lent, Brown, & Larkin, 1984, 1986), mathematics (Betz & Hackett, 1983), the six themes of Holland’s (1997) theory of vocational development (Betz, Harmon et al., 1996), and the tasks involved in making vocational decisions (Taylor & Betz, 1983). In addition, the relationship of self-efficacy expectations to vocational interests and to the career development of special groups (e.g., women and racial/ethnic minorities) has been examined (Betz, 2000).

Social Self-Efficacy

One of the most promising applications of self-efficacy theory is that of perceived self-efficacy for social behaviors. Social self-efficacy may be defined as a person's confidence in his or her ability to engage in the social interactional tasks necessary to initiate and maintain interpersonal relationships (Smith & Betz, 2000). Historically, research on social self-efficacy in college student and adult samples has been constrained by inadequate measurement procedures. For example, some researchers (e.g., Alden, Teschuk, & Tee, 1992; Mahone, Bruch, & Heimberg, 1993) have relied on single-item measures of a person's self-confidence in social situations, which are often criticized for not being psychometrically robust (Nunnally & Bernstein, 1994; Spector, 1992).
Unfortunately, many of the commonly employed multi-item instruments for measuring social self-efficacy also possess limitations that restrict their utility in both research and applied contexts (Smith & Betz, 2000). As such, the reliability and validity of the most frequently used scale, the Social Self-Efficacy subscale of the Self-Efficacy Scale (SES; Sherer et al., 1982), has been questioned (Mallinckrodt, 1992; Patterson & O'Brien, 1997; Sherer & Adams, 1983; Sherer et al., 1982; Smith & Betz, 2000), while others, such as the College Interaction Self-Efficacy Questionnaire (CISEQ; Fichten Bourdon, Amsel, & Fox, 1987), have been described as being narrow in definition and scope (Patterson & O'Brien, 1997; Smith & Betz, 2000).

Given the lack of psychometrically sound measurement techniques for assessing social self-efficacy, Smith and Betz (2000) developed a new instrument, the Scale of Perceived Social Self-Efficacy (PSSE), to assess the construct. The PSSE is designed to measure perceived self-efficacy for a wide range of social behaviors in college student and adult populations. Initial reliability and validity data obtained in the development sample of 354 undergraduates (90 males and 264 females) support the utility of the PSSE as an improved assessment of social self-efficacy expectations. Accordingly, internal consistency reliability (coefficient alpha = .94) and three-week test-retest reliability (r = .82) were high, and construct validity was indicated by expected correlations with measures of self-esteem, shyness, and social anxiety. The authors encourage use of the PSSE in research investigating the relationship of social self-efficacy to indices of vocational development and psychological adjustment (Smith & Betz, 2000).
The enhanced measurement of the social self-efficacy construct was deemed important given that the limited research that does exist on social self-efficacy has suggested some potentially important relationships between it and a range of personal adjustment and career development variables. For instance, in an investigation employing three different adolescent samples, Connolly (1989) found significant correlations between social self-efficacy and several aspects of self-concept, including perceived social acceptance, general self-worth, cognitive and physical competence, and self-esteem. Examining the development of social self-efficacy and its impact on a range of social and academic variables, a study by Patterson and O'Brien (1997) reported similar findings. The researchers utilized the CISEQ (Fichten et al., 1987) and the Social Self-Efficacy subscale of the SES (Sherer et al., 1982) to measure social self-efficacy in a sample of 243 (127 female and 116 male) first-year college students. Correlational analyses indicated significant positive relationships between social self-efficacy and assessments of social control, social adjustment, and global self-esteem.

In addition to its relationship to general personal adjustment, social self-efficacy is relevant to a consideration of the role that social competence plays in educational and career development. Accordingly, Patterson and O'Brien (1997) suggest the potential importance of social self-efficacy expectations in young adults' transition to and retention in college. Research supports this notion; for instance, in a sample of first-year college students, Ferrari and Parker (1992) reported a positive relationship between social self-efficacy and academic performance. Studies have also demonstrated that ineffective peer
group relationships in college can result in loneliness, which in turn can lead to depression, low self-esteem, and poor academic performance (Blai, 1989; Rotenberg & Morrison, 1993).

Furthermore, research (e.g., Blustein, Walbridge, Friedlander, & Palladino, 1991; Felsman & Blustein, 1999; O’Brien, 1996) has suggested that the capacity for close interpersonal relationships in adolescence is associated with more advanced career development and decision-making processes. For example, Felsman and Blustein (1999) found that adolescents who reported higher levels of attachment to peers and who demonstrated the capacity to experience intimate relationships with others exhibited more environmental exploration and greater progress in committing to career choices. Niles and Sowa (1992) reported a significant relationship between social self-efficacy and three scales from Krumboltz’s (1988) Career Beliefs Inventory, namely flexibility, motivation, and preference, such that higher social self-efficacy was associated with beliefs that facilitate, rather than impede, the career development process.

Studies have also examined the link between social self-efficacy and various psychological and emotional difficulties. For instance, comparisons between the social self-efficacy ratings of emotionally disturbed and well-functioning adolescents indicate that disturbed adolescents possess lower social self-efficacy expectations than do their psychologically healthy peers (Connolly, 1989). Similar results have been obtained with samples of college students and adults (Hays & Buckle, 1992). Furthermore, many people who seek counseling for emotional difficulties report experiencing high levels of social anxiety in interpersonal situations (Schlenker & Leary, 1982). Perceived social
self-efficacy is also negatively related to such symptoms of psychological impairment as generalized anxiety, social withdrawal, and strict behavioral control (Connolly, 1989; Sherer & Adams, 1983).

Social Self-Efficacy and Depression

Increasing attention has been given to examining the link between perceived social self-efficacy and the experience of depression in particular. Overall, a relationship between social self-efficacy and depression has been found to exist in both child and adult samples (Bandura, 1997). For instance, Ehrenberg, Cox, and Koopman (1991) studied the relationship between social self-efficacy and depression in a sample of depressed adolescents. Regression coefficients of -.41 and -.42 for middle- and late-adolescent groups indicated a significant relationship between the two constructs.

Similarly, Betz et al. (1999b) examined the association between depression, as measured by the Beck Depression Inventory (BDI; Beck & Steer, 1987), and social confidence (self-efficacy), as assessed by the Skills Confidence Inventory (SCI; Betz, Borgen, & Harmon, 1996; Betz, Harmon, et al., 1996). The results indicated significant relationships between the two constructs for female (r = -.22), although not for male, college students. In a sample of 250 undergraduates (84 males and 166 females), Anderson and Betz (2001) obtained correlations of r = -.30 (males) and r = -.25 (females) between depression and social self-efficacy as measured by the Social Self-Efficacy subscale of the SES (Sherer et al., 1982) and correlations of r = -.33 (males) and r = -.18 (females) between depression and scores on the Social Confidence scale of the SCI (Betz, Borgen, et al., 1996; Betz, Harmon, et al., 1996). Finally, McFarland et al. (1994) found
social self-efficacy, as measured by the Adolescent Social Self-Efficacy Scale (S-EFF; Connolly, 1989), to be a significant predictor of depression in an adolescent sample with a mean age of 17.1 years.

Findings such as these have led to research focused on delineating factors that may mediate the relationship between social self-efficacy and depression. One such mediating variable is social support, which is postulated to have both a direct and a buffering effect on psychological functioning in general. That is, secure, stable social relationships, especially with family and peers, are said to promote resilience in the face of adversity and to reduce one's vulnerability to stress, depression, and illness (Bandura, 1997; Rutter, 1985). McFarlane, Bellissimo, and Norman (1995) examined this claim in a longitudinal study of 682 sophomore high school students (325 females and 357 males) who had a high risk for premature school drop-out. The participants were assessed at Times 1 and 2 on their level of stress, available social supports, experience of depressive symptomology, and social self-efficacy expectations as measured by the S-EFF (Connolly, 1989). The results indicated that both perceived social self-efficacy and family social support were negatively related to depression. Furthermore, while peer social support did not have a significant direct effect on depression, it did correlate positively with perceived social self-efficacy.

Similar evidence for the relationship between social self-efficacy, social support, and depression has been found in research on elderly populations. For instance, Holahan and Holahan (1987) found that perceived social self-efficacy predicted individuals' level of social support one year later in a sample of older adults. In addition, high perceived
social self-efficacy influenced participants’ experience of depressive symptomology both directly ($r = -.31$) and indirectly through its influence on the development of strong social supports ($r = .57$).

Thus, it seems that both high social self-efficacy and social support serve as protective factors against the development of depression, whereas social support from peers predicts greater social self-efficacy. McFarlane et al. (1995) suggest that the family provides a foundation for the development of a healthy sense of social self-efficacy, but that a transition occurs during adolescence in which peers then become important for further development of one’s sense of perceived social efficacy. Development of social self-efficacy can thus be thwarted if peer relationships are impoverished or disrupted, creating a constrictive cycle in which poor friendships lead to perceived social inefficacy. Because the development and maintenance of healthy interpersonal relationships is predicated upon the possession of strong expectations of social self-efficacy (Leary & Atherton, 1986), such perceived social inefficacy can in turn create internal barriers to positive peer relationships in the future (Bandura, 1986; Bandura et al., 1996; Wheeler & Ladd, 1982). As such, "socially efficacious individuals create more supportive environments for themselves than do those who have a low opinion of their social capabilities. Supportive relationships, in turn, can enhance personal efficacy" (Bandura, 1997, p. 159).

Causal Model of Childhood Depression

According to Bandura (1997, p. 347), depression may arise from different sources, yet “a profound sense of personal inefficacy...is the central common factor in
the different subprocesses of depression.” Thus, Bandura et al. (1999) sought to integrate findings relating social and other aspects of perceived self-efficacy to indices of adjustment by proposing and evaluating a causal model of efficacy and sociocognitive pathways to childhood depression. Specifically, the researchers postulated that social self-efficacy and academic self-efficacy interact with prosocialness, academic achievement, and problem behavior to predict levels of both current and future childhood depression.

Analyzing the model with a sample of 282 children (148 males and 134 females) with a mean age of 11.5 years, Bandura et al. (1999) found support for their conjectures. Low perceived social and academic self-efficacy beliefs contributed to concurrent and later depression both directly and indirectly through their impact on prosocialness, academic achievement, and problem behaviors. Perceived social inefficacy contributed more strongly to subsequent depression for girls than for boys. The researchers concluded that “a persistent sense of personal inefficacy operates as a common contributor to both clinical and less severe forms of depression” (Bandura et al., 1999, p. 267).

Proposed Model of Pathways to Depression in Young Adulthood

Major depression is the most commonly diagnosed mood disorder in adulthood, with less severe levels of depressive symptoms also affecting a large percentage of the population (Nevid et al., 1994). In fact, depression has been termed the “common cold” of psychological adjustment (Bandura, 1997; Selgiman, 1973). Depression at various levels of severity has been associated with a range of impaired functioning, including
disrupted interpersonal relationships, sleep abnormalities, physical illness, behavioral
decision, occupational inactivity, low self-esteem, and suicidal ideation (APA, 1994;
Nevid et al., 1994).

Given the prevalence of depression in adulthood and the impairment in
functioning that is associated with it, the establishment of casual models aimed at
accounting for the relationships among dimensions of perceived efficacy, sociocognitive
factors, and adulthood depression is warranted. An evaluation of such a model would
serve to further understanding of self-efficacy theory, the antecedents of depression in
young adulthood, and the development of efficacy-based counseling interventions aimed
at addressing issues of low expectations of perceived self-efficacy, depression, and other
aspects of career and personal adjustment. Because of the success of the model
postulated by Bandura et al. (1999) in accounting for significant contributors to
depression in childhood, it provides a foundation for the development of a similar model
for use with young adults.

Figure 2 depicts the model proposed herein to account for efficacy and
sociocognitive pathways to depression in young adulthood. Social self-efficacy and
career decision self-efficacy were hypothesized to contribute to concurrent levels of
depression through their relationships with shyness and career indecision. The variables
chosen for inclusion in the proposed model were not exact duplicates of those
incorporated in Bandura et al.'s (1999) model of childhood depression, but rather were
Figure 2

Proposed Model of Relationships Among Social Self-Efficacy, Career Decision Self-Efficacy, Shyness, Career Indecision, and Depression
selected on the basis of empirical and theoretical relevance to factors that contribute to emotional adjustment in young adulthood. The following sections review literature on the included constructs.

Review of Variables in the Young Adult Model

Career Decision Self-Efficacy

The counterpart to Bandura et al.'s (1999) consideration of academic self-efficacy as a predictor of childhood depression in the current model of efficacy pathways to depression in young adulthood was career decision self-efficacy. Included in the model as a covariate of social self-efficacy, career decision self-efficacy can be considered an important career choice process rather than career choice content variable. That is, career decision self-efficacy refers to the choice and implementation of any career rather than to a specific vocational domain (e.g., math) (Hackett & Betz, 1981). The notion of career decision self-efficacy emerged from Taylor and Betz's (1983) reformulation of the career indecision construct within the context of Bandura's (1977) self-efficacy theory. Within that framework, career decision self-efficacy refers to an individual's confidence in his or her ability to perform the tasks involved in making vocational decisions. Whereas academic self-efficacy reflects a person's beliefs in his or her ability to meet the demands of school (Bandura et al., 1999), career decision self-efficacy expands beyond academic concerns to address behaviors encountered throughout the process of adult career development.

The specific career decision-making behaviors addressed by Taylor and Betz (1983) are based on the five Career Choice Competencies outlined in Crites' (1961, 1965)
model of career maturity, namely accurate self-appraisal, gathering occupational information, goal selection, making plans for the future, and problem solving. In the development sample of 346 college students (128 males and 218 females) for the Career Decision Self-Efficacy Scale (CDMSE), Taylor and Betz (1983) found that self-efficacy expectations significantly predicted career indecision, with students who possessed lower levels of career decision self-efficacy being more vocationally undecided. Similarly, in their extension of the psychometric evaluation of the CDMSE in a sample of 407 undergraduates, Taylor and Popma (1990) found career decision self-efficacy to be a significant negative predictor of vocational indecision. Bergeron and Romano (1994) found self-efficacy for career decision-making activities to be related to both vocational and educational (e.g., college major) indecision, again with students exhibiting lower levels of self-efficacy for career decision-making tasks reporting greater indecision.

In a college student sample, Solberg, Good, Fischer, Brown, and Nord (1995) examined the relationships among career search (decision) self-efficacy, human agency, and various career indices. Human agency was measured in terms of instrumentality, interpersonal facility (e.g., social anxiety, sociability, and fear of high-status others), and assertiveness. Overall, the researchers found that both higher career search self-efficacy expectations and a greater sense of personal agency were related to more career decidedness and engagement in career exploration behaviors. Moreover, expectations of career search self-efficacy were found to mediate the relationship between human agency
and the career variables, suggesting that career search self-efficacy may have a more
direct influence on career decidedness and career search behavior than does an
individual's general sense of personal agency.

Although no research has directly assessed the association between career
decision self-efficacy and depression, speculation may be made about a relationship
between the two constructs. Accordingly, given that behavioral indecision is an
associated characteristic of clinical depression (APA, 1994), it is conceivable that self-
efficacy expectations for one's ability to make decisions, including those related to career
pursuits, would be negatively related to depressive symptoms. In a study of 18 female
students seeking counseling for depression and career concerns, Lucas, Skokowski, and
Ancis (2000) found that difficulties in vocational decision-making were linked to both
symptoms of depression and the experience of disrupted interpersonal relationships.

In fact, career decision self-efficacy has been related to other personal adjustment
variables and to self-efficacy expectations for other behavioral domains, including social
behaviors. For instance, Robbins (1985) reported significant correlations between career
decision self-efficacy and self-esteem and anxiety. Betz and Klein (1996) found higher
CDMSE scores were associated with greater perceived social self-efficacy ($r = .39$) in a
sample of college students. Similarly, Niles and Sowa (1992) reported a correlation of $r
= .21$ between career decision self-efficacy and self-efficacy for social behaviors as
measured by the Social Self-Efficacy subscale of the SES (Sherer et al., 1982).
Shyness

Along with career indecision, shyness was selected as one of two sociocognitive variables within the proposed model through which social and career decision self-efficacy beliefs contribute to depression in young adulthood. Research demonstrates that shyness is a characteristic that has significant detrimental effects on both career and personal development. Characterized by a preoccupation with the self, shyness can be defined as a feeling of tenseness and awkwardness around others, which leads to behavioral inhibition in social interactions as a result of the prospect of negative interpersonal evaluation (Cheek & Buss, 1981; Hamer & Bruch, 1997). While situational shyness, or the experience of the symptoms of shyness in response to a particular social situation, is rather common, less than half of those who experience situational shyness label themselves as shy (Hill, 1989; Zimbardo, 1977).

Shyness can be distinguished from such characteristics as introversion and low sociability (Cheek & Buss, 1981). Whereas introverted people possess an inward focus of attention and an inclination toward solitude but have little trouble interacting with others when necessary, and those low in sociability simply have a nonfearful preference for not associating with others (Hamer & Bruch, 1997), people characterizing themselves as shy are much more likely to report that failure to respond in social settings is a problem for them (Zimbardo, 1977). Accordingly, under conditions of social anxiety shy people tend to perceive negative reactions from others and to respond with tension, behavioral inhibition, awkwardness, heightened self-consciousness, and feelings of physical distress (Montgomery, Haemmerlie, & Edwards, 1991; Schmidt & Fox, 1995).
Thus, shyness involves a maladaptive, fear-based social avoidance which most likely impedes or reduces the effectiveness of an individual’s social interactions (Leary, 1991).

Shyness has been linked to aspects of psychological and emotional adjustment such as depression (Alfano, Joiner, & Perry, 1994; Anderson & Harvey, 1988; Schmidt & Fox, 1995; Traub, 1983). For instance, Schmidt and Fox (1995) found that women (mean age = 21.49 years) reporting high levels of shyness experienced more depression than did women with little shyness. In a sample of 251 (148 males and 103 females) college students, Alfano et al. (1994) also found significant differences in depression for shy and non-shy groups, with shy students reporting higher levels of depression than non-shys. In addition, the data revealed significant correlations between shyness and two measures of depression, with $r = .27$ and $r = .26$. To better explicate the nature of the association between shyness and depression, the researchers investigated the degree to which a negative attributional style served as a mediator of the relationship. The results were consistent with that idea; in addition to being more depressed than non-shy students, shys demonstrated a more negative attributional style.

Research indicates that shyness may also have a particularly detrimental impact on career development. For example, Arkin, Lake, and Baumgardner (1986) reported the maladaptive effects of shyness on job interview behaviors. In a sample of 151 undergraduates, Phillips and Bruch (1988) found that shy college students, as indicated by the Revised Cheek and Buss Shyness Scale (Cheek, 1983; Cheek & Buss, 1981), were significantly less effective in behaviors necessary for successful career development than were non-shy students. Specifically, shy students tended to acknowledge career
preferences limited to non-interpersonally oriented occupations, engaged in less career exploration, and were more career undecided than were non-shy individuals. In more recent research, Hamer and Bruch (1997) found a negative relationship between shyness and vocational self-concept crystallization and career maturity. Overall, Hamer and Bruch (1997) assert that shy students are more likely to have difficulty forming a vocational self-concept, making career-related decisions, expanding vocational options beyond non-social fields, and achieving vocational maturity than are non-shy students. The researchers suggest that counselors should attend to shyness among college students as a way of indirectly helping them to more effectively complete the developmental tasks necessary for obtaining a satisfying career.

Studies examining the development of shyness provide support for the role of self-efficacy in its etiology. Investigating whether self-rated shy and non-shy college students differ in terms of social skills knowledge, the willingness to engage in social interactions, and self-efficacy for performing various social behaviors, Hill (1989) found no differences between the groups for the first two variables. However, there was a discrepancy between the perceived social self-efficacy of shy and non-shy individuals, with shy students describing themselves as both less likely to act and less capable of performing social behaviors.

Further evidence of the relationship between social self-efficacy and shyness comes from correlational studies of the two constructs. Utilizing the Social Self-Efficacy subscale of the SES (Sherer et al., 1982) and the Social Confidence scale of the SCI (Betz, Borgen, et al., 1996; Betz, Harmon, et al., 1996) as indices of social self-efficacy
expectations in a sample of 250 (84 males, 166 females) college students, Anderson and Betz (2001) obtained correlations ranging from $r = -.54$ to $r = -.77$ between social self-efficacy and shyness. Smith and Betz (2000) reported correlations of $r = -.67$ and $r = -.71$ between social self-efficacy and shyness for male ($N = 90$) and female ($N = 264$) college students, respectively. Taken together, the results of these studies suggest substantial shared variance between the two constructs of social self-efficacy and shyness.

**Career Indecision**

The second sociocognitive variable included in the model as a mediator of efficacy pathways to depression in young adulthood, career indecision, has received extensive attention in the literature and is considered to be an integral component of career development and adjustment. Career indecision may be defined as an individual's uncertainty regarding his or her choice of career pursuits (Leong & Chervinko, 1996). As might be expected, indecision regarding one's career is associated with concurrent uncertainty regarding educational decisions. In a sample of college undergraduates, Bergeron and Romano (1994) found a positive relationship between vocational and educational indecision. That is, students who were more decided about their college major also tended to be more decided about their choice of a future career.

According to McAuliffe (1992), between 8.5% and 21% of vocationally undecided individuals report significant internal barriers to effective career decision-making that necessitate therapeutic intervention. Research evidence from studies exploring the association between various personality characteristics and career indecision supports this assumption. For instance, Fuqua, Newman, and Seaworth (1988)
examined the relationship between state- and trait-anxiety and career indecision in a sample of 349 college students. The results indicated that both types of anxiety were significantly related to various components of career indecision, namely that increased anxiety was associated with a lack of information about oneself and careers and with uncertainty regarding the degree of fit between oneself and vocational alternatives.

In a sample of 217 undergraduates, Leong and Chervinko (1996) investigated the association between career indecision and the "negative" personality characteristics of perfectionism, self-consciousness, and fear of commitment. The data demonstrated that the personality constructs accounted for a significant proportion of the variance (20%) in career indecision as measured by the Career Decision Scale (CDS; Osipow, Carney, Winer, Yanico, & Koschier, 1980). That is, individuals who displayed more socially prescribed perfectionism, private self-consciousness, and fear of commitment and less self-oriented perfectionism and social anxiety reported experiencing greater career indecision. One unexpected result was the negative relationship between social anxiety and career indecision, suggesting that individuals with low levels of social anxiety tend to be more indecisive. Leong and Chervinko (1996) call for future research to more clearly explicate that relationship.

In fact, other research focusing on the association between social self-efficacy, variously defined, and career indecision has contradicted this last finding. For instance, Betz, Schifano, and Kaplan (1999a) examined the relationship of the subscales of the Task Specific Occupational Self-Efficacy Scale (TSOSS; Osipow & Temple, 1996) and the Skills Confidence Inventory (SCI; Betz, Borgen, et al., 1996; Betz, Harmon, et al.,
1996) to a measure of career indecision in a sample of 324 undergraduate students. The results indicated that both the Verbal/Interpersonal Self-Efficacy scale of the TSOSS (r = -.31 for males, r = -.28 for females) and the Social Confidence subscale of the SCI (r = -.20 for males, r = -.27 for females) were significantly related to career indecision. That is, greater social self-confidence was associated with lower levels of career indecision.

The Verbal/Interpersonal Self-Efficacy scale of the TSOSS was also negatively related to career indecision in an investigation by Temple and Osipow (1994) and positively associated with a measure of career decidedness in a study by Tuck, Rolfe, and Adair (1995).

Finally, Newman, Gray, and Fuqua (1999) assert the importance of social development variables to levels of career indecision. The researchers examined the relationship of career indecision to factors on the California Psychological Inventory (CPI; Gough, 1987) in a sample of 146 undergraduates (56 males and 93 females). The results indicated that students with high levels of career indecision scored lower on dimensions of prosocialness, extraversion, sociability, social ascendancy, and leadership potential than did students with lower levels of indecision. Newman et al. (1999) encourage further investigation of the role of socially relevant variables in the development of vocational indecision.

Career indecision was considered an important variable for inclusion in the proposed model given the centrality of having a career or an intended career for the definition of an adult identity in today's society. What has been historically true for adult
males is now true for both genders -- what you “do” determines who you “are.” As such, a typical greeting among newly introduced college students is “what is your major?” while “what do you do (for a living)?” takes its place following graduation.

Indecision with respect to the answers to these and other career-related questions so central to an adult identity could potentially contribute to negative feelings toward oneself and to the development of various psychological and emotional difficulties. Accordingly, vocational indecision has been related to both state- and trait-anxiety (Fuqua et al., 1988; Saunders, Peterson, Sampson, & Reardon, 2000) and to low self-esteem (Resnick, Fauble, & Osipow, 1970; Stead, Watson, & Foxcroft, 1993). In addition, Saunders et al. (2000) investigated the relationships among depression, dysfunctional career thoughts, and career indecision in a sample of 215 undergraduate students. While depression did not contribute a significant amount of independent variance to the prediction of career indecision in the regression model, the two constructs were moderately correlated (r = .22). Career indecision was also significantly related to depression in a study by Sweeney and Schill (1998) for male (r = .23) but not female college students. Given these findings, Saunders et al. (2000, p. 295) call for more research on affective states associated with career indecision, as negative affect such as depression “may actually exacerbate the career problem by further impeding the capacity for adaptive information processing while an individual is in the indecision state.”

Self-Esteem

Bandura et al. (1999) assert that the foundation for human agency is a sense of personal efficacy. Yet, it might be argued that both self-efficacy and self-esteem are
essential components of human agency. To test that idea, data were collected within the present study on students’ current levels of self-esteem so that an expanded model of both cognitive (efficacy) and affective (esteem) pathways to depression could be evaluated (see Figure 3). Global self-esteem may be understood as an affective evaluation of self-worth (Betz & Klein, 1996). Self-esteem was considered a potentially important predictor within the proposed model given its demonstrated relationship to a range of psychological, emotional, and career adjustment variables.

For instance, self-esteem has been related to various constructs in the realm of social behavior, including social self-efficacy and shyness. Social confidence (self-efficacy) as measured by the SCI (Betz, Borgen, et al., 1996; Betz, Harmon, et al., 1996) was significantly correlated with global self-esteem for both male ($r = .24$) and female ($r = .22$) college students in a study by Betz and Klein (1996). Utilizing various measures of social self-efficacy, Smith and Betz (2000) also found a significant positive association between social self-efficacy and self-esteem for both male ($r = .22$) and female ($r = .28$ and $r = .32$) undergraduates.

Low self-esteem has been related to shyness in both childhood and adult samples (Alfano et al., 1994; Cheek & Buss, 1981; Lazarus, 1982; Schmidt & Fox, 1995). For example, Lazarus (1982) found a significant relationship ($r = .63$) between shyness and low self-esteem in a sample of 98 fifth-grade students. Similarly, Schmidt and Fox (1995) reported that women (mean age = 21.49 years) who possessed high levels
Figure 3

Expanded Model of Contributions of Social Self-Efficacy, Career Decision Self-Efficacy, and Self-Esteem to Adjustment Variables of Shyness, Career Indecision, and Depression
of shyness demonstrated lower self-esteem than their low-shy counterparts. Smith and Betz (2000) obtained significant negative correlations between global self-esteem and shyness for both male ($r = -.29$) and female ($r = -.33$) college students.

The career development variables of career indecision and career decision self-efficacy also possess significant relationships with global self-esteem. Individuals with low self-esteem have been shown to possess higher levels of indecision regarding their career pursuits (Resnick et al., 1970; Stead et al., 1993). Whereas career indecision and self-esteem are negatively correlated, career decision self-efficacy has a positive association with self-esteem. In a sample of 347 (127 males and 220 females) college students, Betz and Klein (1996) found significant correlations of $r = .43$ and $r = .39$ between career decision self-efficacy and global self-esteem for males and females, respectively.

Finally, self-esteem was deemed an important construct for inclusion in the expanded model proposed herein given its demonstrated relationship to depression. In fact, feelings of worthlessness and low self-esteem are central diagnostic criteria for major depression and dysthymia, respectively, in the Diagnostic and Statistical Manual of Mental Disorders, 4th edition (DSM-IV; APA, 1994). In their development of the Beck Self-Esteem Scales (BSE), Beck, Brown, Steer, Kuyken, and Grisham (2001) obtained significant negative correlations between the BSE Self Scale and two measures of depression, with a range of $r = -.27$ to $r = -.56$. In addition, participants with a diagnosis of a mood disorder such as major depression or dysthymia had significantly lower self-esteem than those diagnosed with an anxiety disorder.
Johnson, Meyer, Winett, and Small (2000) examined the relationships of social support and self-esteem to depressive symptoms in a sample of 31 adults (mean age of 42.29 years) diagnosed with bipolar disorder. The results indicated a significant negative correlation between self-esteem and depression ($r = -0.68$) but no relationship between self-esteem and manic symptomology. Social support for self-esteem, defined as positive evaluations of self from others and positive comparison of self to others, was a significant predictor of depression in the regression equation even after controlling for initial level of depression. The authors suggest the plausibility of a mediational model in which self-esteem operates as one mechanism whereby social support influences depression over time.

Furthermore, Ohannessian, Lerner, Lerner, and von Eye (1999) investigated the relationships among ratings of self-competence, depression, and anxiety in a sample of 75 young adolescents over a period of one year. The results indicated that higher levels of perceived self-worth and academic self-competence were associated with lower levels of depression and anxiety for both boys and girls. In addition, a significant relationship between perceived social self-competence and depression was obtained for boys, with greater perceived social competence being associated with less depression. While girls reported significantly higher levels of depression than boys, this gender difference disappeared after controlling for self-worth. Allgood-Merten, Lewinsohn, and Hops (1990) also found that the association between gender and depression in a sample of adolescents decreased after the variance accounted for by self-esteem and body image.
was controlled. Thus, research suggests that perceived self-worth serves as one factor that at least partially accounts for gender differences in depression during adolescence.

Implications of the Proposed Model for Counseling

The importance of testing casual models of the contribution of self-efficacy expectations to variables such as shyness, career indecision, and depression relates to the possibility of developing counseling interventions based on self-efficacy theory aimed at addressing these and other conditions of maladjustment. In other words, it raises the question of whether interventions focused on social and career decision self-efficacy expectations might also have positive effects on a range of career and personal adjustment variables, including problems of shyness, career indecision, depression, and low self-esteem.

The utility of testing the particular contribution of efficacy pathways within such a model relates to the advantages that Bandura's (1977, 1986, 1997) theory of self-efficacy holds with respect to the design of treatment strategies. As shown in Figure 2, the pathways of social and career decision self-efficacy are placed as the primary predictor variables in the proposed model. One might argue, for instance, that shyness represents a more fundamental trait-like characteristic of personality and that social self-efficacy functions as a moderating variable, thereby suggesting that the ordering of the model variables ought to be reversed. However, it is because of their utility as a source for generating approaches to therapeutic intervention that the indices of self-efficacy expectations are placed as the primary predictors in the proposed model.
As such, self-efficacy theory contains the elements relating to therapeutic intervention directly within the model. An understanding of where a person possesses deficits in the sources of information needed to develop strong self-efficacy beliefs (left side of Figure 1) leads directly to the formation of a course of treatment (Betz, 1992). Therefore, self-efficacy theory maintains that therapeutic increases in self-efficacy may be achieved through interventions focused on reducing the level of emotional arousal and on enhancing the performance accomplishments, opportunities for vicarious learning, and exposure to verbal persuasion in clients experiencing feelings of inefficacy. Some researchers (e.g., Betz, 1999; Solberg, Good, & Nord, 1994) provide specific suggestions for efficacy-based interventions as they relate to career development in particular. For instance, Betz (1999) recommends classes, workshops, and community education programs that ensure success experiences (performance accomplishments), shadowing and interviewing employed adults (vicarious learning), anxiety management techniques such as relaxation and systematic desensitization (emotional arousal), and support, encouragement, and positive reinforcement (verbal persuasion).

An additional potentially important aspect of self-efficacy theory with respect to the development of counseling interventions is Bandura's (1977, 1986, 1997) suggestion that the strengthening of self-efficacy beliefs for one domain of behavior should generalize to other related behaviors. Thus, interventions designed to enhance social self-efficacy might lead to concomitant gains in career decision self-efficacy and vice versa.
In turn, demonstration of causal pathways from efficacy beliefs to shyness, career indecision, and depression would suggest the possibility of improvement in those areas of adjustment following efficacy-based interventions as well.

**Research on Interventions**

Investigations evaluating the effects of self-efficacy-based interventions on various career-related variables have provided support for their utility. For example, research has demonstrated that anxiety management is an effective component of treatments aimed at combating career indecision (Mendonca & Seiss, 1976). Luzzo and Taylor (1994) examined the effects of verbal persuasion on the career decision self-efficacy expectations of a group of first-year college students. The results indicated that students receiving verbal encouragement stating that they possessed adequate skills and opportunities to effectively complete various career decision-making behaviors displayed significant increases in their perceived career decision self-efficacy as measured by the CDMSE (Taylor & Betz, 1983). Furthermore, in a review of counseling and educational intervention studies related to career decision self-efficacy, Betz and Luzzo (1996) report the utility of interventions designed to enhance self-efficacy for career decision-making activities. As such, results consistently demonstrate that those receiving a viable intervention tend to show increases in their self-efficacy expectations for career decision-making behaviors, whereas those receiving no intervention display relatively stable career decision-making self-efficacy over time.

Betz and Schifano (2000) examined the effects of an intervention designed to increase the self-efficacy beliefs of college women for the Realistic theme of Holland's
(1997) theory of vocational development. The researchers also investigated the effects of the intervention on students' ratings of Investigative and Social confidence, Realistic interests, self-efficacy for male-dominated careers, and instrumentality. Participants in the treatment group received a 7-hour intervention addressing all four sources of efficacy information while the control group participated in a neutral intervention. Women receiving the efficacy-based treatment showed greater increases in both Realistic and Investigative self-efficacy beliefs relative to those in the control condition. Thus, the results indicated that interventions based on self-efficacy theory can enhance self-efficacy percepts for the targeted behavior (e.g., Realistic) and can generalize those positive effects to related behavioral domains (e.g., Investigative).

Furthermore, Luzzo, Hasper, Albert, Bibby, and Martinelli (1999) demonstrated the usefulness of efficacy-based treatments in their investigation of the effectiveness of a math/science self-efficacy intervention on the math/science self-efficacy, math/science interests, and college major and career choices of a sample of undecided college students. The results indicated that an intervention focused on performance accomplishments, involving a number-series task structured so that the students succeeded, was associated with increased math/science self-efficacy. Furthermore, participants receiving a treatment that combined performance accomplishments and vicarious learning reported a significant increase in their math/science interests relative to the other participants.

Given the relative infancy yet promise of research on the effects of counseling interventions based on Bandura's (1977, 1986, 1997) self-efficacy theory, further investigations in that vein are warranted (Betz & Schifano, 2000; Hackett & Betz, 1981).
The enhanced understanding of self-efficacy theory and sociocognitive pathways to adulthood depression gained from an examination of models such as those outlined in the proposed study (see Figures 2 and 3) would be an important step toward the improved development and utilization of efficacy-based counseling interventions.

Interaction of Career and Personal Counseling

A consideration of theoretical models and interventions seeking to address both career development and personal adjustment represents an important contribution to the literature given that career and personal counseling are inseparable enterprises. Betz and Corning (1993) argue against the misconception that career counseling can be separated from personal counseling from three vantage points; these include counseling psychology's holistic philosophy, research on gender and culture demonstrating the interrelation between career and personal issues, and commonalities in the process of counseling across content areas. Davidson and Gilbert (1993) argue that an individual's career is a primary source of his or her personal identity and research has provided evidence for the interrelated nature of career and personal issues (Leong & Chervinko, 1996). Because such problems are often intertwined, Krumboltz (1993) asserts that arbitrary dichotomization of career and personal matters prevents counselors from effectively assisting clients whose problems contain elements of both. Moreover, researchers (e.g., Hackett, 1993; Osipow, 1990) advocate the need for more theory-based research on career development and more empirical attention to links between career and personal adjustment as fundamentally related aspects of individuals' lives. In particular,
Osipow (1990) asserts that the use of self-efficacy theory in designing therapeutic interventions is one important manner in which to relate career and personal counseling.

Summary and Purposes of the Present Study

Given the prevalence of depression in adulthood and the impairment in functioning that is associated with it (APA, 1994; Nevid et al., 1994), the formulation and examination of a casual model aimed at accounting for the relationships among dimensions of perceived efficacy, sociocognitive factors, and adult depression is warranted. Accordingly, the purpose of the present study was to outline and evaluate a model of causal pathways to depression in young adulthood. The study endeavored to replicate and extend in a sample of college students the model of childhood depression proposed by Bandura et al. (1999). The variables examined within the proposed model included social self-efficacy, career decision self-efficacy, shyness, career indecision, and depression (see Figure 2). Social self-efficacy and career decision self-efficacy were hypothesized to contribute to concurrent levels of depression through their relationships with shyness and career indecision.

An expanded model that included global self-esteem as an additional primary predictor of depression was also evaluated (see Figure 3). In the expanded model, career decision self-efficacy and self-esteem were predicted to make direct contributions to levels of depressive symptomology. Social self-efficacy, career decision self-efficacy, and self-esteem were hypothesized to contribute to depression indirectly through their relationships with shyness and career indecision.
CHAPTER ?

METHOD

The following chapter describes the method used in the current study. First, demographic information regarding the participants is presented. Secondly, the instruments utilized herein are identified and described. The procedures undertaken in the data collection phase of the research are then detailed. Finally, the chapter concludes with a discussion of the data analyses conducted in the study.

Participants

Structural equation modeling procedures require a large sample size to obtain an adequate chi-square distribution, yet no clear consensus on optimal size exists (Fassinger, 1987). Opinions range from 100 participants for a small study containing four or five variables to the suggestion of 30 participants per measured variable (Fassinger, 1987). Bentler (1985) suggests a ratio of sample size to the number of estimated parameters ranging from 5:1 to 10:1 depending on whether or not normal distributional assumptions are met, with the number of estimated parameters generally being equal to the number of paths that are represented.
Another consideration in determining the appropriate sample size for a study is the level of power, or the probability of correctly rejecting a false null hypothesis (Howell, 1997). Cohen (1992) describes procedures for calculating sample size and power estimates. Sample size estimates for computing $t$ tests of differences between means and testing the significance of correlation coefficients are in the range of 32 to 88 participants per group for a power level of .80 and medium effect sizes. However, given a desired power level of .80 for detecting differences between correlations of medium effect size (e.g., $r = .30$) when using Fisher's $r$-to-$Z$ transformation at an alpha level of .05 (Glass & Hopkins, 1984), estimates indicate a necessary sample size of 177 participants in each group (e.g., males and females) (Cohen, 1992).

Thus, given that the original structure of the proposed model contained six paths (see Figure 2), that it was unclear a priori whether or not normality assumptions would be violated, and that computation of gender differences in the significance of correlation coefficients was planned, it was originally desired that the participants would consist of approximately 400 undergraduate students (200 males and 200 females). In actuality, data were collected from 429 undergraduate students (136 males and 293 females) enrolled in an introductory psychology course at a large Midwestern university. Incomplete data from 24 of the participants reduced the final sample to 405 students (129 males and 276 females). Recruitment of the participants was conducted via a designated web site depicting the location, time, and general nature of the study. Participation was
on a voluntary basis, and although students received course credit as compensation, there were other ways of earning this credit and students could choose from a variety of research studies in which to participate.

**Total Sample.** Demographic data revealed that 83.7% (N = 339) of the participants identified themselves as Caucasian, 7.4% (N = 30) as African American, 5.7% (N = 23) as Asian American/Pacific Islander, 2.0% (N = 8) as Latino/Latina/Hispanic, and .7% (N = 3) as Native American, with the remaining .5% (N = 2) failing to specify their racial/ethnic identity. First-year students comprised 77.5% of the sample (N = 314), 13.1% (N = 53) were sophomores, 5.9% (N = 24) were juniors, and 2.9% (N = 12) were seniors, with the remaining .5% (N = 2) neglecting to identify their grade level. Participants ranged in age from 17 to 47 years, with a mean of 18.81 years and a standard deviation of 2.15 years. The males were found to be significantly older than the females, with means of 19.10 and 18.67, respectively (t = 2.039, p < .05). Given that the age of the students was not found to correlate significantly with any of the variables measured herein, the finding of significant gender differences in age was assumed to have no influence on the obtained results. Because of the small sample sizes of participants possessing racial/ethnic identities other than Caucasian and class ranks other than first-year students, there was insufficient power to examine differences in participants’ scores on the measured variables as a function of their self-identified race/ethnicity or class rank.

Academically, 397 of the participants self-reported grade point averages ranging from 1.79 to 4.00 on a 4.00 scale, with a mean of 3.44 and a standard deviation of .43.
Students were also asked to report on their college entrance examination scores. One hundred fifty-three of the participants provided Scholastic Aptitude Test (SAT) scores ranging from 635 to 1406, with a mean of 1147.13 and a standard deviation of 123.99. American College Test (ACT) scores were reported by 342 of the participants, with a range of 11 to 33, a mean of 24.14, and a standard deviation of 3.36. Participants were also asked to indicate if they had decided on a college major and a future career. Two hundred eighty-eight (71.1%) of the participants had selected a major, whereas 117 (28.9%) remained undecided about their choice of college major. Two hundred ten (51.9%) of the students indicated an intention to pursue a particular career area, whereas 195 (48.1%) were uncertain about their future career field.

Calibration Sample. Structural equation modeling procedures require that causal models that are modified based on statistical indices then be validated in a second sample in order to avoid obtaining a model fit that is due solely to sample characteristics (Byrne, 1994). Thus, in the event that statistically-based modifications were made to the proposed models, the total sample (N = 405) was randomly divided into a calibration and a validation sample. The original model development sample consisted of 288 undergraduates (97 males and 191 females). Eighty-four percent (N = 242) identified themselves as Caucasian, 8.3% (N = 24) as African American, 5.2% (N = 15) as Asian American/Pacific Islander, 1.7% (N = 5) as Latino/Latina/Hispanic, and .3% (N = 1) as Native American, with the remaining .3% (N = 1) not specifying their racial/ethnic identity. First-year students comprised 77.1% of the calibration sample (N = 222), 13.2% (N = 38) were sophomores, 5.9% (N = 17) were juniors, and 3.5% (N = 10) were seniors.
with the remaining .3% (N = 1) failing to specify their grade level. Participants in the calibration sample ranged in age from 17 to 47 years, with a mean of 18.89 years and a standard deviation of 2.41 years.

The participants' self-reported grade point averages ranged from 1.79 to 4.00 on a 4.00 scale, with a mean of 3.43 and a standard deviation of .44. Students' self-reported SAT scores ranged from 635 to 1380 (N = 107), with a mean of 1141.45 and a standard deviation of 123.20. Participants' self-reported ACT scores ranged from 11 to 33 (N = 238), with a mean of 24.15 and a standard deviation of 3.45. Two hundred seven (71.9%) of the participants in the calibration sample had selected a major while 81 (28.1%) remained undecided. One hundred forty-eight (51.4%) had chosen a career, whereas 140 (48.6%) were uncertain about their future career field.

**Validation Sample.** The validation sample consisted of 117 students (32 males and 85 females) who ranged in age from 17 to 26 years, with a mean of 18.62 years and a standard deviation of 1.29 years. Almost 83% of the students self-identified as Caucasian (82.9%, N = 97), 6.8% (N = 8) as Asian American/Pacific Islander, 5.1% (N = 6) as African American, 2.6% (N = 3) as Latino/Latina/Hispanic, and 1.7% (N = 2) as Native American, with the remaining .9% (N = 1) failing to specify their racial/ethnic identity. First-year students comprised 78.6% (N = 92) of the validation sample, 12.8% (N = 15) were sophomores, 6% (N = 7) were juniors, and 1.7% (N = 2) were seniors, with the remaining .9% (N = 1) not specifying their grade level.

Self-reported grade point averages ranged from 2.00 to 4.00 on a 4.00 scale, with a mean of 3.45 and a standard deviation of .41. Students' self-reported SAT scores
ranged from 750 to 1406 (N = 46), with a mean of 1160.35 and a standard deviation of 126.19. Participants' self-reported ACT scores ranged from 16 to 33 (N = 104), with a mean of 24.13 and a standard deviation of 3.18. Eighty-one (69.2%) of the participants in the validation sample had selected a major while 26 (30.8%) remained undecided. Sixty-two (53%) had chosen a career, whereas 55 (47%) were uncertain about their future career field. There were no significant differences between the calibration and validation samples on any of the demographic, academic, or model variables measured herein.

**Instruments**

**Social Self-Efficacy.** Social self-efficacy was assessed with the Scale of Perceived Social Self-Efficacy (PSSE; Smith & Betz, 2000). The PSSE is a recently developed instrument that measures perceived self-efficacy for a broad range of social behaviors and that is intended for use with college students and adults. The PSSE consists of 25 items (see Appendix A) addressing several areas of social interaction, including: making friends ("Ask a potential friend out for coffee"), pursuing romantic relationships ("Ask someone out on a date"), social assertiveness ("Join a lunch or dinner table where people are already sitting and talking"), performance in public situations ("Express your opinion to a group of people discussing a subject that is of interest to you"), groups or parties ("Go to a party or social function where you probably won't know anyone"), and giving or receiving help ("Ask someone for help when you need it"). Items are scored on a five-point Likert scale ranging from "no confidence at all" (1) to "complete confidence" (5). Total scores are obtained by summing over all of the items; higher scores indicate greater perceived social self-efficacy.
Data from a development sample of 354 college students (90 males and 264 females) support the psychometric quality of the scale (Smith & Betz, 2000). Accordingly, internal consistency reliability (coefficient alpha = .94) and 3-week test-retest reliability (r = .82) were high. Maximum likelihood factor analysis revealed that a single general factor best accounted for the structure of the inventory. Expected positive correlations with other measures of social self-efficacy and with self-esteem, and negative correlations with shyness and social anxiety supported the construct validity of the PSSE. Discriminant validity was supported by expected correlations with adjacent and nonadjacent themes on Holland's (1997) hexagonal theory of vocational development, as measured by the Skills Confidence Inventory (SCI; Betz, Borgen et al., 1996; Betz, Harmon et al., 1996).

**Career Decision Self-Efficacy.** The short form of the Career Decision Self-Efficacy Scale (CDMSE-SF; Betz, Klein, & Taylor, 1996) was employed as a measure of self-efficacy expectations for successfully completing tasks requisite to making good career decisions. The CDMSE-SF was developed from the original Career Decision Self-Efficacy Scale (CDMSE; Taylor & Betz, 1983) to provide a shorter and more easily employable assessment instrument for use in both research and applied settings. The CDMSE-SF contains a total of 25 items that address the five Career Choice Competencies outlined in Crites' (1961, 1965) model of career maturity, namely self-appraisal, gathering occupational information, goal selection, planning, and problem-
solving. Responses are obtained on a 10-point scale ranging from "no confidence at all" (1) to "complete confidence" (10). A total scale score is computed by summing over all 25 items and higher scores indicate greater levels of career decision self-efficacy.

The CDMSE-SF has been shown to be as psychometrically robust as the original CDMSE, with internal consistency reliabilities ranging from .73 (Self-Appraisal) to .83 (Goal Selection) for the 5-item subscales and .94 for the 25-item total score (Betz, Klein et al., 1996). Several studies have provided strong evidence for the construct validity of the CDMSE-SF, and Betz and Luzzo (1996) assert that both the CDMSE and the CDMSE-SF are psychometrically sound instruments for evaluating changes in career decision self-efficacy as a result of counseling interventions.

Shyness. The Revised Cheek and Buss Shyness Scale (Cheek & Buss, 1981; Cheek, 1983) was used to assess shyness. Consisting of 13 items, the Revised Shyness Scale measures discomfort and inhibition in the presence of others. Items are measured on a five-point Likert scale ranging from "very uncharacteristic or untrue" (1) to "extremely characteristic or true" (5). Total scores are calculated by reverse-scoring the four negatively worded items and summing all responses. Scores range from 13 to 65, with higher scores indicating more shyness. As shown in Appendix B, items include "I am socially somewhat awkward" and "I feel inhibited in social situations."

Internal consistency reliability was reported as an alpha of .90, and 45-day test-retest reliability was $r = .88$. Data support the validity of the scale, as it was found to correlate significantly with other measures of shyness and social anxiety (Cheek & Buss, 1981; Cheek, 1983).
**Career Indecision.** Career indecision was measured with the Career Decision Scale (CDS; Osipow et al., 1980). The CDS consists of 18 items relating to various aspects of vocational decision making and was developed to measure vocational/educational indecision in college students. Responses are given on a 4-point Likert scale ranging from "exactly like me" (4) to "not at all like me" (1). A combination of an individual's scores on items 1 and 2 provides a measure of vocational/educational decidedness. Items 3-18 are summed to provide an index of career indecision, with total scores ranging from 16 to 64 and higher scores indicating less career certainty and greater levels of indecision.

Osipow, Carney, and Barak (1976) reported two-week test-retest reliability coefficients of .90 and .81 in two samples of college students. The CDS manual contains a review of the scale's psychometric properties (Osipow, 1987).

**Depression.** The Beck Depression Inventory-Second Edition (BDI-II; Beck, Steer, & Brown, 1996) was used as an assessment of depression. A self-report inventory of depression, the BDI-II consists of 21 items designed to address affective, cognitive, motivational, and physiological symptoms of depression as outlined in the DSM-IV (APA, 1994). Each item contains four sentences and respondents are asked to select the statement that best describes the way they have been feeling over the past two weeks. Depression scores for each item range from 0 (least severe) to 3 (most severe). A sample item is: 0) I do not feel sad; 1) I feel sad much of the time; 2) I am sad all the time; and 3)
I am so sad or unhappy that I can't stand it. Total scores are obtained by summing values for all items and can range from 0 to 63. Higher scores are indicative of greater levels of depression.

Reliability and validity of the BDI-II were assessed in four outpatient psychiatric samples (N = 500) and one sample of college students (N = 120). Internal consistency reliability is reported as alpha = .92 in the outpatient samples and alpha = .93 for the college student group. Similarly, one-week test-retest reliability was r = .93 (Beck et al., 1996). Research also demonstrates evidence for the construct validity of the scale, with strong correlations found between the BDI-II and BDI-IA and measures of hopelessness and suicidal ideation. The BDI-II also displayed stronger relationships with other measures of depression than with indices of anxiety (Beck et al., 1996).

The original BDI (Beck & Steer, 1987) has been the most widely employed self-report measure of depression in both research and practice, and the BDI-II is viewed simply as an update and enhancement of an already psychometrically sound and respected instrument (Beck et al., 1996). The BDI has been used effectively with a variety of inpatient, outpatient, and nonclinical adult and adolescent samples (Robinson, Shaver, & Wrightsman, 1991). Although a potentially important consideration when using an instrument with a clinical cutoff score related to emotional disturbance in nonclinical samples, restriction of range does not appear to be a detrimental aspect of the BDI and BDI-II. Accordingly, the BDI has produced adequate differentiation among the...
participants in various studies employing college student samples. For instance, Betz et al. (1999b) found means of 29.2 and 26.8 and standard deviations of 6.5 and 5.8 on the BDI for female (N = 206) and male (N = 188) undergraduates, respectively.

**Self-Esteem.** The Unconditional Self-Regard Scale (USRS; Betz, Wohlgemuth, Serling, Harshbarger, & Klein, 1995) provided a measure of global self-esteem. Development of the USRS was based on an adaptation of Carl Rogers’ (1957, 1961) notion of unconditional positive regard for a client by the therapist to the realm of self-evaluation. Unconditional self-regard is also akin to Rogers’ notion of self-ideal self-congruence as the sine qua non of mental health. Betz et al. (1995) define unconditional self-regard as a noncontingent valuing and acceptance of oneself where self-liking is not contingent on one’s performances in various behavioral domains or on others’ evaluations of one’s worth.

The USRS consists of 20 items (see Appendix C), of which 8 are positively worded (e.g., “Even though I make mistakes, I feel good about myself as a person”), 7 are negatively worded and reverse scored (e.g., “I can never quite measure up to my own standards”), and 5 are filler items that are not scored. Responses to the items are obtained on a 5-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (5). Total scores are computed by reverse-scoring the negatively worded items and then summing across responses for all 15 of the included items. Higher scores indicate greater levels of unconditional self-regard or global self-esteem.

Data support the reliability and validity of the USRS. Specifically, values of coefficient alpha ranging from .89 in a sample of 98 undergraduates, .90 in the
development sample of college students, and .92 in a study by Betz and Klein (1996) suggest adequate internal consistency reliability. Validity was supported by significant and moderately sized relationships to other measures of self-esteem and psychological adjustment (Betz et al., 1995) and to perceptions of both level and unconditionality of regard from significant individuals in the participants' childhood and adolescent years (Harshbarger, 1991).

**Procedures**

Following a brief introduction to the general nature of the study, the participants responded to a demographic questionnaire (see Appendix D) and then completed the measures of the constructs assessed herein in the following order: social self-efficacy, shyness, career indecision, depression, career decision self-efficacy, and self-esteem. Fatigue effects were not a concern given the short length of the total questionnaire packet, which allowed the participants to complete all of the measures in approximately 20 minutes. The order of the instruments was selected with the aim of varying the item content of the scales. For instance, the measure of depressive symptomology was placed between the two career development measures. Assurance of confidentiality was given by assigning identification numbers rather than names to each answer sheet. Upon their completion of the instruments, participants were given the debriefing statement contained in Appendix E, which detailed the nature and purpose of the study and provided referral information for student counseling services.
Data Analysis

Statistical analysis began with the calculation of means, standard deviations, internal consistency reliability coefficients, and t tests for gender comparisons for each of the scales. Correlational analysis was employed to examine the interrelationships among the measures included herein. Correlations were calculated for the total sample and separately for males and females. The statistical significance of differences between correlations for the male and female subsamples was evaluated using the z-test for the difference between independent correlation coefficients after conversion to Fisher's Z (Glass & Hopkins, 1984). Differences between students having selected a college major and those remaining undecided and those having chosen an intended future career and those remaining uncertain were assessed with multivariate analysis of variance (MANOVA). The validity of the proposed models was assessed via path analysis procedures contained within the EQS (Version 5.7) program (Bentler, 1985, 1995).
CHAPTER 4
RESULTS

Reliability of Measurement

Table 1 contains the internal consistency reliabilities for each of the measures for the total sample of 405 students. All of the scales demonstrated adequate to high internal consistency, achieving coefficient alphas that ranged from .83 for the Certainty subscale of the Career Decision Scale (CDS) to .95 for both the Scale of Perceived Social Self-Efficacy (PSSE) and the Career Decision Self-Efficacy Scale-Short Form (CDMSE-SF).

Gender and Other Group Comparisons

Table 2 provides the means, standard deviations, and gender comparisons for the total sample (N = 405) for all of the variables assessed herein. Females reported significantly greater levels of depression as measured by the Beck Depression Inventory-II (BDI-II; Beck et al., 1996) than did males, $t = -2.83, p < .05$. No significant gender differences were evident on the measures of social self-efficacy, career decision self-efficacy, shyness, career indecision, or self-esteem. Female students had significantly higher self-reported grade point averages (GPA) than did males, $t = -5.413, p < .001$, with means of 3.52 and 3.26 on a 4.00 scale, respectively. This is consistent with the
<table>
<thead>
<tr>
<th>Scale</th>
<th>Number of Items</th>
<th>Alpha</th>
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<tbody>
<tr>
<td>Scale of Perceived Social Self-Efficacy</td>
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<td>Career Decision Self-Efficacy Scale</td>
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<td>0.95</td>
</tr>
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<td>Unconditional Self-Regard Scale</td>
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<tr>
<td>Shyness Scale</td>
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<td>Career Decision Scale</td>
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</tr>
<tr>
<td>Indecision</td>
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<td>0.88</td>
</tr>
<tr>
<td>Certainty</td>
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<td>0.83</td>
</tr>
<tr>
<td>Beck Depression Inventory-II</td>
<td>21</td>
<td>0.89</td>
</tr>
</tbody>
</table>

Note: N = 405

Table 1: Values of Coefficient Alpha Reliability for Measures of Social Self-Efficacy, Career Decision Self-Efficacy, Self-Esteem, Shyness, Career Indecision, and Depression.
<table>
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<th>Scale</th>
<th>Males (N = 129)</th>
<th>Females (N = 276)</th>
<th>t</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale of Perceived Social Self-Efficacy</td>
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</tr>
<tr>
<td></td>
<td>89.49</td>
<td>91.94</td>
<td>-1.39</td>
</tr>
<tr>
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<td></td>
</tr>
<tr>
<td></td>
<td>97.64</td>
<td>98.57</td>
<td>-0.57</td>
</tr>
<tr>
<td>Unconditional Self-Regard Scale</td>
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<tr>
<td></td>
<td>55.85</td>
<td>56.09</td>
<td>-0.22</td>
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<tr>
<td>Shyness Scale</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>32.60</td>
<td>30.84</td>
<td>1.93</td>
</tr>
<tr>
<td>Career Decision Scale</td>
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<tr>
<td>Indecision</td>
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</tr>
<tr>
<td></td>
<td>6.06</td>
<td>7.77</td>
<td>-2.83*</td>
</tr>
</tbody>
</table>

*p < .05

Table 2: Means, Standard Deviations, and Gender Comparisons for Measures of Social Self-Efficacy, Career Decision Self-Efficacy, Self-Esteem, Shyness, Career Indecision, and Depression
well-established finding that female students tend to achieve better academic grades than their male counterparts (Hyde, 1985; Rosser, 1989). Given the small number of participants who indicated possessing a racial/ethnic background other than Caucasian or a class rank other than as a first-year student, there was insufficient power to examine differences in participants’ scores on the measured variables as a function of their self-identified race/ethnicity or class rank.

Comparison of the means and standard deviations presented in Table 2 with those acquired in past research employing the measures utilized herein with college student samples suggests that the results obtained with the current sample were largely consistent with prior investigations. As such, both males and females indicated similar levels of social self-efficacy, career decision self-efficacy, shyness, career indecision, and career certainty as college students in studies by Smith and Betz (2000), Betz and Klein (1996), and Osipow (1987), with t tests comparing the mean scores for each group being nonsignificant, p > .05. Two differences emerged from the analysis. Males and females in the current study reported lower self-esteem and less depression than participants in studies by Betz and Klein (1996) (mean = 67.9 for males and 64.4 for females) and Beck et al. (1996) (mean = 10.04 for males and 14.55 for females), respectively, p < .05.

Multivariate analysis of variance (MANOVA) procedures were employed to investigate possible differences between students having decided on a major of study (N = 288) and those remaining undecided (N = 117). Table 3 contains the means, standard deviations, and results of the MANOVA for all of the variables analyzed in the study. The results of the MANOVA were significant, with Pillai’s Trace = .42 and F = 40.35,
<table>
<thead>
<tr>
<th>Scale</th>
<th>Major Decided (N = 288)</th>
<th>Major Undecided (N = 117)</th>
</tr>
</thead>
</table>
| Scale of Perceived Social Self-Efficacy | 91.72 (15.99)           | 89.79 (16.95)             | 1.16  
| Career Decision Self-Efficacy Scale  | 100.85 (14.20)          | 91.94 (15.83)             | 30.60**  
| Unconditional Self-Regard Scale      | 56.82 (10.20)           | 53.99 (12.01)             | 5.80*   
| Shyness Scale                        | 31.15 (8.25)            | 32.03 (8.91)              | .91     
| Career Decision Scale                |                         |                           |         
| Indecision                           | 25.51 (8.05)            | 32.25 (7.29)              | 61.49**  
| Certainty                            | 6.07 (1.40)             | 3.49 (1.52)               | 268.58**  
| Beck Depression Inventory-II         |                         |                           |         
|                                     | 6.45 (5.82)             | 9.13 (7.31)               | 15.04**  

*p < .05; **p < .001

Table 3: Means, Standard Deviations, and Multivariate Analysis of Variance for Measures of Social Self-Efficacy, Career Decision Self-Efficacy, Self-Esteem, Shyness, Career Indecision, and Depression for Groups of Major Decided and Major Undecided Students
Significant differences were found between major decided and major undecided students on the measures of career decision self-efficacy, self-esteem, career indecision, career certainty, and depression. Accordingly, students who reported having elected a college major possessed greater career decision self-efficacy, higher self-esteem, less career indecision, greater certainty about their future career, and lower levels of depression than did those remaining undecided about their major. No differences were found on the measures of social self-efficacy or shyness.

MANOVA procedures were also used to investigate differences between students who indicated an intended future career (N = 210) and those remaining uncertain about their intended career (N = 195). Table 4 contains the means, standard deviations, and results of the MANOVA for all of the variables examined in the study. The results of the MANOVA were significant, with Pillai's Trace = .39 and $F = 36.85, p < .001$.

Significant differences were found between career decided and career undecided students on the measures of social self-efficacy, career decision self-efficacy, self-esteem, career indecision, and career certainty. Specifically, students reporting an intended future career demonstrated greater social and career decision self-efficacy, higher self-esteem, less career indecision, and stronger levels of career certainty than students remaining undecided about their future career. No differences were found on the measures of shyness or depression.

**Correlational Data**

Tables 5 and 6 summarize the results of the correlational analyses conducted to examine the nature of the relationships among the variables assessed herein. Correlations...
<table>
<thead>
<tr>
<th>Scale</th>
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<th>Career Undecided</th>
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<tr>
<td></td>
<td>M  SD</td>
<td>M  SD</td>
<td>F</td>
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<tr>
<td>Scale of Perceived Social Self-Efficacy</td>
<td>93.19 15.39</td>
<td>88.98 16.94</td>
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<td>Career Decision Self-Efficacy Scale</td>
<td>102.58 13.98</td>
<td>93.64 15.16</td>
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<td>Unconditional Self-Regard Scale</td>
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<td>54.87 11.35</td>
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<tr>
<td>Shyness Scale</td>
<td>30.83 8.00</td>
<td>32.02 8.88</td>
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<td>Indecision</td>
<td>23.30 6.82</td>
<td>31.94 7.61</td>
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<td>6.35 1.40</td>
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*p < .05; **p < .01; ***p < .001

Table 4: Means, Standard Deviations, and Multivariate Analysis of Variance for Measures of Social Self-Efficacy, Career Decision Self-Efficacy, Self-Esteem, Shyness, Career Indecision, and Depression for Groups of Career Decided and Career Undecided Students
<table>
<thead>
<tr>
<th>Scale</th>
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<th>4</th>
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<td>.57</td>
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<td>-.15</td>
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<td>Indecision Scale of CDS</td>
<td></td>
<td></td>
<td></td>
<td>-.65</td>
<td>.33</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Certainty Scale of CDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>-.23</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beck Depression Inventory-II</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: N = 405. Significant values of r at the .05 and .01 levels are .10 and .13, respectively. However, because of a lack of practical significance, it is suggested that correlations below .20 not be interpreted as significant. CDS = Career Decision Scale.

Table 5: Overall Correlations Among Measures of Social Self-Efficacy, Career Decision Self-Efficacy, Self-Esteem, Shyness, Career Indecision, and Depression
### Table 6: Correlations Among Measures of Social Self-Efficacy, Career Decision Self-Efficacy, Self-Esteem, Shyness, Career Indecision, and Depression, Within Gender

<table>
<thead>
<tr>
<th>Scale</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scale of Perceived Social Self-Efficacy</td>
<td>.62</td>
<td>.50</td>
<td>-.80</td>
<td>-.26</td>
<td>.27</td>
<td>-.27</td>
<td></td>
</tr>
<tr>
<td>Career Decision Self-Efficacy Scale</td>
<td>.54</td>
<td>.48</td>
<td>-.53</td>
<td>-.52</td>
<td>.59</td>
<td>-.34</td>
<td></td>
</tr>
<tr>
<td>Unconditional Self-Regard Scale</td>
<td>.39</td>
<td>.53</td>
<td>-.43</td>
<td>-.21</td>
<td>.21</td>
<td>-.60</td>
<td></td>
</tr>
<tr>
<td>Shyness Scale</td>
<td>-.76</td>
<td>-.46</td>
<td>-.46</td>
<td>.30</td>
<td>-.21</td>
<td>.22</td>
<td></td>
</tr>
<tr>
<td>Indecision Scale of CDS</td>
<td>-.08</td>
<td>-.52</td>
<td>-.42</td>
<td>.13</td>
<td>-.62</td>
<td>.31</td>
<td></td>
</tr>
<tr>
<td>Certainty Scale of CDS</td>
<td>.13</td>
<td>.50</td>
<td>.20</td>
<td>-.11</td>
<td>-.67</td>
<td>-.30</td>
<td></td>
</tr>
<tr>
<td>Beck Depression Inventory-II</td>
<td>-.22</td>
<td>-.40</td>
<td>-.68</td>
<td>.24</td>
<td>.37</td>
<td>-.20</td>
<td></td>
</tr>
</tbody>
</table>

Note: Values above the diagonal are for males (N = 129); values below the diagonal are for females (N = 276). For males, r values of .18 and .23 are significant at the .05 and .01 levels, respectively. For females, r values of .12 and .16 are significant at the .05 and .01 levels, respectively. However, because of a lack of practical significance, it is suggested that correlations below .20 not be interpreted as significant. CDS = Career Decision Scale.
were calculated for the total sample (N = 405) and separately for the male (N = 129) and female (N = 276) subgroups. In Table 6, values above the diagonal are for males and values below the diagonal are for females. Social self-efficacy was found to possess significant positive relationships with career decision self-efficacy and global self-esteem for the sample as a whole (r = .57 and .43) as well as for the male (r = .62 and .50) and female subgroups (r = .54 and .39). In addition, a significant positive correlation was found between social self-efficacy and career certainty for males (r = .27). Career decision self-efficacy, self-esteem, and career certainty were all positively related to one another in each of the three groups, with a range of r = .20 to r = .59. Depression was significantly related to shyness (r = .22, .22, and .24 for the total group, males, and females respectively) and to career indecision (r = .31, .33, and .37 for males, the total group, and females respectively) in all three groups, with shyness and career indecision also being positively correlated in the male subgroup (r = .30).

Social self-efficacy and career decision self-efficacy were both negatively related to shyness and to depression for the total sample (range of r = -.22 to r = -.78) and male (range of r = -.27 to r = -.80) and female (range of r = -.22 to r = -.76) subgroups. Career decision self-efficacy obtained a significant correlation of r = -.52 with career indecision in all three groups, whereas the relationship between social self-efficacy and career indecision reached significance only for males (r = -.26). Significant negative correlations were obtained between self-esteem and the constructs of shyness, career indecision, and depression (range of r = -.21 to r = -.68) and between career certainty and
the measures of career indecision and depression (range of $r = -.20$ to $r = -.67$) for all three groups. The relationship between career certainty and shyness reached statistical significance only for the male subgroup ($r = -.21$).

Correlations of the measured variables to the indices of academic achievement, namely GPA and SAT and ACT scores, were small in magnitude and generally nonsignificant, a finding that is consistent with past research (e.g., Betz et al., 1999a; Taylor & Betz, 1983). The only association reaching statistical significance was that between career decision self-efficacy and ACT scores ($r = .22$) for male, but not female, college students.

The statistical significance of differences between correlations for the male and female subgroups was evaluated using the $z$-test for the difference between independent correlation coefficients after conversion to Fisher's $Z$ (Glass & Hopkins, 1984). One significant gender difference emerged from the analysis, namely that for the correlation between self-esteem and career indecision ($r = -.21$ for males and $r = -.42$ for females). Thus, the amount of indecision experienced regarding the choice of one's future career was more strongly related to one's sense of global self-esteem for females than for males.

The finding of a significant gender difference in the correlation between self-esteem and career indecision indicates that a sufficient level of power was present in the data analysis despite the use of a smaller sample of males ($N = 129$) than that suggested by Cohen (1992) ($N = 177$) for detecting differences of medium effect size ($r = .30$), with
a power level of .80, and an alpha level of .05. In fact, the gender difference that was obtained with the current sample was one of a smaller effect size ($r = .20$) and a lower level of power (.59), and yet it was still statistically significant.

Test for Normality

Because structural equation modeling procedures operate on the assumption that variables are normally distributed, investigation of the normality of the measured variables is essential for accurate interpretation of the results (Byrne, 1994). Examination of the degree of skewness, or asymmetry, and kurtosis, or how peaked or flat a distribution is, represents one way in which normality can be assessed. Typically, skewness and kurtosis values that are equal to or near zero are suggestive of a normal distribution (Glass & Hopkins, 1984). In the current study, all of the measures obtained skewness and kurtosis values that were indicative of normality except the BDI-II (Beck et al., 1996). The distribution of scores on the BDI-II was somewhat positively skewed and leptokurtic, indicating a greater presence of extreme scores than in a normal distribution (Glass & Hopkins, 1984), particularly in the direction of lower levels of depression. A second procedure for assessing the degree of normality in a distribution is the normal probability, Q-Q, or rankit plot, which plots the standardized residuals obtained with a measurement instrument against those expected within a normal distribution (Walker, 1998). Examination of the Q-Q plots for the variables investigated within the present study revealed no severe deviations from normality for any of the measures.

Thus, although there was some indication of a positively skewed and leptokurtic distribution for the BDI-II (Beck et al., 1996), use of the measure in the path analysis was
not deemed to be problematic on several accounts. First, the BDI-II is a well-validated and reliable instrument (e.g., alpha = .89 in the present study) that was selected for inclusion based on its status, along with the original BDI (Beck & Steer, 1987), as the most widely used self-report measure of depression in both research and practice. Moreover, the BDI and the BDI-II have been used successfully with a variety of sample types, including nonclinical adults and adolescents (Robinson et al., 1991). Given that the current sample was nonclinical in nature, it might be expected that depression scores would gravitate toward the low end of the distribution, thereby producing positive skewness. Finally, the results of the Q-Q plot suggest that the nonnormality of the BDI-II distribution was moderate rather than severe. Some (e.g., Anderson & Gerbing, 1988; Joreskog & Sorbom, 1989) have argued that maximum likelihood estimation procedures, which were used herein to evaluate the proposed model, have been shown to be robust against fairly moderate violations of the normality assumption (cited in Hatcher, 1994).

**Path Analysis of the Original Model**

The posited structural model (see Figure 2) was tested via the covariance matrix using the EQS program (Bentler, 1995) for the original calibration sample of 288 participants. Given that this was an initial test of the proposed model and that substantive gender differences on the measured variables were generally lacking, the data were first combined for males and females. Social self-efficacy and career decision self-efficacy were allowed to covary. A variety of goodness-of-fit indices were used to assess the adequacy of the model fit, including the chi-square test, the Bentler-Bonett normed fit index (NFI), the Bentler-Bonett non-normed fit index (NNFI), the comparative fit index (CFI), the root mean square error of approximation (RMSEA), and the standardized root mean square residual (SRMR).
(CFI), and the root mean squared error of approximation (RMSEA). The CFI and RMSEA are generally the preferred indices for assessing adequacy of model fit (Byrne, 1994; Loehlin, 1998). Adequate model fit is suggested by a small chi-square and a nonsignificant p value. Historically, values greater than .90 for the NFI, NNFI, and CFI have been considered to indicate good model fit (Byrne, 1994; Loehlin, 1998), although more recently .95 has been suggested as the baseline for assessing adequacy of fit (Hu & Bentler, 1999). Finally, models with RMSEA values below .05 are considered to be acceptable models (Loehlin, 1998).

Figure 4 presents the results of the path analysis of the original model with the calibration sample. Significant path coefficients (p < .05) were obtained for all of the hypothesized structural links except that between career decision self-efficacy and shyness. Some of the goodness-of-fit indices suggested that the model provided a good fit to the data. For instance, the NFI was .97, the NNFI was .91, and the CFI was .97. The model accounted for 60% of the variance in shyness, 29% of the variance in career indecision, and 15% of the variance in depression.

However, a significant chi-square was obtained, $\chi^2 (3, N = 288) = 16.77, p < .001$, which suggested an inadequate model fit. In addition, the RMSEA was .13, above the desired level of .05 (Loehlin, 1998). Therefore, modification indices were consulted to ascertain whether the addition or deletion of paths would improve the model fit. The Wald test indicated no significant changes to the chi-square following path elimination, whereas the Lagrange Multiplier (LM) test suggested a significant change resulting from the addition of a direct path between career decision self-efficacy and depression.
Figure 4

Path Analysis of Original Model of Relationships Among Social Self-Efficacy, Career Decision Self-Efficacy, Shyness, Career Indecision, and Depression

Note: Coefficients in bold type are significant beyond $p < .05$. $N = 288$.  

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Following the suggestion of MacCallum, Roznowski, and Necowitz (1992), the addition of a path between career decision self-efficacy and depression was deemed to be tenable because it is also theoretically meaningful. As such, in their model of causal pathways to childhood depression, Bandura et al. (1999) found that perceived academic self-efficacy contributed significantly and directly to both concurrent and later depression.

**Path Analysis of the Revised Model**

Figure 5 depicts the results of the path analysis of the revised model containing the suggested path. The revised model was tested first with the original calibration sample of 288 undergraduates. As shown in Figure 5, all of the posited structural links were found to possess statistically significant ($p < .05$) path coefficients except for that between career decision self-efficacy and shyness and that between shyness and depression. The goodness of fit indices revealed that the revised model provided an improved and adequate fit to the data, with a non-significant chi-square, $\chi^2 (2, N = 288) = 3.18, p > .05$, an NFI of .99, an NNFI of .99, a CFI of 1.0, and an RMSEA of .05.

Comparison of the chi-square statistic for the original and revised models allows for a determination of whether the model fit was significantly improved by the modifications (Quintana & Maxwell, 1999). The revised model provided a significant improvement in model fit, $\chi^2$ difference $(1, N = 288) = 13.59, p < .01$. The revised model accounted for 60% of the variance in shyness, 29% of the variance in career indecision, and 19% of the variance in depression, with the latter value being an improvement over that found with the original model. The Wald and LM tests indicated no potential improvement of the model fit via the elimination or addition of paths, respectively.
Figure 5

Path Analysis of Revised Model of Relationships Among Social Self-Efficacy, Career Decision Self-Efficacy, Shyness, Career Indecision, and Depression

Note: Coefficients in bold type are significant beyond p < .05. N = 288.
Given that the addition of a direct path between career decision self-efficacy and depression in the revised model was based on statistical indices performed on data from the calibration sample, proper evaluation of the model required that it be validated in a second sample. Therefore, the revised model was assessed again with the validation sample of 117 participants. A multiple groups model approach was used to compare the pattern of relationships among the variables in the revised model for the two samples. This approach entails a two-step procedure in which the path coefficients are first estimated for each sample. The second step involves imposing constraints that require identical estimates for the model's parameters in each sample (Byrne, 1994). The chi-square difference test provides an evaluation of whether or not the model differs across the samples; if the chi-square difference is non-significant, the model is equivalent across the two groups. In addition, the LM test in the EQS program provides an index of the plausibility of the imposed equality constraints, thereby evaluating the consistency of model fit across samples (Bentler, 1995).

Figure 6 presents the results of the multiple groups model path analysis for the revised model. The LM test indicated that the causal structure of the model was comparable across the calibration and validation samples, with no significant differences in the path coefficients obtained for the two samples. In addition, the chi-square difference test was non-significant, $\chi^2 (7, N = 405) = 9.07, p > .05$. Similar to its performance in the original development sample, the model accounted for 64% of the variance in shyness, 34% of the variance in career indecision, and 14% of the variance in depression in the validation sample.
Figure 6

Path Analysis of Revised Model of Relationships Among Social Self-Efficacy, Career Decision Self-Efficacy, Shyness, Career Indecision, and Depression for the Calibration and Validation Samples

Note: The first path coefficient on each of the structural links is for the calibration sample (N = 288); the second coefficient is for the validation sample (N = 117). Coefficients in bold type are significant beyond p < .05. The causal structure was comparable across samples.
Given that the revised model was replicated for both the calibration and the validation samples, the model was then evaluated with the total sample of 405 undergraduates. As expected, the goodness-of-fit indices suggested a good fit of the model to the data, with a non-significant chi-square, \( \chi^2 (2, N = 405) = 3.77, p > .05 \), an NFI of 1.0, an NNFI of .99, a CFI of 1.0, and a RMSEA of .05. All of the posited structural links were found to possess statistically significant (\( p < .05 \)) path coefficients except for that between career decision self-efficacy and shyness and that between shyness and depression (see Figure 7). The model accounted for 61% of the variance in shyness, 30% of the variance in career indecision, and 17% of the variance in depression. Thus, the data indicate that the revised model shown in Figures 5, 6, and 7 can be considered a plausible representation of the causal relationships among the variables analyzed herein.

Path Analysis of the Expanded Model

Table 5 provides the correlations among the variables studied herein for the total sample of 405 students. As shown in the table, self-esteem, as measured by the Unconditional Self-Regard Scale (USRS; Betz et al., 1995), possessed statistically significant relationships with all of the other variables, with particularly strong associations between it and social self-efficacy (\( r = .43 \)), shyness (\( r = -.45 \)), career decision self-efficacy (\( r = .51 \)), and depression (\( r = -.66 \)). Given these relationships and the theoretical bases for considering global self-esteem to be an important predictor of...
Figure 7

Path Analysis of Revised Model of Relationships Among Social Self-Efficacy, Career Decision Self-Efficacy, Shyness, Career Indecision, and Depression for the Total Sample

Note: Coefficients in bold type are significant beyond \( p < .05 \). \( N = 405 \).
various indices of psychological adjustment, an expanded model that included the USRS as a predictor was assessed (see Figure 3). In the expanded model, social self-efficacy, career decision self-efficacy, and global self-esteem were allowed to covary.

In the event that statistically based modifications were made to the expanded model, it was first tested with the calibration sample of 288 students. All of the goodness-of-fit indices suggested that the expanded model provided an excellent fit to the data, with a non-significant chi-square, $\chi^2 (2, N = 288) = 2.16$, $p > .05$, an NFI of 1.0, an NNFI of 1.0, a CFI of 1.0, and a RMSEA of .02. All of the posited structural links were found to possess statistically significant ($p < .05$) path coefficients except for those between career decision self-efficacy and shyness, shyness and depression, and career decision self-efficacy and depression (see Figure 8). The Wald and LM tests indicated no potential improvement of the model fit via the elimination or addition of paths, respectively. The expanded model accounted for an improved 63% of the variance in shyness, 30% of the variance in career indecision, and 48% of the variance in depression.

Although the expanded model was postulated and tested on the basis of theoretical rather than statistical considerations, further evidence for the model's effectiveness in accounting for pathways to adulthood depression could be obtained through validation with a second independent sample. Therefore, the expanded model was tested a second time using the validation sample of 117 undergraduates. Again, a multiple groups model approach was employed to compare the consistency of model fit across the two samples. The LM test indicated that the causal structure of the model was comparable across the calibration and validation samples, with no significant differences.
Figure 8

Path Analysis of Expanded Model of Contributions of Social Self-Efficacy, Career Decision Self-Efficacy, and Self-Esteem to Adjustment Variables of Shyness, Career Indecision, and Depression

Note: The first path coefficient on each of the structural links is for the calibration sample (N = 288); the second is for the validation sample (N = 117). Coefficients in bold type are significant beyond p < .05. The causal structure was comparable across samples.
in the path coefficients obtained for the two samples (see Figure 8). In addition, the chi-square difference test was non-significant, \( \chi^2 \) difference (10, \( N = 405 \)) = 11.49, \( p > .05 \).

Similar to its performance in the calibration sample, the model accounted for 66% of the variance in shyness, 38% of the variance in career indecision, and 41% of the variance in depression in the validation sample.

Given that the expanded model was replicated for both the calibration and the validation samples, the model was then evaluated with the total sample of 405 undergraduates. Figure 9 presents the expanded model along with the path coefficients that resulted from the path analysis. As expected, the goodness-of-fit indices suggested an excellent fit of the model to the data, with a non-significant chi-square, \( \chi^2 \) (2, \( N = 405 \)) = 2.08, \( p > .05 \), an NFI of 1.0, an NNFI of 1.0, a CFI of 1.0, and a RMSEA of .01. All of the posited structural links were found to possess statistically significant (\( p < .05 \)) path coefficients except for that between career decision self-efficacy and shyness and that between career decision self-efficacy and depression. The Wald and LM tests indicated no potential improvement of the model fit via the elimination or addition of paths, respectively. The expanded model containing global self-esteem was found to account for a greater proportion of the variance in the measured variables than the original or revised versions of the model. Specifically, the expanded model accounted for 63% of the variance in shyness, 32% of the variance in career indecision, and 46% of the variance in depression for the combined sample of 405 students.
Figure 9

Path Analysis of Expanded Model of Contributions of Social Self-Efficacy, Career Decision Self-Efficacy, and Self-Esteem to Adjustment Variables of Shyness, Career Indecision, and Depression, Total Sample

Note: Coefficients in bold type are significant beyond p < .05. N = 405.
Gender Comparisons of Model Fit

Because significant gender differences in depression were obtained in the present study, with females reporting greater levels of depression than males on the BDI-II (mean = 7.77 for females versus mean = 6.06 for males), the adequacy of fit of the revised and expanded models was also assessed separately for each gender. Additional support for the importance of evaluating the utility of the causal models separately for males and females comes from research demonstrating that women are more prone to depression than are men and that gender differences in rates of depression generally emerge in late adolescence (Culbertson, 1997; Nolen-Hoeksema & Girgus, 1994). Moreover, Bandura et al. (1999) found that perceived social self-efficacy made a stronger contribution to concurrent depression in girls than in boys in their analysis of a causal model of depression in childhood. A multiple groups model approach was once again used to compare the pattern of relationships among the variables in the revised and expanded models in the two samples of males and females.

Figure 10 depicts the revised model with the obtained path coefficients for the male and female subgroups. The LM test indicated that the causal structure of the model was comparable across the samples of males and females and provided an adequate fit to the data for both groups. In addition, the chi-square difference test was non-significant, $\chi^2$ difference (7, N = 405) = 12.03, $p > .05$. For males, the goodness of fit indices included a non-significant chi-square, $\chi^2$ (2, N = 129) = 3.73, $p > .05$, an NFI of .99, an NNFI of .97, and a CFI of .99, and an RMSEA of .08, the latter value being above the
Figure 10

Path Analysis of Revised Model of Relationships Among Social Self-Efficacy, Career Decision Self-Efficacy, Shyness, Career Indecision, and Depression, Within Gender

Note: The first path coefficient on each of the structural links is for males; the second coefficient is for females. Coefficients in bold type are significant beyond p < .05. Coefficients followed by an asterisk differ significantly across gender. The causal structure was comparable across gender.
desired level of .05 (Loehlin, 1998). The model fit indices for the female subgroup included a non-significant chi-square, $\chi^2 (2, N = 276) = 1.26, p > .05$, an NFI of 1.0, an NNFI of 1.01, a CFI of 1.0, and an RMSEA of .001.

For females, all of the posited structural links were found to possess statistically significant ($p < .05$) path coefficients except for that between career decision self-efficacy and shyness and that between shyness and depression. For males, the path coefficients between social self-efficacy and career indecision and between career indecision and depression also failed to achieve statistical significance. Despite the overall consistency of model fit across the two groups, one significant gender difference in the path coefficients was obtained, with career indecision being more strongly related to depression for females than for males. The model accounted for 64% of the variance in shyness for males and 58% for females, 28% of the variance in career indecision for males and 33% for females, and 14% of the variance in depression for males and 20% for females. The Wald and LM tests indicated no potential improvement of the model fit for either gender via the elimination or addition of paths, respectively.

Given that the expanded model (see Figures 8 and 9) provided a much improved fit of the data as a whole as compared to the original and revised models, it too was evaluated separately for each gender. Figure 11 depicts the expanded model with the obtained path coefficients for the male and female subgroups. The LM test indicated that the causal structure of the model differed across the samples of males and females, as did the finding of a significant chi-square difference, $\chi^2$ difference $(10, N = 405) = 20.80, p < .05$. Despite gender differences in the model structure, the goodness of fit indices
Figure 11
Path Analysis of Expanded Model of Contributions of Social Self-Efficacy, Career Decision Self-Efficacy, and Self-Esteem to Adjustment Variables of Shyness, Career Indecision, and Depression, Within Gender

Note: The first path coefficient on each of the structural links is for males; the second coefficient is for females. Coefficients in bold type are significant beyond $p < .05$. Coefficients followed by an asterisk differ significantly across gender.
revealed that the expanded model provided an improved and adequate fit to the data for both males and females. For males, the results indicated a non-significant chi-square, $\chi^2 (2, N = 129) = 2.65, p > .05$, an NFI of .99, an NNFI of .99, a CFI of 1.0, and an RMSEA of .05. The model fit indices for the female subgroup included a non-significant chi-square, $\chi^2 (2, N = 276) = .01, p > .05$, an NFI of 1.0, an NNFI of 1.02, a CFI of 1.0, and an RMSEA of .001.

Statistically significant ($p < .05$) path coefficients were found for the structural links between social self-efficacy and shyness, social self-efficacy and career indecision, career decision self-efficacy and career indecision, self-esteem and shyness, self-esteem and career indecision, and self-esteem and depression for females. For males, four of the path coefficients reached statistical significance at $p < .05$, namely those between social self-efficacy and shyness, career decision self-efficacy and career indecision, self-esteem and depression, and career indecision and depression. Significant gender differences in path coefficients were obtained for the links between self-esteem and career indecision and self-esteem and depression. Specifically, self-esteem contributed more strongly to career indecision and depression for females than for males. The model accounted for an improved 64% of the variance in shyness for males and 61% for females, 28% of the variance in career indecision for males and 37% for females, and 41% of the variance in
depression for males and 48% for females. The Wald and LM tests indicated no potential improvement of the model fit for either gender via the elimination or addition of paths, respectively.
CHAPTER 5
DISCUSSION

The present study endeavored to explicate the nature of cognitive (efficacy) and affective (esteem) pathways to depression in young adulthood by examining the contribution of social and career decision self-efficacy, shyness, career indecision, and self-esteem to depressive symptomology in a sample of college undergraduates. The results obtained provide support for the causal models proposed and evaluated herein. Whereas the model containing only efficacy pathways (see Figure 7) was found to be a plausible representation of the causal relationships among the analyzed variables, the expanded model incorporating both self-efficacy and self-esteem pathways to depression (see Figure 9) provided an improved and excellent fit to the data. The expanded model containing global self-esteem accounted for a greater proportion of the variance in depression, which was due at least partially to the fact that high self-esteem contributed directly to low levels of depression.

Global self-esteem, along with social self-efficacy, also contributed significantly to depression through its relationships with shyness and career indecision, while career decision self-efficacy did so solely through its relationship with career indecision. In other words, students who possessed greater perceived social efficacy and higher
self-esteem also experienced less career indecision and shyness and in turn reported lower levels of depression. Moreover, strong career decision self-efficacy beliefs were associated with low depression to the extent that they promoted greater career decidedness.

At first glance, the contribution of social self-efficacy to the prediction of career indecision may not have appeared to operate in the manner just described. As such, despite the finding of negative zero-order correlations between social self-efficacy and career indecision (see Tables 5 and 6), the coefficients for the paths predicting the latter variable from the former were positive in value for each of the path analyses conducted herein (see Figures 4 through 11). The reversal in the relational direction between social self-efficacy and career indecision combined with high correlations between social self-efficacy and the other primary predictor variables, career decision self-efficacy and self-esteem, is suggestive of the possibility that social self-efficacy functions as a suppressor variable within the proposed models (Tzelgov & Henik, 1991; Wiggins, 1973). A suppressor variable is one that acts to remove criterion-irrelevant variance from another predictor (Nunnally & Bernstein, 1994; Tzelgov & Henik, 1991; Wiggins, 1973). Although all of the constructs in a multivariate analysis function to explain some variance in the criterion measure(s) and to subtract criterion-irrelevant variance from other predictors (Tzelgov & Henik, 1991), a suppressor variable serves the second function to a greater degree than the first. The result is a strengthening of other relationships within the model and an enhancement of the model's predictive validity (Wiggins, 1973).
In the present models, it is plausible that social self-efficacy operates as a suppressor through its association with career decision self-efficacy. It can be postulated that social self-efficacy partials out criterion-irrelevant variance that is due to anxiety, or some related maladaptive psychological state, from the contribution of career decision self-efficacy to career indecision. As a result, the relationships among the more fundamentally associated constructs (e.g., career decision self-efficacy and career indecision, social self-efficacy and shyness) are maximized, and the predictive validity of the model is improved. Tzelgov and Henik (1991) advocate the investigation of suppression conditions in multivariate analyses given the important implications for theory development that can result. Future research examining the nature of efficacy and esteem pathways to depression might further explicate the role of social self-efficacy as a suppressor and identify other constructs that serve essential suppressive functions in the prediction of depressive symptomology.

While Bandura et al. (1999) assert that the foundation for human agency is a sense of personal efficacy, the present findings suggest that both cognitive (efficacy) and affective (esteem) aspects of self-worth represent essential components of human agency. A consideration of the construct of career indecision is illustrative of this idea. Both the current study and other research (e.g., Saunders et al., 2000) provide evidence of the cognitive and affective nature of vocational indecision. That is, negative or impoverished thoughts and feelings about oneself, one's abilities, and one's vocational options leads to indecision and inaction regarding one's career pursuits, a consequence of which is stagnant career development. Suggested more generally from the present study, then, is
the notion that high confidence in one's ability to perform social behaviors and to make career-related decisions and a positive evaluation of one's self-worth are critical to the promotion of healthy psychological and emotional adjustment. Perceived social and career decision inefficacy combined with feelings of worthlessness, in turn, breed despondency and emotional suffering. The result is a stifled sense of human agency characterized by immobility and behavioral inhibition.

The importance of considering the contribution of perceptions of both self-efficacy and self-esteem to affective adjustment and human agency may be particularly salient with respect to women. As such, the causal structure of the expanded model of efficacy and esteem pathways to depression (see Figure 11) differed across the genders. Specifically, global self-esteem played a more significant role in the prediction of depression for females than for males. For females, self-esteem contributed significantly to depression both directly and indirectly through its relationships with shyness and career indecision. For males, self-esteem contributed directly to levels of depression, but did not operate indirectly through shyness and career indecision. This result is consistent with the finding of a significantly greater correlation between self-esteem and career indecision for females than for males, suggesting that low self-esteem is more likely to result in indecision regarding the choice of one's future for women than for men.

Earlier research supports the notion that self-esteem plays a greater role in the prediction of depressive symptomology in females than in males. For instance, Lerner et al. (1999) and Allgood-Merten et al. (1990) found that young adolescent girls reported
significantly more depression than boys, but that the gender difference disappeared when the variance due to self-worth was controlled. Thus, the results of the present study extend previous findings to suggest that self-esteem serves as a factor that accounts for gender differences in depression during young adulthood as well as early adolescence.

Another gender difference in model fit was found for the contribution of social self-efficacy to depression. Social self-efficacy contributed to depression in females through its relationships with shyness and career indecision, whereas for males, social self-efficacy only contributed to depression through its relationship to shyness. The greater role of social variables in predicting depression in females than in males has been demonstrated in other research. For instance, Leadbeater, Blatt, and Quinlan (1995) reported that depression is more likely to arise from interpersonal estrangement for females than for males. In addition, Bandura et al. (1999) found that low social self-efficacy was a more significant contributor to concurrent depression in girls than in boys.

The finding of gender variations in the structure of relationships among efficacy, sociocognitive, and esteem pathways to depression is perhaps unsurprising given the demonstrated differences in rates of depression across the genders. Accordingly, females are generally more prone to depression and display higher rates of self-reported and clinically diagnosed depression than males (APA, 1994; Bandura et al., 1999; Nevid et al., 1994). Consistent with this and with the notion that gender differences in depression emerge in late adolescence (Culbertson, 1997; Nolen-Hoeksema & Girgus, 1994), females reported significantly greater levels of depression than males in the present sample.

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Taken together, gender variations in rates and significant predictors of depression suggest discrepancies in the developmental experiences of males and females, particularly within the domains of social and vocational behavior. One such differentiating factor may be a woman's greater tendency to experience a null environment, in which she is neither encouraged nor discouraged but rather simply ignored (Betz, 1989; Freeman, 1979). In addition to restricting perceived career options and solidifying occupational stereotypes (Betz, 1989), null educational and social environments entail an impoverished experience with the sources of information, particularly performance accomplishments and verbal persuasion (Bandura, 1977, 1986, 1997), essential to the development of strong beliefs of personal efficacy. Thus, null environments disadvantage women by promoting the development of expectations of perceived inefficacy, which then may engender depression and feelings of low self-worth.

Comparison of the means and standard deviations obtained herein with those acquired in past research with college student samples suggested general normative consistency with prior investigations. Males and females indicated similar levels of social self-efficacy, career decision self-efficacy, shyness, career indecision, and career certainty and lower levels of depression and self-esteem than undergraduates assessed in earlier studies (e.g., Beck et al., 1996; Betz & Klein, 1996; Osipow, 1987, Smith & Betz, 2000). Although the current sample of college undergraduates was less depressed than that studied by Beck et al. (1996), the expanded model of efficacy and esteem pathways still accounted for nearly 50% of the variance in depressive symptomology.
In addition, the validity of the results obtained from the data analyzed herein is bolstered by the fact that the pattern of gender differences in the measured variables is largely consistent with that found in past research. For instance, the existence of higher rates of depression for females than for males has already been mentioned (APA, 1994; Bandura et al., 1999; Culbertson, 1997; Nevid et al., 1994; Nolen-Hoeksema & Girgus, 1994). Moreover, the lack of gender differences in social and career decision self-efficacy and global self-esteem is supported by other investigations (e.g., Bergeron & Romano, 1994; Betz & Klein, 1996; Betz, Klein, et al., 1996; Betz & Luzzo, 1996; Smith & Betz, 2000; Taylor & Betz, 1983). While past research has obtained mixed results (Osipow, 1987; Taylor & Betz, 1983), the finding of no gender differences in career indecision herein is consistent with more recent investigations (e.g., Bergeron & Romano, 1994; Betz, Klein et al., 1996; Betz et al., 1999a).

Prior research on the role of social variables in career indecision has also produced some discrepant findings. For instance, Leong and Chervinko (1996) found that low levels of social anxiety were associated with greater career indecision. Conversely, other researchers (e.g., Betz et al., 1999a; Newman et al., 1999; Temple & Osipow, 1994; Tuck et al., 1995) have demonstrated that stronger expectations of social self-confidence (efficacy) and other social variables such as extraversion and sociability, thereby implying low levels of social anxiety, are correlated with less vocational indecision. Following the suggestion of Newman et al. (1999), the present study provided additional evidence of the role of social variables in the development of career indecision. Accordingly, social self-efficacy was found to make a significant
contribution to students' levels of career indecision, with greater perceived social self-
efficacy predicting lower levels of indecision. In addition, shyness was significantly
correlated with career indecision for male, although not female, college students,
suggesting that high levels of shyness are more likely to be associated with indecision
regarding one's career pursuits for men than for women.

Related evidence that demonstrates the role of social variables in career
development is the finding of significant differences in the model variables for students
having decided on a college major and a future career and those students remaining
undecided. Specifically, decidedness regarding one's major of study and one's future
career was associated with greater career decision self-efficacy, higher self-esteem, less
career indecision, and stronger levels of career certainty. Students having selected a
major also indicated lower levels of depression and students having decided on a career
field reported higher levels of social self-efficacy than those remaining undecided. These
results were generally consistent with past research. For instance, Anderson and Betz
(2001) found that college students who had selected a future career reported higher levels
of social self-efficacy and social confidence and lower levels of shyness than did those
who remained undecided about their intended career. Other researchers have reported the
experience of social anxiety and depression among career undecided individuals (Larson,
Heppner, Ham, & Dugan, 1988; O'Hare & Tamburri, 1986). Taken together, these
findings and the success of the models evaluated in the present study in accounting for a
significant proportion of the variance in career indecision provide further evidence of the critical importance of perceived social confidence and interpersonal comfort in the processes of career development and decision making.

Furthermore, the study expands upon the existing literature on the contribution of vocational indecision to the development of psychological maladjustment. As such, career indecision was found to make a significant contribution to concurrent depression, with greater levels of indecision predicting more depression. Saunders et al. (2000) found that depression was significantly correlated with career indecision but that the experience of depressive symptoms was not a significant predictor of vocational indecision in the regression equation. The finding of a significant path between the two constructs in the opposite direction in the current study suggests that career indecision may contribute casually to depression rather than the reverse. Future research aimed at further explicating the nature of this relationship is warranted.

Finally, the present investigation also examined relationships among variables that previously were not addressed in the literature. For instance, the study provided evidence of a significant association between career decision self-efficacy and depression. Specifically, low career decision self-efficacy was a significant contributor to greater levels of concurrent depression. Although the significance of career decision self-efficacy as a direct predictor of depression was eliminated when global self-esteem was added to the model, career decision self-efficacy did still influence levels of
depression through its association with career indecision. Thus, it appears that career
decision self-efficacy serves as a more distal contributor to depressive symptoms than
more general aspects of self-concept such as global self-worth.

Bandura et al. (1999) assert the need for interventions aimed at enhancing
perceived self-efficacy and skill in vocational and social domains in children. The
evidence obtained in support of the causal models evaluated herein allows for an
extension of this assertion to college student and adult populations as well. In addition,
the results provide a basis for the conjecture that interventions focused on social and
career decision self-efficacy expectations might also have positive effects on a range of
career and personal adjustment variables, including problems of shyness, career
indecision, depression, and low self-esteem. Future research examining the ability of
interventions involving the sources of self-efficacy information, namely performance
accomplishments, vicarious learning, verbal persuasion, and emotional arousal (Bandura,
1977, 1986, 1997), to enhance individuals’ perceived self-efficacy and to produce
concomitant gains in other aspects of vocational and psychological adjustment is
warranted. McAuliffe (1992) advocates the importance of fostering the ability of clients
who receive efficacy-based treatments to ascribe their performance accomplishments to
their own efforts rather than to environmental factors. Because depression is associated
with a negative attributional style that includes pessimistic views of oneself, the world,
and the future (Alfano et al., 1994; Beck & Weishaar, 1995), researchers and clinicians
seeking to evaluate and utilize efficacy-based interventions in the treatment of depression
should remain especially cognizant of this idea.
In the examined models, perceived social and career decision self-efficacy beliefs served as predictors of the mediating and outcome variables, namely shyness, career indecision, and depression. Thus, it is plausible that efficacy-based treatments may serve as an effective means by which to both prevent the development of future depression and ameliorate already present depressive symptoms. In addition to enhancing the treatment of perceived social and career decision inefficacy, associated sociocognitive variables, and depression, the development and demonstrated utility of efficacy-based counseling interventions would serve to further understanding of self-efficacy theory and would bolster arguments regarding the inseparability of career and personal counseling (e.g., Betz & Corning, 1993; Davidson & Gilbert, 1993; Hackett, 1983; Krumboltz, 1993; Osipow, 1990).

Directions for future research are also suggested by limitations of the present study. Because the samples on which the proposed models were tested consisted largely of Caucasian first-year students at one Midwestern university, it is unclear whether the results will generalize to other populations. Of the total sample (N = 405), African Americans, Asian American/Pacific Islanders, Latino/Latina/Hispanics, and Native Americans possessed sample sizes of N = 30, 23, 8, and 3, respectively. Studies employing larger samples of these and other racial/ethnic groups would provide information regarding the adequacy of fit of the path models in more heterogeneous populations. Furthermore, the sample herein was one of college students ranging in age
from 17 to 47 years with an average of 18.81 years. Future research involving adults of varying ages is necessary before a definitive assertion of the model's utility in accounting for pathways to depression in adulthood can be made.

In addition, it should be noted that while the results indicated an excellent fit to the data for the expanded model of efficacy and esteem pathways to depression analyzed herein, it represents only one plausible model of contributions to depression in young adulthood. Future research may demonstrate that another model provides for a superior understanding of the development of depression in young adults. Moreover, while path analysis and structural equation modeling procedures allow for the testing of hypothesized causal relations among variables using correlational data (Fassinger, 1987), model replication combined with experimental methodology are necessary before more conclusive statements regarding causal contributors to depression in young adulthood can be made.

Research examining how perceived self-efficacy for other domains of behavior interacts with social and career decision self-efficacy to contribute causally to depression represents another potentially important future contribution to the literature. For example, Caprara, Scabini, Barbaranelli, Pastorelli, Regalia, and Bandura (1999; cited in Bandura et al., 1999) have begun research on the contribution of perceived self-efficacy for managing positive and negative affect to depression. Early results in this line of research suggest that perceived efficacy for managing affect contributes significant
independent variance to depression, yet explication of how this aspect of self-efficacy beliefs interacts with social, career decision, and other forms of self-efficacy to predict depressive symptomology awaits further empirical attention.

In conclusion, the present study represents an important step toward enhanced understanding of self-efficacy theory, the causal pathways of depression in young adulthood, and the improved development and utilization of treatment approaches based on self-efficacy theory. It provides a foundation for understanding human agency as consisting of the two critical factors of positive self-cognitions, including strong self-efficacy expectations, and positive affective self-evaluations, characterized by high self-esteem. Given the implications of the model variables for psychological adjustment and well-being, further validation and refinement of the path model of depression in young adulthood and its use in the development and evaluation of efficacy-based counseling interventions are warranted.
LIST OF REFERENCES


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APPENDIX A

THE SCALE OF PERCEIVED SOCIAL SELF-EFFICACY

Directions: Please read each statement carefully. Then decide how much confidence you have that you could perform each of these activities successfully. Use the following scale to indicate your confidence.

<table>
<thead>
<tr>
<th>no confidence at all</th>
<th>little confidence</th>
<th>moderate confidence</th>
<th>much confidence</th>
<th>complete confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

How much confidence do you have that you could:

1. Start a conversation with someone you don’t know very well.
2. Express your opinion to a group of people discussing a subject that is of interest to you.
3. Work on a school, work, community, or other project with people you don’t know very well.
4. Help to make someone you’ve recently met feel comfortable with your group of friends.
5. Share with a group of people an interesting experience you once had.
6. Put yourself in a new and different social situation.
7. Volunteer to help organize an event.
8. Ask a group of people who are planning to engage in a social activity (e.g., go to a movie) if you can join them.
9. Get invited to a party that is being given by a prominent or popular individual.
<table>
<thead>
<tr>
<th></th>
<th>no confidence at all</th>
<th>little confidence</th>
<th>moderate confidence</th>
<th>much confidence</th>
<th>complete confidence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

How much confidence do you have that you could:

10. Volunteer to help lead a group or organization.
11. Keep your side of the conversation.
12. Be involved in group activities.
13. Find someone to spend a weekend afternoon with.
14. Express your feelings to another person.
15. Find someone to go out to lunch with.
16. Ask someone out on a date.
17. Go to a party or social function where you probably won’t know anyone.
18. Ask someone for help when you need it.
19. Make friends with a member of your peer group.
20. Join a lunch or dinner table where people are already sitting and talking.
21. Make friends in a group where everyone else knows each other.
22. Ask someone out after he/she was busy the first time you asked.
23. Get a date to a dance that your friends are going to.
24. Call someone you’ve met and would like to know better.
25. Ask a potential friend out for coffee.
APPENDIX B

SHYNESS SCALE

Directions: Please read each item carefully and decide to what extent it is characteristic of your feelings and behavior. Use the following scale to indicate your answers.

<table>
<thead>
<tr>
<th>very uncharacteristic</th>
<th>untrue</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>very characteristic, true</th>
</tr>
</thead>
</table>

1. I feel tense when I'm with people I don't know well.
2. I am socially somewhat awkward.
3. I do not find it difficult to ask other people for information.
4. I am often uncomfortable at parties and other social functions.
5. When in a group of people, I have trouble thinking of the right things to talk about.
6. It does not take me long to overcome my shyness in new situations.
7. It is hard for me to act natural when I am meeting with new people.
8. I feel nervous when speaking to someone in authority.
9. I have no doubts about my social competence.
10. I have trouble looking someone right in the eye.
11. I feel inhibited in social situations
12. I do not find it hard to talk to strangers.
13. I am more shy with members of the opposite sex.
APPENDIX C

UNCONDITIONAL SELF-REGARD SCALE

Directions: The questions below deal with the attitudes of college students towards themselves and others. Please read each statement carefully. Then decide how strongly you agree or disagree with each statement. Use the following scale to indicate your responses according to how you feel at the present time.

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>aren't sure or neutral</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

1. I feel good about myself as a person.

2. I make time for relaxation activities.

3. I like who I am.

4. It is hard for me to remember the positive things people say about me.

5. I am very critical of myself.

6. I think I am a worthwhile person.

7. I argue a lot with my parents.

8. I enjoy spending time with my friends.

9. Even though I make mistakes, I still feel good about myself as a person.

10. I think of myself in negative terms (e.g., stupid, lazy)

11. It is easy for me to list 5 things I like about myself.

12. I like to spend the holidays with my family.
<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>moderately disagree</th>
<th>aren’t sure or neutral</th>
<th>moderately agree</th>
<th>strongly agree</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

13. I can never quite measure up to my own standards.

14. I view myself in a positive light (e.g., intelligent, caring)

15. I like to be involved with team sports.

16. Even when I goof up, I basically like myself.

17. There are times when I doubt my worth as a person.

18. I tend to look at what I do badly rather than what I do well.


20. When I look in the mirror I like who I see.
APPENDIX D

DEMOGRAPHIC QUESTIONNAIRE

Please answer the following questions:

1. Age ______

2. Gender ______ male ______ female

3. Class rank ______ Freshman
   ______ Sophomore
   ______ Junior
   ______ Senior
   ______ Fifth-year
   ______ Other

4. Race/Ethnicity ______ African American
   ______ Asian American
   ______ Caucasian
   ______ Latino(a)/Hispanic
   ______ Native American
   ______ Multiracial (specify__________________________)
   ______ Other (specify__________________________)

5. Have you selected a major? ______ yes ______ no

6. If you answered “yes” to question #5, what is your major?
   ____________________________

7. Have you selected a future career? ______ yes ______ no

8. If you answered “yes” to question #7, what is your intended career?
   ____________________________

9. Please indicate your high school or current college GPA: ________________

10. Please indicate your cumulative ACT and/or SAT score(s):
    ACT___________    SAT___________
APPENDIX E

DEBRIEFING STATEMENT

Dear Students:

Thank you so much for participating in our experiment. We are interested in college students’ beliefs about their lives, particularly with respect to social interactions and career pursuits. Today you completed questionnaires addressing your beliefs about your competence in social situations, your certainty regarding your choice of college major and future career, and your beliefs about your ability to perform various career-related tasks. You also responded to measures of depression, shyness, and self-esteem.

From this study we hope to gain a better understanding of factors that may lead college students to make better educational and career decisions and to interact more effectively in social situations. We hope to use this information in career counseling to help students become more well-adjusted in both their personal and occupational lives.

If in the course of this experiment you have developed concerns about or uncertainties about your self-esteem, social behavior, or educational and career plans, you may wish to seek counseling. If that is the case, you might be able to find counseling in Townshend Hall at the Psychological Services Center (Room 141). Please call the center at 292-2059 or contact Dr. Richard Russell at 292-0533. In addition, The Ohio State University Counseling and Consultation Service (CCS) offers both personal and career counseling and is open eight hours a day for appointments and, if needed, on an emergency basis. If you would like to seek counseling through CCS, please call 292-5766. If you have any other questions about this study or would like additional counseling referrals, please contact Dr. Nancy Betz at 292-4166.

Again, thank you for assisting us with this research. We hope that it will eventually be useful in helping college students and other individuals in counseling situations.