MULTIPLE PREDICTORS OF COLLEGE ADJUSTMENT AND ACADEMIC PERFORMANCE FOR UNDERGRADUATES IN THEIR FIRST SEMESTER

Shawn Stoever, B.S., M.S.

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APPROVED:

Trent Petrie, Major Professor
Donna Fleming, Committee Member
Bert Hayslip, Committee Member
Ed Watkins, Committee Member
Ernest Harrell, Chair, Department of Psychology
C. Neal Tate, Dean of the Robert B. Toulouse School of Graduate Studies

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College success, as defined by adjustment to college and academic performance, is a multidetermined with a number of contributing influences, including academic factors, personality variables, family characteristics, and environmental factors. This study attempted to provide an organizing model of the college success literature that was based on previous research (e.g., Aspinwall & Taylor, 1994) and current stress-coping theory (Moos & Swindle, 1990). Structural equation modeling analyses indicated that the hypothesized model did not fit the data well. However, subsequent regression analyses did validate the view that college success is multidetermined. Specifically, academic performance was predicted by a combination of academic factors (SAT score and class rank) and academic adjustment. In turn, academic adjustment was predicted by locus of control, perceived social support, and high school class rank. Personal adjustment was predicted by coping strategies employed, parents who fostered autonomy, locus of

control, self-esteem, and high school class rank. Finally, social adjustment was predicted by optimism, coping strategies employed, and locus of control. Treatment implications as well as directions for future research were discussed.

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CHAPTER ONE

INTRODUCTION

The transition from high school to college is a challenging life transition in the development of young adults, and many students are inadequately prepared for the psychological, emotional, and academic realities of higher education (Francis, McDaniel, & Doyle, 1987). The college freshman is confronted with the adaptational challenges of living apart from family and friends, adjusting to the academic regimen, assuming responsibility for the tasks of daily living, and developing a new array of social relationships with peers and faculty (Henton, Lamke, Murphy, & Haynes, 1980). Counseling psychologists play a major role in aiding such students in their transition to this new environment, and a great deal of research has been devoted to determining what factors and issues are relevant to the academic adjustment of college students.

Russell and Petrie (1992) have provided an organizing model of the research in the area of academic adjustment and success that is based on multiple predictor and outcome variables. In their model, factors predictive of academic adjustment are divided into three major content areas: academic, social/environmental, and personality. Academic

factors include a number of variables directly related to academic performance such as aptitude and ability, study skills and test anxiety, academic motivation, and self-efficacy and attribution. Social/Environmental factors affecting academic adjustment include life stress and social support, campus environment, work involvement, family variables, and academic environment. Personality factors predictive of academic adjustment include personality measures, locus of control, self-esteem, and trait anxiety. The organizing model continues by operationally defining academic adjustment and success into three categories of outcome variables: academic performance, social adjustment, and personal adjustment (Russell & Petrie, 1992).

A student's adjustment to college seems to be related to a combination of academic, environmental, personal, and family factors. Thus, the following literature review will be organized based on categories of predictor variables similar to those described in the Russell and Petrie model. As one exception, family variables will be reviewed separately from other social/environmental predictor variables because of the increased emphasis in recent research regarding the role of family relationships to college adjustment. The purpose of this study will be to move beyond the use of organizing models by utilizing current theory, in conjunction with research findings, to

propose and statistically evaluate a causal model of college adjustment. A primary function of the literature review will be to identify the factors most consistently related with college adjustment so that they may be included as measured variables to approximate the latent variables in the hypothesized causal model.

Academic Factors

Early research in the area of college adjustment examined the relationship between academic ability, as measured by high school grade point average (GPA) and test scores from the Scholastic Aptitude Test (SAT) and American College Testing Program (ACT), and college academic success. After reviewing research conducted in the area of college attrition from 1950 to 1975, Pentages and Creedon (1978) concluded that academic achievement and persistence were predicted most often from cognitive variables such as high school GPA and SAT scores. Other researchers also have indicated that academic factors were the best predictors of academic achievement and college persistence (Larose & Roy, 1991; Malloch & Michael, 1981; Mathiasen, 1985; Neely, 1977; Ting & Robinson, 1998; Weitzman, 1982; Wesley, 1994). For example, Neely found that the best predictors of college graduation were high school GPA, high school class rank, and composite ACT score. Larose and Roy (1991) determined that high school GPA was the most effective predictor of first

semester college GPA for their sample of 1,235 students. Similarly, Mathiasen concluded that high school grades and test scores maintained a stronger predictive relationship to college GPA than did study skills, motivation, and certain personality characteristics. Research also has indicated that the strongest predictors of college grades for Black students are academic variables, such as high school GPA and SAT scores (Allen, 1986; Nettles, Thoeny, & Gosman, 1986; Ting & Robinson, 1998).

Despite the predictive power of high school performance and standardized test scores, there remained a substantial amount of unexplained variance in the prediction of college success. Thus, researchers have turned to other academic-related factors to explain why many students who perform only marginally in high school and on standardized tests may respond very well to the demands of college. Academic self-concept, or self-efficacy (although proposed by different researchers, the definitions are so similar that the terms are synonymous in this review) is one academic factor that has received attention as a predictor of academic success and persistence (for reviews see Hansford & Hattie, 1982; Multon, Brown, & Lent, 1991). According to Bandura (1977, 1982), self-efficacy expectations are the beliefs a person has about his or her ability to successfully perform a given task or behavior. Thus, academic self-efficacy refers to a

person's belief in his/her abiltity to perform the behaviors necessary to be academically successful. Examples of these behaviors include: class concentration, memorization, exam concentration, understanding, explaining concepts, discriminating concepts, and note-taking (Wood & Locke, 1987).

It has been hypothesized that efficacy expectations should relate to persistence when confronted with obstacles and success in pursuing educational and career goals (Lent, Brown, & Larkin, 1984). Lent and his colleagues (Lent et al., 1984; Lent, Brown, & Larkin, 1986; Lent, Brown, & Larkin, 1987; Multon, Brown & Lent, 1991) have thoroughly examined this hypothesis and the relationship between self-efficacy and academic achievement/ persistence. In a sample of college students considering careers in science and engineering, Lent et al. (1984) found that students who reported high self-efficacy for educational requirements achieved higher grades and demonstrated greater persistence than those reporting low self-efficacy. Similarly, higher self-efficacy has been related to better academic performance and achievement of self-set academic grade goals for students enrolled in college psychology and management classes (Wood & Locke, 1987).

Employing hierarchical regression analysis, Lent et al. (1986) examined the degree to which measures of self-

efficacy, achievement, ability, and interest could serve as predictors of academic success (semester GPA) and persistence (number of quarters completed in the college of technology) in students considering science and engineering majors and careers. While both math PSAT scores and high school rank made significant contributions to the variance in GPA, results also indicated that self-efficacy accounted for a significant portion of the variance in the prediction of GPA. In addition, high school rank and self-efficacy were the only significant predictors of academic persistence. In a related study, Lent et al. (1987) sampled students in technical/scientific majors to examine the relative contribution of self-efficacy, interest congruence, and consequence thinking in predicting grades and persistence. Consistent with their 1986 investigation, self-efficacy was found to be the most useful of the three variables in predicting academic persistence and grades. Findings from both studies indicated that high self-efficacy students achieved higher grades and remained enrolled longer in the college of science and technology than did students with low self-efficacy.

The role of academic self-concept in predicting the academic achievement of minority and low socioeconomic status students has also been examined. Gerardi (1990) sampled 98 freshmen engineering students with a mean

reported annual income of $12,500 and an ethnic breakdown as follows: 57% African American, 30% Hispanic, 5% Asian, and 4% Euro-American. He employed multiple regression analysis to determine the relationship between high school average, scores on Freshman Skills Assessments in math and reading, academic self-concept, and GPA after three semesters of college. Results indicated that only academic self-concept was related to academic success. Thus, academic self-concept was found to be a better predictor of success than were any other cognitive predictors among minority and low-socioeconomic background students (Gerardi, 1990).

Finally, meta-analytic investigations have been conducted on the self-concept and academic performance/persistence literature (Hansford & Hattie, 1982; Multon et al., 1991). Hansford and Hattie found significant correlations between self-concept and later academic achievement in their review of 128 studies. From a sample of 39 studies, Multon et al. (1991) found support for the facilitating relationship of self-efficacy beliefs to both academic performance and persistence, with effect sizes of .38 and .34, respectively.

To summarize, those students who perform better in high school and on standardized tests have been generally shown to be more successful in college, as measured by college GPA and persistence. In addition, those students who believe in

their ability to perform the tasks associated with college academics have also been shown to be academically successful. Lent et al. 1986) found that each of these three variables (high school rank, standardized test scores, and academic self-concept) made significant unique contributions to the variance in academic success (semester GPA). Thus, the current study will include high school rank, a standardized test score, and academic self-concept as measured variables for the approximation of the academic latent variable.

Personality Factors

Researchers have made attempts to predict academic achievement from personality factors, but have encountered very limited success. For example, the concept of locus of control has been examined in relation to GPA, with those students who score on the internal end of the internal-external continuum hypothesized as being more academically successful (Prociuk & Breen, 1974; Traub, 1982). While correlation coefficients between internality and college grades were statistically significant, they were small in magnitude. Similarly, investigations of the relationship between self-esteem and academic performance have produced only minimal relationships at best (Prager & Freeman, 1979; Prager, 1983). Rosenberg, Schooler, Schoenbach, and Rosenberg (1995) showed that, while global self-esteem is

more strongly related to measures of psychological well-being, specific self-esteem (such as the aforementioned academic self-concept) is a much better predictor of school performance. Thus, it has been suggested that personality factors, such as locus of control and global self-esteem may play an indirect role in academic performance by influencing constructs such as level of educational aspiration (Prager & Freeman, 1979) and study habits (Prociuk & Breen, 1974).

The role of personality factors in college students' academic performance may be better understood by incorporating a broader conceptualization of academic success. Recently, researchers have shifted their attention from academic achievement (i.e., students' grades and persistence) as an outcome variable to the broader concept of college adjustment. While the college experience should enhance students' academic knowledge, it also should provide an opportunity for students to both refine their ability to relate effectively with others and experience intrapersonal growth (Russell & Petrie, 1992). The term college adjustment includes these social and personal aspects of the students' college experience. Thus, motivation to learn, willingness to take action to meet academic demands, a clear sense of purpose, and general satisfaction with the academic environment are all recognized as important parts of academic adjustment (Baker & Siryk, 1984, 1989).

Due to the advent of instruments that reliably and validly measure college adjustment, research in the area has increased in the past ten years. One instrument in particular, Student Adaptation to College Questionnaire (SACQ; Baker, McNeil, & Siryk, 1985), incorporates the multidimensional aspects of college adjustment (i.e., academic, social, personal-emotional, and goal commitment-institutional attachment). Using the SACQ as an outcome measure, research has shown that college adjustment is positively related to both academic variables (Brooks & DuBois, 1995) and personality variables (Martin & Dixon, 1989; Mooney, Sherman, & Lo Presto, 1991).

Mooney et al. (1991) surveyed 88 female undergraduates to assess the relationship between academic locus of control, self-esteem, and geographical distance from home as predictors of college adjustment. They found that an internal locus of control, a high level of self-esteem, and a perception that the distance from home was "just right" were related to all four dimensions of college adjustment measured by the SACQ. Using regression analysis, each predictor variable was shown to significantly increase the overall predictive accuracy of college adjustment (Mooney et al., 1991). Although strengths of this study include the use of multiple predictor variables and a reliable measure of college adjustment, a couple of limitations involving the

sample population are worth noting. First, the exclusion of males from the study decreases the generalizability of the results. Second, the small sample size (88 subjects) for the regression analysis may have produced spuriously high correlations.

Martin and Dixon (1989) sampled 157 male and 158 female college freshmen to investigate the impact of a freshman orientation program and locus of control on college adjustment. While those students characterized by an internal locus of control were significantly more well-adjusted to college life than their external counterparts, orientation attendance had no direct or interactional effect on subsequent adjustment. Although this study employed a large representative sample, it was limited by the exclusion of other predictive factors (i.e., self-esteem) that have been related to college adjustment.

In addition to self-esteem and locus of control, a third personality variable has received attention in the literature for its role in college adjustment and performance. Goal instability is a personality construct that refers to a lack of a mature system of values and goals to direct efforts toward achievement. Thus, students with high goal instability (indicating low goal directedness) are hypothesized to have more difficulty in college adjustment and college performance than their low goal instability

counterparts. In support of this hypothesis, Scott and Robbins (1985) surveyed 72 undergraduate students and found that those students with high goal instability had lower grade point averages than did those with low goal instability. Similarly, in their study of 88 female undergraduates, Robbins & Schwitzer (1988) found that goal instability was a consistent predictor of academic, personal, and institutional adjustment as measured by the SACQ. Although the findings were consistent with theory and statistically significant, goal instability accounted for varying amounts of variance (4% to 48%) when predicting adjustment. Thus, Robbins ans Schwitzer (1988) suggest that future research incorporate other variables along with goal instability as predictors of college adjustment.

Collectively, research with personality factors indicates that higher self-esteem, an internal academic locus of control, and more goal directedness do seem to play a role in the overall adjustment of college students, although they are not necessarily directly related to academic performance. Future research could advance the literature by utilizing the strengths of each of these studies, such as large representative samples and multiple predictor variables. In addition, advances could be made by including both college adjustment and academic performance as outcome measures to determine their relationship with

personality variables and each other. For example, as suggested by Prager and Freeman (1979), self-esteem may be related to college adjustment which is in turn related to academic performance. With these ideas in mind, the current study will employ self-esteem, locus of control, and goal instability as measured variables to approximate the personality latent variable, which, in turn, will be hypothesized to relate to college adjustment and performance.

Family Factors

With the focus shifting from academic performance (i.e., grades) to more general measures of college adjustment, researchers have been able to examine the theories describing adolescent development and family relationships. With regards to family variables affecting college adjustment, psychological separation-individuation received the greatest attention in the early literature. From the psychodynamic perspective, psychological separation has long been conceptualized as the principle developmental task of adolescence (Rice, Cole, & Lapsley, 1990). Specifically, the task of adolescence is the formation of a sense of identity, a cohesive set of personal values regarding career goals, relationships, and belief systems (Erikson, 1968). In his book concerning the development of adolescents, Blos (1979) described individuation as the

shedding of familial dependencies and the loosening of infantile object ties in order to become a member of society at large. Accordingly, changes made at this time render the constancy of self-esteem and mood increasingly independent from external sources. This disengagement from parental control opens the way in adolescence for the development and individuation of the ego (Blos, 1979).

Central to the conceptualization of psychological separation - individuation in adolescence is the view that the process plays a large role in adaptive functioning, and consequently adjustment. A positive relationship is generally assumed between psychological separation and life adjustment during late adolescence and early adulthood (Blos, 1979, Dashef, 1984).

Research examining separation-individuation theory and the hypothesized relationship to adjustment was accelerated when Hoffman (1984) developed the Psychological Separation Inventory (PSI) as a reliable measure of the separation process. Hoffman (1984) viewed psychological separation as a multidimensional construct that can be defined by reference to four dimensions each derived as a subscale of the PSI. Functional independence refers to the ability to manage and direct one's practical and personal affairs without the aid of mother or father. Attitudinal independence concerns the image of oneself as being unique

and having one's own beliefs, values, and opinions. Emotional independence refers to freedom from excessive need for approval, closeness, and emotional support. Conflictual independence is freedom from excessive guilt, anxiety, and resentment in parental relationships. In his initial use of the PSI with a sample of 150 college students, Hoffman (1984) demonstrated that greater emotional independence from parents was related to better academic adjustment, whereas greater conflictual independence was related to better personal adjustment.

Research with the PSI has indicated that the conflictual independence subscale is positively correlated with academic, emotional, personal, and social adjustment (Hoffman, 1984; Lapsley, Rice, & Shadid, 1989; Lopez, Campbell, & Watkins, 1988; Lopez, 1991; Rice, Cole, & Lapsley, 1990); however, other subscales of the PSI have not been consistently correlated with indices of adjustment. Lapsley et al. (1989) examined the relationship between psychological separation and adjustment to college in a sample of 253 college students. Correlational analysis revealed that separation was most strongly related to personal-emotional adjustment of college students. Specifically, those students who experienced the most conflictual independence from their fathers and the most functional and emotional independence from their mothers

were the ones who reported the least amount of psychological distress or somatic consequences of distress (Lapsley et al., 1989). Similarly, Lopez et al. (1988) examined the relationship of family structure, psychological separation, and college adjustment in a sample of 815 college students. Utilizing canonical analysis to examine the relationship between separation (PSI subscales) and college adjustment (SACQ), a single significant canonical root emerged that underscored a relationship between conflicted parent-student attachments and college adjustment for both men and women. As was the case in the previous study, findings suggested that students who were free from excessive guilt, resentment, and anger in the relationship with their parents were also less likely to have emotional difficulties in college adjustment (Lopez et al., 1989).

Finally, Rice et al. (1990) completed an exploratory factor analysis of the PSI and two other measures of psychological separation-individuation in an attempt to differentiate underlying dimensions of individuation. Analysis of questionnaires from their sample of 240 college students yielded two factors. The Positive Separation Feelings Factor, comprised of the conflictual independence subscale of the PSI and subscales from the other two instruments, reflected feelings associated with separating from parents. The Independence From Parents Factor was

comprised of functional, attitudinal, and emotional subscales of the PSI. In their linear structural equation model, the Positive Separation Feelings factor had a large and statistically significant influence on college adjustment (standardized path coefficient = .78), while the Independence From Parents Factor's influence on college adjustment was not significant (standardized path coefficient = -.12). Consequently, the affective response to separation was strongly related to college adjustment, with those students reporting positive feelings about separation being more well adjusted to university life (Rice et al., 1990). Taken together, the aforementioned studies seem to indicate that the quality of the parent-student relationship at the time of separation, indicated by the degree of freedom from feelings of anger, guilt, or mistrust of parents, is more consistently related to college adjustment than actual measures of independence and separation.

According to Kenny and Donaldson (1992), dissatisfaction with traditional psychoanalytic models, which focus only on separation-individuation, led to the application of attachment theory to adolescent and college student development. Theories of attachment (Ainsworth, Blehar, Walters, & Wally, 1978; Bowlby, 1969, 1988) propose that characteristics of secure attachment, not parental

detachment, are important to adaptive social and psychological functioning. Consequently, secure feelings of connection with parents promote active exploration and mastery of the environment, with the parents providing a secure base of support, encouragement, and assistance when needed (Kenny, 1987).

Findings with college students indicate that a positive relationship does exist between parental attachment and adjustment to college (Kenny 1987; 1990; Lapsley , Rice, & Fitzgerald, 1990; Rice & Whaley, 1994, Soucy & Larose, 2000). For example, Lapsley et al. (1990) examined the implications of attachment relationships for adaptive functioning in late adolescence by sampling 130 college freshmen and 123 upperclassmen. Participants completed measures of parent and peer attachment, personal and social identity, and college adjustment. Regression analyses revealed that personal and social identity were significantly predicted by attachment to parents in both the freshman and upperclassman samples. In the freshman group, parent attachment accounted for a significant amount of variance in academic adjustment scores; whereas parent attachment variables accounted for a significant amount of variation in academic adjustment, social adjustment, personal-emotional adjustment, and goal commitment for the upperclassman group (Lapsley et al., 1990). These findings

were interpreted as support for Kenny's (1987) conception of family relations as a secure base from which the adolescent may go forward to negotiate the transition to college confidently.

A new perspective in developmental psychology has emerged that seems to strike a balance between individuation from a psychodynamic perspective and connectedness from the attachment literature (Hill & Holbeck, 1986; Grotevant & Cooper, 1986). Josselson (1988) noted that attachment and individuation are not opposites; rather, they need to be viewed as dual and equally important developmental pathways. Similar conceptualizations have been made by family theorists who have long argued that adolescents must both differentiate themselves from the family and retain a sense of family connectedness (Bowen, 1976; Minuchin, 1974).

Grotevant and Cooper (1985) yielded preliminary empirical support for the importance of both individuality and connectedness within family relationships. In their study of 84 adolescents and their families, adolescent's adaptive functioning, measured by identity development and role-taking ability, was enhanced through parent-adolescent relationships that balanced individuation with family connectedness. Kenny and Donaldson (1991) provided further support for the combined importance of these factors in college students social and psychological functioning. Two

hundred and twenty-six first-year college students completed questionnaires assessing parental attachment, family structure, social competence, and psychological functioning. Interesting sex differences were observed with college women describing themselves as significantly more attached to their parents, rating the affective quality of this attachment more positively, and viewing their parents as having a greater role in providing emotional support, in comparison with their male classmates. For these women, close parental attachments in the absence of both family anxieties over separation and parental marital conflict was associated with higher social competence and lower levels of psychological symptomatology. Results of the canonical analysis for males were not significant. Thus, at least for women, findings of this study suggest the need to consider attachment and individuation as equally important developmental pathways (Kenny & Donaldson, 1991).

Kenny and Donaldson (1992) took their own advice by studying the relationship between parental attachment and psychological separation to college adjustment in a sample of 162 first-year college women. In the set of predictor variables, canonical analysis revealed a significant root characterized by moderate positive loadings on the attachment scales, a low negative loading of the Attitudinal Independence Subscale of the PSI, and a high positive

loading on the Conflictual Independence Subscale of the PSI. In the set of criterion variables (four aspects of the SACQ), the root was characterized by moderate positive loading on Academic Adjustment and high positive loading on Personal Adjustment. Thus, college women who were positively attached to their parents and free of conflictual dependences were also better academically and personally adjusted to the college environment. Findings supported theories that considered both parental connectedness and support for individuation as facilitative of adaptive functioning. In fact, parent-student relationships characterized by the presence of anxiety and resentment were the strongest predictors of problems in college adjustment, as indicated by the structure coefficients (Kenny & Donaldson, 1992).

In general, the studies reviewed in this section regarding the relationship of family variables and college adjustment are characterized by the use of hypotheses from established theories that are tested using sound methodology and assessment instruments. The Kenny and Donaldson (1992) study offers a good summary of the state of the literature regarding the role of family variables as predictors of college adjustment. Specifically, mounting evidence suggests that parent-student relationships characterized by secure attachments and positive feelings about separation

are directly related to successful college adjustment. The authors suggest, however, that limitations in the methodology of their study, such as the inclusion of an all female sample and the cross-sectional and correlational nature of findings, could be improved upon in future research. Specifically, future investigations should employ samples representative of the college student population while utilizing longitudinal designs and more advanced statistical techniques (i.e., covariance structure modeling) to determine the predictive utility of these family variables on college adjustment.

Significant advances have been made recently in the college success/family characteristics literature as researchers have begun to study academic achievement (i.e., college GPA) along with college adjustment. Family characteristics, such as parenting style (Protinsky & Gilkey, 1996; Strage & Brandt, 1999; Wintre & Sugar, 2000) and psychological control by parents (Soucy & Larose, 2000), have been shown to correlate with college GPA. For example, Strage and Brandt (1999) reported a significant positive relationship between student's GPA and active encouragement of independence by their parents. In addition, Wintre and Sugar (2000) found a negative relationship between authoritative mothers and the subsequent GPA of their children. Based on findings of these recent studies,

academic achievement (GPA) warrants inclusion as an outcome measure along with college adjustment. Thus, the current investigation will utilize measures of separation and attachment to approximate the family latent variable in the hypothesized causal model of college adjustment and achievement.

Environmental Factors

Environmental factors, such as life stress, have long been identified for their role in pathology and adaptation. In 1967, Holmes and Rahe introduced the Social Readjustment Rating Scale that provided a means for measuring the amount of stressors a person has encountered. Using this and similar life event inventories, traditional researchers have examined the relationship between various psychological and physical illnesses in college and general populations (Brown & Siegel, 1988; Sarason, Johnson, & Siegel, 1978; Suls & Mullin, 1981). Specifically, frequent exposure to various forms of stressors has been related to major affective disorders (e.g., Lloyd, 1980) and cancer and coronary disease (Rodin & Salovey, 1989). More recently, social psychologists studying life stressors have instigated a shift in perspective from an emphasis on pathology to a concern with adaptive processes and outcomes (Kobasa, 1982). Consequently, life stress research with college students has been extended to non-health related areas of academic

success and college adjustment.

Several investigators have reported a significant negative relationship between life stress and GPA (De Meuse, 1985; Garrity & Ries, 1985; Harris, 1973; Isakson & Jarvis, 1999). Employing a retrospective design, Harris (1973) found that first year college students with lower GPAs experienced significantly more life stress during the preceding year than those with higher GPAs. Similarly, De Meuse (1985) found that life stress was negatively correlated with academic success, with the students who experienced the most stress perfoming worse across six indices of classroom performance. Finally, Garrity and Ries (1985) demonstrated that recent negative life events were inversely correlated with college grades, and that physical illness did not mediate the life stress-academic performance relationship.

Other researchers have investigated a threshold effect, that is, performance is hypothesized to drop after a certain number of stressful life events are present in a person's life. Using a retrospective design, Wildman (1978) found that college students' performance suffered only after they had experienced atleast ten independent negative life events. A similar study employing a prospective design substantiated these findings by demonstrating that a threshold effect occurs when students have experienced 12

independent life events (Lloyd, Alexander, Rice, & Greenfield, 1980). Taken together, findings indicate that those students who experience stressful life events appear to be at risk for poorer academic performance than their peers who experience a relatively stress-free semester.

In addition to the role they play in academic performance, evidence exists linking stressful life events to the adjustment of college students. Chang and Rand (2000) examined the adjustment of 215 college students in relation to life stress and perfectionism. Results indicated that more perceived stress was significantly related to decreased adjustment (Chang & Rand, 2000). In a more comprehensive study of individual and environmental predictors of college adjustment, Brooks and DuBois (1995) included a measure of stressful life events. From this measure, the researchers were able to distinguish between negative major life events (i.e., those that had a substantial impact and occurred less than several times a year) and daily hassles (i.e., those events that occurred at least once a month). Although the negative major life events score was not significantly related to any adjustment indices, results indicated that daily hassles had a strong positive correlation with psychological symptoms and significant negative correlations with total adjustment, social adjustment, and personal/emotional adjustment. The

authors suggested that these findings support the idea that chronic stressors may have a greater impact on psychological adjustment than acute events do (Brooks & DuBois, 1995).

A strength of the literature in the area of environmental factors is the inclusion of both academic performance and college adjustment as outcome variables. As with the other studies of factors related to these outcome variables, however, the literature could be extended by employing longitudinal designs and advanced statistical techniques that would provide an indication of the predictive power of stressful life events. Despite these limitations, findings from the studies reviewed in this area do indicate that an environmental latent factor measured by stressful life events should be included in a causal model of college adjustment.

Multiple Predictors

As evidenced by the positive correlations between college adjustment and various academic, personal, family, and environmental variables, a student's adjustment to college is a multidimensional process. Thus, researchers have suggested that multiple predictors of adjustment should be included in comprehensive studies in order to determine the relative and potentially cumulative contributions of these variables (e.g., Mooney et al., 1991; Russell & Petrie, 1992). Following this suggestion, recent

investigations seem to indicate that personal, social, and family variables are often as good as, if not better than, academic factors at predicting college adjustment (Brooks & DuBois, 1995; Gerdes & Mallinckrodt, 1994; Holmbeck & Wandrei, 1993; Tomlinson-Clarke & Clarke, 1994).

For example, Holmbeck and Wandrei (1993) investigated the predictive utility of family, personality, and cognitive indicators for the adjustment of 286 college freshmen. In their study, family variables included separation-individuation, cohesiveness, attachment; personality variables included measures of adaptability, instrumentality (masculinity) and expressiveness (femininity); and cognitive variables included measures of beliefs held by the student about leaving home. Several measures of adaptive and maladaptive adjustment were employed as outcome variables, including self-esteem, amount of social support, depression, state anxiety, and physical symptoms. Canonical correlation analyses revealed no significant loadings for any of the cognitive variables or home-leaving status; however, family cohesiveness, attachment to mother, attachment to father, separation anxiety, enmeshment seeking, dependency denial, healthy separation, adaptability to change, and instrumentality all loaded on at least one root, as did all five outcome variables. In sum, separation-individuation issues, family relations, and personality variables tended

to be more highly predictive of adjustment than cognitive or home-leaving status variables. Specifically, positive adjustment was associated with students who had healthy family attachments, a good balance between closeness and distance between themselves and their parents, and perceptions of themselves as adaptable to change and in control of their environment (Holmbeck & Wandrei, 1993).

Tomlinson-Clarke and Clarke (1994) compared the predictive value of academic and social variables on college GPA and social adjustment, as measured by a subscale of the SACQ. Sampling 92 college women, multiple regression analyses revealed that being involved in a cocurricular activity (dichotomous variable) and number of cocurricular involvements (continuous variable) were the best predictors of social adjustment. The regression equations predicting college GPA were nonsignificant, not even high school GPA accounted for a significant amount of the variance (Tomlinson-Clarke & Clarke, 1994). Thus, nonacademic factors were better predictors of college adjustment than academic factors in this study.

In a third study that employed the entire SACQ to measure adjustment, Brooks and DuBois (1995) examined the relative impact of individual variables (ACT score, problem-solving skills, surgency/intellect, emotional stability) and environmental variables (social support, daily hassles,

major negative life events, distance from home). In their sample of 56 first-year college students, multiple regression analyses revealed that ACT score accounted for a substantial amount of the variance in SACQ scores, anticipated GPA, and fewer psychological symptoms. The other individual and environmental variables made significant incremental contributions to the prediction of grade point average, social adjustment, and psychological symptoms. The findings from individual predictors indicated that higher ACT scores, a strong capacity to engage in problem-focused coping, and personality tendencies toward extroversion and intellect were all associated with better freshmen adaptation. Regarding environmental variables, more perceived social support and less daily stressors were related to better adjustment (Brooks & DuBois, 1995). Findings of this investigation must be interpreted with caution because the small sample size could have obscured some of the associations between predictor and criterion variables. In addition, the students were sampled during the second semester of their first year, after significant adjustment had presumably taken place and the stressful impact of the transition to college had potentially lessened.

To summarize, these most recent studies represent extensions in the college adjustment literature because they

examine relationships between and cumulative effects of multiple variables previously correlated with adjustment. Several predictor variables have been identified (for review, see Russell & Petrie, 1992), and these variables have been classified for organizational purposes into one of four categories: academic, personal, family, and environmental. Higher standardized test scores, high school GPA, and academic self-efficacy have long been identified as academic variables related to successful academic performance in college (e.g., Lent et al., 1986). Of the personal variables examined, self-esteem, an internal academic locus of control, and goal stability have been shown to correlate positively with college adjustment (e.g., Mooney et al., 1991). With regards to family variables, a balance between healthy attachment and positive feelings regarding separation from parents has been positively related to a student's college adjustment (e.g., Kenny and Donaldson, 1992). Finally, stressful life events and daily hassles are examples of environmental variables that have been related to academic performance and adjustment (e.g., Brooks & DuBois, 1995; Garrity and Ries, 1985). These findings indicate the importance of including such variables in any etiological model.

Despite this research in the area of college adjustment, several questions remain due to specific

limitations of previous work. First, the majority of these studies employ concurrent designs with predictor and outcome variables measured at the same time (Holmbeck & Wandrei, 1993). Thus, findings do not necessarily indicate causal relationships between predictor variables and criterion indices of adjustment, nor could the causal direction of the relationships be specified (Brooks & DuBois, 1995). Second, while certain theories have been utilized and examined regarding their hypotheses for adjustment (e.g., psychodynamic, developmental, and family systems theory led to the study of separation and attachment as family variables influencing adjustment), no unifying theory has been applied to describe the relationships between multiple predictor and outcome measures. Thus, the college adjustment literature needs an etiological model that is grounded in existing theory and capable of incorporating the multiple factors previously correlated with adjustment. Furthermore, prospective designs and advanced statistical techniques (i.e., covariance structure modeling) should be employed to test this etiological model in order to determine the predictive ability of various academic, personal, and family variables (Russell & Petrie, 1992).

Stress-Coping

Tasks associated with the transition to college include attempting to separate psychologically from parents,

establishing greater independence from family, and adapting to the academic and social demands of the college environment (Lopez et al., 1989), and the transition to college has long been recognized as a stressful time in the life of many young adults. Almost 30 years ago, Bloom (1971) suggested that intervention efforts designed to enhance coping skills or decrease the levels of stress experienced by first-year college students may facilitate their adjustment. Consequently, an examination of the stress-coping literature is warranted to shed more light on the relationship between predictive variables and adjustment to college.

The process of social stress combines three major conceptual domains: the sources of stress (e.g., life events, daily hassles), the mediators of stress (coping mechanisms), and the manifestations of stress (emotional, behavioral, and physiological expressions) (Pearlin, Menaghan, Lieberman, & Mullen, 1981). Sources of stress have been divided into three categories: (1) acute stressors which encompass time-limited experiences, such as minor traffic accidents; (2) a stress-event sequence which is a major life event that has an effect over an extended period of time, such as the death of a family member; and (3) chronic stressors which are characterized by their permanent and extended nature, such as lengthy illness of a family

member, and daily hassles that recur over time but are not continuous, such as traffic jams (Elliot & Eisendorfer, 1982). As indicated in a previous section that reviewed the life stress-academic adjustment literature, the presence of any of the three forms of stressors in the life of a student has been associated with poorer academic performance and/or adjustment.

While initially emphasizing the role of acute stressors and major life events in pathology and adjustment, researchers are now advocating for the consideration of the context in which stressors occur (Elliot & Eisdorfer, 1982; Moos & Swindle, 1990; Pearlin, 1989). Pearlin suggested that a person's sociological context plays a large role in determining the stressors to which person's are exposed, the mediators they are able to mobilize, and the manner in which they experience stress. Similarly, Moos & Swindle (1990) suggest that "stress and coping theory would contribute more to research and clinical practice when stressful circumstances are conceptualized in terms of a person's life context, and assessed by examining chronic stressors and life events in specific life domains" (p. 171). Their conceptual model of the stress process includes environmental factors (life events and social resources) and personal factors (personal resources such as self-esteem and cognitive and intellectual ability) that interact with a

life crisis or transition to shape cognitive appraisal and coping responses. These factors, in turn, effect adaptation, health, and/or well-being. In their model, bidirectional paths indicate that all of these processes are transactional with the potential for reciprocal feedback at any stage. Thus, personality variables and ongoing stressors both affect and are affected by adaptation and well-being. Their research with the model has shown that it is useful in conceptualizing and predicting treatment outcome for people with problems with alcohol and depression. In addition, they suggest that the basic ideas of the model are also applicable to healthy populations (Moos & Swindle, 1990). This model seems to have potential for helping researchers to conceptualize the relationship between predictor variables and subsequent adjustment to a major life transition such as attending college.

Mediating Variables

Current conceptualizations of the stress process include not only the stressful life circumstances and events to which the person is exposed, but also how such stressors are appraised and what personal and social resources are available to manage the situation (Lazarus & Folkman, 1984). In fact, Moos and Swindle's (1990) model included factors that mediate the impact of potentially stressful events on a person's adaptation or well-being. According to the stress-

coping literature, the amount of stress that will be experienced by an individual cannot be predicted from various stressors (Pearlin, Liberman, Menaghan, & Mullen, 1981). Instead, people employ a variety of cognitions and behaviors to confront stressful situations and mediate the impact of the stressor. Baron and Kenny (1986) described a mediating variable as being generated in the encounter between an independent and a dependent variable, and having the ability to alter the relationship between the two. Thus, mediators account for the differential effects on people of the same stressful event or circumstance. The nature of a person's reaction to stressors depends both on their coping mechanisms (e.g., problem-focused and emotion-focused) and resources (e.g., social supports and material resources) (Lazarus & Folkman, 1984). The role of social supports and coping abilities have been examined extensively in the college adjustment literature.

Social Support

In 1974, Caplan conceptualized social support as interactions with others that effect greater accommodation with the environment. Since that time, considerable research has examined the importance of social networks and perceived social support. Summarizing the social support literature, Cohen and Wills (1985) concluded that empirical evidence has consistently shown that one's perceptions of

the supportiveness of social network members and resources are positively related to various indices of psychological well-being and negatively related to various measures of psychological distress and psychopathology.

Researchers have found similar positive relationships between well-developed social networks and psychological and emotional adaptation to college (Hays & Oxley, 1986; Perl & Trickett, 1988). For example, Hays and Oxley (1986) conducted a 12-week longitudinal study of the development of social support networks among 89 college freshmen. Questionnaires assessing social network characteristics and adaptation to college were administered at three periods during the fall semester. At four weeks, the number of new acquaintances and fellow students in the freshmen's network were the most strongly related variables with adaptation. The number of students in the network, overall network size, and the amount of fun and relaxation provided by network members were each positively correlated with adaptation at eight and twelve weeks. From the multiple regression analyses, it was evident that larger social networks of fellow students that gave the freshmen an opportunity to relax and have fun accounted for a majority of the variance in their college adaptation (Hays & Oxley, 1986).

In addition to characteristics of social networks, evidence also indicates that a student's perceptions of

social support are positively related to both psychological well-being (Procidano & Heller, 1983) and college adaptation (Brooks & DuBois, 1995; Compas, Wagner, Slavin, & Vannatta, 1986; Kenny & Stryker, 1996; Isakson & Jarvis, 1999; Zea, Jarama, & Bianchi, 1995). Specifically, Procidano and Heller (1983) found that perceived social support from family and friends were better predictors of psychological symptomatology than life events or social network characteristics. Similarly, Brooks and DuBois (1995) reported that freshmen who perceived more social support anticipated having higher grades at the end of the semester and also scored higher on ratings of social adjustment. This positive relationship between satisfaction with social support and college adjustment also holds for ethnically and racially diverse students (Kenny & Stryker, 1996; Zea et al., 1995).

In sum, several investigators have examined characteristics of social networks and perceived social support as independent variables and found that both are positively related to college adjustment. In the stress-coping literature, social support is conceptualized as a coping resource that individuals utilize to deal with stressful events and circumstances. Consequently, from this perspective, social support would be hypothesized to mediate the relationship between various predictor variables and

adaptation. Several studies have yielded evidence for the role of social support as a mediator variable between adjustment and aspects of a student's personality such as assertiveness (Elliot & Gramling, 1990) and goal instability (Robbins, Lese, & Herrick, 1993; Schwitzer, Robbins, & McGovern, 1993; Scott & Robbins, 1985).

Low-goal instability (indicating high goal directedness) has been shown to be predictive of adjustment to college life (Robbins & Schwitzer, 1988) and academic performance (Scott & Robbins, 1985). Recent investigations have included social support as a mediating variable between goal instability and adjustment as measured by the SACQ. Results indicate that social support does mediate the relationship by serving a buffering function for students who experience low goal-directedness (Scott & Robbins, 1985) and a boosting or enhancing function for the students with the highest goal-directedness (Schwitzer et al., 1993).

Coping Abilities

Lazarus and Folkman (1984) conceptualized coping as "constantly changing behavioral and cognitive efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person" (p. 141). Various labels have been applied to the strategies people employ to deal with stressful events. In one formulation, Lazarus (1966) described three types of

coping: active-cognitive coping, which involves a person's attempts to manage their appraisal of the stressfulness of the event; active-behavioral coping, which refers to overt behavioral attempts by the person to deal directly with the problem and its effects; and avoidance coping, which involves a person's attempts to avoid actively confronting the stressor. Most research involving coping strategies include a similar distinction between those oriented toward approaching and confronting the stressor and those oriented toward avoiding the stressor (Roth & Cohen, 1986). In general, research indicates that individuals who utilize a higher percentage of approach coping are better psychologically adjusted than those who employ more avoidant coping strategies (Holohan & Moos, 1990; 1991; Vitaliano, Maiuro, & Russo, 1987).

The positive relationship between percentage of approach coping and psychological well-being/adjustment extends to adolescents as well (Chang, 1998; Compas, Malcarne, & Fondacaro, 1988; Jorgensen & Dusek, 1990; Leong, Bonz, & Zachar, 1997; Zea, Jarama, & Bianchi, 1995). For example, Jorgensen & Dusek (1990) examined freshmen college students to determine the relationship between coping strategies and optimal adjustment, defined as resolution of Erikson's psychosocial crises or stages. As hypothesized, optimally adjusted freshmen exhibited a higher percentage of

salutory coping efforts (developed a plan of action, used social resources for emotional support and problem-discussion, and engaged in physical, cognitive, and scholastic activities that could lead to self-improvement and maintenance of optimism and self-esteem) than their less adjusted counterparts.

Brooks and DuBois (1995) found support for the positive relationship between active coping and adaptation to college of first-year college students. In their study of individual and environmental predictors of college adjustment, a measure of problem-solving behavior (e.g., the ability to generate multiple solutions to a problem) and attitudes (e.g., the tendency to confront or avoid problems) was included. Correlations indicated that less effective problem-solving behavior and a tendency to avoid problems was significantly related to lower ratings of academic adjustment as measured by the SACQ (Brooks & DuBois, 1995). Similarly, Leong et al. (1997) examined 161 first-year college students and determined that active coping which focused on doing something positive to solve a problem was predictive of academic and personal/emotional adjustment.

Valentiner, Holahan, and Moos (1994) extended the literature by examining the mediating effects of coping strategies between family variables and psychological adjustment in a sample of college students. Structural

equation modeling was utilized to examine their model that included three latent variables: Parental Support, Percentage of Approach Coping, and Changes in Psychological Adjustment. As predicted, Parental Support, as measured by maternal support, paternal support, and marital conflict, was associated with subsequent changes in psychological adjustment both directly and indirectly through approach coping strategies. Furthermore, perceptions of the controllability of the stressful event moderated the interaction between parental support and coping. When confronted with a controllable event, family social context was predictive of adaptive coping which, in turn, predicted better psychological adjustment. When events were uncontrollable, however, the family context was no longer associated with adaptive coping, but instead was related directly to adjustment (Valentiner et al., 1994).

In general, findings of the Valentiner et al. (1994) study were consistent with previous research on the importance of a supportive family environment to subsequent adolescent adjustment. In addition, implications for examining the mediating effects of coping strategies on adjustment to college is evident. Since many of the challenges facing incoming freshmen in their adaptation to college may be perceived as controllable (i.e., forming social networks, studying effectively), it appears that

those students who engage in active coping efforts may be better able to adjust to the new environment. The current study will include coping resources as a latent variable that will be approximated by measures of problem-solving, seeking support, avoidance, and satisfaction with social support.

Summary

To this point, this literature review has covered five main areas. The research seems generally supportive of the relationship of academic factors (Lent et al., 1986), personal factors (Mooney et al., 1991), family factors (Kenny & Donaldson, 1992), and environmental factors (Garrity & Ries, 1985) to college performance or adjustment. In addition, the fifth literature area examined identified a positive relationship between college adjustment and stress-coping variables such as perceived social support and approach-coping strategies (Brooks & DuBois, 1995). Lacking in the literature is the use of a theory-driven integrative model that would provide a context for all of these factors.

Stress and coping theory seems to offer the most promise in explaining the relationships between these variables, and one recent study has made preliminary progress toward the application of a stress-coping model to college adjustment. Aspinwall and Taylor (1992) examined whether the effects of individual differences on adjustment

to college were direct or mediated by the use of particular coping strategies, social support, and enhanced motivation. Employing a longitudinal design to sample 553 incoming freshmen, individual difference factors (locus of control, self-esteem, optimism, and desire for control), initial positive and negative mood, ways of coping, and social support were measured during the second week of the fall quarter. Three months later, well-being, general and college-related stress, adjustment to college, psychological health and symptoms, and motivation were assessed. Finally, cumulative GPA was determined for each subject after five academic quarters. The study further extended the literature by employing structural equation modeling to estimate regression coefficients and the variances and covariances of independent variables in the model, and their hypothesized model accounted for 52% of the variance in adjustment to college. Several of the specific paths warrant discussion. First, only one personality construct, optimism, exerted a direct, positive effect on subsequent adjustment to college. Second, the beneficial effects of self-esteem, locus of control, and additional indirect benefits of optimism on subsequent adjustment to college were mediated by the way students coped with entering college. Students with higher self-esteem, greater optimism, and an internal locus of control used less

avoidant coping. Third, greater optimism and greater desire for control predicted greater use of active coping strategies. Fourth, higher self-esteem and greater desire for control predicted the use of seeking social support as a coping strategy. Fifth, social support, active coping, and nonuse of avoidant coping all predicted better subsequent adjustment to college. In addition, a second model demonstrated that motivation mediated the predictive effects of higher self-esteem and greater desire for control on subsequent academic performance (Aspinwall & Taylor, 1992).

Two main conclusions can be drawn from the Aspinwall and Taylor (1992) investigation: (1) the impact of various personal variables, including self-esteem, locus of control, and optimism, on adjustment and academic performance may be largely mediated by the adoption of particular coping strategies (i.e., active coping and social support) and by enhanced motivation, and (2) active coping and social support positively influence college adjustment, whereas avoidant coping does not. Because of the direct and indirect effects of optimism on college adjustment reported in this study, optimism will be added to the list of measured variables employed in the current investigation to approximate the personality latent variable.

Current Study

The next step in understanding a student's adjustment

to college seems to be the organization of the various correlates into a model so that the relationships between the correlates and adjustment can be understood. Since the role of adaptive coping strategies and social support as mediators of adaptation in college students has been identified, stress and coping theory seems to be a logical area to explore in terms of formulating a model of college adjustment. In fact, Moos and Swindle (1990) suggested that stress and coping theory would contribute more to research and clinical practice when stressful circumstances are conceptualized in terms of a person's life context. The transition to college is a clear example of a stressful circumstance in the life of many adolescents. Because of the stressful nature of the college environment and findings from the coping literature, the college adjustment literature could surely benefit from being conceptualized in terms of stress and coping theory.

Aspinwall and Taylor (1992) conducted a preliminary investigation in this area, and found support for the inclusion of coping strategies in a comprehensive model aimed at predicting college adjustment. In addition, several aspects of their methodology offer advances in the literature, including the use of first semester freshmen who presumably are in the greatest state of transition, a longitudinal design, and advanced statistical techniques

(i.e., structural equation modeling). As with any study, limitations do exist. First, as they mentioned, a structural equation model is only as good as the variables it contains. For example, the exclusion of family variables that have been previously shown to relate to college adjustment leaves several questions unanswered, such as how does attachment and separation relate to the use of coping strategies and subsequent adjustment. Second, they assessed college adjustment by using measures of well-being, perceived stress, and nine items regarding perceived adjustment. A more reliable measure such as the SACQ could have been employed to assess the various components of college adjustment. Third, the study used separate models for the prediction of college adjustment and college performance. Ideally, the relationship between predictor variables and both of these outcome measures could be included in the same model.

The current study will utilize the strengths of recent investigations (i.e., a prospective design, first-semester college freshmen, and linear structural relations analysis), while attempting to overcome their limitations by including a more comprehensive causal model that includes more factors previously correlated with college adjustment and more reliable outcome measures. In addition, the current study extends the literature base by proposing a theory-driven

integrative model that will provide a context for the previously identified correlates of college adjustment.

Proposed Model

The purpose of the current study was to propose an etiological model and examine the causal pathways between variables previously correlated with college adjustment and academic performance. It was suggested that an expanded conceptualization of the stress process proposed by Moos and Swindle (1990) will provide the basis for a causal model of college adjustment using linear structural relations analysis. Specifically, the first semester of school for freshmen college students will be conceptualized as an ongoing stressful life transition. Following the stress model, environmental stressors and other correlates of college adjustment (i.e., academic factors, personal factors, and family factors) were expected to interact with the student's ongoing stressful transition to influence their use of coping strategies. These factors and coping strategies were then hypothesized to influence the student's adjustment to college and subsequent academic performance.

Linear structural relations analysis (LISREL8.3: Joreskog & Sorbom, 1993) was utilized for the examination of interactional relations among variables in an integrated form. LISREL allows the use of correlational and nonexperimental data to determine the plausability of

theoretical models in a specific population. Hypothesized in the structural equation model is a specified causal structure among a set of unobservable constructs (latent variables), each measured by a set of observed indicator variables (measured variables). The model is then tested for fit in a particular sample.

The measurement model indicates which observable variables are expected to approximate each latent construct. In the current study, the measured variables were chosen based on past findings that they were associated with college adjustment. Measured variables were expected to load on the seven latent factors as follows: Personality Factor - optimism, goal instability, self-esteem, and academic locus of control; Academic Factor - academic self-concept, high school rank, and SAT score; Family Factor - separation-individuation and attachment; Environmental Factor - positive life events and negative life events; Coping Factor - problem-solving, seeking support, avoidance, satisfaction with social support; College Adjustment - academic, personal, social, and institutional; Academic Performance Factor - semester GPA.

Figure 1 provides a visual representation of the proposed model. The hypothesized relationships between the latent variables are indicated by arrows and further described below.

1. Academic Factors (represented by high school rank, SAT score, and academic self-efficacy) are hypothesized to have a direct effect on College Adjustment and a direct effect on Academic Performance.

2. Environmental Stressors (represented by positive and negative life events) are hypothesized to have an indirect effect on College Adjustment, mediated by Coping Resources (i.e., problem solving, seeking support, avoidance, and satisfaction with social support). Environmental Stressors are also hypothesized to have a direct effect on College Adjustment and a direct effect on Academic Performance.

3. Personality Factors (represented by academic locus of control, goal instability, optimism, and self-esteem) are hypothesized to have an indirect effect on College Adjustment, mediated by Coping Resources.

4. Family Factors (represented by separation-individuation and attachment) are hypothesized to have an indirect effect on College Adjustment, mediated by Coping Resources.

5. Coping Resources are hypothesized to have a direct effect on College Adjustment.

6. College Adjustment is hypothesized to have a direct effect on academic performance.

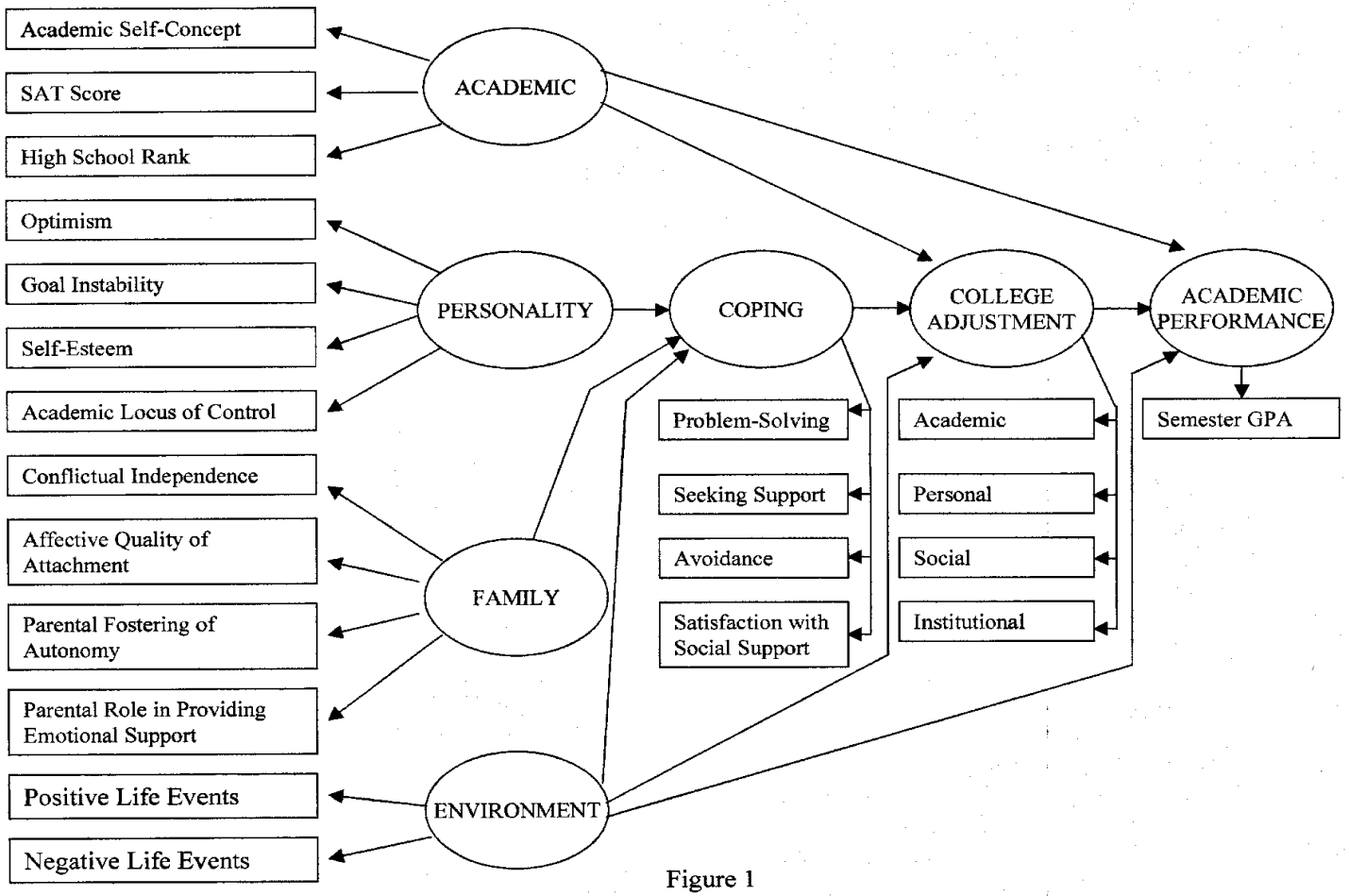
Academic Self-Concept
SAT Score
High School Rank
Optimism
Goal Instability
Self-Esteem
Academic Locus of Control
Conflictual Independence
Affective Quality of Attachment
Parental Fostering of Autonomy
Parental Role in Providing Emotional Support
Positive Life Events
Negative Life Events
ACADEMIC
PERSONALITY
FAMILY
ENVIRONMENT
COPING
COLLEGE ADJUSTMENT
ACADEMIC PERFORMANCE
Problem-Solving
Seeking Support
Avoidance
Satisfaction with Social Support
Academic
Personal
Social
Institutional
Semester GPA

Figure 1

CHAPTER TWO

METHOD

Participants

Participants were solicited from an undergraduate course required of all first-semester freshmen at a private, southwestern university. During the second week of the Fall Semester, a sample of 258 male and female freshmen was collected. During the twelth week of the semester, the adjustment to college questionnaire (SACQ) was again administered to the same sample. Finally, information regarding semester credits earned and grade point average for all participants was obtained from the registrar at the end of the Fall Semester.

Of the original 258 students sampled, fifteen were omitted for the following reasons: five withdrew from the university during the semester, three failed to complete the SACQ at week twelve, three dropped out of the university without withdrawing, and four did not have any standardized test scores (i.e., SAT or ACT). A two-way analysis of variance was conducted to determine if there were any differences between the group of subjects who completed the study (N = 243) and those who did not (N = 15) on the observed variables. No significant differences between

these groups were found. Of the completed questionnaire packets, the registrar did not provide a high school class rank for 15 students. To avoid the loss of additional subjects, class rank was omitted as a variable in the measurement model. Thus, 243 participants constitute the final sample on which all prospective analyses were based. Demographic characteristics for these participants is presented in Table 1.

Measures

Demographic Questionnaire. A demographic questionnaire was developed to obtain information regarding age, gender, marital status, racial/ethnic group, place of residence, and satisfaction with distance from home. Specific information about the parent(s) or guardian(s) with whom the student resided, level of education and occupation was used to compute a modified form of the Hollingshead (1975) Four Factor Index of Social Status. Four Factor scores were calculated by multiplying both spouses or guardians with whom the student resided by a factor of 3 and their occupational status by a factor of 5. The scores for both spouses were then summed and averaged. When only one parent or guardian resided with the child, the score was calculated by multiplying the level of education and occupation by Hollingshead's original factors and summing the scores for education and occupation for that one parent. Hollingshead

Table 1

Demographic Statistics

Characteristics	N	%	Mean	S.D.	Range
Age (years)	243		18.05	.40	17-20
Gender					
Females	166	68.3%			
Males	77	31.7%			
Ethnicity					
Black	11	4.5%			
White	210	86.4%			
Hispanic	20	8.2%			
Asian-American	1	.4%			
Religious Preference					
Catholic	19	7.8%			
Protestant	186	76.5%			
Other	31	12.8%			
None	7	2.9%			
Residence					
Dormitory	213	87.7%			
Home w/Parents	28	11.5%			
Apartment	2	.8%			
Parent's Mar. Status					
Married	185	76.1%			
Divorced	51	21.0%			
Separated	1	.4%			
Never Married	4	1.6%			
Other	2	.8%			

reported a correlation coefficients between median years of school and occupational score as .84 for males and .85 for females.

Academic Self-Concept. The Brookover Self-Concept of Ability (SCA; Brookover, Thomas, & Paterson, 1964) measures students' perceptions of their academic ability. The scale consists of eight multiple-choice items, and each item has five response alternatives with higher self-concept alternatives receiving higher values ("I am the best"= 5; "I am above average"= 4) and the lower self-concept alternatives, the lower scores ("I am below average"= 2; "I am the poorest"= 1). Thus, the total score may range from 8 (very poor academic self-concept) to 40 (very positive academic self-concept), and is interpreted as the degree to which students believe themselves intellectually capable of succeeding in college.

Brookover et al. (1964) reported test-retest coefficients of .95 for men and .96 for women, and internal reliability coefficients of .82 for men and .77 for women. Similarly, the Cronbach alpha calculated on the current sample was .76. Predictive validity coefficients for the SCA and various subject area achievement tests have been reported to range from .52 to .88 (Shavelson, Hubner, & Stanton, 1976). In meta-analyses, Hansford and Hattie (1982) found the SCA correlated the highest with academic

performance measures (M = .43 in 18 studies analyzed) among a group of nine self-concept measures. Finally, the SCA has been found to significantly and consistently correlate with various English self-concept scales, as well as with grades in English and mathematics courses (Byrne & Shavelson, 1987). Taken together, these findings indicate that the SCA is a reliable and valid instrument for measuring academic self-concept.

Self-esteem. The Rosenberg Self-Esteem Scale (SES; Rosenberg, 1965) measures the self-acceptance dimension of self-esteem, consisting of ten items regarding feelings of self-like and respect versus worthlessness. Individuals are asked to rate their level of agreement with each item based on a four-point Likert scale ranging from 1 (strongly agree) to 4 (strongly disagree). Guttman scoring is used to determine the overall self-esteem score: two or three resonses indicating high self-esteem on the first 3 items are scored as one item, two responses indicating high self-esteem on the 4th and 5th items are scored as one item, and two responses indicating high self-esteem on the 9th and 10th items are scored as one item. The remaining three items are scored individually, thus, the self-esteem score can range from 0 (low self-esteem) to 6 (high self-esteem).

Over a two-week period, the test-retest reliability has been found to be high (r = .85), suggesting that the scale

is stable over time (Robinson & Shaver, 1973). As for the internal consistency of the SES, the Cronbach alpha for the current sample was adequate (r = .73). Robinson and Shaver (1973) also found moderate correlations between the SES and scores on the Coopersmith Self-Esteem Inventory (r = .59), and with the California Psychological Inventory Self-Acceptance scale (r = .66).

Academic Locus of Control. The Academic Locus of Control Inventory (ALC; Trice, 1985) is a 28-item, self-report inventory designed to measure beliefs in personal control over academic outcomes. Individuals respond to each item by indicating that it is either true or false as applied to them. Scores on the scale are derived from summing the number of externally answered items; thus, total scores may range from 0 (internally oriented) to 28 (externally oriented).

Trice (1985) reported a Kuder-Richardson-20 (KR20) reliability coefficient of .70. Similarly, the Cronbach alpha for this sample was calculated to be .71, indicating an adequate level of internal consistency. Test-retest reliability over a five-week period (r = .92) indicates significant stability. As evidence for the scale's construct validity, product-moment correlations with the Rotter I-E scale were significant (r = .50). For students in psychology courses, significant negative correlations

were found between scale scores and both final exam grades (r = -.32) and attendance (r = -.30), indicating that externally oriented students scored lower on the final exam and missed more classes. Finally, discriminant and convergent validity data seem to be adequate for research purposes (Trice, 1985).

Goal Instability. The Goal Instability Scale (GIS; Robbins & Patton, 1985) is a ten-item self-report measure developed to assess the individual's goal directedness. Items are rated on a 6-point Likert scale from (1) strongly like me to (6) not at all like me. Example items include, "It's hard to find a reason for working" and "I wonder where my life is headed". A total score is calculated by summing all the responses with higher total scores indicating more goal directedness (less goal instability).

Test-retest reliability over a two-week period (r = .76) and inter-item consistency (alpha coefficient of .81) indicate that the GIS has adequate stability (Robbins & Patton, 1985). The alpha value for the current sample (r = .83) provides further support for the internal consistency of the scale. Regarding its validity, the GIS has been shown to correlate positively with measures of personal competency (.46), study skills (.46), and course grade (.31) (Scott & Robbins, 1985). In addition, the GIS correlated as expected with career indecision (-.22) with students scoring

higher on goal instability (low goal-directed) indicating more career indecision (Robbins & Patton, 1985).

Optimism. The ten-item revised Life Orientation Test (LOT-R; Scheier, Carver, & Bridges, 1994) was used to measure generalized expectancies for positive versus negative outcomes. Only six of the ten items are used to derive an optimism score, with the remaining four item used as filler items. Respondents indicate the extent of their agreement with each item using the following response format: 0 = strongly disagree, 1 = disagree, 2 = neutral, 3 = agree, and 4 = strongly agree. Of the six scored items, three are negatively worded and must be reverse coded before scoring. A total scores is obtained by summing across the six items, and a higher score indicates a more optimistic orientation.

The LOT-R has an acceptable level of internal consistency (Cronbach's alpha = .78) and is fairly stable over time with a test-retest reliability correlation of .79 over 28 months (Scheier et al., 1994). The Cronbach alpha for the current sample was also adeequate (r = .74). As evidence for the scale's validity, Scheier et al. (1994) reported that the LOT-R correlated positively with self-mastery (.48) and self-esteem (.50), while correlating negatively with anxiety (-.53) and two measures of neuroticism (-.43 and -.36). Thus, the LOT-R appears to

possess adequate convergent and discriminant validity.

Attachment. The 55-item Parental Attachment Questionnaire (PAQ; Kenny, 1990) measures student-parent attachment on three scales derived from factor analysis: Affective Quality of Attachment, Parental Fostering of Autonomy, and Parental Role in Providing Emotional Support. Students respond to each item based on a five-point Likert scale from 1 (not at all) to 5 (very much) in order to describe their parents, their relationship with their parents, and their feelings or experiences. One response is requested for both parents; therefore, separate scores for mother and father are not provided.

The PAQ has been shown to have adequate internal consistency for all three subscales (ranging from .88 to .96) and test-retest stability (ranging from .82 to .91) (Kenny, 1990). The Cronbach alphas for the current sample were also adequate (ranging from .83 to .94). Regarding validity, the three factors are theoretically consistent with Ainsworth et al.'s (1978) conceptualization of attachment as an enduring affective bond, which serves as a secure base in providing emotional support and in fostering autonomy and mastery of the environment. Kenny (1990) provided further support for the PAQ's validity by finding predictable significant relationships between the PAQ factors and subscales of the Moos Family Environment Scale.

Separation-individuation. The 50-item Conflictual Independence scale (CI) of the larger 138-item Psychological Separation Inventory (PSI; Hoffman, 1984) measures the extent to which late adolescent's separation from parents is free from feelings of guilt, mistrust, anger, and resentment. First derived rationally, the scale was then supported by confirmatory factor analysis. Students respond to each item using a five-point Likert scale from 1 (not at all true of me) to 5 (very true of me); summing the items yields a total scale score. Higher CI scores are considered to be indicative of a more positive and less reactive parent-student relationship (Lopez, Watkins, Manus, & Hunton-Shoup, 1992).

As evidence for the reliability of the CI scale, Hoffman (1984) reported Cronbach alpha reliability coefficients ranging from .88 to .92, and two- to three-week test-retest reliability of .74 to .96. The scale's internal consistency proved adequate for the current sample (r = .92). Correlations with indices of personal adjustment provided support for the validity of the PSI (Hoffman, 1984). Several researchers (e.g., Lopez et al., 1992) have elected to use only the CI scale, instead of the entire PSI, because CI scores have been found to be (a) generally uncorrelated with the other PSI scale scores and (b) a more consistent and prominent predictor of indexes relative to

the other scales (Lopez & Gover, 1993).

Of the 50 items in the CI scale, 25 yield information about separation from mother and an identical 25 items yield information about separation from father. Consistent with previous research (Kenny & Donaldson, 1992; Lopez et al., 1988; Rice et al., 1990) the mother and father scales will be combined in this study so that overall parental separation is indicated for the CI scale. In support of this decision, Kenny & Donaldson (1992) found that internal consistency alphas for their sample improved slightly when the mother and father scales were combined (ranging from .91 to .94) as compared to when they were separate (ranging from .86 to .93).

Environmental Stressors. The 112-item College Student Life Events Schedule (CSLES; Sandler & Lakey, 1982) will be used to measure life stress. The CSLES was developed to adequately assess the specific kinds of stressors that the college population experiences. Each item represents an event, and participants indicate whether or not it occurred in the past 12 months of their lives. For the events they did experience, students rate the impact of the event by choosing one of four responses: -2 (very negative), -1 (slightly negative), 1 (slightly positive), and 2 (very positive). The negative items can be summed to yield a negative life events score, and the positive responses can

be summed to yield a positive life events score.

The CSLES was found to have a test-retest reliability of .92. As evidence for its validity, the CSLES was also found to correlate (r = .62) with the Life Experience Scale, another well tested measure of life stressors (Sandler & Laskey, 1982).

Social Support. The Perceived Social Support Scale (PSS; Procidano & Heller, 1983) was used to assess the extent to which a student "believes that his/her needs for support, information, and feedback are fulfilled" (p. 2). The PSS was developed and validated for use with college students and includes two subscales: Perceived Social Support-Family (PSS-Fa) and Perceived Social Support-Friends (PSS-Fr). Each scale contains 20 declarative statements, regarding support from "friends" or support from "family", which are answered either "yes" or "no". The response indicative of perceived support is scored 1 and the other response is scored 0. Of the two subscales, PSS-Fa has been found to have a stronger negative relationship with symptoms of distress and psychopathology (Procidano & Heller, 1983), and the current study will include only the PSS-Fa.

Regarding validity, the PSS-Fa has been shown to correlate highly (.65) with another measure of support, the Social Support Questionnaire (Sarason, Sarason, Shearin, & Pierce, 1987). The PSS-Fa also has high internal

consistency with a KR20 of .90 (Procidano & Heller, 1983). Similarly, the Cronbach alpha calculated for the current sample was .90.

Coping. The Coping Strategy Indicator (CSI) is a 33-item questionnaire that was used to measure three fundamental modes of coping: problem-solving, seeking social support, and avoidance (Amirkhan, 1990). Students were asked to think about the recent transition to college and the related problems associated with this transition. They were then asked to respond to questions that indicated how they dealt with the problem, such as "Let your feelings out to a friend" and "Tried to distract yourself from the problem". Participants indicated whether they utilized each item "a lot" (3 points), "a little" (2 points), or "not at all" (1 point). To score the questionnaire, items are broken into the three subscales and summed. Scores for each subscale may range from 11 to 33 with higher scores indicating more utilization of that type of coping response.

At four to eight weeks, test-retest coefficients for student and community samples ranged from .77 to .86 (Amirkhan, 1990). Cronbach's alpha coefficient indicated high internal reliability for the CSI scales: .84 for Avoidance, .89 for Problem-Solving, and .93 for Seeking Support. Cronbach’s alpha coefficients caluclated for the current sample were also adequate, ranging from .81, to .87,

to .74, for the respective subscales. In addition, Amirkhan (1990) reported modest support for the convergent validity of the CSI from significant correlations between the subscales and various personality characteristics, including: Problem Solving and internal locus of control (-.27), repression (-.23), and depression (-.14); Seeking Support and repression (-.21); and Avoidance and depression (.28).

Adjustment to College. The Student Adaptation to College Questionnaire (SACQ; Baker & Siryk, 1984) is a self-report inventory with 67 items that provides a full scale measure of general adjustment. In addition, it assesses four facets of college adjustment: academic, personal, social-emotional, and goal commitment-institutional attachment. Academic Adjustment measures how well the student manages the educational demands of the college experience. Social adjustment measures how well the student deals with interpersonal experiences at the university (e.g., meeting people or joining organizations). Personal-emotional adjustment measures the extent that the student experiences general psychological distress or the somatic consequences of distress. Finally, Goal Commitment-Institutional Attachment measures the degree of institutional affiliation the student feels toward the university. Students respond to each item by rating how

closely it applies to them on a 9-point Likert scale. Summing the item scores for each factor, and all 67 items for the total score, yields the adjustment scores. Higher scores indicate greater perceived adjustment.

On the basis of two independent samples, Baker and Siryk (1986) reported coefficient alphas for the Full Scale (.91 and .92) and the subscales (ranging from .79 to .92) that reflect a high degree of internal consistency for each scale. The internal consistency of the Full Scale and the subscales were further supported by adequate Cronbach alphas for the current sample at both administrations (r values ranged from .83 to .94). Evidence for criterion validity includes predicted significant relationships with attrition, use of psychological services, grade point average, and participation in social events (Baker & Siryk, 1986).

Procedure

Before administering questionnaire packets, the examiner gave participants a statement of the study's general purpose (i.e., to investigate the relationship between various psychological factors and college adjustment) as well as information regarding anonymity, confidentiality, and their right to discontinue participation at any time. Participants were asked to sign consent forms. They completed the demographic questionnaire, SCA, SES, ALC, PAQ, CI, CSLES, PSS-Fa, and

CSI during a class period in the second week of the semester. Following a longitudinal design, the same group of students completed the SACQ during the twelth week of the semester. Finally, student I.D. numbers were used to obtain information from the registrar (i.e., high school rank, SAT or ACT score, number of credit hours taken for the semester, and grade point average for the semester).

The timing of administration was important because of variance in potential stressful events during a semester. The second week of the semester was chosen for the first administration in order to give students a chance to experience some of the stressors associated with the transition to college (e.g., attending all of their classes at least once). The second administration was the twelth week of school so that students had completed midterm exams and still had considerable time before the stress of finals.

Data Analysis

Structural equation modeling (SEM) is a statistical technique that is utilized to (a) investigate the hypothesized relationship between unobserved (latent) and observed (measured) variables, and (b) determine the plausibility of the hypothesized model in the specified sample. Structural equation modeling involves a number of steps, most of which have been made easier with the advent of certain computer software packages.

Linear Structural Relations Analysis (LISREL), developed by Joreskog and Sorbom (1978), uses maximum likelihood (ML) or generalized least squares (GLS) procedures to examine patterns of relationships among latent or unobserved variables. In the current study, LISREL8.3 (Joreskog & Sorbom, 1993), published by Scientific Software, was used to evaluate the entire measurement model and to determine the best fitting, most parsimonious causal model. LISREL incorporates a mathematical and statistical approach to the analysis of linear structural relationships, using matrix algebra, and its outputs include parameter estimates and several goodness of fit indices.

Perhaps the most widely used goodness of fit index provided by LISREL is the chi-square test. The chi-square statistic provides a test of the null hypothesis that the model holds exactly in the population. If the null hypothesis is correct, then the obtained chi-square value should be small and the corresponding probability value should be relatively large. Thus, a significantly large p value would indicate that the model fits the data. Determining model fit based on chi-square criterion has been criticized because different decisions about the same models fit may be made depending on the sample size (Marsh, Balla, & McDonald, 1988). For this reason, chi-square should be supplemented with other goodness of fit criteria that are

not affected by sample size.

Other measures of fit include Bentler and Bonett's (1980) normed-fit index (NFI), non-normed fit index (NNFI), Bentler's (1989) comparative fit index (CFI), and the goodness of fit index (GFI). Although possible values of these indices vary, values over .90 are indicative of an acceptable fit of the model to the data. The root mean square error of approximation (RMSEA) is another measure of fit with smaller RMSEA values (less than .05) associated with acceptable fit. The overall fit of the proposed model in this research was assessed using all of the aforementioned criteria.

Often times in SEM analysis, it is necessary to modify the model when the proposed model does not fit the data well. Modification involves either freeing or fixing model parameters. A free parameter's value is unknown and has to be estimated, whereas a fixed parameter has a known value which has been determined a priori by the researcher. If the t-value of a free parameter is not significant, then it is probable that the parameter in the population is zero and thus, the parameter in the model should be fixed. In this case, the fit of the model will deteriorate slightly, although it will be more parsimonious. The second type of modification involves freeing a previously fixed parameter. The decision to free a parameter is based on the values of

the parameter's modification indices and theoretical justification. LISREL8.3 output provides a modification index which indicates the minimum improvement (decrease in chi-square value) that would be associated with freeing a parameter. In freeing a parameter, the overall fit of the model will be improved although the model will be less parsimonious.

Although modifying a model in the manner described above may increase the fit, the risk is that the model will be invalid; that is, the model will not generalize to other samples or the population of interest. Invalid models occur because modifications very often capitalize on chance characteristics of the sample data. MacCallum et al. (1986) provided the following recommendations to minimize the dangers associated with modification of structural equation models: (1) use large sample sizes, (2) have a well-formulated initial model, in that the correspondence between it and the true model is high, and (3) make modifications only after theoretical justification.

The conditions important in achieving model validity (e.g., large sample size and theoretical basis for model construction and modification) were carefully regarded over the course of these analyses and subsequent modifications. With regards to sample size, Hatcher (1994) recommends a ratio of at least five subjects for each parameter to be

estimated. With 243 completed questionnaire packets, the number of subjects easily exceeded Hatcher's (1994) criteria. Of equal importance with regards to validity, the model proposed in the current study was based on theory (Moos & Swindle, 1978) and previous research (e.g., Aspinwall & Taylor, 1992).

CHAPTER THREE

RESULTS

Descriptive Analyses

Prior to analyses, all variables in the data set were examined through SPSS programs for accuracy of data entry, missing values, and fit between distributions and assumptions of multivariate analyses. Assumptions of multivariate normality were not met since some of the variables showed a significant amount of skewness and/or kurtosis (see Table 2).

To correct for the violation of assumptions so that LISREL analyses would be valid, the data were robustified using a SAS program that in effect corrects for outliers in the data set. Robustification employs the use of Mahallonobo's distance to determine the distance of each subject from the group's centroid with less weight given to outlying subjects. Thus, the downweighted outliers make less of a contribution to the covariance matrix, thereby helping to achieve multivariate normality (Bentler & Yuan, 1998). By using a correlation matrix with the robustified data, the maximum likelihood (ML) estimation method could be utilized when testing the measurement and causal models.

Next, the internal consistency of the measures was

computed. All of the scales proved reliable with internal consistencies ranging from .70 to .94 (see Table 3). Intercorrelations among all scales were computed, with most being less than .70 (see Table 4) which reduces the risk of multicollinearity (Hatcher, 1994). Two of the measures, Parental Role in Providing Emotional Support Scale of the Parental Attachment Questionnaire (PAQ3) and the Institutional Attachment Scale of the Student Adaptation to College Questionnaire, were dropped from further investigation because of their high intercorrelations with other scales and the amount of item overlap with other scales. The Psychological Separation Inventory's conflictual independence scale also correlated strongly with the remaining two subscales of the Parental Attachment Questionnaire; however, all these scales remained in the analyses because they all loaded on the same latent factor, Family Characteristics.

Model Analyses

To begin the model analysis, the entire measurement model, including all the latent constructs (e.g., Academic, Personality, Family, Environmental, Coping, College Adjustment, and Academic Performance) was evaluated through LISREL8.3. The measurement model determines how the latent variables relate to the observed variables; and for this model, all of the observed variables

evidenced significant loadings on their respective latent factors. Specifically, SAT and Academic Self-Concept loaded on the Academic Factor; Optimism, Goal-Instability, Self-Esteem, and Locus of Control loaded on the Personality Factor; Conflictual Independence, Affective Quality of Attachment, and Parental Fostering of Autonomy loaded on the Family Factor; Positive and Negative Life Events loaded on the Environment Factor; Problem-Solving, Seeking Support, Avoidance, and Satisfaction with Support loaded on the Coping Factor; Academic, Personal, and Social Adjustment loaded on the College Adjustment Factor; and GPA loaded on the Academic Performance Factor. Next, the structural equation causal model was analyzed to identify the best fitting, most parsimonious model. Based on theory and research, a causal model was hypothesized to determine the importance of the exogenous variables in predicting college adjustment and performance. In the model, Academic Characteristics, Personality Characteristics, Family Characteristics, and Environmental Characteristics were conceptualized as independent (exogenous) latent variables, while Coping Resources, College Adjustment, and Academic Performance were conceptualized as dependent (endogenous) latent variables (See Figure 1).

Initial attempts to fit the structural model to the sample data were unsuccessful, thus a series of

modifications were undertaken. Modifications were limited to those that were consistent with previous research and theory and were accepted only if they produced a significant change in chi-square. LISREL8.3 provides a preliminary solution when the structural model does not fit the data so that the source of the problem can be traced. Based on this tentative solution, a few modifications were made. Within the theta-delta matrix (i.e., measurement errors in the independent variables), the measured variable Fall GPA had a negative error variance. In regards to a situation with a nonpositive theta-delta matrix, Kaplan (1989) suggests setting the error to a small positive value. Following a procedure outlined by Bollen (1989), the error variance of the observed variable Fall GPA was set equal to one minus the scale reliability times the variance of the measure. Since a reliability coefficient could not be calculated on this scale, scale reliability was estimated at .90 as suggested by Joreskog and Sorbom (1993). This procedure corrected the negative error variance for Fall GPA.

A second series of modifications included correcting for highly correlated error variances between two sets of measured variables. Within the theta-delta matrix, the exogenous measured variables of Goal Instability (GIS) and Self-Esteem (SES) had highly correlated error variances. Similarly, within the theta-epsilon matrix, the endogenous

Table 2

Test of Multivariate Normality

Variable	Skewness		Kurtosis	
	Z-Score	P-Value	Z-Score	P-Value
SAT	0.70	.484	-0.08	.936
GPAFALL	-2.70	.007	0.35	.725
SCA	-1.70	.089	-0.99	.324
SES	-3.38	.001	3.07	.002
ALC	0.68	.499	-1.62	.106
PAQ1	-3.10	.002	1.33	.183
PAQ2	-3.25	.001	2.12	.034
PAQ3	-2.95	.003	1.81	.071
PSI	-3.41	.001	2.81	.005
NEGLE	3.42	.001	3.90	.000
POSLE	2.43	.015	0.85	.394
PSS	-3.68	.000	3.82	.000
CSI1	-2.53	.012	0.52	.607
CSI2	-2.60	.009	-1.27	.204
CSI3	1.72	.086	-2.37	.018
LOT	-0.77	.441	-1.17	.243
GIS	-0.50	.612	-1.32	.185
ACADADJ3	0.68	.498	-2.66	.008
SOCADJ3	-2.74	.006	0.51	.607
PERSADJ3	-2.00	.045	-1.89	.235
ATTAADJ3	-2.65	.008	-0.97	.334

Note. SAT = SAT Score; GPAFALL = Fall Semester Grade Point Average; SCA = Academic Self-Concept; SES = Self-Esteem; ALC = Academic Locus of Control; PAQ1 = Affective Quality of Attachment with Parents; PAQ2 = Parental Fostering of Autonomy; PAQ3 = Parental Role in Providing Emotional Support; PSI = Independence from Parents Free from Emotional Conflict; NEGLE = Negative Environmental Events; POSLE = Positive Environmental Events; PSS = Perceived Social Support; CSI1 = Problem-Solving Coping; CSI2 = Seeking Social Support Coping; CSI3 = Avoidance Coping; LOT = Optimism; GIS = Goal Instability; ACADADJ3 = Academic Adjustment at week 12; SOCADJ3 = Social Adjustment at week 12; PERSADJ3 = Personal Adjustment at week 12; ATTAADJ3 = Institutional Adjustment at week 12.

Table 3

Descriptive Statistics for Measured Variables

Variable	# Items	Mean	S.D.	Internal Consistency
SAT		994.40	142.69	
GPAFALL		2.63	.86	
SCA	8	31.21	3.49	.75
SES	10	4.79	1.33	.73
ALC	28	9.86	4.04	.70
PAQ1	23	94.63	14.74	.94
PAQ2	14	54.47	9.82	.89
PAQ3	13	48.24	8.23	.82
PSI	24	79.59	15.39	.92
NEGLE		11.10	8.37	
POSLE		32.07	12.89	
PSS	20	16.65	4.35	.90
CSI1	11	25.56	4.63	.87
CSI2	11	25.91	5.26	.91
CSI3	11	19.78	4.61	.82
LOT	10	14.79	3.90	.75
GIS	10	40.50	8.22	.82
ACADADJ3	24	148.16	28.30	.89
SOCADJ3	20	136.49	25.79	.89
PERSADJ3	15	90.89	21.38	.85
ATTAADJ3	15	106.47	20.50	.88
FULLADJ3	67	434.08	71.16	.94

Note: GPAFALL = Fall Semester Grade Point Average, scores range from 0.0 to 4.0; SAT Score = Scholastic Aptitude Test, scores range from 580 to 1400 for this sample; SCA = Academic Self-Concept, scores range from 8 [poor academic self-concept] to 40 [positive academic self-concept]; SES = Self-Esteem, scores range from 0 [low self-esteem] to 6 [high self-esteem]; ALC = Academic Locus of Control, scores range from 0 [internally oriented] to 28 [externally oriented]; PAQ1 = Affective Quality of Attachment with Parents, scores range from 23 [poor affective quality] to 115 [high affective quality]; PAQ2 = Parental Fostering of Autonomy, scores range from 14 [no fostering of autonomy] to 70 [healthy fostering of autonomy]; PAQ3 = Parental Role in Providing Emotional Support, scores range from 13 [no emotional support] to 65 [appropriate emotional support]; PSI = Independence from Parents Free from Emotional Conflict, scores range from 25 [conflicted parent-student relationship] to 125 [positive parent-student relationship]; NEGLE = Negative Environmental Events, scores range from 0 [no negative life

Table 3 (Continued)

events] to 224 [many events negatively impacting life]; POSLE = Positive Environmental Events, scores range from 0 [no positive life events] to 224 [many events positively impacting life]; PSS = Perceived Social Support, scores range from 0 [no support from family] to 20 [good support from family]; CSI1 = Problem-Solving Coping, scores range from 11 [no use of problem-solving] to 33 [extensive use of problem-solving]; CSI2 = Seeking Social Support Coping, scores range from 11 [no seeking support] to 33 [extensive seeking of support]; CSI3 = Avoidance Coping, scores range from 11 [no use of avoidance] to 33 [extensive use of avoidance]; LOT = Optimism, scores range from 0 [no optimism] to 24 [very optimistic]; GIS = Goal Instability, scores range from 10 [no goal directedness] to 60 [very goal directed]; ACADADJ3 = Academic Adjustment at week 12, scores range from 24 [poorly manages educational demands of college] to 216 [manages educational demands well]; SOCADJ3 = Social Adjustment at week 12, scores range from 20 [poor social adjustment] to 180 [very good social adjustment]; PERSADJ3 = Personal Adjustment at week 12, scores range from 15 [extensive psychological distress] to 135 [no psychological distress]; ATTAADJ3 = Institutional Adjustment at week 12, scores range from 15 [no feeling of affiliation with college] to 135 [strong feelings of affiliation with college]; FULLADJ3 = Total Adjustment Score at week 12, scores range from 67 [very poor college adjustment] to 603 [very good college adjustment].

Table 4

Correlation Matrix for Indicator Variables

	SAT	SCA	RANK	SES	ALC	PAQ1	PAQ2	PAQ3	PSI	NEGL	POSL	PSS	CSI1	CSI2	CSI3	LOT	GIS
SAT	1.00																
SCA	.479	1.00															
RANK	-.512	-.403	1.00														
SES	.085	.232	.008	1.00													
ALC	-.040	-.357	.064	-.343	1.00												
PAQ1	.094	.115	-.058	.455	-.335	1.00											
PAQ2	.123	.109	-.054	.417	-.247	.772	1.00										
PAQ3	-.013	.064	-.070	.373	-.246	.819	.582	1.00									
PSI	.147	.109	-.063	.452	-.247	.773	.810	.573	1.00								
NEGL	-.101	-.091	.003	-.234	.232	-.205	-.168	-.107	-.273	1.00							
POSL	-.026	.180	-.095	.035	-.154	.065	.009	.120	-.032	.247	1.00						
PSS	-.017	.111	-.071	.330	-.231	.724	.572	.728	.564	-.097	.118	1.00					
CSI1	.095	.223	.002	.214	-.293	.239	.169	.230	.159	.004	.158	.303	1.00				
CSI2	.124	.035	-.017	.041	-.115	.248	.094	.298	.143	.004	.234	.250	.419	1.00			
CSI3	-.168	-.049	.111	-.348	.289	-.308	-.244	-.226	-.333	.477	.113	-.152	-.022	-.033	1.00		
LOT	.166	.255	-.138	.419	-.320	.368	.349	.305	.344	-.222	.059	.262	.298	.174	-.337	1.00	
GIS	.048	.286	.010	.412	-.531	.386	.389	.304	.389	-.234	.162	.264	.243	.028	-.395	.442	1.00
GPAF	.477	.258	-.445	.142	-.066	.206	.158	.226	.155	-.029	.055	.191	.125	.149	-.179	.157	-.013
FULL	.246	.328	-.225	.318	-.446	.355	.306	.315	.287	-.237	.072	.281	.216	.159	-.419	.374	.366
ACAD	.193	.305	-.201	.223	-.424	.291	.227	.281	.195	-.185	.037	.287	.212	.118	-.255	.246	.345
SOC	.176	.228	-.137	.183	-.306	.233	.218	.212	.194	-.146	.129	.177	.116	.166	-.334	.312	.238
PERS	.221	.222	-.210	.415	-.349	.343	.362	.302	.325	-.261	-.002	.248	.144	.070	-.483	.372	.316
ATTA	.185	.243	-.175	.142	-.356	.214	.164	.151	.164	-.145	.134	.119	.165	-.178	-.284	.233	.256

Table 4 (continued)

Correlation Matrix for Indicator Variables

GPAF	1.00					
FULL	.427	1.00				
ACAD	.477	.833	1.00			
SOC	.208	.800	.469	1.00		
PERS	.366	.808	.621	.518	1.00	
ATTA	.235	.797	.523	.836	.488	1.00
	GPAF	FULL	ACAD	SOC	PERS	ATTA

Note: SAT=Scholastic Aptitude Test; SCA=Academic Self-Concept; SES=Self-Esteem; ALC=Academic Locus of Control; PAQ1=Affective Quality of Attachment with Parents; PAQ2=Parental Fostering of Autonomy; PAQ3=Parental Role in Providing Emotional Support; PSI=Independence from Parents Free from Emotional Conflict; NEGL=Negative Environmental Events; POSL=Positive Environmental Events; PSS=Perceived Social Support; CSI1=Problem-Solving Coping; CSI2=Seeking Social Support Coping; CSI3=Avoidance Coping; LOT=Optimism; GIS=Goal Instability; GPAF=Fall Semester Grade Point Average; FULL=Total Adjustment Score at week 12; ACAD=Academic Adjustment at week 12; SOC=Social Adjustment at week 12; PERS=Personal Adjustment at week 12; ATTA=Institutional Adjustment at week 12.

measured variables of Problem-Solving (CSI1) and Seeking Support (CSI2) had highly correlated error variances. As suggested by LISREL8.3, freeing these parameters so they could correlate produced significant t-values and subsequently reduced the chi-square value for the model.

As a final modification, the preliminary solution from LISREL8.3 suggested that the error variances between the endogenous latent variables (PSI) of College Adjustment and Academic Performance were highly correlated. Again, by freeing this parameter and allowing the error variances to correlate between these two latent variables, the corresponding t-value was significant and the chi-square value for the model was reduced.

Despite these successful modifications, the solution for the model was still found to be nonadmissible (i.e., it failed to converge). In other words, the goodness of fit indices for the model never reached the significance level: chi-square(135, N = 243) = 649.64, p = 0.0, NFI = .68, NNFI = .64, CFI = .72, GFI = .79, RMSEA = .12 (see Table 5). The models nonconvergence is somewhat hard to explain given the significant amount of variance accounted for in all of the structural equations, meaning the exogenous latent factors were successful in predicting the endogenous latent variables to a large extent. For example, seventy-three percent of the variance of Coping was accounted for by the

latent variables Personality characteristics, Family Characteristics, and Environmental Stressors. In addition, examination of t-values in this equation revealed that all the variables were contributing significantly.

Failed efforts to produce a significant model fit led to a review of the literature that had supported the formation of the original model. Efforts were made to revise the model, consistent with previous theory and research, so that a convergent solution could be found. For example, when testing an empirical model that incorporated stress-coping theory and bulimia research, Street-Neiberding and Petrie (1996) used the same four scales (i.e., Problem-Solving, Seeking Support, Avoidance, and Perceived Social Support) for their latent variable Coping Strategies as were incorporated in the current study. Through exploratory and confirmatory factor analysis, Street-Neiberding and Petrie (1996) discovered that these scales loaded on two separate factors: Problem-Solving, Seeking Support, and Avoidance on a Coping Resources factor; and Perceived Social Support on a Support factor. This finding seems consistent with Pearlin et al.'s (1981) conceptualization of the stress process in which two distinct mediators of stress are distinguished: social support and coping.

Based on this information, the current model was revised into two models (1A and 1B) with the only difference

being what measured variables represented Coping as a latent factor. In model 1A, Coping Resources was represented by the scales of the Coping Strategy Indicator (i.e., problem-solving, seeking support, and avoidance). In model 1B, Coping Resources was represented by Perceived Social Support. Unfortunately, as was the case with the original model, both models 1A and 1B produced poor goodness of fit indices when analyzed in LISREL8.3 (see Table 5).

A final review of the literature exposed one other area where modification was warranted. In the most closely related study to the current investigation, Aspinwall and Taylor (1992) used two separate models for the prediction of College Adjustment and Academic Performance. Indeed, the path from College Adjustment to Academic Performance was the most highly speculative in the original model with only limited empirical support (e.g., Brooks & DuBois, 1995). Thus as a final modification, two separate models were created that differed only in their incorporation of endogenous variables. In model 2, Academic Performance was dropped so that College Adjustment was the final latent factor in the model. In model 3, College Adjustment was dropped so that Academic Performance was the final endogenous latent variable. As was the case with model 1, both of these models were further divided into models 2A, 2B, 3A, and 3B to incorporate the differences in the latent

variable Coping Resources (i.e., coping strategies in models 2A and 3A vs. perceived support in models 2B and 3B). Despite all of these modifications, models 2A, 2B, 3A, and 3B all proved to be nonconvergent with poor goodness of fit indices when analyzed using LISREL8.3 (see Table 5). Thus, attempts to find a good fitting, parsimonious model for College Adjustment and Academic Performance using separate models were no more successful than were the attempts with the original model that included both.

Regression Analysis

Since structural equation modeling analyses indicated the hypothesized model of college adjustment and academic performance did not accurately fit the sample data, regression analysis was utilized to provide at least some information from the current sample. Multiple regression analyses were performed to examine the degree to which academic, personality, family, environmental, and coping variables contributed to the prediction of college adjustment and academic performance.

In the first regression analyses, academic performance, as measured by Fall GPA, was used as the criterion variable. In hierarchical multiple regression, the order of entry of the independent variables is determined by the researcher based on theory and previous research. Thus, in keeping with the model proposed in the current study and confirmed

Table 5

Goodness of Fit Indices for the Models

Model	Chi-Square	df	p	NFI	NNFI	CFI	GFI	RMSEA
1	650	135	0.00	.68	.64	.72	.79	.12
1A	509	117	0.00	.72	.69	.76	.81	.12
1B	394	90	0.00	.77	.74	.81	.83	.12
2A	432	105	0.00	.74	.72	.78	.83	.12
2B	280	78	0.00	.82	.81	.86	.86	.11
3A	710	107	0.00	.57	.49	.60	.76	.14
3B	365	79	0.00	.77	.74	.80	.83	.13

Note: Model 1 = A priori model; Model 1A = Problem-solving, Seeking Support and Avoidance used as measured variables for the Coping Latent Factor; Model 1B = Satisfaction with support used as the measured variable for the Coping Latent Factor; Model 2A = Problem-solving, Seeking Support and Avoidance used as measured variables for the Coping Latent Factor, Academic Performance Latent Factor was left out of the model; Model 2B = Satisfaction with support used as the measured variable for the Coping Latent Factor, Academic Performance Latent Factor was left out of the model; Model 3A = Problem-solving, Seeking Support and Avoidance used as measured variables for the Coping Latent Factor, College Adjustment Latent Factor was left out of the model; Model 3B = Satisfaction with support used as the measured variable for the Coping Latent Factor, College Adjustment Latent Factor was left out of the model.

by further examination of the literature, variables eligible for entry on each successive step were as follows: academic variables (Academic Self-Concept, SAT Scores, and Class Rank), adjustment (Academic, Social, and Personal subscales of the Student Adjustment to College Questionnaire), personality variables (Self-Esteem, and Optimism), family characteristics (Conflictual Independence, Affective Quality of Attachment, and Parental Fostering of Autonomy), and coping resources (Seeking support, Avoidance, and Satisfaction with support). Because of the quantity of predictor variables in the analysis, all measured variables (i.e., Academic locus of control, Goal instability, Problem-solving coping, Positive life events, and Negative life events) that were nonsignificantly correlated with Fall GPA were excluded from the equation.

At the first step of the model, academic variables (SAT, Class Rank, and Academic Self-Concept) accounted for 27.6% of the variance in Fall GPA, F (3, 222)= 28.20, p < .001. At Step 2, adding the adjustment variables (Academic, Personal, and Social adjustment) accounted for an additional 14.9% of the GPA variance, Change F (3, 219)= 18.91, p <.001. At Step 3 of the model, the addition of the personality variables (Optimism and Self-esteem) did not add anything to the model, Change F (2, 217)= 0.20, p =.820. At Step 4, nothing was added to the model with the addition of

the family variables (Conflictual Independence, Affective Quality of Attachment, and Parental Fostering of Autonomy), Change F (3, 214)= 0.32, p =.808. After the final step, the addition of the coping variables (Seeking support, Avoidance, and Satisfaction with support) did not add anything to the model, Change F (3, 211) = 0.97, p =.409 (see Table 6). Although the full model was significant, F (14, 211) = 11.67, p <.001, the final three sets did not significantly add to the model. Thus, the most parsimonious model would be defined by the first two sets of predictors, in particular SAT score (Beta = .347, p < .001), Class Rank (Beta = -.231, p < .001), and Academic Adjustment (Beta = .395, p < .001). Students with higher SAT scores and a higher rank in their graduating high school class had a higher GPA at the end of their first semester in college. In addition, students who were better able to manage the educational demands of the university had a higher grade point average. No other significant relationships were found.

For the remaining regression analyses predicting college adjustment, the same three subscales of the SACQ (Academic,
Personal, and Social) utilized in the structural equation model were again employed, this time as criterion variables. Some thought was given to using either the Full Scale

Table 6

Stepwise Hierarchical Regression Examining the Relation of Predictor Variables to Academic Performance (GPA FALL)

Variables	B	Standard Error B	Beta
Step 1:			
SAT Score	1.99	.00	.33*
Class Rank	- .25	.06	-.28*
SCA	-4.49	.02	-.02
Step 2:			
SAT Score	2.09	.00	.35*
Class Rank	- .20	.05	-.23*
SCA	-2.71	.02	-.11
SOCADJ3	-2.66	.00	-.08
ACADADJ3	1.21	.00	.39*
PERSADJ3	2.56	.00	.06
Step 3:			
SAT Score	2.09	.00	.35*
Class Rank	- .21	.05	-.24*
SCA	-2.79	.02	-.11
SOCADJ3	-2.40	.00	-.07
ACADADJ3	1.21	.00	.40*
PERSADJ3	2.26	.00	.06
SES	2.16	.04	.03
LOT	-6.36	.01	-.03
Step 4:			
SAT Score	2.10	.00	.35*
Class Rank	- .20	.06	-.24*
SCA	-2.71	.02	-.11
SOCADJ3	-2.43	.00	-.07
ACADADJ3	1.17	.00	.38*
PERSADJ3	2.38	.00	.06
SES	1.39	.04	.02
LOT	-7.63	.01	-.04
PAQ1	5.31	.01	.09
PAQ2	-3.50	.01	-.04
PSI	-1.30	.01	-.02
Step 5:			
SAT Score	2.14	.00	.36*
Class Rank	- .20	.06	-.23*
SCA	-2.80	.02	-.12
SOCADJ3	-2.66	.00	-.08
ACADADJ3	1.13	.00	.37*
PERSADJ3	2.87	.00	.07
SES	1.67	.04	.03
LOT	-8.52	.01	-.04
PAQ1	4.14	.01	.00
PAQ2	-2.33	.01	-.03
PSI	-1.46	.01	-.03
CSI2	9.15	.01	.06
CSI3	-2.31	.01	-.00
PSS	1.89	.02	.10

Note: *p < .001. Step 1 R Square Change = .28, p < .001;

Table 6 (Continued)

Step 2 R Square Change = .15, $p < .001$; Step 3 R Square Change = .00, $p = .820$; Step 4 R Square Change = .00, $p = .808$; Step 5 R Square Change = .01, $p = .968$. GPAFALL = Fall Semester Grade Point Average, scores range from 0.0 to 4.0; SAT Score = Scholastic Aptitude Test, scores range from 580 to 1400 for this sample; Class Rank = Rank in high school class, ranks categorized as 1 [top 10%], 2 [11-25%], 3 [26-50%], 4 [51-75%], 5 [76-100%]; SCA = Academic Self-Concept, scores range from 8 [poor academic self-concept] to 40 [positive academic self-concept]; SES = Self-Esteem, scores range from 0 [low self-esteem] to 6 [high self-esteem]; PAQ1 = Affective Quality of Attachment with Parents, scores range from 23 [poor affective quality] to 115 [high affective quality]; PAQ2 = Parental Fostering of Autonomy, scores range from 14 [no fostering of autonomy] to 70 [healthy fostering of autonomy]; PSI = Independence from Parents Free from Emotional Conflict, scores range from 25 [conflicted parent-student relationship] to 125 [positive parent-student relationship]; PSS = Perceived Social Support, scores range from 0 [no support from family] to 20 [good support from family]; CSI2 = Seeking Social Support Coping, scores range from 11 [no seeking support] to 33 [extensive seeking of support]; CSI3 = Avoidance Coping, scores range from 11 [no use of avoidance] to 33 [extensive use of avoidance]; LOT = Optimism, scores range from 0 [no optimism] to 24 [very optimistic]; ACADADJ3 = Academic Adjustment at week 12, scores range from 24 [poorly manages educational demands of college] to 216 [manages educational demands well]; SOCADJ3 = Social Adjustment at week 12, scores range from 20 [poor social adjustment] to 180 [very good social adjustment]; PERSADJ3 = Personal Adjustment at week 12, scores range from 15 [extensive psychological distress] to 135 [no psychological distress].

Adjustment score as the regression criterion or using canonical correlation with all three subscales; however, based on theoretical definition, the three subscales seem to represent independent facets of college adjustment. As further support for examining the subscales separately, recent research with the SACQ (e.g., Bettencourt, Charlton, Eubanks, Kernahan, & Fuller, 1999; Tomlinson-Clark, 1998; Leong, Bonz, Zachar, 1997) has invariably found that the impact of various psychosocial and academic variables depends on the subscale examined. In addition to utilizing three separate equations to predict college adjustment, the remaining analyses differ from the prediction of academic performance in that stepwise regression was employed rather than hiearchical regression. Unlike the more consistent findings of the academic performance literature, there appears to be more discrepancies as to what variables are better predictors of adjustment. Thus, the stepwise multiple regression technique was employed so that the order of entry of predictor variables was statisitically determined.

With Academic Adjustment as the criterion variable, the following variables were utilized as predictors: SAT, Class Rank, Academic Self-Concept, Self-Esteem, Academic Locus of Control, Optimism, Goal Instability, Affective Quality of Attachment, Parental Fostering of Autonomy, Conflictual

Independence, Negative Life Events, Satisfaction with Social Support, Problem-Solving, and Avoidance. As was the case with previous regression analyses, two variables (Positive Life Events and Seeking Social Support) were not included in the predictor set because their correlation with academic adjustment was nonsignificant. The regression analysis revealed a model with three significant steps. Academic locus of control emerged as the first predictor accounting for 19.2% of the variance in Academic Adjustment, F (1, 224) = 53.25, p<.001. At step 2, Satisfaction with Social Support was added to the model and accounted for an additional 4.4% of the variance in Academic Adjustment, Change F (1, 223) = 12.92, p<.001. At step 3 of the model, the addition of Class Rank accounted for an additional 2.6% of the variance, Change F (1, 222) = 7.82, p<.01. None of the other variables were significant predictors of Academic Adjustment. Thus, the final model contained three steps that accounted for 26.2% (adjusted R square=.252) of the variance, F (3, 222) = 26.31, p<.001. Academic Adjustment (i.e., students ability to manage the educational demands of the university) was predicted by an internal locus of control (Beta = -.378, p < .001), more satisfaction with social support (Beta = .207, p < .01, and a higher high school class rank (Beta = -.162, p < .01), see Table 7.

Similar to Academic Adjustment, with Personal

Adjustment as the criterion variable, the following variables were utilized as predictors: SAT, Class Rank, Academic Self-Concept, Self-Esteem, Academic Locus of Control, Optimism, Goal Instability, Affectuve Quality of Attachment, Parental Fostering of Autonomy, Conflictual Independence, Negative Life Events, Satisfaction with Social Support, Problem-Solving, and Avoidance. Again, two variables (Positive Life Events and Seeking Social Support) were not included in the predictor set because their correlation with Personal Adjustment was nonsignificant. This regression analysis revealed a model with five significant steps. Avoidant Coping emerged as the most significant predictor, accounting for 24.0% of the variance in Personal Adjustment, F (1, 224) = 70.85, $p < .001$. At step 2, an additional 6.9% of the variance was accounted for with Parental Fostering of Autonomy entering the model, Change F (1, 223) = 22.42, $p < .001$. An additional 3.4% of the variance was accounted for after the addition of Academic Locus of Control at step 3, Change F (1, 222) = 11.51, $p < .01$. At step 4, Class Rank was entered the model and accounted for an additional 2.1% of the variance in Personal Adjustment, Change F (1, 221) = 7.23, $p < .01$. After the final step, adding Self-Esteem to the model accounted for an additional 2.0% of the variance, Change F (1, 220) = 7.04, $p < .01$.. None of the other variables

significantly influenced the criterion variable. Thus, the final model contained three steps that accounted for 38.4% (adjusted R square=.370) of the variance in Personal Adjustment, F (5, 220) = 27.45, p<.001. Consequently, less avoidant coping (Beta = -.325, p < .001), more fostering of autonomy from parents (Beta = .180, p < .01), an internal locus of control (Beta = -.155, p < .01), a higher class rank in high school (Beta = -.156, p < .01), and higher self-esteem (Beta = .165, p < .01) were all significant predictors of a better Personal Adjustment to college (see Table 8).

For the final criterion variable (Social Adjustment), the following variables were utilized as predictors: SAT, Class Rank, Academic Self-Concept, Self-Esteem, Academic Locus of Control, Optimism, Goal Instability, Affective Quality of Attachment, Parental Fostering of Autonomy, Conflictual Independence, Negative Life Events, Positive Life Events, Satisfaction with Social Support, Seeking Social Support, and Avoidance. Because of its nonsignificant correlation with Emotional Adjustment, one variable (Problem-Solving) was excluded from the predictor set. The regression analysis revealed a model with four significant steps. Optimism emerged as the most significant predictor of Social Adjustment, accounting for 11.7% of the variance, F (1, 224) = 29.61, p < .001. In step 2, an

additional 4.7% of the variance was accounted for by the addition of Avoidant Coping to the model, Change F (1, 223) = 12.46, p < .01. At step 3, the addition of Academic Locus of Control allowed the model to account for an additional 3.0% of the variance, Change F (1, 222) = 8.19, p < .01. After the final step, adding Seeking Social Support to the model accounted for an additional 1.4% of the variance in Social Adjustment, Change F (1, 221) = 3.91, p< .05. None of the other variables were significant predictors of the criterion variable when added to the model. The entire model accounted for 20.7% (adjusted R square=.193) of the variance in Social Adjustment, F (4, 221) = 14.45, p < .001. Better social adjustment was predicted by more optimism (Beta = .188, p < .01), less use of avoidant coping (Beta = -.201, p < .01), an internal locus of control (Beta = -.177, p < .01), and more seeking of social support (Beta = .120, p < .05), see Table 9.

Table 7

Stepwise Statistical Regression Examining the Relation of Predictor Variables to Academic Adjustment (ACADADJ3)

Predictor Variables	B	Standard Error B	Beta
Step 1:			
ALC	-2.98	.41	-.44*
Step 2:			
ALC	-2.62	.41	-.39*
PSS	1.38	.38	.22*
Step 3:			
ALC	-2.57	.40	-.38*
PSS	1.32	.38	.21**
CLASS RANK	-4.57	1.63	-.16**

Note: *p < .001, **p < .01. Step 1 R Square Change = .19, p < .001; Step 2 R Square Change = .04, p < .001; Step 3 R Square Change = .03, p < .01. ACADADJ3 = Academic Adjustment at week 12, scores range from 24 [poorly manages educational demands of college] to 216 [manages educational demands well]; ALC = Academic Locus of Control, scores range from 0 [internally oriented] to 28 [externally oriented]; PSS = Perceived Social Support, scores range from 0 [no support from family] to 20 [good support from family]; Class Rank = Rank in high school class, ranks categorized as 1 [top 10%], 2 [11-25%], 3 [26-50%], 4 [51-75%], 5 [76-100%].

Table 8

Stepwise Statistical Regression Examining the Relation of Predictor Variables to Personal Adjustment (PERSADJ3)

Predictor Variables	B	Standard Error B	Beta
Step 1:			
CSI3	-2.24	.27	-.49*
Step 2:			
CSI3	-1.95	.26	-.43*
PAQ2	.58	.12	.27*
Step 3:			
CSI3	-1.72	.26	-.38*
PAQ2	.50	.12	.23*
ALC	-1.03	.30	-.20**
Step 4:			
CSI3	-1.66	.26	-.36*
PAQ2	.49	.12	.23*
ALC	-1.01	.30	-.19**
CLASS RANK	-3.14	1.17	-.15**
Step 5:			
CSI3	-1.49	.27	-.33*
PAQ2	.39	.13	.18**
ALC	- .81	.30	-.16**
CLASS RANK	-3.37	1.16	-.16**
SES	2.66	1.00	.17**

Note: *$p < .001$, **$p < .01$. Step 1 R Square Change = .24, $p < .001$; Step 2 R Square Change = .07, $p < .001$; Step 3 R Square Change = .03, $p < .01$; Step 4 R Square Change = .02, $p < .01$; Step 5 R Square Change = .02, $p < .01$. PERSADJ3 = Personal Adjustment at week 12, scores range from 15 [extensive psychological distress] to 135 [no psychological distress]; CSI3 = Avoidance Coping, scores range from 11 [no use of avoidance] to 33 [extensive use of avoidance]; PAQ2 = Parental Fostering of Autonomy, scores range from 14 [no fostering of autonomy] to 70 [healthy fostering of autonomy]; ALC = Academic Locus of Control, scores range from 0 [internally oriented] to 28 [externally oriented]; Class Rank = Rank in high school class, ranks categorized as 1 [top 10%], 2 [11-25%], 3 [26-50%], 4 [51-75%], 5 [76-100%]; SES = Self-Esteem, scores range from 0 [low self-esteem] to 6 [high self-esteem].

Table 9

Stepwise Statistical Regression Examining the Relation of Predictor Variables to Social Adjustment (SOCADJ3)

Predictor Variables	B	Standard Error B	Beta
Step 1:			
LOT	2.24	.41	.34*
Step 2:			
LOT	1.66	.43	.25*
CSI3	-1.29	.37	-.23**
Step 3:			
LOT	1.34	.44	.20**
CSI3	-1.09	.37	-.20**
ALC	-1.17	.41	-.19**
Step 4:			
LOT	1.23	.44	.19**
CSI3	-1.11	.36	-.20**
ALC	-1.11	.41	-.18**
CSI2	.56	.30	.12***

Note: *p < .001, **p < .01, ***p < .05. Step 1 R Square Change = .12, p < .001; Step 2 R Square Change = .05, p < .01; Step 3 R Square Change = .03, p < .01; Step 4 R Square Change = .01, p < .05. SOCADJ3 = Social Adjustment at week 12, scores range from 20 [poor social adjustment] to 180 [very good social adjustment]; LOT = Optimism, scores range from 0 [no optimism] to 24 [very optimistic]; CSI3 = Avoidance Coping, scores range from 11 [no use of avoidance] to 33 [extensive use of avoidance]; ALC = Academic Locus of Control, scores range from 0 [internally oriented] to 28 [externally oriented]; CSI2 = Seeking Social Support Coping, scores range from 11 [no seeking support] to 33 [extensive seeking of support].

CHAPTER FOUR

DISCUSSION

An a priori structural equation model was used to test the impact of various predictor variables on adjustment to college and subsequent college performance. Of particular interest was whether academic factors, personality differences, environmental factors, and family variables would influence students adjustment to and performance in college and whether these relationships would be direct or mediated by the use of coping strategies or perceptions of social support. Although all relationships were in the expected directions and the variables accounted for significant amounts of variance, the overall fit of the model was poor. These findings suggest that either some important factors, such as cognitive appraisal and distance from home, were not considered or the way these factors interact was not successfully hypothesized. Further limitations of the current investigation will be discussed subsequently.

Based on the lack of support for the entire model, regression analyses were employed to determine the relationships between predictor variables and the following criterion variables: academic performance, academic

adjustment, personal adjustment, and social adjustment. In general, findings suggest that college adjustment and performance is a multidetermined phenomenon with the predictive weight of various academic, social, family, and individual variables depending largely on what criterion is used to define "college success".

For academic performance as measured by Fall GPA, SAT score and high school class rank accounted for a significant amount (28%) of the variance. These findings are consistent with the overwhelming majority of the literature (e.g., Larose & Roy, 1991; Malloch & Michael, 1981; Mathiasen, 1985; Neely, 1977; Ting & Robinson, 1998; Weitzman, 1982; Wesley, 1994) that suggests academic factors are the best predictors of who will successfully perform academically in college. Interestingly, students' academic adjustment at the 12th week of the semester accounted for a significant amount of the variance (15%) in Fall GPA above and beyond what was accounted for by SAT score and class rank. As expected, students who were better adjusted to the educational demands of the institution earned higher grades at the end of the fall semester. Although Tomlinson-Clarke (1998) utilized regression analyses to show that academic adjustment made an independent, positive contribution to grade point average, her study failed to consider the importance of previous achievement or ability. Thus, the

current findings extend the literature by indicating this relationship is significant even after accounting for previous academic achievement (class rank) and ability (SAT). Adjustment, at least in the form of adjusting to educational demands, was clearly found to be predictive of academic performance.

Academic adjustment itself was predicted by individual, social, and academic factors. Consistent with previous research (Martin & Dixon, 1989; Mooney et al., 1991), locus of control accounted for a significant amount of the variance (19%) in academic adjustment, with those students who believed they had personal control over academic outcomes (i.e., internal locus of control) being better adjusted. In addition, perceived social support made a significant incremental contribution, with students who were more satisfied with support being better adjusted. Although social support has been shown predictive of social adjustment (Brooks & DuBois, 1995; Kenny & Stryker, 1996) and overall adjustment as measured by the Full Scale score of the SACQ (Zea et al., 1995), this appears to be the first time perceived social support has been shown to be predictive of academic adjustment. This is most likely explained through examination of the Perceived Social Support Inventory - Family (PSS-Fa; Procidano & Heller, 1983) utilized in this investigation. The PSS-Fa was

designed to measure the extent to which an individual percieves that his or her needs for support (i.e., My family gives me the emotional support I need) and information (i.e., I get ideas about how to do things from my family) are being fulfilled by their family. Thus, it seems likely that parents who provide adequate social support for their son or daughter would also take the time to provide them with information needed to meet educational demands such as taking notes, preparing for tests, and being ready for the increased difficulty of college academics. Along with perceived social support and locus of control, class rank was predictive of academic adjustment. It is not surprising that those students who ranked higher in their graduating high school class were better able to handle the educational demands of college since presumably similar tasks (e.g., note-taking ability, test-taking ability) are associated with success at both levels.

As was the case with academic adjustment, the personal adjustment of college students was also predicted by a combination of individual, social, family, and academic factors. Thirty-eight percent of the variance in personal adjustment could be accounted for by the following variables: avoidant coping, parental fostering of autonomy, locus of control, class rank, and self-esteem. Consistent with the findings of Leong et al. (1997) in their study of

coping styles as predictors of college adjustment in freshmen, findings from the current investigation suggested that students who coped by avoiding problems experienced significantly more psychological (i.e., anxiety and depression) and physical (i.e., headaches and loss of appetite) distress. Although the mediating effects of coping found by Aspinwall and Taylor (1992) could not be substantiated in this study, the fact that a maladaptive coping style emerged as the strongest predictor of personal adjustment does indicate further investigation of this construct is warranted. With regard to the other significant predictors of personal adjustment, findings were supportive of previous research (e.g., Kenny & Donaldson, 1992) indicating that students who perceived that their parents fostered autonomy experienced less psychological distress. In addition, an internal locus of control and higher levels of self-esteem were positively related to personal adjustment, which was consistent with past research (Mooney et al., 1991).

Again demonstrating that adjustment is multidetermined, 21% of the variance in the social adjustment of the college freshmen was predicted by the following variables: optimism, avoidant coping, locus of control, and seeking social support. Results of the current investigation confirm previous findings (Aspinwall & Taylor, 1992; Chang,

1998) that highlighted the role of dispositional optimism and coping styles in college adjustment. Specifically, students who were more optimistic, sought social support, and refused to avoid their problems were better able to successfully deal with interpersonal experiences in college. As was the case with academic and personal adjustment, findings indicated that students with an internal locus of control were also better socially adjusted.

Taken together, results of the four regression analyses help to paint a picture of the successful college student. With regards to grade point average, a student's history of academic performance, academic ability, and adjustment to the educational demands of college were the best predictors of subsequent performance. Although several individual, family, and social variables were given the opportunity, none of these variables was able to predict a significant amount of the variance in Fall GPA beyond class rank, SAT score, and academic adjustment. Notwithstanding the lack of support for a direct link between these psychosocial variables and academic performance, results do seem to indicate that certain variables (i.e., locus of control and social support) indirectly impact performance through their influence on adjustment to college. This complex relationship certainly warrants further investigation. For now, despite a growing body of research that indicates

psychosocial variables may go beyond academic variables in predicting academic performance for "at-risk" students (Larose & Roy, 1991; Ting, 1997), utilization of these traditional measures is still likely to be the best way to identify who will succeed academically, especially for normally admitted students.

In addition to academic performance, a student's success in college should also be defined in terms of their adjustment. With this in mind, findings of the current study indicate that individual variables (i.e., locus of control, optimism, and self-esteem), family variables (i.e., parental fostering of autonomy), academic variables (i.e., class rank), and coping strategies (i.e., seeking support, satisfaction with support, and avoidant coping) all play a role in adjustment. Specifically, compared to their less adjusted counterparts, the well adjusted student is likely to have an internal locus of control, a higher self-esteem, a more optimistic disposition, parents who fostered independence, and a higher class rank. In addition, these well adjusted students appear to seek social support more, be more satisfied with the support they get, and deal directly with their problems. Obviously, these findings yield significant weight to the hypothesis that college adjustment and performance is a multidetermined, multifaceted phenomenon.

Limitations of the Study

No study is perfect in design or methodology, and this investigation is no exception. First, the time of administration (second week of first semester) of the questionnaire packet could have impacted the results. Although Aspinwall & Taylor (1992) also distributed their questionnaires to freshmen in the second week of their Fall semester, it could be argued that the students were not yet fully aware of all the demands and stresses of college (e.g., they probably had not even taken an exam yet). Since the coping measure employed in the study specifically asked students to respond in light of the stress associated with their recent transition to college, stress could possibly be underreported and subsequent coping responses may not have been utilized at that point. For example, students might have indicated use of more problem-solving and active coping if the questionnaire had been administered later in the semester when tests and other stressors were more salient. These administration timing issues were considered; however, the decision was made to give all the measures (excluding the SACQ that was given at week 12) at week two of the semester based on three points: it was important to get baseline measures of the psychosocial variables (e.g., self-esteem, psychological separation from parents, locus of control) before they were influenced by the college

environment, having access to a large a sample (N greater than 250) at a later point in time would have proven difficult, and previous research had utilized the second week for their administration of the coping measure (Aspinwall & Taylor, 1992). It can only be determined by future research whether the timing of administration of the coping measure had any impact on the nonconvergence of the hypothesized model of college success.

Another methodological limitation of the study may have been the analysis of men and women in the same model. Researchers (Sedlacek, 1996; Ting & Robinson, 1998) are beginning to argue that multivariate models to predict college success across gender are more effective than general models that include males and females. In other words, the same factors may not be predictive of the academic performance and adjustment of men and women. Although Ting & Robinson (1998) did find that some predictor variables differed by gender (i.e., science skills for women, financial aid and planning of work hours for men), they did not find any differences by gender for the predictor variables utilized in the current investigation. Additionally, the size of the sample for this investigation (N = 243) did not allow dividing by gender. Therefore, combining females and males for the analyses was both necessary and justifiable.

As a final possible methodological limitation, the generalization of the results may not go beyond a small private university with a predominately Caucasian student body. A review of the literature indicates that school size and/or environment have never been examined for their potential influences on college adjustment. However, it could be argued that college environment differs significantly based on factors such as student body size and cohesiveness. Only future research could determine whether these campus characteristics actually play a role in college adjustment. In contrast, research has clearly shown that race and ethnicity (Kenny & Stryker, 1996; Ting & Robinson, 1998; Zea et al., 1995) serve as moderators for the college adjustment process. For example, Zea et al. (1995) found that internal locus of control was positively related to adaptation to college for African-American, Latino, and white students, whereas the opposite was true for Asian Americans with external locus of control positively related to college adaptation. These findings clearly indicate that results of the current study from a sample comprised of 86% white students should not be overgeneralized to non-Caucasian student populations.

Treatment Implications

Despite the limitations of the study, the investigation does provide useful information for admissions personnel and

college counselors. Findings of the investigation could be used to profile what type of student is more likely to succeed and who may need greater attention and support. With so many factors proving predictive of college success, it is apparent that intervention efforts aimed at improving college adaptation and performance may occur at many levels (individual, academic, coping resources, family systems).

Although traditional admissions criteria (i.e., SAT score and class rank) were validated as predictive of college GPA, academic adjustment was shown to influence college performance above and beyond these factors. In addition to duplicating the results that showed academic adjustment was predictive of GPA, Tomlinson (1998) found that academic adjustment improved significantly every year a student was in college. These findings indicate that students may naturally adjust to the educational demands of the college experience over time. Taken together, these results seem to indicate that early efforts, such as seminars at orientation or a special training course in their first semester, to prepare new students for specific educational demands (e.g., note-taking, test-taking, time management) could subsequently improve the academic performance of students. Research has shown that freshman seminars are successful at promoting early academic adjustment (e.g., Schwitzer, McGovern, & Robbins, 1991).

Because students presenting themselves for help at college counseling centers are often times more concerned with their psychological well-being and adjustment than their grades, findings of the current study should be of particular interest to counselors. With locus of control significantly predicting all outcome measures of adjustment, it is apparent that counselors should use cognitive interventions to help students realize they have a choice with regards to how they view educational challenges and how they prepare themselves. Specifically, students who take responsibility for their adjustment and performance rather than hold to the faulty belief that fate, luck, or the whim of their professors determines their college success demonstrate better adjustment. As evidence for the significance of locus of control, Cone & Owens (1991) found that students participating in a freshman study skills course who initially scored more external ended the semester by scoring more internal on a measure of locus of control. Furthermore, these students had a higher grade point average at the end of the semester than had been predicted based on their ability and previous academic performance (Cone & Owens, 1991). Thus, locus of control can be impacted with intervention efforts, and students college success can be positively affected by these changes.

Closely related to students' taking responsibility for

their college adjustment, findings of the current study indicate that counselors also might encourage students to actively deal with their problems rather than use avoidance as a form of coping. Students also might benefit from efforts to bolster their social support networks. Since some of the factors predictive of college adjustment may be deeply ingrained in the student before they enter college (i.e., global self-esteem and optimism), interventions aimed at improving coping skills and social support resources may prove more efficient and effective for counselors. For example, small groups could be established in the residence halls to give new students a place to discuss issues related to their transition to college, thereby providing needed social support and encouraging active coping.

Areas for Future Research

The failure of the current study to provide an empirically verifiable model to predict college success leaves a great deal of room for future research. An organizing model of the academic performance and adjustment literature that is both theory-driven and based on previous research with multiple predictors is still needed. With all the empirical support for the various predictor factors included in the current model, future research should replicate the non-significant findings of this study before the model is completely abandoned. A good follow-up study

to this investigation might utilize basically the same model with a larger sample that could be divided between males and females because recent research (e.g., Ting & Robinson, 1998) seems to indicate that gender may moderate the relationship between predictor variables and adjustment. Of course, this research could also be extended by including a more diverse sample of men and women from other racial/ethnic groups.

The use of stress-coping theory to integrate various aspects of this literature also warrants further consideration for several reasons. First, the transition to college is a specific stressful life event that triggers the utilization of coping mechanisms (Moos & Swindle, 1990). Second, findings from this study indicate that coping styles and social support characteristics both influence various aspects of adjustment. Third, an overwhelming majority of past research has found similar interactions between coping, support, and adjustment (e.g., Brooks & DuBois, 1995). While still incorporating the same variables, future research might improve on the design of the current investigation by administering the coping measure at a more stressful time in the first semester (i.e., during the first round of exams). Also related to timing of administration, the literature could be extended by assessing baseline measures prior to the students' arrival on campus, such as

during the summer prior to their freshman year, so that their responses would not be confounded by their recent transition. As an additional improvement, perhaps a better understanding of coping and adjustment could be achieved by expanding this variable to include a student's appraisal of their situation. Lazarus and Folkman's (1984) stress theory defined psychological stress as a relationship between person and environment that is appraised by the person as both taxing or exceeding his/her resources and endangers the person's well-being. The current investigation's failure to consider the appraisal aspect of the stress-coping response leaves many questions unanswered (e.g., Did students even think the recent transition to college was stressful?, Were they even concerned about their grades/adjustment?). Future researchers investigating the relationships between college adjustment and stress-coping may do well to include student's appraisals in their models.

Conclusion

The current investigation examined an empirically-derived, theory-driven model of college adjustment and performance. Although the model was based in theory and included multiple predictors that had been previously shown to relate to college success, structural equation modeling analyses indicated that the model did not fit the data well. The study is important in that subsequent regression

analyses validated the view that college success is a multidetermined phenomenon with various academic, individual, social, and family variables playing a role. In addition, findings clearly point to the need for further refining of the model and future research in the area to provide some organization to this diverse body of literature.

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