

ABSTRACT

Title of Dissertation: COLLEGE STUDENT STRESS: WHO IS
RESILIENT? WHO IS VULNERABLE?

Jan Yeaman, Doctor of Philosophy, 1994

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This study explored and described the pervasive stress on college campuses. It focused on what it is that distinguished those students who did and those who did not develop physical, psychological and/or academic sequelae in response to exposure to stressors during their college experience. A comprehensive model of stress and coping, based on a review of the literature, was presented. The model was affirmed by the data analysis.

To conduct the research, 672 participants were randomly selected from those attending a Christian liberal-arts college in south central Pennsylvania. Of those who were selected and participated, 317 completed usable questionnaires. Data collection occurred over a one week period, using a self-report questionnaire. Subjects were categorized into Resilient (n = 43, 13.6%), Average (n = 96, 30.3%) and Vulnerable (n = 178, 56.1%) groups prior to data analysis.

Incorporated into the 192 item questionnaire was the *Brief Personal Survey* (Webb, 1988). It contains 88 items on nine subscales: denial, health distress, pressure-overload, anger-frustration, anxiety, depression, social support, philosophical-spiritual resources and coping confidence. Subjects also indicated their magnitude of stress on 78 items. The remaining items focused on demographics.

The data showed that Resilient subjects experienced less pressure-overload, anger-frustration, anxiety and depression than either Average or Vulnerable groups. Males and females were not found to differ with regard to pressure-overload, anger-frustration or depression. Females experienced higher levels of anxiety, stressor magnitude, health distress, social support and philosophical-spiritual resources.

Correlations between stressors were also reported, as were the rankings of stressors. These were presented on the basis of variables such as gender, academic year and academic major.

Because of the nature of the stressors identified, this study has shown the mutual importance of the curricular and cocurricular in the lives of college students. The findings of this research pointed out the clear and urgent need for various types of prevention and intervention programs. These were discussed from the perspective of institutional concerns, for curricular and cocurricular faculty, as well as for health educators.

**COLLEGE-STUDENT STRESS:
WHO IS RESILIENT?
WHO IS VULNERABLE?**

by

Jan Yeaman

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This dissertation has not only been a study of the stress of undergraduate college students, but a study of my own personal ability to cope with stress. My success in doing this is further confirmation of my firm conviction of the interdependence of all life. I am grateful to many persons and institutions who have directly and indirectly contributed to the formation of the thought and work presented in this volume.

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COLLEGE STUDENTS AND STRESS: WHO IS RESILIENT? WHO IS VULNERABLE?

CHAPTER ONE: STATEMENT of the PROBLEM

INTRODUCTION

A popular attitude persists that college students are engaged in a perpetual round of adventure and merriment and are, therefore, immune to stress. Those more closely involved with college students would not necessarily agree. Simpson-Kirkland (1983) observed that "while the college years may well be the most eventful and growth-producing years of a young person's life, there is often a darker side to this rosy picture" (p. 1). Thus, the classic image of blissful adolescence within the ivory tower is simply that: an image and not a reflection of reality. For vulnerable individuals, the immediate and long-term consequences of stress can be profound. Yet not all students succumb to stress physically, psychologically, academically or spiritually. In the midst of potentially stressful situations they appear to be resilient. They maintain their sense of well-being.

THE PURPOSE

This study is exploratory and descriptive. It seeks to understand what it is that distinguishes between those students who are stress resilient during the college experience and those who are vulnerable. This study seeks to identify: (1) sources of stress; (2) health distress level; (3) psychological distress level; (4)

stress-coping techniques; and (5) coping confidence related to college student stress. This dissertation also explores the relationships between many of the components of stress: sources, physical and psychological responses, coping techniques and coping confidence.

Self-report questionnaires will be used to gather these data, which will be analyzed to identify possible variables predicting which students will be resilient and which will be vulnerable. Such knowledge would greatly assist in the development of effective cocurricular and curricular programs and services for students. This knowledge would also add to the general understanding of the stress and coping techniques associated with the college-student population.

RESEARCH QUESTIONS

This research study seeks to answer the following questions:

1. What are the sources of stress associated with seeking an undergraduate degree?
2. Do vulnerable students report higher numbers of stressors than average or resilient students?
3. Do differences exist between resilient and vulnerable students with regard to sources of stress?
4. Do differences exist between resilient and vulnerable students with regard to feelings of pressure-overload, anger-frustration, anxiety, depression, coping confidence, social support or philosophical-spiritual resources?
5. Do differences exist between resilient and vulnerable students with regard to issues such as gender, grade point average, academic major, or year in school?

6. Do differences exist between male and female students with regard to sources of stress?
7. Do differences exist between male and female students with regard to feelings of pressure-overload, anger-frustration, anxiety, depression, coping confidence, social support or philosophical-spiritual resources?
8. Do differences exist between male and female students with regard to stressors associated with grade point average, academic major, or year in school?

BACKGROUND AND RATIONALE

Stress is pervasive on university and college campuses. The consequences of stress can be profound, impacting every facet of students' lives. A review of the literature indicates that during the college years, high student stress has been associated with behavioral outcomes such as substance abuse, lowered academic performance, suicide and aggression. It can limit students' personal and interpersonal lives.

Stress has an associated financial burden. National data show only 40-50 percent of entering freshmen graduate from state colleges within the traditionally expected eight semesters (Whitman, Spendlove & Clark, 1987; Brower, 1990). Failing to make a successful transition and/or successfully cope with the stress of college life, many students drop out, thereby starting their adult lives with a sense of failure. Others are able to continue in college by taking reduced work loads (Montgomery, 1983). This adds to students' financial burden and may impact their self-esteem because they do not graduate with their original class.

There are also long-term implications in conjunction with stress which is not effectively managed. During the college years many life-long behavior patterns are established. For many college students with high stress, these patterns may be detrimental to health and well-being.

The stress experienced by college students also has the potential to impact everyone associated with the campus. It results in increased campus demands for counseling and health care services. Caring faculty members may feel burdened to meet the needs of highly stressed students. Resident Advisors may feel overwhelmed in their inability to identify and/or to effectively assist students at risk. Resident Directors may experience significant frustration in knowing how to supervise Resident Advisors with regard to student stress and how to develop effective programming in the residences. The ramifications of failing to understand and appropriately intervene in college-student stress can be extensive.

SIGNIFICANCE TO HEALTH EDUCATION

It is important for health educators to focus on the issue of college-student stress. Approximately 5 percent of the total U. S. population is enrolled in colleges and universities (Guyton, Corbin, Zimmer, O'Donnell, Chervin, Sloane & Chamberlain, 1989). This is a significant sector of the population, including upward of 13 million people.

Research indicates there is a high risk of immediate and long-term harm due to stress for college students. The prevention of such harm is considered to be the ethical responsibility of the college and university system (Smallman, Sowa & Young, 1991). In his investigation Cooper (1990) noted that the American

Association of State Colleges and Universities affirmed wellness as a principle objective of college education. Furthermore, understanding stress and developing effective stress-management strategies is a prerequisite for preparing students for success in careers (Sharpley & Scuderi, 1990) or any other future endeavor. With their training in needs-assessment, education and program design, health educators have a significant role to play in the development, implementation and evaluation of intervention plans.

SCOPE AND DELIMITATIONS OF THE STUDY

This study is limited by the population sample. Data for the purpose of answering the research questions of the study were collected at a private, four-year, Christian liberal-arts college with a total enrollment of 2,250. Of these, 96.9 percent were full-time students. Forty-nine percent of the student body were from Pennsylvania, 45.3 percent from other states and the remainder from foreign countries. While not representative of all college campuses, the data collected and analyzed on this particular campus have direct applicability to numerous other Christian liberal-arts colleges.

The scope of this research broadens the existing knowledge base in studying this particular type of population. To date, no published research has investigated the issue of stress and students on Christian, liberal-arts college campuses. The study breaks new ground in assessing this particular population.

CONCEPTUAL FRAMEWORK: STRESS AND COPING MODEL

To provide a conceptual framework for understanding the many variables contributing to stress and the possible stress outcomes, this researcher has developed a model to be partially tested in the proposed study. It is primarily based on the seminal theoretical works of Selye, Cannon, Lazarus and Pearlin and Schooler, each of which are discussed in length later. The model is a synthesis and assimilation of several key concepts/constructs in the stress literature. The resulting model of stress and coping is presented in Figure 1 on the following page. All of the components presented in Figure 1 are described in detail in Chapter Two.

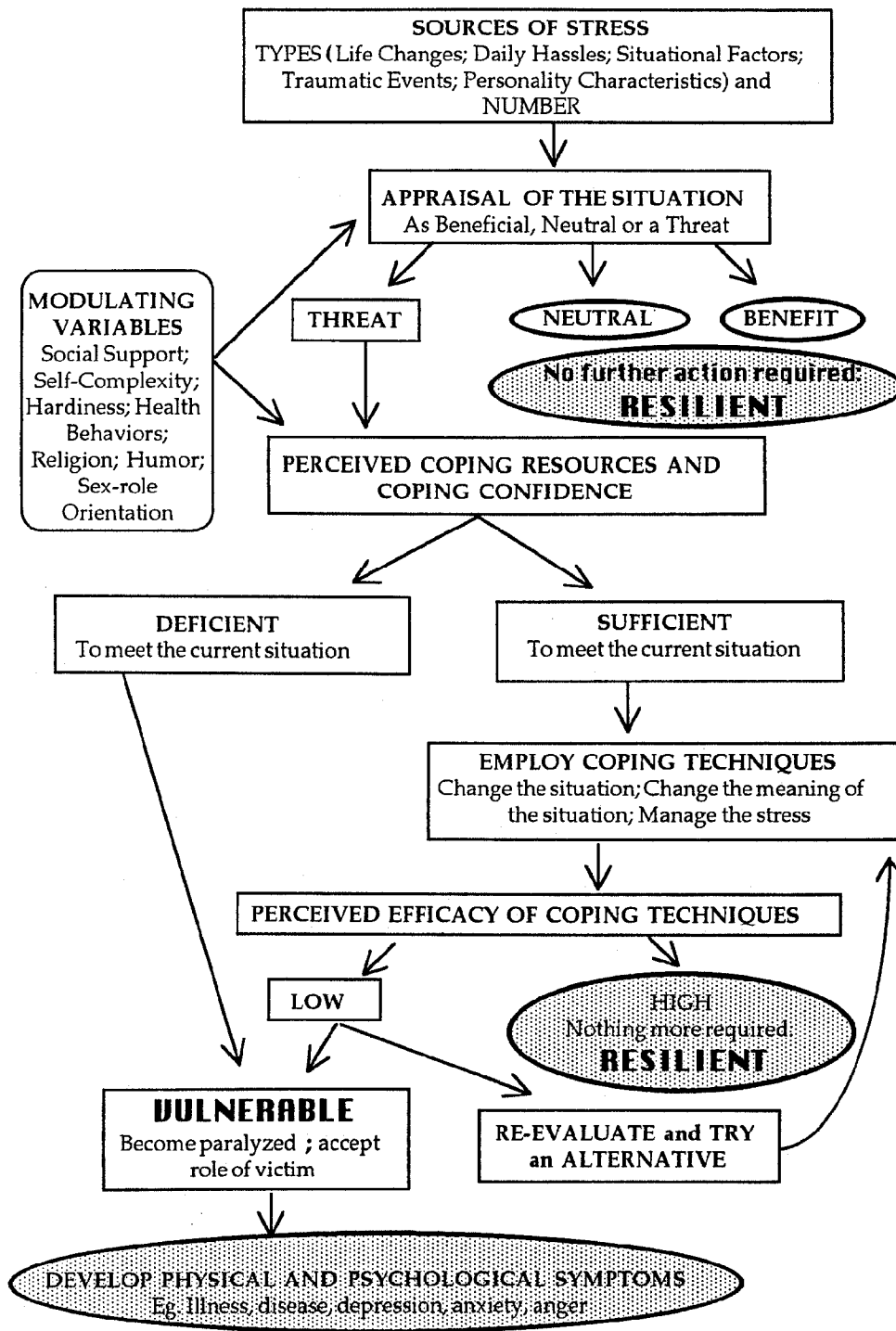


Figure 1: Stress and Coping Model

This conceptual model of stress and coping is grounded in the pioneering works of Cannon and Selye. Walter Cannon's description of "fight or flight," and Hans Selye's syndrome of "just being sick" are the classic, foundational concepts of stress uniting two major fields of study: Cannon's psychology and Selye's medical physiology. To understand the sources and implications of college-students' stress, both psychological and physical issues must be addressed by any effective model. Each facet of the stress and coping model presented in Figure 1 is discussed with these issues in mind.

Sources of Stress. The first stage in the model is the exposure to some form of stressor. The model considers five major categories of stressors: life changes; daily hassles; situational factors; traumatic events; and personality characteristics. The number of stressors one is exposed to is also believed to contribute to the stress and coping experience.

Appraisal of the Situation. In this model, stress is conceptualized as the exposure to threatening stressors *and* the self-perception of having inadequate resources to successfully confront the stressor. The transactional model created by Folkman and Lazarus (1985) states that when exposed to a stressor, individuals appraise the situation as threatening, neutral or beneficial. When a situation is appraised as neutral or beneficial, nothing more is required of the individual. If the stressor is appraised as threatening, coping resources and coping confidence are then evaluated. When individuals perceive the available coping resources to be sufficient to meet the demands of the threatening situation and they believe their coping will result in positive outcomes, they engage in specific coping techniques. These techniques primarily result in changing the situation, changing the meaning of the situation or managing the existing stress (Pearlin and Schooler, 1978).

Perceived Coping Resources and Coping Confidence. When confronted with a threatening stressor, people must evaluate their resources for coping and their level of confidence in employing those resources. If the coping resources and coping confidence are perceived as being deficient to meet the demands of the threatening situation, individuals develop physical and psychological symptoms of stress.

Modulating Variables. The appraisal of the situation and the perception of coping resources and coping confidence can be moderated by many factors. Key variables which have been shown to impact the stress response are social support, hardiness, health behaviors, religion, humor and/or sex-role orientation. In the conceptual model presented in Figure 1, these variables are considered to modulate the situation (i.e. they have the ability to vary from situation to situation). All of these modulating variables will be discussed in depth in Chapter Two, although not all are addressed by the present research.

Employ Coping Techniques and Evaluate Their Efficacy. As individuals employ one or more coping techniques they perceive the efficacy of their actions: Is this behavior effectively reducing the threat of the stressor? High coping efficacy is the perception that the coping behavior is effective and that the threat is removed as a consequence. In this particular situation, nothing more is required of the individual. Individuals responding in such a manner are considered to be resilient to stress.

Re-evaluate and Try an Alternative or Become Vulnerable. If, however, the coping techniques are perceived by the individual as being ineffective there are two primary options open: re-evaluating the situation and trying an alternative coping technique that may potentially eliminate or minimize the threat; or becoming paralyzed. In the latter scenario, individuals may rigidly repeat the same coping

behavior over and over or they become passive. Individuals who accept this helpless, ineffectual victim role are considered to be vulnerable to stress. By their behavior, or lack of it, they significantly increase the likelihood of developing psychological and physical symptomatology.

HYPOTHESES

Based on the foregoing rationale, this study investigates the independent and joint effects of college students' perceived stress on physical and psychological distress. It also attempts to discover which variables predict at-risk students by distinguishing between those who are resilient and those who are vulnerable to stress.

On the basis of health distress scores, participants were divided into groups of Resilient, Average and Vulnerable subjects. Eight primary categories of hypotheses are engaged:

A. Magnitude of stressors.

Hypothesis One:

H-1. Average subjects will report a greater magnitude of stressors than Resilient subjects.

Hypothesis Two:

H-2. Vulnerable subjects will report a greater magnitude of stressors than Average or Resilient subjects.

B. Pressure-Overload.

Hypothesis Three:

H-3. Average subjects will report more pressure-overload than Resilient subjects.

Hypothesis Four:

H-4. Vulnerable subjects will report more pressure-overload than Average or Resilient subjects.

C. Anger-Frustration.

Hypothesis Five:

H-5. Average subjects will report more anger-frustration than Resilient subjects.

Hypothesis Six:

H-6. Vulnerable subjects will report more anger-frustration than Average or Resilient subjects.

D. Anxiety.

Hypothesis Seven:

H-7. Average subjects will report more anxiety than Resilient subjects.

Hypothesis Eight:

H-8. Vulnerable subjects will report more anxiety than Average or Resilient subjects.

E. Depression.

Hypothesis Nine:

H-9. Average students will report more depression than Resilient subjects.

Hypothesis Ten:

H-10. Vulnerable subjects will report more depression than Average or Resilient subjects.

F. Coping Confidence.

Hypothesis Eleven:

H-11. Average students will report more coping confidence than Vulnerable students.

Hypothesis Twelve:

H-12. Resilient subjects will report more coping confidence than Average or Vulnerable subjects.

G. Social Support.

Hypothesis Thirteen:

H-13. Average subjects will report more social support than Vulnerable subjects.

Hypothesis Fourteen:

H-14. Resilient subjects will report more social support than Average or Vulnerable students.

H. Philosophical-Spiritual Resources.

Hypothesis Fifteen:

H-15. Average subjects will report more philosophical-spiritual resources than Vulnerable subjects.

Hypothesis Sixteen:

H-16. Resilient subjects will report more philosophical-spiritual resources than Average or Vulnerable subjects.

The review of the literature indicated gender differences in college-student stress is likely. Because of this, nine additional hypotheses related to differences between male and female college student participants were proposed:

A. Magnitude of stressors.

Hypothesis Seventeen:

H-17. Female subjects will report significantly higher magnitude of stressors than male subjects.

B. Health Distress.

Hypothesis Eighteen:

H-18. Male subjects will report more health distress than female subjects.

C. Pressure-Overload.

Hypothesis Nineteen:

H-19. Female subjects will report more pressure overload than male subjects.

D. Anger-Frustration.

Hypothesis Twenty:

H-20. Male subjects will report more anger-frustration than female subjects.

E. Anxiety.

Hypothesis Twenty-one:

H-21. Female subjects will report more anxiety than male subjects.

F. Depression.

Hypothesis Twenty-two:

H-22. Female subjects will report more depression than male subjects.

G. Coping Confidence.

Hypothesis Twenty-three:

H-23. Female subjects will report more coping confidence than male subjects.

H. Social Support.

Hypothesis Twenty-four:

H-24. Female subjects will report more social support than males.

I. Philosophical-Spiritual Resources.

Hypothesis Twenty-five:

H-25. Female subjects will report more philosophical-spiritual resources than males.

The hypotheses which were tested in this research are summarized on the following pages in Tables 1 and 2. Also indicated in Tables 1 and 2 are the dependent and independent variables associated with each hypothesis.

Table 1: Hypotheses Regarding Resilient, Average and Vulnerable Students

DEPENDENT VARIABLES	INDEPENDENT VARIABLES		
	RESILIENT SUBJECTS	AVERAGE SUBJECTS	VULNERABLE SUBJECTS
Magnitude of stressors		Average subjects will report a greater magnitude of stressors than resilient subjects.	Vulnerable subjects will report a greater magnitude of stressors than average or resilient subjects.
Pressure-Overload (PO)		Average subjects will report more PO than resilient subjects.	Vulnerable subjects will report more PO than average or resilient subjects.
Anger-Frustration (AF)		Average subjects will report more AF than resilient subjects.	Vulnerable subjects will report more AF than average or resilient subjects.
Anxiety		Average subjects will report more anxiety than resilient subjects.	Vulnerable subjects will report more anxiety than average or resilient subjects.
Depression		Average subjects will report more depression than resilient subjects.	Vulnerable subjects will report more depression than average or resilient subjects.
Coping Confidence (CC)	Resilient subjects will report more CC than average or vulnerable subjects.	Average subjects will report more CC than vulnerable subjects.	
Social Support (SS)	Resilient subjects will report more SS than average or vulnerable subjects.	Average subjects will report more SS than vulnerable subjects.	
Philosophical-Spiritual Resources (PS)	Resilient subjects will report more PS than average or vulnerable subjects.	Average subjects will report more PS than vulnerable subjects.	

Table 2: Hypotheses Regarding Male and Female Students

DEPENDENT VARIABLE	INDEPENDENT VARIABLE	
	MALE SUBJECTS	FEMALE SUBJECTS
Stressor magnitude		Females will report greater stressor magnitude than males.
Health Distress	Male subjects will report more health distress than females.	
Pressure-Overload		Female subjects will report more pressure-overload than males.
Anger-frustration	Male subjects will report more anger-frustration than females.	
Anxiety		Female subjects will report more anxiety than males.
Depression		Female subjects will report more depression than males.
Coping Confidence		Female subjects will report more coping confidence than males.
Social Support		Female subjects will report more social support than males.
Philosophical-Spiritual Resources		Female subjects will report more philosophical-spiritual coping resources than males.

The collected descriptive data were also analyzed. Of particular interest are the sources of stress on the basis of year in program and membership in sub-populations such as academic majors, ethnicity, nationality. In addition, data were analyzed to report on clinically significant levels of Pressure-Overload, Anger-Frustration, Anxiety, Depression, Social Support, Philosophical-Spiritual resources and Coping Confidence by academic major.

SUMMARY

Chapter One provided an overview to this study of college-student stress. The purpose of the study, related research questions as well as the background and rationale have been discussed. Also presented was the significance of this study to the field of health education. The scope and delimitations of this research along with the conceptual framework were introduced. The hypotheses to be tested were briefly described at this time.

CHAPTER TWO: REVIEW OF THE LITERATURE

INTRODUCTION

The concept of stress, while not clearly defined or understood, is a common topic of conversation today. The field of stress research has been in formal existence since the pioneering work on the concept of "fight or flight" by Walter Cannon at the turn of the century. Currently there are numerous areas of specialized study within the field of stress research including: stress and coronary disease, stress and alcohol, stress and psychiatric disorders, urban environmental stress, social support and stress, stress and disasters, occupational or workplace stress, stress and adolescence. Within many of these specialized areas of stress research, there are further areas of specialization. This study will focus on the stress experienced by a particular group: college-students.

This review of the literature will look at the historical background of the general concept of stress as well as delineate the specifics of student stress. Issues related to stress will be discussed in terms of general theory and their specific relevance to the college-student population. The issues selected for focus are these: sources of stress; sequelae of stress; mediators and moderators of stress; techniques of coping with stress; and coping confidence.

Interwoven with these main topics, additional coverage will be given to stress as it relates to special populations on campus. Unique stressors and responses to stress can result from membership in a subculture of the campus life. Gender, minority status, and academic major are included in these subcultures.

Also considered relevant to the current study are experiences of nontraditional and international students. With a comprehensive discourse on stress in general and college stress in particular, the need for conducting such research will be clearly established.

This present discussion will also review the measurement of the various components of stress. Particular attention will be focused on the measurement of those facets of stress being considered in this study.

It is important to note at the onset that this review of the literature is approached through the use of clear, distinct categories which are artificially created in an attempt to clarify the presentation. In reality, one aspect of stress blends together with all the other aspects; to some extent, all are likely to be both causes and effects. For example, stressors are theoretically considered to be the sources of stress which result in physical or psychological outcomes. These outcomes can in turn become additional stressors. In a similar manner, mediators and moderators of stress overlap with coping techniques and coping confidence. For the sake of presentation, the literature review is divided into sections. To gain the most insight, however, the reader must be mindful that the components of college-student stress are best explained by circular rather than linear logic.

THE STRESS CONCEPT

The popularization of the term "stress" is generally attributed to the work of endocrinologist Hans Selye. He reported (1979) that it was in 1936 that he published his first primitive study. Selye's is a physiologically based definition: "stress is the nonspecific response of the body to any demand made upon it to adapt whether that demand produces pleasure or pain" (Selye, 1946). Decades

later, while still supporting his original definition of stress, Selye observed that while everyone talks about stress, everybody defines it differently and nobody really knows what it is (Selye, 1974, 1982). The stress field has indeed been characterized by controversy and inconsistency, even within specialized stress research areas. In his historical review of the stress field, Mason (1975a) began with this statement: "Perhaps the single most remarkable historical fact concerning the term 'stress' is its persistent, widespread usage in biology and medicine in spite of almost chaotic disagreement over its definition" (p.6).

The controversy and inconsistency becomes even more pronounced when one considers the social sciences. Within the discipline of psychology, stress has taken on various meanings. At times it is considered synonymous with such concepts as anxiety, frustration, tension, or emotional distress. More often than not, researchers in the social sciences have focused on stressors, the sources of stress, or stimuli, typically considered in terms of emotional and/or behavioral outcomes.

To understand stress and its ramifications, it is necessary to account for both the physical and psychological dimensions of stress. While Selye was aware that psychological stimuli could impact the physical responses of the General Adaptation Syndrome, he tended to underestimate them (Webb, 1988). Studies going beyond Selye's work have indicated that psychological responses are not only a consequence of stress but may also be necessary for a human physiological response (Mason, 1975a).

Richard Lazarus was one of the first theorists to see stress as a combined function of the person, the situation, and the reaction by including the concept of appraisal into his definition of stress. Lazarus proposed that "stress cannot be defined by situations because the capacity of any situation to produce stress

reactions depends on the characteristics of the individual" (Lazarus, 1966, p.5). Stress from Lazarus' perspective included the entire phenomenon of stimulus, response, and intervening variables (Holroyd & Lazarus, 1982). The intervening variables are considered to be the individual's appraisal and coping behaviors and attitudes. When one's coping resources are insufficient to successfully resolve a situation appraised as being relevant to one's well-being, stress is experienced (Folkman & Lazarus, 1985).

This historical overview illustrates the variations currently found in the field of stress-related research. Such a diversity of definitions for an apparently singular concept would appear to validate Mason's (1975b) observation that the stimulus-based roots of the psychological stress field have been in a different arena than the response-based roots of the physiological stress field. This has resulted in different approaches to understanding and measuring stress, both of which will be discussed in more detail later.

UNDERSTANDING STUDENT STRESS

The first step in understanding student stress is to recognize the prevalence and significance of the issue.

Prevalence of Student Stress

The work of Koplik and DeVito (1986) suggests an escalating trend with regard to college-student stress. They compared incoming freshmen in 1976 to those in 1986. Of the ten major areas identified by the *Mooney Problem Checklist*, students in 1986 reported significantly more distress in every aspect of

their lives. Simultaneously, students in 1986 had lower SAT scores, which had the potential of creating more distress by increasing academic pressure in higher education.

In their study on students and stress, Dunkel-Schetter and Lobel (1990) concluded that when compared to college students of two decades ago, today's students appear to be experiencing more and different kinds of stress. College students are neither immune to the unique stressors of college life nor are they protected from the sorts of stressors that occur in the general population.

Academic, personal and interpersonal pressures are universal stressors for students. Roscoe (1987) analyzed 1,628 statements made by 204 undergraduate students over an entire semester. The top concerns he found are listed below, including the percentage of students reporting each. Also included is an extrapolation of the implications for a hypothetical campus of 15,000 students:

Student Concern	Percentage Reporting	Extrap- -olation
Classes/assignments/tests	18.5	2,775 cases
Dating relationships	14.0	2,100 cases
Family members or relationships	12.0	1,800 cases
Illness/injuries	8.5	1,275 cases
Roommates	7.0	1,050 cases
Friends	7.0	1,050 cases

Given the high number of cases per semester at the hypothetical college, it is little wonder that campus counseling services and health services often feel taxed to the limit.

Stress is a fact of college life regardless of freshman, sophomore, junior or senior status. With the exception of incoming varsity athletes (Smallman, Sowa & Young, 1991), freshman are typically considered to be the most vulnerable to stressors. College transition can constitute a period of new and intense demands

and life changes that can increase stress (Roberts & White, 1989). A freshman's failure to negotiate the transition from high school to college, from living at home to relative independence, can precipitate psychological distress. At times this distress has long-term consequences (Oppenheimer, 1984).

After the freshman year comes the sophomore slump: that realization of being too far into the program to quit but still a long way from completion. Sophomores experience increased stress from trying to make sense of their majors, while seniors experience the stress of trying to find a practical use for their majors in the job market (Nelson, 1989). Juniors and seniors also have the pressures of planning for rapidly changing future job markets. Many will struggle with present and future financial pressures due to higher education costs. Seniors have the added stressors of anticipating leaving the familiar, separating from special friends and stepping out into the work force.

Significance of the Problem

Throughout their college years, students are presented daily with stressful situations from which they can emerge successful and satisfied or unsuccessful and disappointed (Morrison, Pulakus & Saladin, 1991). In 1982, Lang found that stress received the top ranking for interference with college-student quality of life. Repeatedly, studies on students indicate that stress is a debilitating medical and social problem. Pinch, Heck, and Vinal (1986) studied freshmen males living in residences, and found 93 percent experienced physical signs of stress and 88 percent evidenced stress related feelings such as depression and anxiety. In another study of 250 males (mean age 20.0 years) and 271 females (mean age 20.0 years), 55 percent of females and 67 percent of males had one or more

clinically elevated scale on the *Minnesota Multiphasic Personality Inventory* (Hovanitz and Kozora, 1989). This is well above the 25 percent with comparable elevations in the general population and is indicative of the extent of late adolescent stress. Depression, a recognized stress symptom, is a common problem among university students. Sixty-five percent of females and 51 percent of males showed significant depression scores as measured by the Center for Epidemiologic Studies of Depression Scale (McDermott, Hawkins, Littlefield & Murray, 1989). In their literature review, Carnahan, Tobin, and Uncapher (1981) note that depression is a major problem for both sexes during the college years. They also report that the depression rate is 50 percent higher in the college population than in the general American adult population.

College life stress has proven to be fatal or near fatal for many students. One study (Carson & Johnson, 1985) indicated that 20 percent of undergraduates (n=218) reported seriously considering suicide. Sometimes, in trying to cope with their problems, students act in self-destructive ways. Sometimes students signal their distress with anger and aggressiveness. Withdrawal and loss of contact with reality are possible. For others, the stress response is an eating disorder and/or substance abuse.

In their literature review, Neidigh, Gesten, and Shiffman (1988) note that alcohol is the most widely used mood-modifying drug on college campuses with up to 92 percent of students using alcohol. Neidigh et al. (1988) concluded that increased stress increases the temptation to drink and that college students are at risk for the development of alcohol-abuse problems. A similar conclusion was reached by Williams, Decker, and Libassi (1983), who found that a significant number of students (20 percent) feel stressed at least 50 percent of each day and that this contributes to the use of anti-anxiety agents, drugs and alcohol.

Burnout, an outcome of stress, can result from learning conditions that demand excessively high levels of effort with relatively little support for developing effective coping. Burnout has been found to impact such student behavior as attrition, course selection and academic performance (Neumann, Finaly-Neumann & Reichel, 1990). There is also an established relationship between burnout and memory performance, a student's most important tool (Meirer & Schmeck, 1985).

The long-term implications of college-student stress are also important to understand. Inability to successfully negotiate the stress of college years is not to be taken lightly; during these years the foundation for coping and decision-making is being assimilated (Ramsey, Greenberg & Fraser, 1989). Ineffectual coping in the educational years can lead to impairment in the practicing years of the professional (Beck & Srivastava, 1991).

There are also long-term physical consequences. Anxiety, an outcome of stress, is a significant factor in future morbidity and mortality (Russek, King, Russek & Russek, 1990). The lifestyles shaped during the college years also influence later susceptibility to diseases (Greenberg, Ramsey & Hale, 1987). Lifestyle habits contribute to approximately 50 percent of premature mortality (Romano, 1984). The Surgeon General's Report on Healthy People (1979) indicates that the adolescent years are particularly relevant in the development of lifelong health habits. Students' health patterns can be shaped by the attitudes, knowledge and behavior adopted during the college years. Grants by various life insurance companies for the development of wellness programs on college and university campuses attest to the potential long-term impact of student stress (Kushner & Hartigan, 1983). Such concern shows both the need and interest for creating and promoting appropriate wellness and health-enhancement lifestyles

within the college-age community. Wellness programs can be implemented effectively only if college-student stress and its consequences are understood.

SOURCES OF STRESS

Introduction

Stressors are stimuli "with the potential of triggering the fight-or-flight response" (Greenberg, 1990, p. 8). Stressors initiate the chemical chain reactions in the sympathetic nervous system. They are most commonly considered to be either psychological (e.g. depression), sociological (e.g. divorce, death of a significant other) or physical (e.g. fatigue, illness). Stressors can also be biological (e.g. environmental exposure) or of a philosophical or spiritual nature (e.g. meaning in life).

A single situation can present multiple, simultaneous stressors. For example, during the transition to college a freshman may experience homesickness (psychological stressor), fatigue due to changes in sleep patterns (physical stressor), changes in surroundings (biological stressor), separation from friends and family (sociological stressor) and be challenged by questions of self-identity (philosophical/spiritual stressor).

Stressors are dynamic, not static. Stressors are also generally neutral. Adverse consequences of stressors are due to the individual's perceptions. There are also interpersonal and intrapersonal differences with regard to stressors. What is distressful to one person may be considered to be challenging to another. Intrapersonally, the same event may be stressful on one occasion and either invigorating or neutral on another occasion. Benjamin and Walz (1987) conclude

that the ultimate impact of a stressor will depend on one or more of a number of variables: 1) the environment; 2) the magnitude of the stressor; 3) what has gone on before; 4) our value system; 5) our physical condition; and 6) habit.

For the purpose of this present study, stressors will be discussed in three contexts. First, stressors will be described in terms of a general, conceptual framework. Next, literature dealing with specific stressors for college students will be discussed. Thirdly, the stressors connected with five special populations on campus will be presented. The special populations considered are academic majors, African-American students, nontraditional students, athletes and international students.

Stressors: Conceptual Framework

In the model of stress and coping presented in Chapter One (Figure 1), stressors were identified as the stimulus necessary for possible stress responses to be initiated. That section of the model is presented in Figure 2:

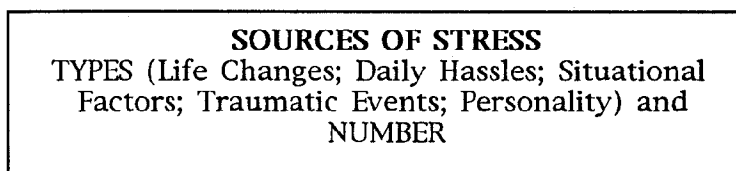


Figure 2: Sources of Stress

In their work on stress and coping, Atkinson, Atkinson, Smith and Bem (1990) established five general categories of sources of stress. These categories represent different conceptual frameworks for approaching the issue of sources of stress. Four of these are supported by significant additional research efforts: 1) life changes; 2) daily hassles; 3) situational factors; and 4) traumatic events. The

fifth category identified by Atkinson et al (1990) is conflict. Personality is also considered a potential source of college student stress (Nelson, 1989).

Life Changes:

Life changes have long been the focus of research. In 1967, Holmes and Rahe's seminal research with Navy personnel discovered that health outcomes are associated with life change. Selye's work postulated that every time an individual must adapt, there is stress. Holmes and Rahe studied typical life changes and weighted them, allowing for a score that measures stress and "predicts" a person's susceptibility to illness. This epidemiological approach to stressors has been widely employed. Americans, Japanese, African-Americans, Mexican Americans, Danes, and Swedes are some of the populations studied using a life events approach (Morgan, 1982).

The initial research on life events did not distinguish between positive and negative events. Since both required adaptation, both were considered stressful and equally adverse to health. Much attention has often been given to the fact that women report more negative life events than men do. Hovanitz's (1986) research provides some perspective. She found that women students also report more positive life events than men students.

Subsequent research on life events further clarified the understanding of stress. It suggested that only negative events are associated with symptomatology (Anderson & Arnoult, 1989; Brown, 1989; Holm, Holroyd, Hursey & Penzien, 1986). This may be due to the fact that individuals plan for positive events, whereas negative events are often unexpected and disruptive. Ultimately, how the positive or negative event is perceived by the student will most accurately predict its impact.

Based on Holmes and Rahe's work, specific instruments have been developed specifically for use with a college student population: the *Life Change Unit Rating Scale for College Students* (Daniels, 1982); the *Everyday Problems and Life Events Survey* (Burks & Martin, 1985); the *Life Event Scale for Students* (Linden, 1984); and the *College Adjustment Rating Scale* (Zitzow, 1984). In a prospective study of undergraduates, J. D. Brown (1991) concluded that stressful life events are linked to psychological distress. Brown also found that life events predicted self-reports of health and visits to the campus health facility.

Daily Hassles:

More recently the conceptualization of stressors has shifted away from major life events to daily hassles. Hassles are the "experiences and conditions of daily living that have been appraised as salient and harmful or threatening to the endorser's well-being" (Braun, 1989, p. 363). Researchers have found that total symptoms of stress correlate more highly with everyday problems than with major life events, although both are significant (Burks & Martin, 1985). Hassles are considered to be a more powerful predictor of the development of symptomatology and adaptational outcomes.

Using daily hassles as the focus of studies also avoids the cyclical shifts in reporting of symptoms by women. Dickstein (1984) found no significant overall differences between college men and women reporting negative events. She did find, however, significant differences in the number of negative events reported by women between the intermenstrual to premenstrual phases. Thus, the reporting of negative events fluctuates for women, based on their menstrual cycle. As with life events, female students do report more hassles than men although they do not report higher levels of perceived stress (Kohn, Lafreniere & Gurevich, 1990).

Chamberlain and Zika (1990) studied four different college populations. They found that there was consistency in the number of daily hassles reported over three- to six-month periods. They also found a low association between daily hassles and life events. This indicates that each approach provides substantially different measures and that daily hassles are not a "downstream" effect of life events as many have presumed. For example, many have concluded that divorce, a life event, results in many daily hassles arising from changes in routine. The studies done by Chamberlain and Zika concluded that hassles are differentiated from life events and are more influential in the development of psychological distress or symptomatology.

Situational Factors:

Situational factors are precisely that: factors associated with the situation in which one finds oneself. Situational factors can be interpersonal conflict, threats to one's physical and emotional well-being, time constraints or lack of resources (Benjamin & Walz, 1987). Being a student and living on campus presents many situational factors which can be perceived as stressors. Benjamin and Walz (1987) note that not only does college present the student with an entirely new environment, for many it is the most important transition the student has yet encountered in life. The change in living conditions, routines and sleep habits are all situational stressors (Roberts, 1989; Workman, Albert, Machetanz, Sparks & Kester, 1981). The independence presented by college life is a major stressor (Blimling & Miltenberger, 1990; Brower, 1990; Compas, Wagner, Slavin & Vannatta, 1986; Holdaway & Kelloway, 1987; Ramsey et al., 1989). Campus life raises situational factors such as loss of privacy, institutional food and

adjusting to new routines (Bliming & Miltenberger, 1990; Chamberlain & Zika, 1990; Perl, 1982; Roberts & White, 1989; Staik & Dickman, 1988).

The impact of situational factors can be modified significantly by the degree of predictability of the stressor and by the extent of control the individual believes is possible (Atkinson et al., 1990). The availability of social support also lessens situational stressors.

Traumatic Events:

Pennebaker, Hughes, and O'Heeron (1987) found that having experienced a traumatic event but feeling unable to confront or disclose the situation resulted in significant stress. Inhibition with regard to traumatic events resulted in increased rates of physical illness and in symptom reports. The work of Pennebaker and Beall (1986) indicates that providing an opportunity for disclosure of traumatic events decreases the number of reported illnesses, as well as decreasing the number of days of restricted activity due to illness. The research of Pennebaker and his colleagues suggests that restraining one's thoughts and feelings surrounding a traumatic event requires psychophysiological work.

Personality:

Nelson (1988) proposes that stressors be viewed relative to personality. His research points to specific lifestyles people choose, each with its own unique set of potential stressors. Becoming aware of those stressors for which a person has a low threshold is the key to decreasing personal stress.

Self-esteem, a component of personality, can influence how one perceives a stressor. Brown (1989) studied the responses to positive and negative life events of individuals in two independent samples. He found that both high and low self-

esteem subjects benefited emotionally from positive events, but only high self-esteem subjects benefited physically. It appears that positive life events disrupt the identity of low self-esteem subjects putting them at greater risk of developing illness.

Stressors: College Students

Because stress influences how students perceive their own and others behavior, considerable descriptive and exploratory research has been done over the past twenty years in an attempt to accurately identify their sources of stress. These studies have employed one or more of the various frameworks previously described. Wagner and Compas (1990) suggest that all stressors are a reflection of various developmental stages. They identify academic concerns as the stressor of consequence for college students. However, the multiple stressors identified by researchers across private or state campuses (Staik & Dickman, 1988; Thomas & Williams, 1990), community colleges (Workman et al., 1981), graduate schools (Cahir & Morris, 1991) or a single researcher doing multiple studies at the undergraduate level (Brower, 1990) seems remarkably consistent. The stressors are also similar to those of students with special academic needs who require assistance to be successful in college (Roberts, 1989). The consistency also persists over a considerable time period.

Some general observations about college-student stressors are noteworthy. As with other populations, female college students tend to report more stressors than males (Ganon & Pardie, 1989; Gray, 1988). Males and females do, however, generally tend to report the same types of stressors (Hamilton & Fagot, 1988; Holm et al., 1986; Wagner & Compas, 1990; Wohlgemuth & Betz, 1981).

There are some gender-related differences in reporting which will be discussed later. When male and female seniors were studied, both groups reported significantly fewer stressors in the spring semester when compared to the fall semester.

Another important observation of college-student stress arises from Roberts' 1989 study. In his research, stressors were categorized as personal or academic. The analysis indicates that only .3 percent of the total variation in academic stressors is accounted for by personal stressors and vice versa. This would strongly suggest that there is conceptual independence between personal and academic stressors with a college population. Both facets, therefore, must be considered to fully understand college-student stress.

When considered collectively, this body of research reveals clusters of related sources of stress for college students: family issues; social life; self-sufficiency; finances; stressors associated with "normal" living; and, of course, academic concerns.

Family Issues:

Family problems are considered to be a significant stressor. Anderson and Yuenger (1987) found that past and present problems with parents weighed heavily on students yet received little attention. When students sought counseling on campus, 48 percent reported significant family problems. Yet only 25 percent even discussed these problems in their counseling sessions. Similarly, Archer and Lamnin (1985) found parental conflicts and expectations to be the second-ranked self-reported stressor. Parental expectations regarding grades and behavior were also noted by other researchers as important (Roberts & White, 1989; Simpson-Kirkland, 1983).

A change in the health of a family member is also stressful for students (Anderson & Yuenger, 1987). Death of a sibling rated higher than death of a parent, but both are major sources of stress and disruption (Zitzow, 1984). Death of a significant other was reported more frequently by male students than females as a stressor (Gray, 1988). With regard to both family and peer relationships, females report more stress than males during adolescence (Wagner & Compas, 1990).

Social Life:

Issues related to social life were frequently identified as stressful. Based on the volume of self-reports, making and keeping friends, thereby avoiding boredom or loneliness, is considered a challenge by many college students (Brower, 1990; Fisher & Hood, 1987; Kagan, 1987; Pinch et al., 1986; Roberts, 1989; Roberts & White, 1989; Staik & Dickman, 1988; Thomas & Scott, 1987; Villanova & Bownas, 1984). Satisfaction with one's personal dating habits (Staik and Dickman, 1988; Zitzow, 1984) as well as breaking up with a girlfriend or boyfriend (Reissman, Whalen, Frost, and Morgenthau, 1991; Roberts, 1989; Workman et al., 1981) are sources of stress. Dunkel-Schetter and Lobel's (1990) three-year study at UCLA found that grieving over the dissolution of a significant relationship often went unnoticed and untreated. For college-age women, having a romantic relationship is a stressor that leads to physical and emotional distress (Reissman et al., 1991). Expected, yet absent from the literature reviewed, are additional potential stressors related to social life: fear of pregnancy and fear of contacting sexually transmitted diseases.

Other social issues include having serious arguments with a friend (Workman et al., 1981), roommate conflicts (Reissman et al., 1991; Roberts,

1989) and concern over problems a friend is experiencing (Zitzow, 1984). Lack of regard by others in social interactions was considered a stressor by female students but not by males (Hamilton & Fagot, 1988). Peer pressure (Roberts, 1989) can also be a social sources of stress. Developing the necessary tolerance to successfully live on campus with a diversity of people can be another concern (Blimling & Miltenberger, 1990).

Related to social acceptability and dating are concerns over physical appearance (Gray, 1988; Roberts & White, 1989) and dieting (Villanova & Bownas, 1984). Given the current culture, it is not surprising that women report appearance as a stressor more frequently than do men (Hamilton & Fagot, 1988). Villanova and Bownas (1984) also note that living on more geographically isolated campuses can also lead to concerns over a lack of social activities.

Self-sufficiency:

As previously mentioned, attending college is a major step enroute to independence and psychosocial autonomy. Learning the necessary skills to care for oneself can create stressors because the old plans and procedures do not always fit the new circumstances in which students find themselves (Fisher & Hood, 1987). Seventy-two percent of students living in residence report feeling homesick (Fisher & Hood, 1987). This supports the findings of Compas et al. (1986). Maintaining one's physical health requires self-discipline (Brower, 1990; Villanova & Bownas, 1984). Learning to budget money is also a stressor (Zitzow, 1984) for college students.

For some, developing assertiveness or decision-making skills are key issues (Kagan, 1987; Thomas & Scott, 1987). Students must make many decisions with regard to lifestyle issues such as alcohol or drug use and sexuality (Ramsey et al.,

1989; Thomas & Scott, 1987). College students report conflict with their personal sexual morality as a source of stress (Chamberlain & Zika, 1990; Zitzow, 1984).

College life may not meet students' expectations. Facing up to this discrepancy and adapting to it can be a source of stress (Simpson-Kirkland, 1983). This may be most pronounced with the person-environment fit as freshmen live in residence halls (Perl, 1982). Expectations may not match actual perceptions, once they have settled in.

The process of developing appropriate levels of self-sufficiency can lead to exploring and discovering personal values and determining what it is that one really believes (Blimling & Miltenberger, 1990). Blimling and Miltenberger (1990) believe that a complete collapse of one's value system is a catastrophe of major proportions for incoming freshmen. Such a collapse can leave a void in the student's sense of meaning and purpose in life at a developmental stage when these may already be shaky.

Finances:

Finances influence the student's academic future and present social life. Because many students are financially dependent on their parents, it can also strain family relationships. It is not surprising, then, that financial worries are cited as a predominate stressor for this population (Blimling & Miltenberger, 1990; Cahir & Morris, 1991; Fisher & Hood, 1987; Pinch et al., 1986; Roberts, 1989; Roberts & White, 1989; Staik & Dickman, 1988; Villanova & Bownas, 1984; Workman et al., 1981).

Stressors of "Normal" Living:

College students experience general stressors associated with normal, daily living. Having something stolen (Zitzow, 1984) or chronic car trouble (Workman et al., 1981) can be stressors. This population also reports fear of failure (Zitzow, 1984), general worry (Kohn, Lafreniere & Gurevich, 1990; Workman et al., 1981) and depression (Zitzow, 1984) as stressors.

Academic Concerns:

Based on their review of the literature, Greenberg, Ramsey, and Hale (1987) conclude that academic factors are the most stressful for students. They certainly play a significant role as a sources of stress related to college life. Academic concerns are so numerous that they, themselves, can be categorized into major areas. The main categories of academic stressors are those related to courses, instruction, time management, dealing with the administration and general concerns.

The volume of work, a course-related stressor, is the most frequently cited academic source of stress (Chamberlain & Zika, 1990; Gray, 1989; Holdaway & Kelloway, 1987; Kagan, 1987; Kohn and Frazer, 1986; Macan, Shahani, Dipboye & Phillips, 1990; Pinch et al., 1986; Roberts, 1989; Roberts & White, 1989; Villanova & Bownas, 1984). Giving a class presentation is another source of stress (Kohn & Frazer, 1986; Zitzow, 1984).

The degree of academic competition in higher education can be a source of stress for many college students. Preparing for and taking tests or exams are potential stressors (Kohn & Frazer, 1986; Roberts, 1989; Roberts & White, 1989; Staik & Dickman, 1988; Thomas & Scott, 1990; Villanova & Bownas, 1984; Workman et al., 1981; Zitzow, 1984). This is directly related to the potential

pressure reported for getting good grades (Brower, 1990; Gray, 1988; Kohn & Frazer, 1986; Roberts, 1989; Staik & Dickman, 1988; Villanova & Bownas, 1984; Zitzow, 1984). Contrary to the studies of the 1960's, more recent research indicates that women students are as achievement oriented as men (Staats, 1983).

An additional category of stressors relates to instructional issues in the classroom. Students perceive faculty as making courses threatening rather than challenging (Holdaway & Kelloway, 1987; Roberts, 1989; Whitman et al., 1987). Not receiving feedback from faculty (Cahir & Morris, 1991; Staik and Dickman, 1988; Whitman et al., 1987) and coping with the college grading system (Holdaway & Kelloway, 1987) are other potential sources of stress. Being called on in class is cited (Kohn & Frazer, 1986; Roberts, 1989; Zitzow, 1984), as is conflict with an instructor (Villanova & Bownas, 1984; Zitzow, 1984).

Time management, the third category of academic concerns, is often associated with feelings of anxiety, embarrassment, and worry (Strang, 1981). It is the second most frequently cited stressor of college students (Blimling & Miltenberger, 1990; Brower, 1990; Cahir & Morris, 1991; Chamberlain & Zika, 1990; Kagan, 1987; Roberts, 1989; Staik & Dickman, 1988; Strang, 1981; Villanova & Bownas, 1984). By contrast, students with strong time management skills tend to have less role ambiguity, less somatic tension and higher reported satisfaction with jobs, life, and higher academic performance (Macan et al., 1990). Forty-two percent of females students (42.4 percent) report high anxiety over time-management issues compared to 32.9 percent of male students (Strang, 1981). This is considered to be a significant difference. It is intriguing that female students have been found to be better time managers and that they employ time-management behaviors more frequently than males, yet male students perceive having a greater sense of control over their time (Macon et al., 1990). Strang

(1981) found that women students tend to pace their workload more evenly than men, thereby doing fewer "last-minute jobs."

Directly related to time management are additional stressors. One is the pressure of completing papers in general and research papers in particular (Kohn & Frazer, 1986; Roberts, 1989; Zitzow, 1984). Others are procrastination (Roberts, 1989; Roberts & White, 1989; Thomas & Scott, 1990) and the failure to complete assignments (Kohn & Frazer, 1986; Zitzow, 1984).

Students on college campuses must also interact directly and indirectly with the administration of the college. This can produce another unique set of stressors. Administrative procedures (Cahir & Morris, 1991; Holdaway & Kelloway, 1987; Villanova & Bownas, 1984) and registration procedures (Holdaway & Kelloway, 1987; Roberts, 1989; Staik & Dickman, 1988) can be vexing. On many campuses, finding parking is a major frustration (Holdaway & Kelloway, 1987). During the transition from high school, learning how to use libraries (Holdaway & Kelloway, 1987) and adjusting to large classes (Roberts, 1989) can be stressful.

There are also general academic concerns. The most commonly cited are confusion over selecting a major or minor (Thomas & Scott, 1987; Workman et al., 1981; Zitzow, 1984) and difficulty in making a vocational selection (Brower, 1990; Chamberlain & Zika, 1990; Gray, 1988; Roberts, 1989; Roberts & White, 1989; Zitzow, 1984).

Not being prepared for the rigors of higher education can be a stressor (Fisher & Hood, 1987). In their work, Holdaway and Kelloway (1987) found that engineering students had the lowest ratings for preparedness in listening skills, reading skills and note taking. Being suspended or put on academic probation is also considered a stressor (Zitzow, 1984). Physically moving, a requirement of

living on campus, can be a source of stress, particularly for freshmen (Fisher & Hood, 1987).

Stressors: Special Populations

While some researchers have focused on stress factors for college students in general, others have studied the sources, symptoms and effects of stress on particular populations of students. The key groups on campus receiving the research attention are academic majors, African-American students, nontraditional students, athletes and international students. Also relevant as a separate topic is gender and stressors.

Gender:

There is controversy over whether there are *any* differences in how men and women perceive stressors or experience stress. This may stem from weaknesses in the existing research base (Martocchio, 1989). It is important to note that before focusing on gender-related differences it is important to acknowledge that gender similarities may outweigh differences (Freedman & Phillips, 1988).

In Staik and Dickman's survey (1988), undergraduates rank ordered college stressors. They found both differences and similarities in the rankings of males and females. The top stressors for males were: 1) academics; 2) finances; 3) employment; 4) friendship and campus life; and 5) social pressure. For females, the top stressors were: 1) academics; 2) time management; 3) home problems and dependence/independence; 4) dating relationships.

In his measurement of stress among college-students, Hensley (1991) found that females reported more stress on all scales and tended to disclose more than males. He also found that females in professional tracks perceive more stressors. Hensley attributes this to the fact that the female students will likely earn only 64 percent of the amount their male classmates will.

Appraisal of a stressor appears related to one's gender. When events were appraised as ambiguous, women more frequently concluded the event would have a greater impact on their lives (Holm et al., 1986). As a consequence, women students tended to catastrophize more than men. While women respond more strongly to perceived ambiguity, they may be slower than men to give an event this type of appraisal. Dunkel-Schetter and Loel's study (1990) conducted over three years, shows female students more likely than males to consider their situation as controllable and to respond with problem-solving behavior. This may be because women students have been found to be more internally controlled and to have a higher sense of purpose in life than men (Zika & Chamberlain, 1987).

When students who tended to deny anxiety in their lives were studied, gender-related differences emerged (Wallbott & Scherer, 1991). Female anxiety-deniers reacted strongly to cognitive stressors but not to emotional ones. The reverse was true of male anxiety-deniers.

An alternative way to approach differences is to focus on sex-role orientation rather than gender. Belk and Snell (1989) looked at the issue of students' stereotypes about women. Whether male or female, subjects who described themselves as having "conventional" stereotypes about women evidenced a higher level of distress in response to negative events. These students also had lower grades. Conventional sex-role orientations may be indicative of conventional expectations generally.

Academic Majors:

Undoubtedly, each academic major presents students with unique stressors. All majors, however, have not been the specific focus of stress research.

There is a large body of information on the stress of being a nursing student. Psychiatric symptoms are considered to be an outcome of exposure to stressors. In baccalaureate nursing students, psychiatric symptoms were found to be more prevalent than for the general population (Beck & Srivastava, 1991).

Globally, nursing, medical and dental students are presented with information overload, clinical pressures and feelings of inadequacy. Nursing students rank ordered perceived stressors (Beck & Srivastava, 1991). The top stressors identified were: 1) academic work; 2) lacking clinical knowledge or experience to accomplish the task; 3) clinical work; 4) relationships with faculty; 5) unclear expectations of courses or faculty; 6) effects on private life. In Beck and Srivastava's (1991) study 50 percent (n=94) of baccalaureate nursing students expressed uncertainty regarding their career choice.

Clinical practicum represents a primary source of stress that is intrinsic to the training and educating of nurses cross-culturally (Pagana, 1989). It is common for nursing students to appraise their environment as harmful and threatening to their well-being (Russler, 1991). Yuen's (1990) research highlighted that nursing students feel strong supervisory pressure can lead to fear of failure and feelings of powerlessness. Also identified as stressors are uncertainty about what the clinical supervisor expects and about one's performance. Unsatisfactory relationships with supervisors or other team members are sources of stress for nursing students (Yuen, 1991). This echoes Lindop's work (1989). He found that 60 percent of the single reasons most frequently given for students leaving nursing programs were attributable to the negative attitudes expressed toward learners by senior

nurses. Students dropping out, many of whom had completed 75 percent of their program and were still interested in nursing, felt a lack of caring on the part of supervisors.

Another academic major which has been studied is that of education. In addition to the usual stressors of college life, education majors must also engage in student teaching. A survey of 280 student teachers conducted by Abernathy, Manera and Wright (1985) found the rank order of stressors to be: 1) classroom discipline; 2) unmotivated students; 3) lecturing; and 4) time management.

Music students have also been researched. Dews and Williams (1989) identified many potential stressors as being germane to the field of studying music: 1) preperformance nervousness; 2) impatience with musical progress; 3) job insecurity; 4) feeling conflict between the demands of the music program and personal life; 5) inadequacy of practice facilities; 6) stage fright; 7) concentration.

In Dews and Williams' study (1989) 96 percent of the music students sought help for stress, but only from informal sources. Students reported that they were only interested in formal help if the helper was also knowledgeable about music. In fact, many of the students felt that stress was essential to their creativity.

As can be seen by the brevity of this review, there is much more that can be discovered about academic majors and sources of stress. This is an area ripe for future research efforts.

African-Americans:

Jacqueline Fleming (1981) compared African-American freshmen and seniors on African-American campuses with those on predominantly white campuses. She found that the groups were similar in many of their sources of

stress. Fleming identified finances as being a major area of difference. Financial problems were more common for African-American students on African-American campuses.

On predominantly white campuses, African-American students are in a potentially more stressful position than their white academic peers (Gunnings, 1982; Jung & Khalsa, 1989). Even quiet African-American students are highly visible. They may also have difficulty determining who comprises their social network. African-American students may not have minority administrators or faculty members to serve as role models, mentors or psychological supporters (Gunnings, 1982; Edmunds, 1984). African-American students may come to college less prepared for academic competition than Caucasian students (Edmunds, 1984).

Dating relationships are compounded for African-American students on predominantly white campuses. Fleming (1981), identified the worst-case scenario as being an African-American woman on a white campus. They have significantly more social difficulty than their male counterparts.

Nontraditional Students:

Traditional students are those who enroll in college directly or shortly after graduating from high school. Students enrolling when they are 25 years of age and older are considered to be nontraditional. With all the changes brought about by the information age and anticipated changes in the Workforce 2000, increasing numbers of nontraditional students can be expected to enroll. On some large, state campuses, nontraditional students now constitute nearly 33 percent of the undergraduate population. The majority of these students are women who may experience role strain in returning to school. Many of these women juggle school,

family and jobs simultaneously. Often they find themselves with little personal time, which can be stressful.

Levin (1986) reports that for many nontraditional students, the normal academic stressors are compounded by issues of mid-life transitions.

Nontraditional students must contend with noticeable physical signs of aging. For many, the return to school is precipitated by a sense of disparity between career expectations and actual achievements. Levin also notes that death is a more personalized issue for nontraditional students. This is in sharp contrast with the recklessness of youth evidenced by traditional-aged students.

Nontraditionals can have a heightened sense of anxiety about "being old" and returning to school. They may lack confidence in their current academic and test-taking skills, fear a decline in their ability to learn and expect difficulties competing with traditional students (Yarbrough & Schaffer, 1990). Since their previous academic experience, there have been dramatic technological changes on campuses. For example, libraries now typically use computers for literature searches rather than card catalogs. Lack of concern on the part of faculty can be a critical factor, especially for older re-entry women (Kirk and Dorfman, 1983).

Yarbrough and Schaffer (1990) found that nontraditionals report more anxiety than traditional students. Yet assessment of school-related anxiety found nontraditional students to be lower than expected national norms for college students. Sharply and Scuderi's work (1990) found that, on the whole, older students are more able to perform in the midst of over-arousal.

Nontraditional students may have more stressors, but it is also important to note that they may have more accessible resources for dealing with those stressors of students in general and nontraditional students in particular. Time-management skills increase with age (Macan et al., 1990) and they have little difficulty with

absenteeism (Leving, 1986). In choosing to return to school, nontraditional students may have a greater sense of control over their lives and also increased social support (Staats, 1983). Thus, the research to date suggests that nontraditional students are an inappropriate target population for some forms of stress-management intervention.

Athletes:

In many ways, college athletes are another unique population on campuses. Incoming freshmen athletes are perhaps the most unique with regard to college-student stress. Compared to their non-athlete cohorts, freshmen athletes show less depression and anxiety with the transition to college (Smallman, Sowa & Young, 1991). Smallman et al. (1991) also found that as these freshmen progress through the system they are at higher risk of developing stress-related symptoms than their non-athlete classmates. In addition to the usual stressors that one would expect of college life, the student-athlete also experiences unique stressors. Because of the funds generated directly and indirectly by college athletics, the stressors of athletes have received much attention.

By way of background, college athletics are largely regulated by the National College Athletic Association (NCAA). The NCAA has three categories of student participation based on the extent of allowable athletic scholarship. Division I schools provide athletes with full academic scholarships. Division II provides partial scholarships, and Division III is not permitted to offer student athletes any scholarship funds. Some sources of stress are common to all athletes in all NCAA Divisions, while others are not.

It is important to note that athletes of both sexes are affected by common sources of stress (Gould, Horn & Spreeman, 1983) although males and females

rank stressors differently. Selby, Weinstein, and Bird (1990) studied 27 varsity teams at Stanford University. Their findings indicate that male athletes rate injury as the highest stressor (66 percent), followed by academic concerns (58 percent). For females, the opposite pattern was found: 72 percent ranked academic concerns highest and 68 percent stated injury. The gender-related differences in rankings may reflect the reality that men have the potential of athletic employment after college, whereas women are dependent on their education.

Differences have been identified regarding cultural and gender-related differences in how competitive behavior is expressed (Dickinson, Sebastien & Taylor, 1983). Smallman et al. (1991) found that male athletes experience more anxiety than females. Differences have also been identified depending on the type of sport. "Individual sport participants demonstrated higher anxiety levels than team sport participants...[with]...the highest state anxiety levels found for individual contact sport participants and the lowest for team contact sport participants" (Gould et al., 1983, p. 160).

Potential stressors for athletes can be organized in two main categories: those that are present during competition and those outside of the actual competitive situation. The primary stressors outside of competition are academic problems, time management, social isolation and possible identity conflict. During competition, the more frequent stressors are fear of failure and fear of success. The playing environment and coaching style also play a significant role in athlete-stress. A review of the literature of each of these categories will be presented.

Academic problems and time management are closely related. Student-athletes put in long hours of practice and have road-trips for games. If there is tournament play, the team may be gone for most of a weekend. This can put academic demands on the student to keep up with their grades regardless of which

Division the college plays in. For scholarship athletes in Division I and II schools, not maintaining academic standards can lead to a loss of athletic eligibility. Loss of such eligibility may result in the need to drop out of school. For student-athletes in Division III schools there is also academic pressure. Because they are not permitted to receive any athletic scholarship money, doing poorly academically represents a waste of personal finances. Thus, all athletes experience pressure to perform both athletically and academically.

Also related to time management is the issue of social isolation. "Athletes, especially those who seek recognition in their sport, may become isolated from their peers....The isolation is further aggravated if the athlete is a serious student" (Pinkerton, Hinz & Barrow, 1989, p. 221).

Pinkerton and his colleagues (1989) concluded that there are two possible areas for identity conflict for athletes. The first focuses on the fact that the majority of individuals playing varsity sports experienced the status that came from being a successful athlete in high school. The collegiate environment, however, may be far more demanding while being much less supportive. Athletes might feel much like a little fish in a big pond rather than a big fish in a little pond.

The second area in which identity conflict might arise is sexual preference. Being with members of the same sex in intense, emotional moments may lead to confusion for some. For those who choose a homosexual lifestyle, confusion may persist, particularly for males. "Unlike males who become homosexual, females may find attributes that are more traditionally associated with being male--aggressiveness, physical strength, competitiveness, masculinity--less dissonant with their concepts of the ideal [athlete]" (Pinkerton et al., 1989, p. 221).

Playing environment and coaching style are closely connected. Playing environment refers to getting along with or living with teammates not of one's own

choosing. There may be poor communication and conflicting values between coaches and athletes and among the athletes themselves (Buceta, 1985). Many coaches believe in the philosophy of arousing players' passions by being verbally aggressive or abusive and non-affirming. The coach may create stress for the athlete by lowering confidence levels or by creating role ambiguity by repeated position changes (Buceta, 1985).

The primary stressors during competition, assuming that the athlete has been trained and physically conditioned for the task at hand, are mental. They are fear of failure and fear of success. Fear of failure may seem more obvious. The athlete worries about "not playing well," of "making mistakes," (Gould et al., 1983) and of "being yelled at" by significant others. The likelihood of fear of failure resulting in inability to perform athletically is proportionate to the value the athlete assigns to winning that particular event at that particular time. In its simplest terms, fear of success (nikephobia) focuses on the belief that if one gets better, others will put on more pressure and increase expectations while others will become increasingly jealous (Gaurons, 1985). There may also be a fear on the part of the athletes that being successful too quickly will shorten their career because they have already reached their personal best.

Being aware of the various unique stressors that a varsity athlete may face is an important part of meeting the needs of the student-athlete.

International Students:

An increasing number of students on American campuses come from foreign countries. After reviewing the literature, Oropeza, Fitzgibbon and Barón (1991) concluded that many colleges actively recruit international students. These students play a key role in the maintenance and survival of academic programs,

especially engineering and the sciences. Foreign students may feel supported by colleges and universities during the recruitment phase, but the high rates at which they use campus health services for stress-related problems is suggestive that they are not given follow-up support and are exposed to many stressors during their programs (Ebbin & Blankenship, 1986).

For these students, the initial stressors arising from the immigration process are considered distinct from the stressors experienced on campus (Eisenbruch, 1990). Oropeza et al. (1991) sorted the stressors of international students into five clusters: culture shock; changes in economic and social status; the need for high academic achievement; discrimination; and miscellaneous stressors. This framework will be used for the present discussion.

Culture shock typically occurs in the third to twelfth month of arrival. Alexander and Shaw (1991) include environment, food, lifestyles and personal relationships in culture. Culture also includes adapting to American social customs (Cho, 1988; Meloni, 1986). How personal problems are communicated is another area of potential cultural difference.

Under the category of economic and social status, Oropeza et al. (1991) point out that many students experience dramatic changes when they become one of thousands of students in affluent North America. In their homelands, these students may have been accustomed to living life in the upper echelons of society.

Foreign students may feel pressure to achieve at high levels. For many, this is an issue of national and/or family pride (Oropeza, 1991). When studying in their mother tongue, they may have excelled academically. Depending on their English proficiency, understanding lectures, participating in class discussions and preparing written or oral reports may be stressors (Cho, 1988; Meloni, 1986).

Racial and ethnic discrimination may also be experienced by foreign students (Oropeza et al., 1991).

There are many miscellaneous stressors to which international students may be exposed to. Homesickness (Meloni, 1986), the need to keep abreast of political developments back home (Oropeza et al., 1991), cultural differences in male/female relationships (Cho, 1988; Meloni, 1986; Oropeza et al., 1991) and deciding where to live after graduation can become stressors. Married students report fewer personal stressors (Cho, 1988; Meloni, 1986). That changes, however, if the couple are raising impressionable children in a foreign society (Oropeza et al., 1991).

The magnitude of stress varies with length of stay (Cho, 1988). Nationality is also central to the sources of stress for international students. Meloni (1986) looked at the issue in depth. She found that specific major stressors were associated with many nationalities. Students from the Far East and Southeast Asia struggled most with English proficiency. Grades were the problem for Africans and Latin Americans. Students from India and Pakistan reported financial concerns as the primary stressor, while academic concerns were cited by those from the Middle East, Iran and Afghanistan. Coming from an oral culture, Arab students found written reports to be stressful. Meloni describes plagiarism as a new concept for these students, who are accustomed to making the knowledge of others their own. Being given the freedom of choice with electives was also stressful for Arab students.

As this review of the literature suggests, there are numerous specific sources of stress for international students, in addition to the ones shared by all college students. As a result, international students may be one of the highest risk groups on college campuses.

Summary

College students appraise events as harmful, benign or beneficial. Those stimuli that are evaluated as harmful are classified as stressors. Stressors trigger the sympathetic division of the autonomic nervous system to become dominant. The result is that the student experiences stress.

Any situation has the potential of being a stressor. Stressors may be psychological, sociological, physical, biological or philosophical in nature. Different conceptual frameworks have been engaged by researchers to study the issue of stressors. Life changes, daily hassles, situational factors, traumatic events and personality have all been considered.

College students are exposed to many stressors. These can be organized into various clusters: family issues; social life; self-sufficiency issues; finances; normal living; and academic concerns. Academic stressors can be further subdivided into five main areas: those associated with courses; those associated directly with instruction; those associated with time management; those associated with dealing with administration; and general issues.

A discussion of college-student stressors would be incomplete without a discussion of the special populations on campuses. The unique stressors of specific academic majors, African-American students, nontraditional students, student-athletes, and international students were covered in this review of the literature. Gender differences and similarities were also presented throughout the various sections.

SEQUELAE

Introduction

Stress is significant because if it is prolonged and not attended to it results in the development of physical and psychological symptoms. For students, it also results in the development of academic problems. In the stress and coping model presented in Chapter One (Figure 1), the consequences of stress is represented as a possible end-point (see Figure 3).

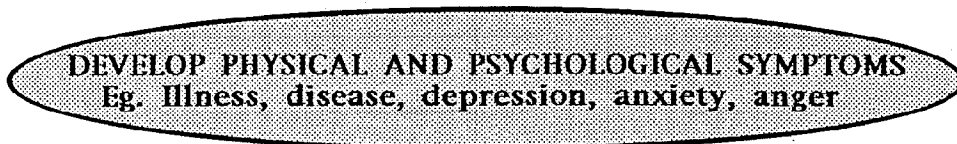


Figure 3. Consequences of Stress

Background:

Long-term stress with prolonged and excessive autonomic arousal can be physically and emotionally taxing. The "fight-or-flight" phenomenon is no longer acted out physically. As a consequence, the hormonal reaction to stressors is mobilized and persists longer than was evolutionarily intended (Maddi, Bartone, & Puccetti, 1987). This finding has led to a dramatic change in the focus of epidemiologists during this century. There has been a significant shift from a sole study of communicable diseases to the study of stress-related, degenerative types of disease (Carnahan et al., 1981; Roberts, 1989).

The major causes of death in the 1900's were pneumonia, influenza, tuberculosis, diarrhea and enteritis (Gunnings, 1982). By the 1960's the major causes of death were stress-related: heart disease, malignant neoplasms and

vascular lesions (Gunnings, 1982). In recognition of this change, the relatively new field of behavioral medicine has developed. Its social science counterpart is health psychology. Both are interdisciplinary fields with specialists from both medicine and psychology.

Since its inception, the study of stress has principally been involved with the etiology of physical and psychological disorders (Sowa & Barsanti, 1986). Because of the overlapping emphasis on the consequences of stress from the fields of epidemiology, behavioral medicine and stress research, much is known about the sequelae of stress.

In their study of stress specificities, Wallbott and Scherer (1991) found that different people will develop different symptoms from each other but that individuals tend to be consistent in their symptoms across situations. When the situation changes, however, the individual will respond with different symptoms.

Regardless of the source of stress, the physiological and psychological outcomes are similar (Lesko & Summerfield, 1989). Because physical and psychological symptoms are typically intertwined and interactive, some researchers choose to study "well-being" (Zika & Chamberlain, 1987). Well-being is a qualitative and quantitative way of looking at distress. It is a concept that incorporates physical, psychological and spiritual components and that goes beyond the continuum of ill-not ill.

Since Selye's early work on the physical consequences of stress, researchers have built a substantial body of evidence describing the prevalence and impact of stress. Physical and psychological illness or even death can be the result of the individual's defense against stressor agents. In their review of the literature, Kohn and Frazer (1986) conclude that up to 75 percent of visits to general practitioners are stress-related. The data are no different when focusing on a

college population. Medical personnel at the University of Maryland campus health center report that the majority of presenting problems of students have a stress component (Greenberg et al., 1987).

Stressors and Symptomatology:

From the earlier discussion of stressors it can be seen that there are many sources of stress. All of these sources have the potential of leading to less-than-desirable outcomes. But the quality of stressors as well as their quantity impacts their consequences. These characteristics of stressors are particularly noteworthy in a discussion of sequelae: imprinting; control and chronicity; and the stressor-stress cycle.

Exposure to stressors can leave a powerful imprint on an individual. Researchers have found that experiencing physical or psychological distress when exposed to stressors makes one hypersensitive to future stressors (Sowa & Barsanti, 1986). Sowa and Barsanti's work also revealed that there is a ripple effect between stressors and symptomatology. When a stressor results in distress in one situation, that same stressor will be rated as aversive in the future regardless of the situational context. Being exposed to multiple stressors on a daily basis, therefore, compounds college-student stress and its consequences.

Control is a primary characteristic of stressors cited by many researchers. Atkinson et al. (1990) noted that stressors which are perceived as being uncontrollable have a more detrimental impact on the immune system than those which are perceived as controllable.

In the work of Gannon and Pardie (1989) controllability and chronicity were identified as key stressor characteristics affecting symptomatology. While this study used animals as experimental subjects, it is illuminating. Animals with

no control over their stressors responded with increased cortisol, growth-hormone and adrenaline excretion. Simultaneously, the animals had depletions of brain norepinephrine and deficits in immunocompetence. When Gannon and Pardie exposed animals to transient stressors, the animals had increased plasma levels of neurotransmitters. When the stressors became chronic, however, the same animals had a depletion of central neurotransmitters. This is significant because neurotransmitters are chemical messengers which allow the body to communicate with itself and in turn respond to and adapt to the environment.

In human subjects, Gannon and Pardie (1989) found that control predicted psychological and psychosomatic symptoms in women. With men, control only predicted psychosomatic symptoms. Chronicity was a significant predictor of health outcomes, and its power was increased if it was considered with the number of stressors, particularly for women.

Helplessness, an extreme form of lack of control, has been associated with somatic effects including sudden death (Allen, 1980). By contrast, Kobasa and colleagues' (1981, 1982) concept of hardiness has a high control component. Hardiness is associated with a low susceptibility to stress. Anderson and Arnoult (1989) found that perceived personal control yields a strong effect for health conditions. Respondents reported less depression, less sickness and more overall wellness. The only condition not impacted by the control factor in Anderson and Arnoult's study was insomnia.

The cyclical interaction of stressors and stress is present in all forms of stress and sequelae. When stress is chronic, the symptoms of stress may in themselves become new stressors. As new stressors, they are not only a consequence of but also a cause of additional stress. In such a manner, stress leads to symptoms and symptoms lead to stress (Wagner & Compas, 1990).

An example of this stress cycle is the body's increased production of prolactin (PRL) in response to stress in both males and females (Vassend, Halvorsen & Norman, 1987). In males, prolactin results in a decrease of sex hormones and possible infertility (Hole, 1990). This stress response in turn produces more stress for the individual. In females, prolactin is most predominant as a hormone associated with pregnancy and birthing: prolactin stimulates the mammary glands (Hole, 1990). For women, the release of prolactin as a stress response may result in an increased desire for nurturing and interpersonal contact. It may also explain the anecdotal data of college counselors that suggests females experiencing the stress of being college seniors are more often torn between the desires of career and marriage, with the possibility of parenting, than are their male counterparts.

The stressor-stress cycle is visible in other ways as well. The autonomic and biochemical consequences of stress may be heightened or exaggerated by lifestyle choices. Two widely used substances that magnify the impact of stress are nicotine and caffeine. MacDougall, Musante, Castillo, and Acevedome (1988) studied the extent of this impact. They found that the smoking group, caffeine group and combined experimental group showed increases in systolic blood pressure and heart rate double that of the control group.

In an attempt to cope psychologically, some individuals respond to stressors with behavior that impacts physical health. Erratic eating patterns (Watkins, 1983) and improper diet and nutrition (Carnahan et al., 1981) are common. Risk-taking behavior often increases (Watkins, 1983). This may magnify the risk-taking tendencies already associated with college students at their developmental stage. Gill (1985) notes the increase in alcohol consumption and drug use, which is sometimes accompanied by a simultaneous decrease in ability to

establish clear goals and engage in life (Decker et al., 1982). On a more positive lifestyle note, De Meuse (1985a) reports an increase in the illness-related behaviors of seeking medical consultation and treatment.

Summary:

This brief introduction on the sequelae strongly suggests the importance of being knowledgeable about the consequences of stress. In the following sections, these consequences will be elaborated on in more detail. The literature review on the sequelae of stress will focus on several relevant areas: physical sequelae; psychological sequelae; and academic sequelae. The presentations on physical and psychological consequences will be divided into two components. Discussions of the general physical sequelae will be followed by those specifically related to the college population. In a similar fashion, general psychological sequelae will precede those associated with college students.

Understanding the nature of the general sequelae is important in the overall understanding of college-student stress. When exposed to stressors, college students are susceptible to both the general sequelae and to the forms specifically found to surface in their population.

Physical Sequelae

Whether studied retrospectively or prospectively, stress has been postulated to be the major factor behind the variations of chronic disease and illness evidenced in the population (Maddi et al., 1984). These conditions are referred to as psychosomatic, meaning that both the mind and body are involved. Psychosomatic diseases are classified as psychogenic (those caused by stress) and psychomollitic

(those exacerbated by stress). A third classification is psychosomatic. In this situation, the stress does not cause the problem but it does inhibit the healing process. In all cases the disease is real, not imagined. Psychosomatic disease in all its forms impacts both the general population and the college-student population.

General Physical Sequelae

Stressors can exert so much power that merely thinking about a stressor will change an individual's physiology. Rosenthal, Montgomery, Edwards, Hutcherson, Follette, and Lichstein (1989) had subjects rank order life event items. Participants then spent two minutes visualizing the items ranked three, two and one. Reactions were monitored using EKG and EMG measurements. It was shown that imagining stressful events, even those one has never experienced, triggered a significant physical stress reaction. In this experiment, women were found to be more reactive than men.

Gender-related differences associated with physical consequences have been identified. Hastrup and Light (1984) found that there are menstrual cycle changes in cardiovascular stress reactivity in normally menstruating women. They also found higher absolute levels for systolic blood pressure, both at rest and during stress, for males. Systolic blood pressure remained significantly higher for males compared to females, even when menstrual phase was controlled for. Heightened heart rate activity is considered to be serious for either sex because it increases the likelihood of developing atherosclerosis (Sharpley & Scuderi, 1990).

General physical sequelae of stress can be clustered into two main, interrelated topics: disease and illness; and the immune system.

Disease and Illness:

A review of the literature results in a host of citations on the physical sequelae of stress. Ulcers, hypertension and heart disease are the most commonly cited physical conditions (Atkinson et al., 1990; Benjamin & Walz, 1987; Carnahan et al., 1981; Decker, Williams, & Hall, 1982; De Meuse, 1985a). Thyroid disease and cancer (Benjamin & Walz, 1987) as well as tuberculosis, diabetes and chronic yeast infections (De Meuse, 1985a) can result from prolonged stress. General respiratory problems, asthma, colitis and rheumatoid arthritis have also been associated with stress (Atkinson et al., 1990; Benjamin & Walz, 1987; Decker, Williams, & Hall, 1982; Watkins, 1983). Possible stress symptoms include gastrointestinal disturbances, weight loss, exhaustion, fatigue and a general sense of being physically run-down (Watkins, 1983).

Insomnia is associated with stress (Decker et al., 1982; Watkins, 1983). In their study, Hicks and Garcia (1987) found an inverse relationship between level of stress and sleep duration. Another condition frequently connected to stress is that of headaches (Carnahan et al, 1981; Decker et al, 1982; Watkins, 1983). Holm et al. (1986) studied the role of stress in recurrent headaches. They found that 80 percent of recurrent headaches are stress-related.

The Immune System:

Many of the above mentioned stress-related conditions occur due to a weakened immune system. The immune system is the body's first line of defense against illness. It is a complex

"surveillance mechanism that protects the body from disease-causing microorganisms. It regulates our susceptibility to cancers, infectious diseases, allergies, and

autoimmune disorders (that is, diseases such as rheumatoid arthritis, in which the immune cells attack the normal tissue of the body)" (Atkinson et al., 1990, p. 583).

Secretory immunoglobulin A (S-IgA) is particularly compromised by stress. It is the predominant antibody in saliva, tears and intestinal secretions (Hole, 1990). A negative relationship has been found between stress and S-IgA (Jemmott & Magloire, 1988; Martin & Dobbin, 1988). In light of this, it is not surprising that frequent viral or flu episodes and persistent colds are stress-related (Watkins, 1983).

Student Physical Sequelae:

It appears that students are much more aware of the psychological than the physical consequences of stress. Gray (1988) had college students report their perceived symptoms of stress with the resulting rank ordering:

1. nervousness or anxiety
2. muscle tension
3. feelings of insecurity or excessive worrying
4. weakness, fatigue or lack of energy
5. lowered threshold for anger or irritability
6. depression
7. difficulty concentrating or forgetfulness

As can be seen, college students rarely identified physical consequences. Those that were reported (muscle tension; weaknesses, fatigue or lack of energy) are not what would be considered major consequences. In another study, the physical outcomes of heartburn and gastrointestinal upset were reported by students

(Kanter, Roberts & Hane, 1983). In reality, there are numerous, significant physical sequelae to prolonged stress for college students.

In response to the demands of academia, students experience many biochemical changes. Blood glucose levels fluctuate in response to stress. This makes it difficult for students with diabetes, especially males, to stabilize their condition (Hanson & Pichert, 1986). In females, stress can cause or significantly impact the development of amenorrhea and dysmenorrhea. Dysmenorrhea refers to the condition of painful menses. It is estimated that up to 75 percent of college-aged women suffer from dysmenorrhea, and of those who do, two-thirds do so every month (Dickstein, 1984).

The physiological changes during examination stress have been studied by numerous researchers. Increases in serum prolactin, systolic blood pressure and cortisol levels have been found (Vassend, 1988). During exams, students have been found to have decreased levels of antibodies (Atkinson et al., 1990). Students' bodies appear to recognize this change and respond with increases in monocytes that can break down bacterial cell membranes (Halvorsen & Vassend, 1986). Diastolic blood pressure rises significantly in response to stress associated with academic assignments (Lesko & Summerfield, 1989).

With their competitiveness, time urgency and impatience, Type-A college students typically feel stressed because of failing to meet their own expectations about academic achievement. Poor health is predictable for this group (Fekken & Jakubowski, 1990). Decreases in secretory immunoglobulin-A have already been discussed in the section on general physical sequelae. It is important to note here, however, that the decrease is more pronounced during final exams, particularly for students with high need for achievement (Jemmott & Magloire, 1988).

Certain sectors of the college-student population have specific types of physical susceptibility. Stressors experienced by international students most commonly surface as health-related issues (Cho, 1988). Male undergraduates appear to become accident-prone due to stress. In both a pilot study and a major study, Furney (1983) found that in four of five specific accident categories and in the overall number of accidents there was a positive correlation with negative life events. There was a positive correlation for undergraduate females as well (.43), but it was not as high as for males (.76).

For female students, being in a romantic relationship is associated with lowered health, even when their global perceived stress is controlled for (Reifman & Dunkel-Schetter, 1990). This finding was confirmed by another study in 1991 (Reisman et al.). Reisman's group found that freshman women who were romantically involved (i.e. dating the same person on a regular basis) had more physical symptoms and more medical visits. However, they were not receiving more counseling than noninvolved women. The results also showed that involved women experience more performance difficulties and more days in bed due to illness; they also make more visits to the health service for distress.

As with general physical sequelae, much of the morbidity and mortality associated with college-student stress is self-induced by way of lifestyle choices. Kushner and Hartigan (1983) compared changes in lifestyle behaviors of college students over a ten-year period. They found an 82 percent increase in alcohol use, a 40 percent increase in the number of cigarettes smoked, and a 33 percent increase in the use of over-the-counter sleeping medications. The immediate and long-term implications of these changes are profound.

Psychological Sequelae

General Psychological Sequelae:

Flaherty and Richman (1989) write about "psychiatric epidemiologists," and indeed, this is a most appropriate phrase to use in conjunction with the study of the psychological causes and effects of stress. The psychological impairment resulting from life-event stress is frequently sufficient to require treatment (Andrews, Tennant, Hewson & Vaillant, 1978; Holmes & Rahe, 1967).

In addition to being associated with morbidity, psychological sequelae are also associated with mortality. Suicide can result from an inability to cope with the myriad of life's demands. Helplessness and despair can result in suicidal ideation and suicide attempts (Dixon, Heppner & Anderson, 1991). Suicide is the second leading cause of death among college students (Greenberg, 1984). Westfeld and Range's (1990) review of the literature indicated that, conservatively, 30 to 40 percent of students engage in suicidal ideation; attempts are made by 4 to 5 percent. These rates suggest that these are common behaviors of students on college campuses.

The most commonly acknowledged psychological manifestations of stress are depression (Benjamin & Walz, 1987; De Meuse, 1985a; Kanter et al., 1983; Watkins, 1983; Workman et al., 1981), anxiety (Benjamin & Walz, 1987; Workman et al., 1981) and anger (Atkinson et al., 1990). Stress is a significant predictor of depression, especially with those who employ what Folkman and Lazarus (1985, 1988) call emotion-focused coping strategies (Hartley & Kolenc, 1988; Kuiper, Olinger & Air, 1989; Warren, Stake & McKee, 1982). This style of coping utilizes such approaches as avoidance, distancing, self-blame and wishful thinking. Psychological symptomatology is the highest when there is a poor fit

between one's appraisals of a situation and one's coping styles (Folkman & Lazarus, 1985). A study by Warren et al. (1982) found that those respondents with high coping skills and consequent low stress responses did not experience depression.

Russek and her colleagues (1990) conducted a 35-year prospective study of anxiety using healthy male students from Harvard University. Anxiety was defined as the subject's feelings of apprehension with accompanying autonomic nervous system arousal (this equates with what transactional stress researchers call "appraised threat" or "harm"). The classes of 1952, 1953 and 1954 completed psychological and physical stress tests. "Sickness" was identified by complete medical records, maintained during the study by subjects' personal physicians. Anxiety was found to be the key predictor of psychosomatic disorders. More than 71 percent of all "sick" subjects experienced severe anxiety. During the study six subjects died: five of these individuals were in the high-anxiety group. In the high-anxiety group there was a 250 percent higher incidence of coronary heart disease. This significant finding was unrelated to smoking behavior, family history of coronary heart disease, emotional reactivity or blood pressure. Anxiety is a potent consequence of stress.

Anger, another outcome of stress, has also been studied. Thomas and Williams (1990) found anger to be correlated significantly with perceived stress in men and women. Anger can result in altered physiology, particularly with regard to cardiac output and peripheral vascular resistance. Suppressed anger has long been connected with poor health but Thomas and Williams (1990) came to a similar conclusion about expressed anger.

Suppressing other emotions also results in psychological symptoms. Pennebaker and his colleagues (1986, 1987, 1988) have shown that there is an

inverse relationship between expressing the emotions surrounding a traumatic event and psychological symptomatology. The inability to express emotion coupled with the desire to express emotion can literally be a fatal combination.

Strong correlations have been established between emotional distress and eating disorders such as anorexia, bulimia and compulsive eating. Compulsive eating, often linked to anger and hostility, is significantly related to stress (Kagan & Squires, 1984).

There are numbers of miscellaneous psychological consequences of prolonged stress. Lability of mood, blunting of affect and diminished frustration-tolerance have been identified (Watkins, 1983). Rigidity, defensiveness and burnout with its associated cynicism may also occur (Benjamin & Walz, 1987).

Some might assume that if stressors cause psychological sequelae, then perhaps the absence of perceived stress would equate with happiness. Staats (1983) looked at this issue and found that there was a near-zero correlation between stress and happiness. However, he also established that low stress does not necessarily mean happiness, nor do high levels of happiness result in absence of stress.

Student Psychological Sequelae:

The psychological consequences associated with being a college student are predictable. The consequences are also numerous. Compas et al. (1986) found that 64 percent of the variance of freshmen's psychological symptoms could be accounted for by measurements taken three months prior to their arrival on campus. In their study, Fisher and Hood (1987) found that all students, irrespective of residential status, showed a rise in psychological disturbance in response to the transition to college. Depression, obsessionality and

absentmindedness were most notable. This has been corroborated by other researchers (Kanter et al., 1983).

Dunkel-Schetter and Lobel (1990) studied the student population at UCLA.

On a campus with a high commuter population they found the following:

1. up to 60 percent of students showed signs of depression in the month previous
2. 67 percent of students were experiencing current problems with eating and sleeping or illness
3. 31 percent "usually" felt overwhelmed with school work
4. 20 percent found their GPA to be a constant worry for them
5. 75 percent reported having conflicts with parents two or more times per week
6. 85 percent did not get along with parents
7. students had difficulty forming and maintaining social relationships with peers.

Despite these overwhelming psychological issues, only 9 percent of Dunkel-Schetter and Lobel's respondents had ever confided in a professional campus counselor. Eleven percent had confided in a peer counselor.

Academic Sequelae

There is a third and special classification of consequences of college-student stress: academic sequelae. In addition to physical and psychological manifestations, prolonged exposure to stress impacts colleges students academically.

Globally, the relationship between emotional arousal due to stressors and performance is curvilinear (Dandoy & Goldstein, 1990). Initially, some arousal enhances performance. Beyond certain limits, however, performance suffers significantly. Excessive academic stress has also been associated with one's sense of well-being. High academic stress often results in a decrease in self-esteem and life-satisfaction (Dunkel-Schetter & Lobel, 1990). This is understandable given the proportion of time that college students spend focusing on academics. This stress is magnified by the constant awareness that their performance is being evaluated.

Retrospectively, there is a negative correlation between negative life-events and grade-point average (GPA) (Zitzow, 1984). Hence, as the number of negative life events increases, there is a corresponding decrease in GPA. Life stress has also been shown to be inversely related to exam scores, extra-credit points and to total course-points (De Meuse, 1985b).

Similar results arise when studies use a prospective design. De Meuse (1985a) found that the inverse relationship between negative life-events and performance in the classroom made it possible to predict future success. This finding was confirmed later by Benjamin (1987). Students experienced lowered GPA's when they engaged in maladaptive coping such as abusing others, acting impulsively and drinking alcohol (Bentley, 1982).

Another way to analyze the impact stressors can have on GPA is to look at those with high GPA's. College students with high GPA's report using stress-management techniques more often than those with low GPA's (Gray, 1988). In a similar vein, when students with low GPA's are taught stress-management techniques their GPA's improve. Decker (1987) found that students in such a treatment group gained an average of 0.431 GPA. During the same time span, the

control group experienced a slight decrease in GPA (-0.060). Decker showed that the treatment group had significant decreases in general stress and in test anxiety.

For some students, overall GPA does not explain the level of emotion during the preparation for an exam (Folkman & Lazarus, 1985). Immediate concerns may be more important than past performance, to many students. High test-anxiety, a prevalent and debilitating condition, is the resulting consequence of such stress. The primary detrimental consequences of test-anxiety is that it decreases performance and leads to consistent misinterpretations of intelligence, aptitude and progress (Register, Beckham, May & Gustafson, 1991).

Test-anxious individuals are more likely to engage in self-derogatory, self-evaluative thinking that further impairs their performance (Kagan & Squires, 1984). Ottens, Tucker, and Robbins (1989) looked at the issue of academic anxiety. They concluded that test-anxious students experience an inability to answer the first question and an inability to recall information while they are aware that time is running out and that their classmates are making faster progress through the test.

Those who are test-anxious are more susceptible to extraneous interference. These students report more physical symptoms (Vassend, 1988) and they worry more. Two defining characteristics of college-student worriers are their chronic perfectionism along with their sense of feeling rushed and pressed for time (Meyer, Miller, Metzger & Borkovec, 1990). These characteristics are consequences of and fuel for the stress response.

Stress is the primary reason for another academic issue: cheating. Barnett and Dalton (1981) found that the number-one reason for cheating was the perceived pressure to get good grades. Faculty members who were included in the

survey consistently underestimated the extent of the pressure college students felt. This lack of empathy may itself be a significant stressor.

Absenteeism can also be a consequence of stress. In 1983, Slem looked at the relationship between classroom absenteeism and stress factors. He found that attendance correlated inversely with stress variables, even when attendance was not mandatory.

SUMMARY

By triggering powerful biochemical reactions, stressors can be detrimental to both longevity and quality of life. This is now so well recognized that it has revolutionized the way health care is viewed and how it is provided. For many decades the role of stress in morbidity and mortality has been acknowledged and studied.

The consequences of prolonged exposure can impact college students physically, psychological and/or academically. As with all components of a discussion on stress, these facets of the sequelae are interactive; they feed off each other. At one time a response may be a consequence of stress. At another, it may become a stressor itself (e.g. maladaptive coping which incorporates behaviors such as substance-abuse or risk-taking and creates additional problems).

The consequences of stressors are altered by the characteristics of the stressor itself. In this review of the literature, controllability and chronicity were discussed. The physical, psychological and academic sequelae of stress were discussed, with explicit emphasis on college students. A summary of the discussion is provided in Table 3.

Table 3: Summary of Sequelae of Stress

PHYSICAL	PSYCHOLOGICAL	ACADEMIC
<p>GENERAL:</p> <ul style="list-style-type: none"> ◆ altered EKG and EMG's ◆ ulcers, hypertension, heart disease ◆ thyroid disease, cancer, TB, diabetes ◆ chronic yeast infections ◆ general respiratory problems, asthma, colitis, rheumatoid arthritis ◆ gastrointestinal disturbances, weight loss/gain, exhaustion, fatigue ◆ insomnia, sleep disturbances, headaches ◆ decreases in immunocompetence, S-IgA <p>STUDENT RELATED:</p> <ul style="list-style-type: none"> ◆ fluctuations in blood-glucose levels, diabetes ◆ amenorrhea, dysmenorrhea ◆ increases in serum prolactin, systolic blood pressure, cortisol levels ◆ decreased antibodies ◆ diastolic blood pressure increases ◆ accident-proneness ◆ increased health center visits, increased days of restricted activity ◆ increased use of alcohol, tobacco, over-the-counter sleeping medications 	<p>GENERAL</p> <ul style="list-style-type: none"> ◆ increase use of psychological & psychiatric services ◆ increased helplessness, despair, suicide ideation and suicide ◆ increased depression, anxiety, anger, hostility ◆ anorexia, bulimia, compulsive eating ◆ lability of mood, blunting of affect, diminished frustration tolerance ◆ increased rigidity, defensiveness, burnout, cynicism <p>STUDENT RELATED:</p> <ul style="list-style-type: none"> ◆ increase in psychological disturbances ◆ depression, obsessionality, absentmindedness ◆ increased worry ◆ increased familial conflicts 	<ul style="list-style-type: none"> ◆ decreased performance in an environment where performance is constantly evaluated ◆ decrease in self-esteem, life-satisfaction, sense of well-being ◆ decrease in GPA, exam scores, extra-credit points, total course points ◆ test-anxiety ◆ increased misinterpretations of ability level, intelligence, progress ◆ increased self-derogatory, self-evaluative thinking ◆ increased cheating ◆ increased absenteeism

INTERVENING VARIABLES

All college students are exposed to similar multiple forms of stressors, yet not all students succumb to the physical, psychological or academic consequences described in the previous section. Some appear to handle any change or challenge

with equanimity. Researchers have put considerable effort into understanding why this is true of some but not of others. Two key interactive factors appear to make the difference: 1) appraisal of the situation; and 2) modulating variables. Figure 4 illustrates how these components fit into the model of stress and coping presented in Chapter One.

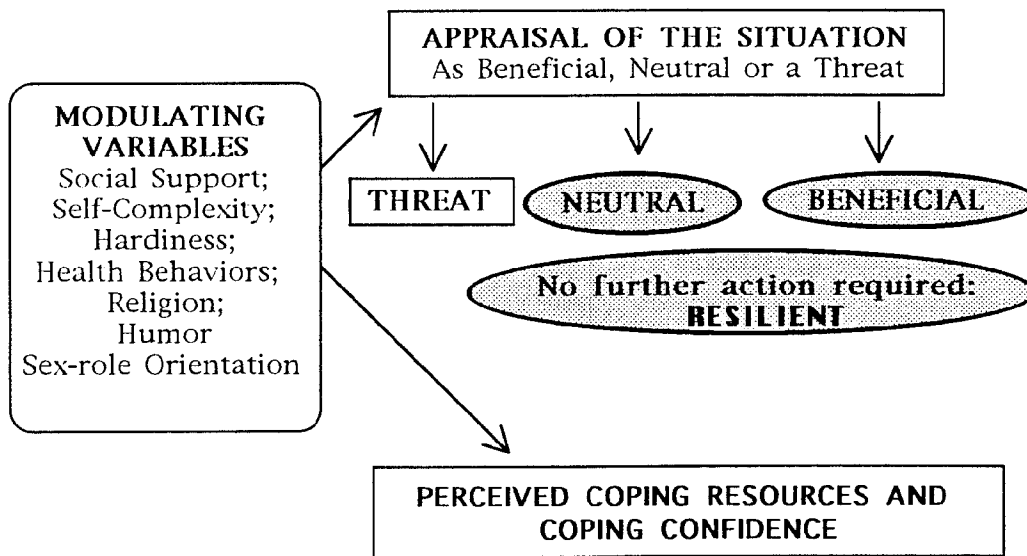


Figure 4: Intervening Variables in the Stress Response

Discussion of these intervening variables will cover both the general understanding of the issues, as well as the way these issues relate specifically to college-student stress.

Appraisal of the Situation

Although studies are on record that indicate that the stress response is not influenced by cognitive appraisal (Steptoe & Vögele, 1986), these are distinctly in the minority. Abella and Heslin (1989) found that the way a stressful event is

appraised determines the nature of the emotions experienced. The conclusion based on the previous section of the literature review would also include that the extent of the consequences of stress is also determined by the appraisal process. Morgan (1982) found that the way individuals perceive and attach meaning to events is a more accurate predictor of future illness than the nature of the event itself.

Cognitive appraisal consists of the perceptions and evaluations of events that focus on the implications of the event for the person's well-being and for possible coping resources (Holm et al., 1986). Forsythe and Compas (1987) note two characteristics of appraisals: they may facilitate or impede eventual coping; they are independent of the objective features of the stressor.

Folkman and Lazarus (1985) were fore runners in the theoretical inclusion of appraisal in the stress response. Prior to their work, Holmes and Rahe's (1967) efforts found that experiencing change resulted in symptomatology. Folkman and Lazarus' contribution was to identify that change is detrimental only if individuals perceive it as detrimental.

In their transactional model, Folkman and Lazarus identify primary appraisal and secondary appraisal. In the stage of primary appraisal, individuals evaluate whether or not the event is relevant to well-being. The encounter is also categorized as a benefit, a threat, a harm/loss or a challenge at this point in the appraisal process. "Threat refers to the potential for harm; challenge refers to the potential for mastery, growth or gain; and harm or loss refers to injury already done, as in harm to friendship, health, or self-esteem" (Pagana, 1989. p. 169).

The secondary appraisal refers to the options and resources available to deal with the encounter; this operates independently of primary appraisal. Secondary appraisal will be discussed in more depth during the presentation on coping.

Emotions can be viewed as an indirect measure of the types of cognitive appraisals a person is making (Drumheller et al., 1991). As an individual's appraisals of the events change, so do the emotions (Folkman & Lazarus, 1985). Folkman and Lazarus note that situations evaluated as being ambiguous evoke emotions of threat (worry, fear, anxiety) and challenge (confidence, hope, eagerness). This parallels the findings of Maddi and Kobasa (1984) in their development of the concept of hardiness. In their various studies, Folkman and Lazarus discovered that when a situation unfolds and the outcome becomes clear, the individual will experience harm emotions (anger, sadness, disappointment, guilt, disgust) or benefit emotions (exhilaration, pleasure, happiness, relief).

The intensity of the emotion experienced is in direct proportion to the extent to which the person believes there is something at stake. This contributes to the differences in people's emotional reactions to similar situations.

Personality characteristics can influence how stressful encounters are appraised. One of these pertinent characteristics is explanatory style, the individual's causal explanation of bad events. There are six explanations of events along three continua:

1. it is stable, it will last forever
2. it is unstable, it is a temporary condition
3. it is global, it affects everything in my life
4. it is specific, it only affects this particular situation
5. it is internal, it is my fault
6. it is external, it is not my fault.

Peterson (1988) conducted two studies of stress response and explanatory style. In both cases, students who appraised negative situations as being stable

and global experienced more stressful occurrences, more symptomatology and developed more unhealthy lifestyle habits.

In summary, the way an event is appraised largely determines whether or not that stressor will instigate the stress response. If the encounter is appraised as a benefit or a challenge, it will not be distressful. If, however, the event is appraised as being a threat or a harm/loss the resulting emotions will trigger autonomic arousal. Arousal, and its consequent symptomatology, is highest when there is a poor fit between the primary appraisal and coping styles.

Modulating Variables

The potential stress response stemming from the appraisal process can be decreased by certain variables frequently referred to as mediators and moderators. The terms mediating and moderating are used by different authors to describe different concepts. Folkman and Lazarus (1988) consider moderator variables to be antecedent conditions which interact with other conditions to produce an outcome. Gender, socioeconomic status or personality traits would be considered moderators by this definition. In their model, Folkman and Lazarus describe mediators as variables generated in the encounter. Mediators change the relationship between the antecedent and the outcome. By this definition, Folkman and Lazarus' concept of cognitive appraisal is a mediator.

The distinction between mediators and moderators can become more complicated when one considers that the same variable may function in the same model as both a mediator and a moderator (Zika & Chamberlain, 1987). As indicated by the previous paragraphs, use of the terms 'mediator and moderator' have a tremendous inherent potential for semantic confusion. To eliminate this, the

present discussion will focus on variables that *modulate* the stress response. *The New Lexicon Webster's Dictionary of the English Language* (Encyclopedic Ed., 1988) defines the term modulator as something which has the ability to change intermittently. Variables which modulate the stress response, therefore, are ones which may have varying degrees of influence from situation to situation. The term modulating implies that these variables are not constants, and this is considered to be a more realistic reflection of life.

Those variables consistently shown in the literature to be significant modulators are: social support, hardiness, self-complexity, lifestyle, religion, humor and sex-role orientation. A review of the literature for each of these modulating variables will be presented.

Social Support:

In its simplest form, social support is the degree to which an individual's needs for support are met by others (Jemmott & Magloire, 1988). This includes perceived need for support, as well as the perceived availability for support. Social support can focus on emotional, informational or tangible support from others (Jung & Khalsa, 1989).

Social support is perhaps the most favored research topic when modifying variables are considered. Interest in this area has spawned volumes of studies. Considered collectively, the findings suggest there are two manners in which social support impacts the stress response: the buffer model and the direct effects model (Jemmott & Magloire, 1988). In the buffer model, social support is seen as beneficial only when the individual is exposed to stressful events. This model contends that when there is no stress, the presence of social support does not make any difference. In the direct effects model, social support is perceived as

salubrious whether or not the individual is exposed to stressors; it is seen as beneficial at all times.

Some of the social-support studies have focused on the aspect of social interest and how it is positively related to overall health, somatic symptoms and energy level (Zarski, West, Gintner & Carlson, 1987). Others have studied how the frequency of 'doing things' with others increases well-being and decreases depression (Reifman & Dunkel-Schetter, 1990). Frustration has been expressed regarding theorists who tend to only use one facet of social support in their research (Wolgemuth & Betz, 1991).

Wolgemuth and Betz (1991) looked at the stress levels of college undergraduates and three social-support measures: number of social supports, satisfaction with social supports and family support. With women, they found that 18 to 29 percent of the variance in physical symptoms could be predicted by these variables. These same variables did not have predictive efficacy with male students. In fact, with males Wolgemuth and Betz (1991) were unable to discover any social support measure that related to the symptoms of males. They did not, however, consider whether increased social support would make them healthy. Compared to the men, the women reported higher levels of social support on four of seven indices. For the female students, low family support resulted in increased strain, regardless of stress level.

While there are studies which suggest that there are no gender-related differences related to social support (Goodman, Sewell & Jampol, 1984), other studies suggest that differences do exist. In their review of the literature, Flaherty and Richman (1989) concluded that the data suggests women have developed a greater sensitivity to their own needs and to those of others. As a result, women may have a greater capacity to provide support and a greater dependence on social

support for their sense of well-being. This finding is confirmed by others (Gilligan, 1982; Josselson, 1983).

Wagner and Compas (1990) researched gender as a moderator between stress and symptomatology. One of their findings is that females, from junior high through college, rated negative events occurring to those in their social network as more stressful than did males. For females, the stress perceived by their social network became a part of their own stress. Wagner and Compas (1990) surmised that "females may be more sensitive than males to the well-being of others, consistent with Gilligan's (1982) formulation that, as early as junior high, females' relationships are more rooted in their sense of connectedness and caring for others, whereas males' relationships may entail more emotional separation and autonomy" (p. 403).

Martin and Burks (1985) conducted a study on social support, with college women as the population of interest. They found that the number of persons in the network contributes a substantial proportion of the variance of the total support measures, especially for nonfamily social support. There was a negative correlation between nonfamily support and symptoms within the high stress group. The importance of network and nonfamily support may reflect a gender issue. It may also reflect the developmental period of college students. When college students are at a stage of increased independence from family, nonfamily support may be more meaningful. Their peer group may also be able to better understand the stressors of college life and listen empathetically.

Social support has also been researched from the context of the specific benefits it nurtures. People who have adequate social support may engage in fewer negative behaviors such as substance abuse and engage in more positive behaviors such as regular sleep and good nutrition (Jemmott & Magloire, 1988).

Those with many social ties tend to live longer and are less apt to succumb to stress-related illnesses than those with few social supports (Atkinson et al., 1990). The immune systems of college students with high levels of social support function better (Jemmott and Magloire, 1988). Jemmott and Magliore (1988) also found that students with significant social support have higher secretory immunoglobulin-A (S-IgA) across all examination periods: pre-exam, exam and post-exam. Students who lack social support and feel lonely show the poorest immune functioning during exam stress (Atkinson et al., 1990).

Social support is also associated with decreased psychological maladjustment and report of daily hassles (Zarski et al., 1987). For college students, high levels of family support decrease the magnitude of psychological problems stemming from everyday problems (Burks & Martin, 1985). Holahan and Moos (1981) found that when initial maladjustment, life change events and social support were controlled for, a decrease in social support in the family and work environment would be significantly related to increased psychological maladjustment for as long as one year later.

Specific forms of maladjustment have been researched. Social support is inversely related to emotional exhaustion (Neumann, Finly-Neumann & Reichel, 1990). Student burnout leading to academic failure and student attrition decreases with a perception of psychological community (McCarthy, Pretty & Catano, 1990). Another specific form of maladjustment associated with low social support is depression. Social-support variables significantly increase the ability to accurately predict depression scores beyond that afforded by stress levels alone (Elliot & Gramling, 1990). Jung and Khalsa (1989) found that for African-Americans, perceived family support was related to lower depression levels, while for whites support from friends was key.

Kuiper and Olinger's (1989) study confirmed that lack of social support leads to increased levels of depression. They also discovered that even when not depressed, vulnerable individuals engaged in more self-isolation. Regardless of the current level of depression, the subjects in the study were reticent in seeking out others to discuss their problems. This suggests that it is not the depression that leads to low social support, but rather, low social support leads to the depression.

In a similar manner, Goodman et al. (1984) found a reticence to seek out social support related to the use of professional counseling. Given an equal number of stressful events, the likelihood of seeking counseling increases as social support decreases. This places such individuals in a position of double indemnity: the more social support decreases, the more important counseling becomes to fill the void.

In summary, social support significantly changes the physical and psychological impact stressful events have on a person. Physically, people with good social support systems have enhanced immune systems and are less susceptible to psychosomatic disorders. Social support decreases stress-related psychological maladjustments such as burnout and depression.

Hardiness:

Another construct which can modify the stress response is hardiness. Suzanne Kobasa and her colleagues (1981; Kobasa, Maddi & Courington, 1981; Kobasa, Maddi & Kahn, 1982) coined the phrase "hardiness" after studying white male executives under the stress of re-organization. It was noted that under these strains some high-stress executives became sick while other high-stress executives did not. The high-stress, high-illness executives could be distinguished from the high-stress, low-illness executives by their scores on the hardiness factor.

Hardiness is a configuration of personality characteristics that function as a resistance resource. Hardiness "combines three tendencies--namely, toward commitment rather than alienation, toward control rather than powerlessness, and toward challenge rather than threat" (Maddi & Kobasa, 1984, p. 31).

In a longitudinal study conducted by Kobasa et al. (1982), a significant interaction was found between stressful events and hardiness on developing illness. This finding was consistent one year and two years after the original data collection was completed. Kobasa and colleagues also found that hardiness has its greatest health-preserving effects when stressful events mount. Subsequent studies have shown that 27 percent of the variance in illness scores can be accounted for by hardiness, stress levels and health practices (Wiebe & McCallum, 1986).

Research studies have identified numerous implications for hardiness. A decrease in stress level has been associated with an increase in hardiness and health practices (Wiebe & McCallum, 1986). As hardiness increases, individuals engage in more positive health practices and in fewer negative health behaviors such as overeating, smoking or over-drinking (Kobasa, Maddi & Kahn, 1982). Besides the obvious physical benefits of choosing positive health behaviors, there are likely psychological benefits from the sense of control.

Wiebe (1991) found the same stressor was perceived as less threatening by high-hardy individuals than by low-hardy individuals. It was also highlighted that high hardiness is associated with less negative and more positive affect. High-hardy persons had more frustration tolerance and lower diastolic blood pressure. This is significant, given that diastolic blood pressure is considered reflective of chronic rather than acute stress. In their study, Sears & McKillop (1990) found hopelessness and hardiness to be negatively correlated.

There are also differences in the extent and manner of how high- and low-hardy individuals approach the issue of social support (Kobasa et al., 1982). Those high in hardiness are desirous of giving and hearing frank appraisals of situations. They want to learn and grow and may actively seek this out through training courses or counseling. By contrast, low-hardy individuals tend to seek blanket reassurances and distractions from stress.

There are gender-related differences affiliated with hardiness. Wiebe (1991) found that high-hardy men had a lower heart rate during a perceived threat than low-hardy men. No similar contrast was found for women. Men also reported a greater sense of perceived control than women. For both men and women, hardiness increases positive affect. For women, however, hardiness does not appear to exert protective physical effects.

Self-complexity:

Patricia Linville (1985, 1987) developed and researched the concept of self-complexity as a means of explaining why some people are more susceptible to the adverse consequences of stress than others. Self-complexity refers to the way individuals cognitively organize their self-knowledge. The more ways one is able to describe oneself, the more 'aspects' one is considered to have. With increased numbers of self-aspects, the individual's identity becomes more complex. When people have few self-aspects, stressful events can spill over into other aspects.

As an example, several possible self-aspects may exist with a varsity football player. If he primarily sees himself as a 'jock' and a superstar athlete, becoming injured takes on a profound meaning. If this same athlete describes himself not only as a son, but the son of a former all-pro football player, the injury becomes more stressful. If the athlete believes that he is popular only

because he is a football hero, other social roles are impacted by the injury. Assume, however, that this football player has a honey-comb of self-aspects. He might describe himself as an athlete, a friend, a son, a poet, a romantic, a student, a colleague, a writer, etc. In this scenario, the athlete has so many self-aspects that trauma to even a central one leaves him with many other parts of himself intact. This student-athlete will feel strain from an injury but is not as likely to catastrophize and overgeneralize the meaning of the stressful event.

In prospective studies, Linville has found that the higher the level of self-complexity, the less adverse the impact of stressful events on symptoms such as depression, flu episodes, backache, headache and menstrual cramps. Self-complexity has a buffering effect.

Under high stress, individuals with high self-complexity evidence fewer symptoms. Under low stress, those with high self-complexity evidence more symptoms. This suggests that in the absence of stressful encounters, maintaining all of one's self-aspects can become a source of stress. Under low stress, low self-complexity individuals appear to live a simpler life and experience fewer symptoms.

Health Behaviors:

Health behaviors in general, and physical fitness in particular, have been identified as a major modifier of the stress response (Lesko & Summerfield, 1989). Roth, Wiebe, Fillingim, and Shay (1989) found an inverse relationship between illness, a consequence of stress, and fitness. They concluded that while other modifiers decrease the stress response by influencing the subjective interpretation of the event, physical exercise decreases the physiological strain that occurs when events are interpreted as stressful.

Not only does physical exercise prove beneficial in the midst of stressful events; it can be beneficial from a preventive standpoint also. People who are physically fit are less vulnerable to the adverse effect of life stress. Lesko and Summerfield (1989) revealed that students who exercise more experience lower stress levels resulting from class assignments. Brown (1991) found that as distress increased so did college-student visits to the health care center, but only for those scoring low on fitness measures.

Religion:

Religion has either been ignored or considered a source of pathology by psychological researchers. More frequently than not, there is a strong professional bias against religion. An editorial in the *Brain/Mind Bulletin* (1986) noted this disparity:

Ninety-five percent of Americans polled... claim to "believe in God," compared to 43 percent of the American Psychiatric Assn. [Association] membership and five percent of the American Psychological Assn. [Association] membership....Because of their own agnosticism or ambivalence, they seem uninterested in "religiosity" as a trait. (p. 1)

Larson, Lyons, and Sherill (1991) and Larson, Pattison, Blazer, Omran, and Kaplan (1986) used systematic analytic reviews of the quantity and quality of 2,348 research studies published in four major journals over a five-year period: *American Journal of Psychiatry*, *British Journal of Psychiatry*, *Canadian Journal of Psychiatry* and *Archives of General Psychiatry*. They concluded that although religion is a highly salient variable, religion has a minimal place in psychiatric

theory and human behavior. According to Larson, Pattison, Blazer, Omran, and Kaplan (1986),

Psychiatry usually approaches religion as an independent variable, associated with psychiatric disease outcome; it seldom assesses religion as a dependent variable. In addition, psychiatry knows little of the benefits of religion, since it seldom assesses it either as an independent variable in association with emotional health or as a dependent variable of a psychotherapeutic or psychosocial intervention. (p. 333)

When religion is studied, it is often associated with physical and/or mental health. Religiosity has been shown to lower pain levels in cancer patients (Maton, 1989). Religiousness (Trent, Keller & Pictrowski, 1983) and spiritual support (Maton, 1989) are inversely related to depression. For intrinsically religious Protestants exposed to high, uncontrollable stress, depression scores decreased over time as the stress increased (Park, Cohen & Herb, 1990).

In their review of more than 200 studies in the literature, Gartner, Larson, and Allen (1991) concluded that religious commitment contributed to longevity of life, decreased drug and alcohol use and fewer incidents of delinquency. Those who do not attend church are four times more likely to commit suicide. A negative relationship was found between church attendance and divorce, while a positive relationship was found between church attendance and marital satisfaction. A consistent negative relationship was found between religious participation and psychological distress. Infrequent church attenders were twice as likely to be clinically depressed. Schizophrenics who attended church had lower rates of hospitalization.

Maton (1989) found four dimensions of religiosity which allow it to have a stress-buffering role: spiritual coping (personal prayer and religious attribution); congregational coping (rituals and seeking the clergy's advice); spiritual support (perceived support from God); and congregational support (perceived support from the clergy and fellow church members).

The findings of other researchers overlap with Maton's (Koplik & DeVito, 1986; Park et al., 1990; Schafer & King, 1990). On the basis of separate studies, they concluded that faith and practice foster a type of attributional perspective which might ameliorate the harmful personal effects of adverse circumstances. Religion may provide a framework of meaning for these individuals, helping them make sense of negative experiences. Purpose or meaning-in-life has been shown to be important with regard to health issues (Das, 1983). Of the personality variables considered by Zika and Chamberlain (1987), meaning-in-life was the most consistent predictor of well-being.

Religion plays a significant role in the lives of college students as well. Koplik and DeVito (1986) compared freshmen from the class of 1976 to those of the class of 1986. Those in 1976 were more concerned with keeping their earlier religious faith. By 1986, the freshmen were more troubled over moral issues and wanting to feel closer to God. Maton (1989) found that for college students experiencing the high stress of being freshmen, spiritual support positively and significantly related to personal, emotional adjustment.

Humor:

Humor can also modify the adverse effect of life stress by allowing individuals to find alternative meanings in a situation. Martin and Dobbin (1988) found that people with varying degrees of humor do not differ in the number of

daily hassles they report. People who use humor, therefore, are aware of the problems but are able to respond differently.

Humor is not merely a psychological uplift in the midst of strife. It also impacts the immune system. For those with low humor and high stress, a strong negative relationship was found between daily hassles and secretory immunoglobulin-A (SIgA) (Martin & Dobbin, 1988). Those with low humor had a significantly depressed immune system following a stressful encounter.

Gender differences have been found with regard to humor. Schill and O'Laughlin (1984) did not find any particular humor preferences with women. Men preferred sexual humor to cope with their stress, a preference not shared by the women in the study.

Sex-Role Orientation:

The negative effects emanating from high levels of distress can be mitigated by gender role orientation. Nezru, Nezru, and Peterson (1986) considered the concept of psychological androgyny, that is, those individuals who do not categorize life into male and female roles. Their findings indicated that differences in depression rates related more to sex role orientation than to gender.

Sex-role orientation has also been shown to influence the college experience of students. In a study conducted by Brooks, Morgan, and Scherer (1990), individuals with a nontraditional sex role orientation were found to have a greater composite of coping behaviors regardless of gender or type of stressful situation. Traditional females had the most restricted range of coping resources, while nontraditional women made the most use of social support. Nontraditional males and females used more planful problem-solving. Brooks and colleagues (1990)

postulated that students with nontraditional sex-role orientations may have larger coping repertoires by virtue of coping with the stressor of being nontraditional.

Summary:

There are numerous variables which are capable of diminishing the adverse physical and psychological effects of stressful encounters. Some of these modifiers are resources such as social support. Others are personality traits like hardiness, self-complexity or humor. Physical fitness, a health behavior, and religion are also able to decrease the magnitude and meaning of negative events.

COPING

How one approaches coping is a significant factor in whether or not one develops sequelae as a result of exposure to various types and magnitudes of sources of stress. The segments of the stress and coping model (presented in Chapter One) that will be discussed at this time are represented in Figure 5.

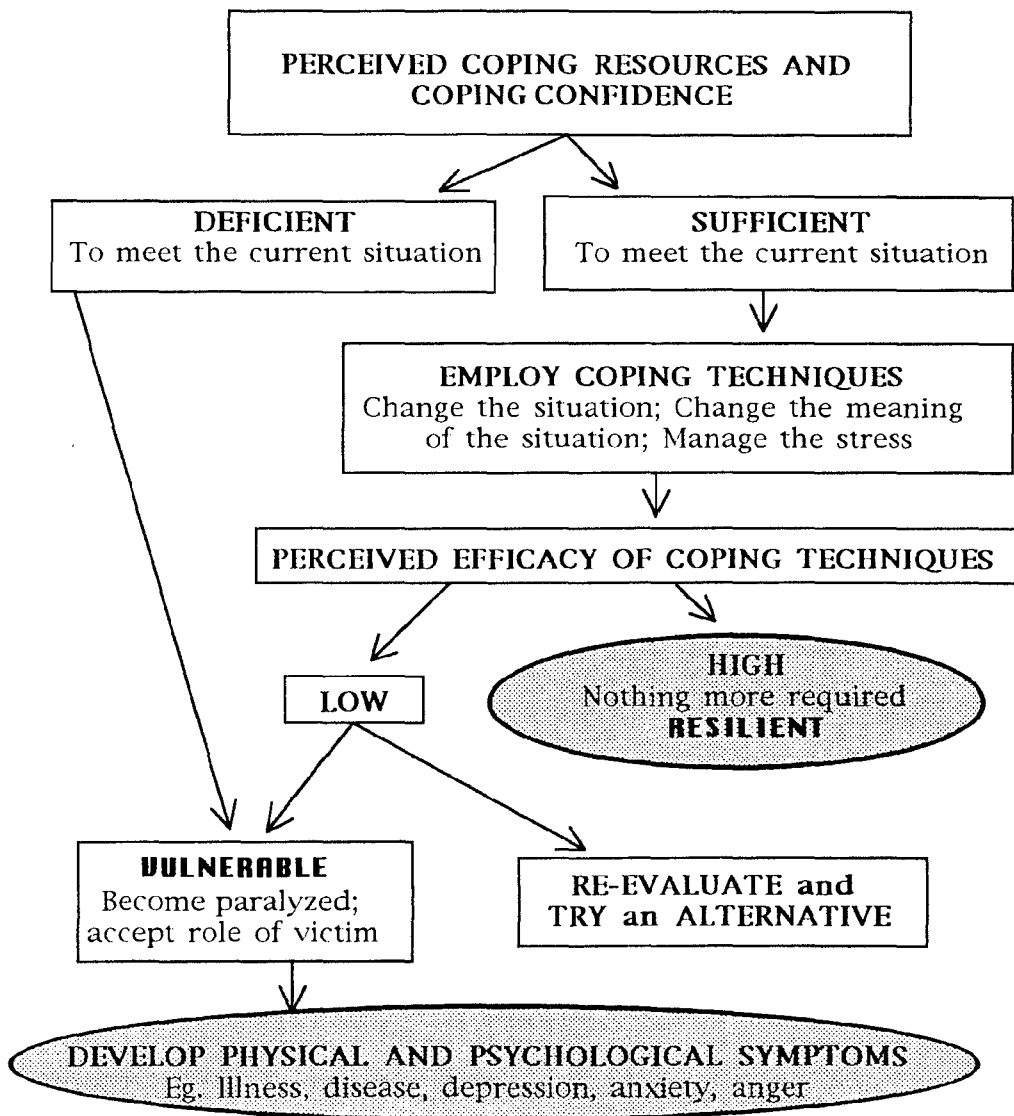


Figure 5: Paths of Coping

Background

In their work, Franzen and Hefferan (1983) point out that stress and coping can be defined by their consequences. A stressful situation is an encounter that arouses one's sympathetic nervous system and often one's subjective feelings of

anxiety. Franzen and Hefferan see coping as a cognitive or behavioral response that decreases these effects of stress. Coping is an attempt to control the magnitude of the stress response. Identifying and developing coping skills allows one to utilize energy reserves wisely and to respond to the stresses of life in a manner which promotes health and well-being (Roberts, 1989).

Folkman and Lazarus (1968) define coping as the efforts made to master, tolerate or reduce the internal and external demands and conflicts surrounding the individual. They go on to highlight two functions of coping when there is a troubled person-environment relationship: regulating distressing emotions; doing something to change for the better the problem causing the distress. These functions are satisfied by two respective coping techniques: emotion-focused and problem-focused coping, respectively. More will be presented on these techniques later.

There are differences in how vulnerable (high-stress) and resilient (low-stress) people attempt to cope with similarly appraised situations. Drumheller et al. (1991) suggest that just as high-stress persons have been found to be more physiologically responsive to stressful encounters they may also be more cognitively and behaviorally responsive. Simply put, high-stress people may think and act differently in their efforts to cope. Kobasa (1981) considers this cognitive and behavioral difference to be a function of personality. Hovanitz and Kozora (1989) consider it to be due to the different personality characteristics in individuals and/or due to the nature of the stressor.

Learning to cope is an essential part of the process enroute to earning a college degree. Holdaway and Kelloway (1987) conclude that the transition to college and college itself "will always require some substantial personal adjustment, regardless of country, type of university or college, and the [efforts]

taken by these institutions [to assist students]" (p. 62). Or as another author put it, college has the effect of catalyzing more unhappy events than happy ones (Fleming, 1981).

College students may be particularly vulnerable in their efforts to cope because they may not yet have the knowledge and experience to make mature decisions. Bonner and Rich (1987) researched college-student suicides. They found that deficient adaptive resources, cognitive distortions and social/emotional alienation served as a predispositional base in suicidal behavior.

Lacking life experience, college students often create their own negative outcomes by coping in a manner that is discrepant with their own appraisal of the situation (Abella & Heslin, 1989). As a result students may engage in negative lifestyle choices and risk-taking, even though they know it is not helpful. High stress levels are associated with cognitive impairment (Atkinson et al., 1990). This may lead to rigidity which makes it difficult for students to see alternative solutions to their situations.

As can be seen from the preceding, coping is an important concept to consider in a study of college-student stress. Under the theoretical framework of types of coping, coping responses and coping resources will be presented along with relevant gender-related differences. Coping efficacy or coping confidence will also be covered in the discussion.

Types of Coping

In 1978 Leonard Pearlin and Carmi Schooler published the results of their longitudinal study on the nature and structure of coping. Their sociological perspective made a significant difference in the understanding of coping. Prior to

Pearlin and Schooler, coping was seen only from an individualized, clinical perspective. After their work, coping patterns in response to the normal strains of living were acknowledged to exist. Pearlin and Schooler effectively demonstrated that both the style and content of coping affects well-being.

Based on interviews with 2,300 people between the ages of 18 to 65, Pearlin and Schooler found three major types of coping:

(1) responses that change the situation out of which strainful experience arises; (2) responses that control the meaning of the strainful experience after it occurs but before the emergence of stress; and (3) responses that function more for the control of stress itself after it has emerged (p. 6).

Each of these types of coping will be discussed, with its relevant research. While presented as separate, distinct patterns there is considerable overlap between the approaches. Also presented will be findings on gender-related differences.

Responses that Modify the Situation:

Pearlin and Schooler (1978) point out that the first step to modifying a stressful encounter is to recognize that a problematic situation exists. Once this is recognized, it is possible for a person to change the situation. Problem-focused coping and seeking advice are some of the adaptive coping strategies which can change the situation.

Tanck and Robbins (1979) found that the most common coping responses for both sexes were analyzing the source of stress, taking direct action, and seeking company. Folkman and Lazarus, the originators of the transactional model of stress, would categorized these responses as "problem-focused." Problem-

focused coping is employed more when individuals believe that there is an element of control which allows for something constructive to be done. When individuals perceive that they have some control, they make efforts to directly alter the situation. If, however, problem-focused coping is engaged in situations where there actually is low control, difficulties arise. Folkman and Lazarus (1985) found that the only time low control is associated with psychological symptomatology is when coping strategies that are intended to change the stressor are engaged.

Seeking out advice and assistance are also coping behaviors which can change the situation. Those who are assertive under duress have been found to be more adept at accessing and marshaling social support (Elliot & Gramling, 1990). Elliot and Gramling also found that assertiveness is incompatible with prolonged feelings of depression or loneliness, major psychological manifestations of stress. Assertive people are more resilient to stress because they assume an active or proactive stance.

Responses that Modify the Meaning of the Situation:

After the event has occurred but before stress emanates, people attach meaning to what has transpired. If the event is perceived as negative and impacting on areas of the individual's life that has been given high meaning, the event will be stressful. The more the person perceives being at risk in a given situation, the more intense the stress response will be (Peacock & Wong, 1990). This perception of what is at stake, however, can be changed. The negative meaning of the situation can be neutralized by cognitive beliefs, religion, philosophy or humor. Regardless of the specific strategy employed, redefining the situation is a powerful coping mechanism (Nelson, 1988).

Cognitive beliefs are the glasses through which we view the world; they are paradigms which alter our behavior. Because of experiences we have growing up, our cognitive beliefs can become distorted. When this happens, our day-to-day perceptions do not reflect reality; they are negatively colored by our past experiences. Cognitive distortion is positively correlated with depression: the more distortions one has in approaching life, the more depressed one is likely to be (Warren et al., 1982). Individuals who have many irrational cognitive beliefs are more reactive to stressful events and to the adverse physical and psychological consequences of such an event (Vestre & Burnis, 1987). Relative to college-student use of alcohol as a coping resource, differences have been found in the cognitive coping of abstainers and relapsers (Neidigh, Gesten & Shiffman, 1988). Cognitive distortions are a significant factor in recurring tension headaches (Holm et al., 1986).

There is one situation in which cognitive distortion enhances the individual's ability to change the meaning of the situation. During relationship breakups, illusory control is a stress-reducing adaptation (Collins & Clark, 1989).

Another way of changing the meaning has already been discussed in detail: religion. Turning to religion as a coping strategy is strongly related to planful coping, restraint coping, positive reinterpretation and personal growth (Carver, Scheier & Weintraub, 1989). Carver et al. also found religion to have a zero correlation with alcohol-drug disengagement. Those who described themselves as 'religious' did not resort to alcohol or drugs as a coping strategy.

Pearlin and Schooler (1978) also consider selective ignoring to be a way to change the meaning of the situation. In this case, individuals "cast about for some positive attribute or circumstance within a troublesome situation. . . . [This tends to] shrink the significance of problems" (p. 6-7).

Managing the Stress After it Occurs:

Frequently people find themselves in the situation of trying to cope with stress after some negative encounter has occurred. When it appears that one's personal coping resources are minimal, there is a tendency to regulate the distress but to do little to change the situation. College students respond by exercising and increasing their intake of vitamins (Spillman, 1990). Eating comfort foods was also reported widely in Spillman's study, with males preferring pizza, soft drinks and milk; females preferred candy/sweets (especially chocolate), soft drinks and pizza.

Pinch et al. (1986) studied the coping strategies of freshmen males living in residence halls. They found the following behaviors:

25 percent over-ate	23 percent used alcohol
50 percent exercised	20 percent drove around
54 percent talked to others	20 percent meditated

Personality traits influence the type of strategy one might choose to manage stress. Plante and Schwartz (1990) found that individuals who are highly defensive and highly repressive use solitary activities. They engage in personal hobbies, or in acceptable but nonverbal activities such as running and swimming.

Creating a strategy for manageable suffering is somewhat related to the technique of changing the meaning, although it is not as adaptive because of its victim mentality. In this instance individuals adopt a martyr's stance "that can convert the endurance of unavoidable hardships into a moral virtue" (Pearlin and Schooler, 1978, p. 7).

Minimizing the discomfort can be viewed as a positive or negative management attempt. Avoidance behaviors such as excessive television viewing and alcohol or drug use would be examples of strategies with negative outcomes.

Denial, passive acceptance, withdrawal and wishful thinking frequently fall into the negative category.

Emotion-focused coping, the second style identified by transactional theorists Folkman and Lazarus, is also a form of minimizing the discomfort. Emotion-focused coping involves distancing, self-blame, self-isolation, minimizing and making light of the situation. It can be a predictor of depression (Hartley & Kolenc, 1988; Kuiper et al., 1989). Zarski et al. (1987) found emotion-focused coping correlated with somatic symptoms and daily hassles. Emotion-focused coping has also been associated with more of the negative factors of high trait- and state-anxiety (Russler, 1991).

There are some situations in which emotion-focused coping is adaptive. When the event is uncontrollable, emotion-focused coping can be a positive response. Also, emotion-focused coping can facilitate problem-focused coping if it is used to manage emotions that would otherwise impede the problem-focused activity (Folkman and Lazarus, 1985).

Gender-Related Differences:

The relationships between coping and stress or coping and psychopathology have frequently exhibited gender-related differences (Hovanitz, 1986; Hovanitz & Kozora, 1989). Wagner and Compas (1990) concluded that "despite the fact that females report experiencing more stress than males, they may 'rise to the occasion,' finding the resources required in order to meet the stressful demands" (p. 400).

Similar results were found by Zeidner and Hammer (1990). They assessed coping resources on five variables: cognitive, social, emotional, spiritual/philosophical and physical. A total coping-resource score was also

computed. They found that women had higher scores on all variables but particularly on the social and emotional scales. Hovanitz and Kozora (1989) found that women use more social-centered coping. Perhaps it is because women experience more success in coping with stress that they are more open to discussing the frequency and magnitude of their experience with researchers.

Hovanitz (1986) found that men and women did not differ in their rate of using emotion-focused coping. However, women's use of it was associated with more psychopathology and dysfunction. That finding may reflect stereotypical bias in measurement instruments.

When Hamilton and Fagot (1988) compared male and female undergraduates they found differences in the use of ineffective coping strategies. Males tend to seek sexual gratification and to use marijuana. Females ruminated, ate constantly and became dysfunctional or irritable.

Gray (1988) found a number of stress-management techniques used significantly more often by female college students than by males: talking with a friend or family member; setting realistic goals and expectations; expressing feelings and emotions in a healthy way; attending to spiritual well-being; eliminating the use of chemicals; doing "something just for fun" on a daily basis; eating a nutritionally balanced diet; and responding to bodily messages.

Coping Confidence:

Having a repertoire of coping responses and resources is not sufficient to insulate one from the adversity of stressful encounters. People must also have a sense of confidence in their ability to use these responses and resources at appropriate times. This self-efficacy about coping maintains the perspective that life is under control even in the midst of difficult trials. Coping confidence allows

individuals to feel good about their ability to handle the problems that life brings along; it promotes a sense of stability. Self-efficacy judgments about coping, according to Krantz' (1983) summation, influence both the imitation and the persistence of coping behavior.

Dispositional optimism is a way in which coping efficacy can be studied (Scheier et al., 1986). Optimism is an expectancy that there will be a positive outcome. Scheier et al. conducted two studies on optimists and pessimists. They found that optimism confers an advantage not only when something can be done to deal with a stressful situation but also when the event is one that must simply be accepted. In their research, optimism was associated with problem-focused coping and with the suppression of competing activities. Optimism is inversely related both to the tendency to focus on and express emotions and to the tendency to give up on the goal (Carver, Scheier & Weintraub, 1989; Scheier et al., 1986).

Low efficacy is associated with problems and pathology. Low coping-confidence is associated with low problem-solving and high suicide rates (Dixon et al., 1991) and depression (Warren et al., 1982). It is not clear which comes first, although it is likely a cyclical process, where one influences the other.

Optimists do better in the transition to college than pessimists (Cantor & Norem, 1989). Morrison et al. (1991) found that college students who are optimists are not only more satisfied with their ability to handle stress, they are also more satisfied with life in general. Those with high coping-confidence had higher scores on total self-concept, honesty, verbal ability, emotional stability and academic ability. These students were also more confident in their relationships with their parents.

Summary:

Pearlin and Schooler (1978) aptly write that "coping, in sum, is certainly not a unidimensional behavior. It functions at a number of levels and is attained by a plethora of behaviors, cognitions, and perceptions" (pp.7-8).

Coping strategies typically applied by individuals are those that change the situation, those that change the meaning of the situation and those that manage, rather than eliminate, stress. The more strategies people have in their behavioral and cognitive repertoires, the more successful their coping efforts will be at minimizing or neutralizing stressful situations. Mental health is as much a result of having a varied set of resources and a flexible response to coping as it does to any particular coping resource (Kessler & Essex, 1982). Pearlin and Schooler (1978) present the same principle emphatically when they state, "it is clearly better to be armed with a repertoire of responses and a reservoir of resources than to have either alone" (p. 12).

When Carson and Johnson (1985) researched the problem of suicide in college students, they found that those with suicidal thoughts experienced significantly more stress symptoms although they were not experiencing more serious, stressful life-events. Carson and Johnson concluded that those who are suicidal are less resilient because they have less information and skill with which to handle problems and emotions.

Learning to cope successfully is crucial to college students. Students whose physical and psychological resources are already taxed by chronic stress are vulnerable. The occurrence of an acute event, even a small one, may have the potential to trigger a crisis (Dunkel-Schetter & Lobel, 1990). Developing confidence in one's coping skills can counteract this potential danger.

MEASUREMENT OF STRESS

Conducting this present research required the successful measurement of stressors, perceived stress-level, psychological distress, health distress, coping resources and coping confidence. Various techniques of data collection are available in each of these areas.

Accurately assessing stress can be a challenge because it is extremely difficult to measure directly without invasive procedures. As a result, researchers can focus on the cognitive processes which produce stress and/or on the behavioral responses which arise from it (Hamilton, Rotheiler & Howard, 1991). In their review of psychological and neuroendocrinological measurements of stress, Baum, Grunberg, and Singer (1982) noted four basic approaches to measuring stress: self-report, performance-based, psychological and biochemical. Of these, self-report is frequently employed.

Self-report techniques can be useful beyond collecting information about the perceived stress level. Derogatis (1974, 1982) points out numerous advantages of self-report instruments that insures the likelihood of their becoming even more popular. He notes that they can easily be administered and scored by non-professionals. Self-reports often allow for computerized scoring, thereby allowing for the development of broader data bases. Measures using a self-report format are cost-effective and can be used in a variety of settings not just the laboratory. While the main concern with self-report instruments is getting individuals to accurately portray their current status, their strengths are considered to outweigh this limitation (Derogatis, 1974, 1982).

In an attempt to identify the consequences of stress, researchers have employed two basic data-collection techniques: interviewing physicians and/or

reviewing medical files. Those symptoms and illnesses recorded are included in the study. A second approach is to have respondents complete self-reports. Kobasa, Maddi, and Courington (1981) compared these two techniques. They found an 89 percent agreement between a subject's self-report and the physician's diagnosis of that same subject's condition. When compared against the criterion of a physician's diagnosis, self-report of illness is a valid measure.

In this present study, self-reports were accepted for all of the areas of research interest. Researchers have found that to increase the accuracy of the self-reports, shorter recall periods of six months or less should be employed (Klein & Rubovits, 1987; Nezu et al., 1986)

SUMMARY

Stress is an important concept of the modern world. The pioneering work of Selye in physiology and of Cannon in psychology have allowed an understanding of parts of this multifaceted subject. Lazarus, with his transactional model, added another significant piece to our understanding: how an individual appraises an event is as important as the event itself.

Attempting to understand stress and its ramifications among the college-student population is an important undertaking. College students are daily bombarded with a multitude of potential stressors. For some, this results in the development of physical, psychological or academic sequelae. Others, however, appear to be more resilient to stress.

What distinguishes those who succumb to the stressful events and those who are resilient may be modulating variables. Cognitive appraisal, social support, hardiness, self-complexity, health behaviors, religion, humor and sex-role

orientation can be mediators and/or moderators in the stress response. When this occurs, the impact of the stressful events is modified. Coping patterns and coping confidence can also make people more resilient to stress.

While previous researchers have looked at various components of stress and its consequences among college students, comprehensive attempts have not been made. Based on a review of the literature this present study will investigate stressors, perceived stress-level, psychological distress, health distress, and coping confidence in the college-student population.

Understanding college-student stress is beneficial institutionally and individually. In a time when the budgets of many institutions are shrinking and demands for those monies are increasing having a comprehensive understanding of college-student stress can be most helpful. On the basis of such information, cost-effective prevention and intervention programs can be established. In such a manner vulnerable college students who need the most help will have help available. Providing this type of appropriate assistance for students can have long-term implications for their longevity and quality of life.

CHAPTER THREE: METHODOLOGY AND PROCEDURE

SUBJECTS

Target Population

Data for the purpose of answering the research questions of the study were collected at a Christian, four-year, liberal-arts college with a total enrollment of 2,256 students. In the 1993-94 academic year, 21 students attended off-campus programs (such as the American Studies program in Washington, D.C.) on a full-time basis and 61 attended the Philadelphia campus. The remainder were on the main campus in Gratham, Pennsylvania.

Students attending this eastern college represent 34 states and 21 foreign countries. The college offers more than 40 different majors, including professional and preprofessional degrees in business, computer science, education, engineering, medicine and nursing. Many programs involve cooperative education, internships and international service opportunities.

Subject Selection

On the basis of a list of current students generated by the college registrar's office, participants were chosen for inclusion by means of a stratified, randomized computer selection. Stratification was on the basis of academic year (freshman,

sophomore, junior, senior). Over-sampling procedures were carried out in anticipation that not all students selected would be willing to participate: 672 students were selected in order to establish a final population of 327 subjects. This subject pool was within $\pm .05$ percent of the population proportion, providing sufficient statistical power (a 95 percent level of confidence) (Krejcie & Morgan, 1970) for the proposed data analysis.

The morning before the data was collected, students received a letter (see Appendix A1) in campus mail inviting them to participate by filling out a questionnaire during chapel time on a specific date. This was followed-up in the afternoon with a voice-mail message reminding them that they had been selected to participate. As an incentive, those agreeing to participate in the study were given credit for attending the normal mandatory chapel.

INSTRUMENTATION

The questionnaire had several components. Prior to answering any items, respondents were asked to put a number code for their major on the answer sheet (see Appendix B1). This allowed for data to be analyzed by specific academic majors.

There were three main segments to the questionnaire. The first section presented participants with a list of potential sources of stress which were compiled by the researcher on the basis of the literature review (see Appendix B2). Each stress source was presented on a five-point Likert scale ranging from "0 - Not stressful" to "4 - Extremely stressful." Respondents were asked to indicate to what extent they have personally experienced each stressor in the previous six-month period. The second section consisted of the standardized *Brief Personal*

Survey (BPS) (see Appendix B3). Permission was obtained from the author of the *BPS* to use the questions (see Appendix A4). The *BPS* included validity scales and measures of stress responses and stress resources. The final segment of the questionnaire gathered demographic information (see Appendix B4). While there are several components to the questionnaire, participants were given a single form with questions numbered successively to minimize potential confusion on the answer sheets (see Appendix B5).

Brief Personal Survey

In response to the need for a brief, multidimensional self-report instrument, Webb (1988) developed the *Brief Personal Survey (BPS)*. The *BPS* consists of 80 True/False items. Items are written on a sixth-grade reading level and are designed to be answered by persons from teenage to senior adult years. The *BPS* can be completed in 10 - 15 minutes.

The Subscales:

Based on a review of the stress literature, Webb (1988) targeted nine key response and mediating variables for scale development:

- a. response sets:

Validity-Denial scale

- b. excessive somatic and health concerns:

Health Distress scale

- c. response-based stress variables:

Anxiety scale

Depression scale

Anger-Frustration scale

Pressure-Overload scale

d. mediator variables:

Social Support scale

Philosophical-Spiritual Support scale

Coping Confidence scale

There is always a potential validity problem posed by malingering or faking on self-report inventories. The *BPS* includes a validity scale, the Denial scale, to "detect a response set, deliberate or not, sensitive to naive social desirability" (Webb, 1988, p.45). The *BPS*'s validity scale reflected the extent to which individuals tend to deny common faults, which could reflect that they also deny they are experiencing stress or related problems. The Denial scale, therefore, identified a respondent's tendency to choose socially desirable responses. The Health Distress scale was designed to measure an individual's "preoccupation with physical disorder as a stress response and as a potential defense mechanism or means of avoiding other issues or coping options" (Webb, 1988, p.46).

Four of the *BPS* scales focused on response-based stress variables indicative of psychological symptomatology. In her review of the literature, Webb (1988) concluded that "anxiety and depression are the response symptoms most often chosen to measure stress level" (p. 49). In developing the Anxiety and Depression scales, attention was given to separating each mood symptom.

The response scale included two additional psychological manifestations of stress: Anger-Frustration and Pressure-Overload. Since the early work of Selye and Cannon the physiological changes resulting from anger arousal have been recognized as a stress response. The fourth response scale, Pressure-Overload,

was designed to "capture the layman's sense of stress as a pressured or overloaded state of being" (Webb, 1988, p.66).

Three potential mediator/moderator variables were targeted for scale development in the *BPS*: Social Support, Philosophical-Spiritual Support, and Coping Confidence. The Social Support scale attempted to tap into "the degree to which a person's basic social needs for affection, approval, belonging, and security are met by others" (Webb, 1988, p.71). Philosophical-Spiritual Support is broadly defined by Webb (1988) as the "resources provided by a person's philosophical-spiritual beliefs or practices that might mitigate the problems of life" (p. 81). The last of the scales to evaluate mediator variables was the Coping Confidence scale. This scale is "meant to address the individual's appraisal of self-efficacy and personal confidence in his or her coping capacity with current stress" (Webb, 1988, p. 87).

The items associated with each of the scales are presented in Appendix C1. The direction for scoring each item is also included.

Norms:

The *BPS* is currently normed primarily on white, middle-class community residents and on medical patients.

Reliability:

Reliability is a prerequisite characteristic, when employing any form of questionnaire. When an instrument possesses reliability, the researcher can be assured that the data collected on each of repeated administrations are essentially the same. A reliable instrument will obtain consistent results each time it is used

to measure the same condition (Krishef, 1987). The *Brief Personal Survey*, a crucial component of the present research instrument, is reliable.

The internal consistency data are presented in Appendix C2. Coefficient alphas were generated to determine the relationship between individual test items and the test as a whole (Cronbach, 1952). The coefficient alpha for the total test is .72. The *BPS* stress responses scales (health distress, pressure-overload, anger-frustration, anxiety and depression) have coefficient alphas ranging from .68 to .78. The *BPS* stress resources scales (social support, philosophical-spiritual support and coping confidence) have coefficient alphas ranging from .74 to .80.

Webb (1988) notes the "longstanding difficulty in developing reliability [validity] scales with moderate reliability" (p. 140). The validity scale's coefficient alpha with a general population is .54, although with the control sample used in developing the instrument the coefficient alpha was .61. A similar pattern was found with the *Minnesota Multiphasic Personality Inventory (MMPI)*. The *MMPI*'s Lie scale is comparable to the *BPS*'s Denial scale. While the *MMPI* has 15 reliability items, compared to the *BPS*'s 8 items, the reliability coefficients for the general population is .46 and for psychiatric patients it ranges from .62 to .72 (Hathaway & McKinley, 1983). Thus, the validity scale has the lowest reliability of any of the *BPS* scales, but it is better than or comparable to the Lie scale of the *MMPI*, long considered a gold standard in personality assessment.

Validity:

Validity is another prerequisite characteristic of research instruments. A questionnaire is deemed to be valid to the extent that it measures what it purports to measure (Krishef, 1987). The validity of the *Brief Personal Survey* will be

discussed in terms of group differences, self-ratings, physician ratings and structural validity.

Group Differences:

The *BPS* has been found to differentiate between medical patients and a control group. "Medical patients scored higher on stress responses and lower on stress resources than the control group.... Persons with a clearly definable stressor have therefore been shown to experience more responses to stress and to feel they have fewer resources to cope with stress" (Mauger, 1989, p. 2). The differences in scores are presented in Appendix C3.

Self-Ratings:

The comparison of *BPS* scores and participants' self-ratings of perceived stress is provided in Appendix C4 and C5. "There are small to moderate positive correlations between Stress Response scales and stress ratings and small negative correlations between stress ratings and Stress Resource scales" (Mauger, 1989, p. 2).

Physician Ratings:

During the norming, medical group participants were also rated by their physicians for stress/illness after being seen for a medical appointment. "None of the *BPS* scales is related to the physician's ratings of the actual severity of the patient's illness, but a number of the scales are related to the influence of stress on the patient's condition, the degree of psychological distress exhibited by the patient during the appointment, and the patient's overconcern about their condition"

(Mauger, 1989, p. 3). The correlations of physician ratings with *BPS* scales are presented in Appendix C6.

Structural Validity:

"The internal structure of the *BPS* is seen in the intercorrelation matrices and principal components analyses" (Mauger, 1989, p. 3). There are small to moderate correlations between scales (see Appendix C7), indicating that the scales are each measuring different variables when considered in light of the unique variances for the scales.

DATA COLLECTION

The data-collection method was approved by the University of Maryland (College Park) Human Subjects Review Committee. Participants were 18 years of age or older. The questionnaire was a noninvasive survey procedure. Participants' responses were anonymous and were only considered in the context of the large data pool. There were no disclosures of the human subjects' responses outside the research context which put individuals at risk of criminal or civil liability nor damaged to the subjects' financial standing, employability or reputation. On these grounds, the research was also approved by Messiah College, where the data were collected.

The primary data collection dates were within an eight day period: a Tuesday, Thursday and Tuesday. Because of sufficient seating, all students were invited to come on the first Tuesday. Those unable to come on the Tuesday were invited back for make-up sessions on either the Thursday or the subsequent Tuesday. An additional data collection session was added on the Thursday

evening for those randomly students selected who attend classes at the Philadelphia campus.

When students arrived at the testing site, they were given a packet containing information and all materials necessary to participate. To standardize administrations of the questionnaire, the top sheet of the packet was a letter describing the study and requesting them to participate. The letter was read aloud to the students by the researcher (see Appendix A2 for the Questionnaire Administration Script).

If students agreed to participate, they were asked to sign the informed-consent form (see Appendix A2) on the bottom section of the introductory letter and return it at the end of the session with their completed questionnaire. Participants left their completed questionnaires, as well as their chapel attendance cards, in separate supervised collection boxes at each exit. The attendance cards of those participating in the study were processed by the college separately from those of students attending the regular chapel. In this manner, an accurate record was provided to the researcher indicating who participated in each data collection session. This list was compared with the list of those students who were invited to participate without compromising the anonymity of subjects. Those students who did not show up were sent a follow-up letter (see Appendix A3). In this letter they were offered the opportunity to participate in the study by attending a make-up day on Thursday. Again, it was determined who participated in the Thursday session and those not attending were sent follow-up letters allowing them to participate Tuesday of the following week. This procedure insured the highest possible rate of participation. Participants' responses to the items on the questionnaire were recorded on Scantron sheets for computerize scoring.

All subjects received information about the study which allowed them to provide informed consent to participate. The informed consent form was also reviewed and approved by the University of Maryland. The informed consent did include a "withdrawal-without-prejudice clause." By assuring students that they would receive chapel credit even if they did not stay to complete the questionnaire, the solicitation process did not become coercive.

DATA ANALYSIS

Prior to examining the data of all respondents collectively, it was initially analyzed as four separate batches: those who voluntarily showed up for participation in the Tuesday, Thursday, Tuesday sessions on the main campus; and those who participated in the Thursday session at the Philadelphia campus. This ensured that data between the collection sessions was compatible before it was collapsed into one large data base for analysis.

Only the questionnaires completed by those subjects with T-scores of 64 or lower on the validity subscale (Denial) of the *Brief Personal Survey* were analyzed. Based on normative data (Mauger, 1988), respondents with T-scores 65 and above do not admit to experiencing stress or having problems. By virtue of their 'fake good' profiles, these subjects were excluded from the study.

Prior to the core analysis of the study, the demographic data on subjects categorized as vulnerable, average and resilient was analyzed. This allowed for an accurate determination that differences found between groups reflected their health distress and were not the result of demographics such as year in school, nationality or academic major.

The data obtained during the study was analyzed using a 2 X 3 factorial analysis of variance. The first independent variable, gender, consisted of (1) females and (2) males. The second independent variable, health distress, consisted of (1) vulnerable, (2) average and (3) resilient subjects. With each hypothesis tested, the effect of gender and health distress on the dependent variable, as well as the interaction effect, was considered. This plan is presented in Figure 6.

		MAIN EFFECT A: Health Distress		
MAIN EFFECT B: Gender		VULNERABLE	AVERAGE	RESILIENT
FEMALE				
MALE				

Figure 6. Factorial Analysis of Variance Design

Given the finding of a significant main effect or interaction effect, Tukey's HSD (honestly significant difference) test was employed to make all possible pairwise comparisons.

While this research engaged a 2 X 3 factorial analysis of variance, for clarity of presentation the hypotheses and sources of data for each main effect are presented separately. Those related to the main effect of health distress are presented in Table 4. The hypotheses and sources of data associated with the main effect of gender are presented in Table 5.

Table 4: Main Effect A (Health Distress): Hypotheses, Sources of Data and Proposed Statistical Procedures

HYPOTHESIS	SOURCE OF DATA
<p>Students who are classified as Vulnerable will report a significantly higher stressor magnitude than Average or Resilient students. Furthermore, Average subjects will report a higher mean score than Resilient subjects</p>	<p><i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76</p> <p>Stressor Checklist Subscale</p>
<p>Students who are classified as Vulnerable will report significantly higher pressure-overload than Average or Resilient students. Furthermore, Average subjects will report a higher score than Resilient subjects</p>	<p><i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76</p> <p><i>Brief Personal Survey</i> Pressure-Overload Subscale Items 2, 17, 23, 27, 34, 63, 78</p>
<p>Students who are classified as Vulnerable will report higher anger-frustration than Average or Resilient students. Furthermore, Average subjects will report a higher score than Resilient subjects</p>	<p><i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76</p> <p><i>Brief Personal Survey</i> Anger-Frustration Subscale Items 18, 29, 39, 50, 54, 55, 60, 65, 75</p>
<p>Students who are classified as Vulnerable will report higher anxiety than Average or Resilient students. Furthermore, Average subjects will report a higher score than Resilient subjects</p>	<p><i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76</p> <p><i>Brief Personal Survey</i> Anxiety Subscale Items 5, 26, 31, 42, 46, 51, 56, 69</p>
<p>Students who are classified as Vulnerable will report higher depression than Average or Resilient students. Further-more, Average subjects will report a higher mean score than Resilient subjects</p>	<p><i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76</p> <p><i>Brief Personal Survey</i> Depression Subscale Items 3, 9, 15, 32, 37, 45, 61, 68, 77</p>
<p>Students who are classified as Resilient will report significantly higher coping confidence than Average or Vulnerable students. Furthermore, Average subjects will report a higher mean score than Vulnerable subjects</p>	<p><i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76</p> <p><i>Brief Personal Survey</i> Coping Confidence Subscale Items 10, 13, 22, 35, 58, 68, 70, 73</p> <p><i>Continued. . .</i></p>

HYPOTHESIS Continued	SOURCE OF DATA Continued
Students who are classified as Resilient will report significantly higher social support than Average or Vulnerable students. Furthermore, Average subjects will report a higher mean score than Vulnerable subjects	<i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76 <i>Brief Personal Survey</i> Social Support Subscale Items 7, 14, 20, 25, 47, 64, 72, 80
Students who are classified as Resilient will report more philosophical-spiritual resources than Average or Resilient students. Furthermore, Average subjects will report a higher mean score than Vulnerable subjects	<i>Brief Personal Survey</i> Health Distress Scale Items 1, 5, 28, 44, 52, 53, 62, 76 <i>Brief Personal Survey</i> Philosophical-Spiritual Resources Subscale Items 12, 19, 30, 38, 49, 57, 66, 71

Table 5: Main Effect B (Gender): Hypotheses, Sources of Data and Proposed Statistical Procedures

HYPOTHESIS	SOURCE OF DATA
Females will report significantly higher magnitude of stressors than males.	Stressor Checklist Subscale
Males will report more health distress than females.	<i>Brief Personal Survey</i> Items 1, 6, 28, 44, 52, 53, 62, 76
Females will report more pressure-overload than males.	<i>Brief Personal Survey</i> Items 2, 17, 23, 27, 34, 63, 78
Males will report more anger-frustration than females.	<i>Brief Personal Survey</i> Items 18, 29, 39, 50, 54, 55, 60, 65, 75
Females will report more anxiety than males.	<i>Brief Personal Survey</i> Items 5, 26, 31, 42, 46, 51, 56, 69
Females will report more depression than males.	<i>Brief Personal Survey</i> Items 3, 9, 15, 32, 37, 45, 61, 68, 77
Females will report more coping confidence than males.	<i>Brief Personal Survey</i> Items 10, 13, 22, 35, 58, 68, 70, 73
Females will report more social support than males.	<i>Brief Personal Survey</i> Items 7, 14, 20, 25, 47, 64, 72, 80
Females will report more philosophical-spiritual resources than males.	<i>Brief Personal Survey</i> Items 12, 19, 30, 38, 49, 57, 66, 71

The descriptive data obtained from the study were also analyzed on the basis of year in program and membership in sub-populations such as academic majors, ethnicity and nationality.

OPERATIONALIZATION OF TERMS USED IN THE HYPOTHESES

Students:

Students were considered to be anyone enrolled at the college, whether full-time (12 or more credit hours) or part-time (less than 12 credit hours).

Health Distress:

The subject classifications of **Vulnerable**, **Average** and **Resilient** were determined by the Health Distress Subscale of the *Brief Personal Survey*. This subscale consisted of eight true-false items. Responses in the direction of health distress were given a weight of '1' and those not indicating health distress were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Subjects with T-scores greater than 55 were considered Vulnerable. Those with T-scores ranging from 45-54 were considered Average. Subjects with T-scores equal to or less than 44 were considered Resilient.

Stressor Magnitude:

Stressor magnitude was determined by the responses to the Stressor Checklist Subscale. For each of 78 items presented, subjects were asked to indicate the degree that the item was a source of stress for them: (0) Not

Stressful; (1) Mildly Stressful; (2) Moderately Stressful; (3) Highly Stressful; or (4) Extremely Stressful. A score of four, therefore, indicated a stronger stressor magnitude than a score of zero. On the computerized-scoring response sheet A = 0, B = 1, C = 2, D = 3 and E = 4.

Pressure-Overload:

Pressure-overload was determined by the Pressure-overload Subscale of the *Brief Personal Survey*. This subscale consisted of seven true-false items. Responses in the direction of pressure-overload were given a weight of '1' and those not indicating pressure-overload were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Anger-Frustration:

Anger-frustration was determined by the Anger-Frustration Subscale of the *Brief Personal Survey*. This subscale consisted of nine true-false items. Responses in the direction of anger-frustration were given a weight of '1' and those not indicating anger-frustration were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Anxiety:

Anxiety was determined by the Anxiety Subscale of the *Brief Personal Survey*. This subscale consisted of seven true-false items. Responses in the direction of anxiety were given a weight of '1' and those not indicating anxiety were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Depression:

Depression was determined by the Depression Subscale of the *Brief Personal Survey*. This subscale consisted of ten true-false items. Responses in the direction of depression were given a weight of '1' and those not indicating depression were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Coping Confidence:

Coping confidence was determined by the Coping Confidence Subscale of the *Brief Personal Survey*. This subscale consisted of eight true-false items. Responses in the direction of coping confidence were given a weight of '1' and those not indicating coping confidence were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Social Support:

Social support was determined by the Social Support Subscale of the *Brief Personal Survey*. This subscale consisted of eight true-false items. Responses in the direction of social support were given a weight of '1' and those not indicating social support were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

Philosophical-Spiritual Resources:

The level of philosophical-spiritual resources was determined by the Philosophical-Spiritual Resources Subscale of the *Brief Personal Survey*. This subscale consisted of eight true-false items. Responses in the direction of philosophical-spiritual resources were given a weight of '1' and those not

indicating philosophical-spiritual resources were weighted '0.' The total subscale score was converted to a T-score to allow for comparisons between subscale scores.

LIMITATIONS OF THE STUDY

This research is limited by numerous factors: the population sampled; issues which influence the data; social desirability in responses; and dependence on self-reported behavior.

Population

This research is limited by the population sample being studied. As a Christian liberal arts college, the target population is not considered to be representative of all colleges or even of all private colleges. The population is relatively homogeneous in values. Perhaps because of its private-school tuition rates, ethnic and racial diversity is limited to 6.1 percent of the total college population. Unlike some institutions, the majority of the students return after their freshman year. For example, 86 percent of fall-1990 freshmen returned for the fall-1991 term. Seventy percent of the 1986 freshmen completed their programs and graduated within five years.

Another distinctive of the college sampled is its orientation and family programming, which may influence perceived stress levels and coping responses. During summer orientation and fall welcome weekend, the college provides activities for family members as well as for students. Also during the school year a "little sibs'" weekend is planned. Younger siblings of students can come and

stay at the college for the weekend. Incoming freshmen who have older siblings attending the college therefore have possibly had opportunities to be familiar with the college campus prior to enrolling.

While not necessarily representative of all colleges, the data are considered to have applicability to the other 84 member schools in the Christian College Coalition to which the target population subscribes. These colleges are located in 29 states in the United States and three provinces in Canada.

This study was also limited by the nature of the research population employed. When participation in a study is a voluntary response to an open invitation, it is only the most motivated who participate. This can lead to biases in the data. With this study, only randomly selected students were invited to participate. Because the study was strongly endorsed by the college and because subjects were given chapel credit for participating, it was hoped that a representative cross-section of the college population would participate, thus minimizing the potential impact of using only volunteer subjects.

Data

Collected one month after school began in the fall, the data may have been contaminated by such factors as the time of the semester or the time of day. For upperclassmen, the return to campus was to a familiar environment. For freshmen, collecting data in the fall semester may have heightened the perception of stress. On the selected campus, freshman orientation was conducted in three smaller sessions in June and July, thus making the arrival in the fall less of a novelty. Data collection was limited to the hour between 9:30 a.m. and 10:30 a.m., the normally scheduled time for chapel. This is not, however,

considered to be detrimental. The time slot was early enough in the day to have participants be "fresh" but not so early as to limit their willingness to be thoughtful in their responses.

External events on campus may have lead to plausible alternative explanations for data outcomes. A major unexpected tragedy occurring during the data-collection period could have significantly increased the stress reported by one of the testing sections. A lengthy data-collection phase could have also resulted in significant response differences between the first session and later sessions. Freshmen would be the most susceptible to such developmental maturation occurring. This potential limitation was addressed by restricting the data collection to four sessions over an eight day period. It was still possible for some major unforeseen incident to have occurred that altered responses but this was minimized by the short data-collection period, although no tragedy occurred that either the researcher or college administration was aware of.

Social Desirability

Students were asked to reveal their self-perceptions with regard to stress experience and the physical and psychological stress consequences. They were also asked to self-report on their levels of social support, coping confidence and philosophical-spiritual resources. In these areas there may have been a tendency for subjects to "fake good," to give a response that made their personal situation seem better than it actually was.

The data were collected in a completely anonymous fashion. As a consequence, subjects had nothing to gain nor lose by presenting themselves in anything but a truthful manner. Social desirability was also reduced by screening

subjects with the *Brief Personal Survey* validity scale. The responses of those subjects who scored above a T-score of 65 were analyzed separately. Individuals scoring above this point find it hard to admit to others or themselves to being under stress or to having problems. Such persons are likely to be defensive, to emphasize the positive side of situations and to avoid thinking or dealing with the unpleasant or the threatening. Those students obtaining Denial Subscale scores above 65T were considered to be those most susceptible to social desirability. This is consistent with the findings of Plante and Swartz (1990) that defensive and repressive individuals consistently maintain a positive self-presentation. Eliminating such individuals from the larger data pool controlled for this.

Self-reported Behavior

The conclusions determined by this research were based solely on self-reported behavior. Students were asked to indicate what stresses them and to what extent they experience that stress. The respondents' self-reports were not followed-up with confirmation by family and friends, a personal physician nor by blood nor urine tests. With research in general (Judd, Smith, & Kidder, 1991) and in stress research in particular (Bentley, Floyd, & Steyert, 1980; Folkman & Lazarus, 1985), subjects are often in a better position to observe and report their own beliefs, feelings and fears than are others. Cohen, Kamarck, and Mermelstein (1983) have shown that self-report measures of stress can effectively predict future behavioral and disease outcomes. Employing self-report techniques also rules out the need for traumatic, invasive laboratory-dependent measures.

Self-reports can be strengthened by "thoughtful wording of questions and careful conceptualizations of what is to be asked" (Judd et al., 1991, p. 196).

The accuracy of self-reports also increases significantly when recall periods of six months or less are employed (Klein & Rubovitis, 1987). Both of these concerns are met by the questionnaire used in the present research study.

It is important to note that a limitation of the present study is that the standardized portion of the self-report is not normed on a college-student population. To date, the *BPS* is normed on predominantly white, middle-class adults.

SUMMARY

This chapter reviewed the methodology and procedures that were employed in this study. The target population was the student body of a Christian, four-year liberal arts college in Pennsylvania. Subjects were randomly selected.

The instrumentation consisted of three primary components: a stressor checklist, the subscales of the *Brief Personal Survey* and demographic items. The *Brief Personal Survey* is a standardized test and the supporting reliability and validity data were presented.

The data were collected in four one-hour periods over an eight day period. The data analyses consisted of a 2 X 3 factorial analysis of variance. The main effects were gender and health distress. The hypotheses generated by these main effects were presented, as were the operationalization of terms.

The study limitations were also discussed. Of primary concern were issues surrounding the target population, data collection and data contamination, social desirability and the use of self-reported behavior.

CHAPTER FOUR: FINDINGS

INTRODUCTION

This chapter presents the data analysis findings in six main sections. The first section addresses the demographic findings. Information on how subjects compare to the larger target population is also presented. The second major area of reporting focuses on the data analyses related to the study's hypotheses set out in Chapter Three and the third section discusses the development of regression equations for predicting the health distress variable. Section four reviews the data analyses of college-student stressors. Those stressors most frequently identified as having a high magnitude from the larger data pool are presented, as well as those for special populations. The fifth segment presents clinically significant findings on the *Brief Personal Survey* subscales. Once again, findings from the larger data pool are presented, as well as those for special populations. The sixth and final section reviews additional study findings of interest. While brief comments are made in this presentation of the findings, the major implications will be discussed in detail in Chapter Five.

Some of the data reported in this chapter reflect the responses of small numbers of subjects. While this makes interpretation of some of the reported percentages tenuous, understanding the full range of data is considered important.

DEMOGRAPHIC FINDINGS

Using a stratified random sampling, a total of 672 subjects were selected for study inclusion. Stratification was based on freshman, sophomore, junior and senior standing. Table 6 presents a profile comparison of those subjects selected with those of the entire student body.

Table 6: A Comparison of Subjects Randomly Selected with the College Population

Demographic	Number of Subjects	Percentage of Subjects Selected n=672	Population Percentage N=2314
Freshman	187	28	28
Sophomore	178	26	26
Junior	145	22	23
Senior	157	24	22
Females	429	63.8	59.96
Males	243	36.2	40.04

As can be seen by Table 6, the study population is year and gender proportionate with the total student population. Given a stratified sampling technique, the proportions of freshmen, sophomores, juniors and seniors are expected. This sampling technique also resulted in sufficient females and males to be included so as to accurately reflect the college's population.

Those subjects randomly selected and who completed questionnaires indicating their majors were also compared with the larger target population on the basis of majors. Table 7 compares the proportions of students selected, by department, with all the students enrolled in the college.

Table 7: Departmental Comparison of Study Sample and the General Student Population

Department	Percentage in Sample n=672	Percentage in College Population n=2314
Behavioral Science	13.78	8.90
Bible	1.76	2.97
Education	11.44	12.5
Engineering	4.11	5.85
Health & Physical Education	4.69	5.53
History and Political Science	4.99	5.40
Language, Literature and Communication	9.97	8.68
Mathematical Science	3.23	4.81
Management and Business	14.66	13.49
Music	1.76	1.84
Natural Science	13.78	11.92
Nursing	7.04	8.63
Visual and Theatrical Arts	2.05	2.83
Undeclared	6.74	6.65

Table 7 suggests that a close approximation of proportions based on departmental majors was maintained by the random selection process, with the exception of the Behavioral Science majors. Perhaps more of those Behavioral Science majors randomly selected participated because they are more interested in and familiar with psychologically related research.

Of the 672 subjects randomly selected, 35 were not on the main campus:

- 8 Accepted by the college but did not register for classes
- 2 Attended the American Studies Program in Washington, D.C.
- 3 Attended affiliated overseas campuses
- 1 Attended the Oregon Extension campus
- 21 Attended the Philadelphia campus

Those students attending classes at the Philadelphia campus were included in the study. The remaining fourteen were not. In total, 658 of the randomly selected

students were available for inclusion. Of these 658 subjects, 350 presented at the administration sites to participate. One subject's questionnaire was not included in the data pool because only 146 of 192 items were complete, leaving 349 completed questionnaires for analysis. Thus, the final response rate was 53 percent. Due to oversampling of the population, this was a sufficient number to insure statistical power.

Prior to data analysis, participating subject responses in each of the administration sessions were compared on the basis of academic status (e.g. full-time, part-time), academic year (e.g. freshman, sophomore), gender and age. Chi-square tests were used to determine whether academic status, academic year, gender and age differed among the four administration sessions. For academic status, the obtained $\chi^2 = .122$, $df = 1$ was not significant at the .01 level. The groups, therefore, did not significantly differ from one another on the basis of full-time or part-time academic status. For gender, the obtained $\chi^2 = 1.060$, $df = 1$ was not significant at the .01 level. The groups, therefore, did not significantly differ from one another on the basis of gender.

For academic year the obtained $\chi^2 = 51.294$, $df = 3$ was significant at the .01 level. Thus, groups did differ significantly from one another on the basis of freshman, sophomore, junior and senior status.

Respondents were asked to indicate their age as one of five categories: a) 18 or less; b) 19 to 20; c) 21 to 22; d) 23 to 24; or e) more than 24. The obtained $\chi^2 = 39.06$, $df = 12$ on the variable age showed significant differences between the groups. Table 8 provides a summary of the chi-square comparisons of the administration groups.

Table 8: Summary of Chi-square Comparisons of the Four Administration Groups

Variable	<i>df</i>	Obtained χ^2
Academic status	1	.122
Gender	1	1.06
Academic year	3	51.29*
Age	12	39.06*

* Significant at $p < .01$ level

When the three administration groups from the main campus were collapsed into one large group and compared to those participating in the administration at the Philadelphia campus, a significant difference was also found on age and academic year.

Thus, the four administration groups were found to be similar on the basis of academic status and gender. Significant differences were found on the basis of academic year and age. This was expected because those students residing at the Philadelphia campus are older upperclass students who are completing their specializations in a joint academic venture with Temple University.

On the basis of the chi-square tests, it was deemed appropriate to include all participants' responses in one large data pool. Thirty-two of these 349 questionnaires were disqualified as invalid based on clinically elevated Denial Subscale T-scores. The final subject pool consisted of 317 undergraduate college students. The majority were Caucasian females, who were not international students. Most subjects were full-time freshman living in traditional residences. Table 9 provides a complete presentation of the demographics of those subjects with valid questionnaires (based on Denial Subscale scores) as well as those with invalid questionnaires. Also included in Table 9 for comparisons are the demographics of the target population, where they are known.

Table 9: Summary of the Demographic Characteristics of the Population and Subjects with Valid Profiles (included) and Invalid Profiles (excluded)

Demographic Feature	Percent of Population N=2256*	% of Valid Profiles (n=317)	% of Invalid Profiles (n=32)
Gender			
Females	59.9	66.88	53.12
Males	40.1	33.12	46.88
Age			
18 years or less	27.79	37.22	34.38
19-20 years	44.95	45.11	40.63
21-22 years	22.82	15.14	25.00
23-24 years	2.13	1.26	00.00
> 24 years	2.30	1.26	00.00
Race			
Caucasian (white)	93.97	91.48	84.38
African-American	1.73	2.52	3.12
Asian	2.22	2.52	0.00
Latino	1.77	1.26	6.25
Other	.31	2.21	6.25
International			
Yes	2.17	4.73	12.50
No	97.83	95.27	87.50
English as Mother-Tongue			
Yes	n/a	96.21	96.88
No		3.79	3.12
Academic Year			
Freshman	27.9	37.34	38.71
Sophomore	25.9	30.70	22.58
Junior	22.7	18.67	16.13
Senior	22.2	13.29	22.58
Unclassified	1.3	n/a	n/a
Academic Status			
Fulltime (12+ hours)	97.6	99.37	100.00
Part-time (6-11 hrs)	2.4	00.63	00.00
Part-time (< 6 hrs)		00.00	00.00
Residential Status			
On-campus, traditional	n/a	74.28	62.50
On-campus, apartments		21.54	28.13
Off-campus, satellite		2.25	00.00
Off campus		1.93	9.38

Continued

Demographic Feature Continued	Percent of Population Continued	% of Valid Profiles Continued	% of Invalid Profiles Continued
Cumulative GPA Non-Freshmen 3.5 to 4.0 2.5 to 3.4 2.0 to 2.4 1.5 to 1.9 < 1.5	n/a	18.46 53.33 22.56 5.13 00.51	14.29 57.14 28.57 00.00 00.00
Cumulative High School GPA of Freshmen A B C D E	n/a	42.28 51.22 6.50 00.00 00.00	41.67 50.00 8.33 00.00 00.00
Sick Days in Last Six Months: None 1 to 2 3 to 4 5 to 6 > 6	n/a	33.44 34.38 12.62 8.83 10.73	50.00 31.25 6.25 9.38 3.12
Varsity Athlete Yes No	12.94 87.06	18.79 81.21	21.88 78.12

* Percentages based on 2256 students who indicated their status
n/a Data not available for this demographic

All of the findings presented in this research are based on this single data pool of 317 subjects. It is noted at the onset that the *n* indicated in the various tables does not always equal 317. This is due to the fact that not all subjects indicated their status on some items by which information was categorized.

HYPOTHESES FINDINGS

On the basis of health distress scores, participants were divided into one of three groups: Resilient, Average and Vulnerable. Using the *Brief Personal Survey* health distress subscale, those classed as Resilient would be described as experiencing few physical symptoms of stress. Subjects categorized as Vulnerable

were considered to be experiencing significant "physical response to stress . . . and could benefit from a stress reduction program" (Webb, 1988). Average subjects have "health concerns and physical responses to stress which are typical of the average person" (Webb, 1988). The breakdown of study subjects by classification was:

Group	n	%
Resilient	43	13.56
Average	96	30.28
Vulnerable	178	56.15

The hypotheses proposed for this study addressed two major areas: group (Resilient, Average or Vulnerable) and gender. Huck and Cormier (1974) point out that a "two-way analysis of variance can answer additional research questions that cannot be answered at all with two separate one-way analyses of variance" (p. 78). For this reason, two-way analyses of variance were also conducted on the data. The independent variables were gender and group (i.e. Resilient, Average or Vulnerable). The successive dependent variables were pressure-overload, anger-frustration, anxiety, depression, social support, philosophical-spiritual resources and coping confidence. No significant interaction effects were discovered between the independent variables in any of the factorial analyses of variance.

Because two-way analyses of variance showed no significant interaction effects, one-way analyses of variance were conducted. Hypotheses H-1 through H-16 were based on the codification by group (Resilient, Average, Vulnerable). The second category of hypotheses (H-17 through H-25) were those regarding the gender of participating college students. Each hypothesis is presented along with the corresponding findings. Because the two-way anovas were conducted first, the

differences found on the basis of Resilient, Average or Vulnerable are not attributable to gender. Similarly, the differences found on the basis of gender are not attributable to Resilient, Average or Vulnerable groupings.

Post hoc Tukey tests were conducted for each analysis of variance presented. Family error rate was set at 0.100.

Health Distress Hypotheses

A. Magnitude of stressors.

Hypothesis One:

H-1. Average subjects will report a greater magnitude of stressors than Resilient subjects.

Hypothesis Two:

H-2. Vulnerable subjects will report a greater magnitude of stressors than Average or Resilient subjects.

The data related to hypotheses H-1 and H-2 were analyzed. The findings from these hypotheses are presented in Tables 10 and 11.

Table 10: Summary of Analysis of Variance
on Stressor Magnitude as a Function of Group

SOURCE	<i>df</i>	MS	F	p
Group	2	20515	14.06	0.000
Error	314	1459		
Total	316			

Table 11: Summary of Stressor Magnitude Mean Scores
as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	166.09 _a	32.46
Average	96	185.94	39.00
Vulnerable	178	199.19 _b	39.02

- a Resilient subjects have significantly less stressor magnitude than Average or Vulnerable subjects, $p < .01$
- b Vulnerable subjects have significantly more stressor magnitude than Average or Resilient subjects, $p < .01$

Thus, the hypotheses for H-1 and H-2 can be accepted as significant differences were found between all groups at the $p < .01$ level. As predicted in hypothesis one, Average subjects reported more stressor magnitude than Resilient subjects. Also, as predicted in hypothesis two, Vulnerable subjects did report more stressor magnitude than Average or Resilient subjects. Out of a maximum stressor magnitude score of 390, Vulnerable subjects had a mean score of 199 compared to 186 and 166 for Average and Resilient subjects respectively.

B. Pressure-Overload.

Hypothesis Three:

H-3. Average subjects will report more pressure-overload than Resilient subjects.

Hypothesis Four:

H-4. Vulnerable subjects will report more pressure-overload than Average or Resilient subjects.

The data related to hypotheses H-3 and H-4 were analyzed. The findings for these hypotheses are presented in Tables 12 and 13.

Table 12: Summary of Analysis of Variance on Pressure-Overload as a Function of Group

SOURCE	df	MS	F	p
Group	2	2128	15.72	0.000
Error	314	135		
Total	316			

Table 13: Summary of Pressure-Overload Mean Scores as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	50.07 _a	10.05
Average	96	57.16	11.49
Vulnerable	178	60.92 _b	12.05

a Resilient subjects have significantly less pressure-overload than Average or Vulnerable subjects, $p < .01$

b Vulnerable subjects have significantly more pressure-overload than Average or Resilient subjects, $p < .01$

Thus, the hypotheses for H-3 and H-4 can be accepted as significant differences were found between all groups at the $p < .01$ level. As predicted in hypothesis three, Average subjects reported more pressure-overload than Resilient subjects. Also, as predicted in hypothesis four, Vulnerable subjects did report more pressure-overload than Average or Resilient subjects.

C. Anger-Frustration.

Hypothesis Five:

H-5. Average subjects will report more anger-frustration than Resilient subjects.

Hypothesis Six:

H-6. Vulnerable subjects will report more anger-frustration than Average or Resilient subjects.

The data related to hypotheses H-5 and H-6 were analyzed. The findings for these hypotheses are presented in Tables 14 and 15..

Table 14: Summary of Analysis of Variance on Anger-Frustration as a Function of Group

SOURCE	df	MS	F	p
Group	2	1041.6	10.98	0.000
Error	314	94.9		
Total	316			

Table 15: Summary of Anger-Frustration Mean Scores as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	49.47 _a	7.99
Average	96	51.45	8.59
Vulnerable	178	55.85 _b	10.66

a Resilient subjects have significantly less anger-frustration than Average or Vulnerable subjects, $p < .01$

b Vulnerable subjects have significantly more anger-frustration than Average or Resilient subjects, $p < .01$

Thus, the hypotheses for H-5 and H-6 can be accepted as significant differences were found between all groups at the $p < .01$ level. As predicted in hypothesis five, Average subjects did report more anger-frustration than Resilient subjects. Also as predicted in hypothesis six, Vulnerable subjects reported more anger-frustration than Average or Resilient subjects.

D. Anxiety.

Hypothesis Seven:

H-7. Average subjects will report more anxiety than Resilient subjects.

Hypothesis Eight:

H-8. Vulnerable subjects will report more anxiety than Average or Resilient subjects.

The data related to hypotheses H-7 and H-8 were analyzed. The findings for these hypotheses are presented in Tables 16 and 17.

Table 16: Summary of Analysis of Variance on Anxiety as a Function of Group

SOURCE	df	MS	F	p
Group	2	3375	25.75	0.000
Error	314	131		
Total	316			

Table 17: Summary of Anxiety Mean Scores as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	52.00 _a	10.14
Average	96	56.85	11.31
Vulnerable	178	64.16 _b	11.81

- a Resilient subjects have significantly less anxiety than Average or Vulnerable subjects, $p < .01$
- b Vulnerable subjects have significantly more anxiety than Average or Resilient subjects, $p < .01$

Thus, the hypotheses for H-7 and H-8 can be accepted as significant differences were found between all groups at the $p < .01$ level. As predicted in hypothesis seven, Average subjects did report more anxiety than Resilient

subjects. As predicted in hypothesis eight, Vulnerable subjects reported more anxiety than Average or Resilient subjects.

E. Depression.

Hypothesis Nine:

H-9. Average students will report more depression than Resilient subjects.

Hypothesis Ten:

H-10. Vulnerable subjects will report more depression than Average or Resilient subjects.

The data related to hypotheses H-9 and H-10 were analyzed. The findings for these hypotheses are presented in Tables 18 and 19.

Table 18: Summary of Analysis of Variance on Depression as a Function of Group

SOURCE	df	MS	F	p
Group	2	4250	22.07	0.000
Error	314	193		
Total	316			

Table 19: Summary of Depression Mean Scores as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	48.49 ^a	9.55
Average	96	53.76	11.54
Vulnerable	178	62.04 ^b	15.76

- a Resilient subjects have significantly less depression than Average or Vulnerable subjects, $p < .01$
- b Vulnerable subjects have significantly more depression than Average or Resilient subjects, $p < .01$

Thus, the hypotheses for H-9 and H-10 can be accepted as significant differences were found between all groups at the $p < .01$ level. As predicted in hypothesis nine, Average subjects did report more depression than Resilient subjects. As predicted in hypothesis ten, Vulnerable subjects reported more depression than Average or Resilient subjects.

F. Coping Confidence.

Hypothesis Eleven:

H-11. Average students will report more coping confidence than Vulnerable students.

Hypothesis Twelve:

H-12. Resilient subjects will report more coping confidence than Average or Vulnerable subjects.

The data related to hypotheses H-11 and H-12 were analyzed. The findings for these hypotheses are presented in Tables 20 and 21.

Table 20: Summary of Analysis of Variance on Coping Confidence as a Function of Group

SOURCE	<i>df</i>	MS	F	p
Group	2	1624	12.50	0.000
Error	314	130		
Total	316			

Table 21: Summary of Coping Confidence Mean Scores
as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	52.63 _a	6.48
Average	96	47.43	11.18
Vulnerable	178	43.44 _b	12.39

- a Resilient subjects have significantly more coping confidence than Average or Vulnerable subjects, $p < .01$
- b Vulnerable subjects have significantly less coping confidence than Average or Resilient subjects, $p < .01$

Thus, the hypotheses for H-11 and H-12 can be accepted as significant differences were found between all groups at the $p < .01$ level. As predicted in hypothesis eleven, Average students did report more coping confidence than Vulnerable students. As predicted in hypothesis twelve, Resilient subjects reported more coping confidence than Average or Vulnerable subjects.

G. Social Support.

Hypothesis Thirteen:

H-13. Average subjects will report more social support than Vulnerable subjects.

Hypothesis Fourteen:

H-14. Resilient subjects will report more social support than Average or Vulnerable students.

The data related to hypotheses H-13 and H-14 were analyzed. The findings are presented in Tables 22 and 23.

Table 22: Summary of Analysis of Variance
on Social Support as a Function of Group

SOURCE	<i>df</i>	MS	F	p
Group	2	133	0.53	0.590*
Error	314	253		
Total	316			

* Not Significant

Table 23: Summary of Social Support Mean Scores
as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	48.47	16.46
Average	96	45.69	15.46
Vulnerable	178	45.85	15.98

Thus, the hypotheses for H-13 and H-14 cannot be accepted as no significant differences were found between the groups. Average subjects did not report more social support than Vulnerable subjects, as predicted in hypothesis thirteen. In fact, they reported slightly less (mean = 45.69 compared to 45.85). Resilient subjects did not report significantly more social support than Average or Vulnerable students.

H. Philosophical-Spiritual Resources.

Hypothesis Fifteen:

H-15. Average subjects will report more philosophical-spiritual resources than Vulnerable subjects.

Hypothesis Sixteen:

H-16. Resilient subjects will report more philosophical-spiritual resources than Average or Vulnerable subjects.

The data related to hypotheses H-15 and H-16 were analyzed. The findings for these hypotheses are presented in Tables 24 and 25.

Table 24: Summary of Analysis of Variance
on Philosophical-Spiritual Resources
as a Function of Group

SOURCE	df	MS	F	p
Group	2	138	0.99	0.372*
Error	314	139		
Total	316			

*Not significant

Table 25: Summary of Philosophical-Spiritual Resources
Mean Scores as a Function of Group

GROUP	N	MEAN	STDEV
Resilient	43	51.53	10.08
Average	96	51.66	10.77
Vulnerable	178	49.74	12.63

Thus, the hypotheses for H-15 and H-16 cannot be accepted as significant differences were not found between the groups. Average subjects did not report significantly more philosophical-spiritual resources than Vulnerable subjects. Resilient subjects did not report more philosophical-spiritual resources than Average or Vulnerable subjects. Resilient subjects actually reported a slightly lower mean score on philosophical-spiritual resources than Average subjects (51.53 compared to 51.66).

Thus, the majority of the hypotheses about the Resilient, Average and Vulnerable groups established prior to data collection were supported by the findings. Resilient subjects, however, did not report significantly higher levels of social support nor did they report higher levels of philosophical-spiritual resources than Average or Vulnerable subjects. A summary of the findings related to stress groupings is presented on the following pages. Table 26 lists each hypothesis and indicates whether or not the hypothesis was accepted.

Table 26: Summary of Significance or Nonsignificance of Hypotheses Regarding Resilient, Average and Vulnerable Students.

Dependent Variables	Independent Variables			<i>p</i>
	Resilient Subjects	Average Subjects	Vulnerable Subjects	
H-1, H-2: Magnitude of stressors		Average subjects will report a greater magnitude of stressors than resilient subjects.	Vulnerable subjects will report a greater magnitude of stressors than average or resilient subjects.	< .01
H-3, H-4: Pressure-Overload (PO)		Average subjects will report more PO than resilient subjects.	Vulnerable subjects will report more PO than average or resilient subjects.	< .01
H-5, H-6: Anger-Frustration (AF)		Average subjects will report more AF than resilient subjects.	Vulnerable subjects will report more AF than average or resilient subjects.	< .01
H-7, H-8: Anxiety		Average subjects will report more anxiety than resilient subjects.	Vulnerable subjects will report more anxiety than average or resilient subjects.	< .01
H-9, H-10: Depression		Average subjects will report more depression than resilient subjects.	Vulnerable subjects will report more depression than average or resilient subjects.	< .01
H-11, H-12 Coping Confidence (CC)	Resilient subjects will report more CC than average or vulnerable subjects.	Average subjects will report more CC than vulnerable subjects.		< .01
H-13, H-14: Social Support (SS)	Resilient subjects will report more SS than average or vulnerable subjects.	Average subjects will report more SS than vulnerable subjects.		Not significant
H-15, H-16: Philosophical-Spiritual Resources (PSR)	Resilient subjects will report more PSR than average or vulnerable subjects.	Average subjects will report more PSR than vulnerable subjects.		Not significant

Because the literature review indicated that gender differences in college-student stress were likely, nine additional hypotheses related to differences between male and female college-student participants were proposed. Each of these is presented along with the corresponding findings.

Gender-Related Hypotheses

A. Stressor Magnitude.

Hypothesis Seventeen:

H-17. Female subjects will report greater stressor magnitude than male subjects.

The data related to hypothesis H-17 were analyzed. The findings from this hypothesis are presented in Tables 27 and 28.

Table 27: Summary of Analysis of Variance
on Stressor Magnitude as a Function of Gender

SOURCE	<i>df</i>	MS	F	p
Gender	1	18503	12.12	0.000
Error	315	1526		
Total	316			

Table 28: Summary of Stressor Magnitude
Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	196.06 ^a	37.28
Males	105	179.83	42.46

^a Female subjects have significantly higher stressor magnitude than male subjects, $p < .01$

Thus, the hypothesis for H-17 can be accepted as significant gender differences were found at the $p < .01$ level. As predicted in hypothesis seventeen, female subjects did report a higher magnitude of stressors than males. Out of a maximum possible stressor magnitude score of 390, females had a mean score of 196.

B. Health Distress.

Hypothesis Eighteen:

H-18. Male subjects will report more health distress than female subjects.

The data related to hypothesis H-18 were analyzed. The findings from this hypothesis are presented in Tables 29 and 30.

Table 29: Summary of Analysis of Variance on Health Distress as a Function of Gender

SOURCE	df	MS	F	p
Gender	1	959	7.61	0.006
Error	315	126		
Total	316			

Table 30: Summary of Health Distress Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	59.94 ^a	11.66
Males	105	56.25	10.28

^a Female subjects have significantly higher health distress than male subjects, $p < .01$

The hypothesis for H-18 cannot be accepted even though significant gender differences were found at the $p < .01$ level. Male subjects did not report more

health distress as predicted in hypothesis eighteen. Males reported significantly less health distress than female subjects (a mean score of 56.25 compared with 59.94 for females).

C. Pressure-Overload.

Hypothesis Nineteen:

H-19. Female subjects will report more pressure-overload than male subjects.

The data related to hypothesis H-19 were analyzed. The findings from this hypothesis are presented in Tables 31 and 32.

Table 31: Summary of Analysis of Variance on Pressure-Overload as a Function of Gender

SOURCE	df	MS	F	p
Gender	1	179	1.21	0.272*
Error	315	148		
Total	316			

*Not significant

Table 32: Summary of Pressure-Overload Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	58.83	11.78
Males	105	57.24	12.90

Thus, the hypothesis for H-19 cannot be accepted as significant gender differences were not found. Female subjects did report higher mean scores on the variable pressure-overload than males (58.83 versus 57.24), but this difference was not statistically significant.

D. Anger-Frustration.

Hypothesis Twenty:

H-20. Male subjects will report more anger-frustration than female subjects.

The data related to hypothesis H-20 were analyzed. The findings from this hypothesis are presented in Tables 33 and 34.

Table 33: Summary of Analysis of Variance on Anger-Frustration as a Function of Gender

SOURCE	<i>df</i>	MS	F	p
Gender	1	0	0.00	0.947*
Error	315	101		
Total	316			

*Not significant

Table 34: Summary of Anger-Frustration Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	53.68	10.16
Males	105	53.60	9.86

Thus, the null hypothesis for H-20 cannot be rejected as significant gender differences were not found. Male subjects did not report more anger-frustration than female subjects, as was predicted in hypothesis twenty.

E. Anxiety.

Hypothesis Twenty-one:

H-21. Female subjects will report more anxiety than male subjects.

The data related to hypothesis H-21 were analyzed. The findings from this hypothesis are presented in Tables 35 and 36.

Table 35: Summary of Analysis of Variance on Anxiety as a Function of Gender

SOURCE	<i>df</i>	MS	F	p
Gender	2	1441	9.77	0.002
Error	315	148		
Total	316			

Table 36: Summary of Anxiety Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	61.80 _a	11.97
Males	105	57.27	12.50

_a Female subjects have significantly higher anxiety than male subjects, $p < .01$

Thus, the hypothesis for H-21 can accepted as significant gender differences were found at the $p < .01$ level. As predicted in hypothesis twenty-one, female subjects did report higher levels of anxiety than male subjects.

F. Depression.

Hypothesis Twenty-two:

H-22. Female subjects will report more depression than male subjects.

The data related to hypothesis H-22 were analyzed. The findings from this hypothesis are presented in Tables 37 and 38.

Table 37: Summary of Analysis of Variance
on Depression as a Function of Gender

SOURCE	<i>df</i>	MS	F	p
Gender	1	74	0.34	0.561*
Error	315	219		
Total	316			

*Not significant

Table 38: Summary of Depression
Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	58.04	14.30
Males	105	57.01	15.74

Thus, the hypothesis for H-22 cannot be accepted as significant gender differences were not found. Female subjects did report higher mean scores on the variable depression (58.04 compared to 57.01 for males), but the difference was not statistically significant.

G. Coping Confidence.

Hypothesis Twenty-three:

H-23. Female subjects will report more coping confidence than male subjects.

The data related to hypothesis H-23 were analyzed. The findings from this hypothesis are presented in Tables 39 and 40.

Table 39: Summary of Analysis of Variance
on Coping Confidence as a Function of Gender

SOURCE	df	MS	F	p
Gender	1	296	2.13	0.145*
Error	315	139		
Total	316			

*Not significant

Table 40: Summary of Coping Confidence
Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	45.21	11.58
Males	105	47.27	12.19

Thus, the hypothesis for H-23 cannot be accepted as significant gender differences were not found. Female subjects did not report more coping confidence than male subjects as predicted in hypothesis twenty-three. Indeed, Males reported higher mean scores on coping confidence although the difference was not statistically significant.

H. Social Support.

Hypothesis Twenty-four:

H-24. Female subjects will report more social support than males.

The data related to hypothesis H-24 were analyzed. The findings from this hypothesis are presented in Tables 41 and 42.

Table 41: Summary of Analysis of Variance on Social Support as a Function of Gender

SOURCE	df	MS	F	p
Gender	1	3047	12.54	0.000
Error	315	243		
Total	316			

Table 42: Summary of Social Support Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	48.34 _a	13.87
Males	105	41.75	18.58

a Female subjects have significantly higher social support than male subjects, $p < .01$

Thus, the null hypothesis for H-24 can be rejected as significant gender differences were found at the $p < .01$ level. As predicted in hypothesis twenty-four, female subjects did report more social support than males.

I. Philosophical-Spiritual Resources.

Hypothesis Twenty-five:

H-25. Female subjects will report more philosophical-spiritual resources than males.

The data related to hypothesis H-25 were analyzed. The findings from these hypotheses are presented in Tables 43 and 44.

Table 43: Summary of Analysis of Variance on Philosophical-Spiritual Resources as a Function of Gender

SOURCE	<i>df</i>	MS	F	p
Gender	1	1071	7.89	0.005
Error	315	136		
Total	316			

Table 44: Summary of Philosophical-Spiritual Resources Mean Scores as a Function of Gender

GENDER	N	MEAN	STDEV
Females	212	51.86 ^a	9.38
Males	105	47.95	14.59

^a Female subjects have significantly higher philosophical-spiritual resources than male subjects, $p < .01$

Thus, the hypothesis for H-25 can be accepted as significant gender differences were found at the $p < .01$ level. As predicted in hypothesis twenty-five, female subjects did report more philosophical-spiritual resources than males.

In summary, there were mixed findings with regard to the gender hypotheses. While predicted, no significant gender differences were found for pressure-overload, anger-frustration, depression or coping confidence. Significant differences based on gender were found in several areas. Females had higher stressor magnitude than males. Women subjects reported more anxiety than the men. The women also reported more social support and more philosophical-spiritual resources to deal with that anxiety. Males had a significantly lower mean

score on health distress. The literature review suggested that males would be more likely to respond somatically to their stress, thereby being more vulnerable to health distress. This study, however, did not support that hypothesis.

Because subjects could not be randomly assigned to a gender group, it is important to acknowledge that these presented findings must be considered "gender-related." A summary of the findings for the gender hypotheses is presented in Table 45.

Table 45: Summary of Significance or Non-significance of Hypotheses Regarding Gender

Dependent Variable	Independent Variable		<i>p</i>
	Male Subjects	Female Subjects	
Magnitude of stressors		Females will report higher magnitude of stressors than males.	< .01
Health Distress	Male subjects will report more health distress than females.		Not significant
Pressure-Overload		Female subjects will report more pressure-overload than males.	Not significant
Anger-frustration	Male subjects will report more anger-frustration than females.		Not significant
Anxiety		Female subjects will report more anxiety than males.	< .01
Depression		Female subjects will report more depression than males.	Not significant
Coping Confidence		Female subjects will report more coping confidence than males.	< .01
Social Support		Female subjects will report more social support than males.	< .01
Philosophical-Spiritual Resources		Female subjects will report more philosophical-spiritual coping resources than males.	< .01

PREDICTING HEALTH DISTRESS

Analytical efforts were made to identify possible variables which would predict health distress, a significant sequelae of stress. Two approaches were

made. The first involved a stepwise regression and the second method utilized the technique of "best regressions." Each approach is discussed here.

Stepwise Regression

Based on the literature review, sixteen variables were considered for the stepwise regression analysis: seven of the *BPS* subscales (pressure-overload, anger-frustration, anxiety, depression, social support, philosophical-spiritual resources and coping confidence); age; gender; race; academic year; residential status; church attendance; frequency of exercise; experience with stress management training; and participation as a varsity athlete. The regression equation associated with these variables is as follows:

$$Y = .9283 + .0154(\text{Anxiety}) + .0095 (\text{Depression})$$

As can be seen from the equation, only the *BPS* subscale scores on anxiety and depression were found to predict health distress. The R^2 between health distress and the predictor variables of anxiety and depression was computed to be 16.87 percent.

Best Regression

The computer program used to analyze the data, *Minitab Release 9* (1992), included the capacity to do the best subsets regression using the maximum R^2 criterion. Up to twenty variables can be considered at a time. The program generates all possible one-predictor, two-predictor, three-predictor, etc., up to twenty-predictor regression models. The variables identified as the best predictors

in a regression model are then analyzed in the manner of standardized multiple regression. The same sixteen variables described in the stepwise regression were employed in the best regression.

The best regression technique yielded two three-predictor regression models of equal predictive power and one six-predictor model. The three-predictor regression equations associated with the sixteen variables are presented in Models A and B.

Model A:

$$Y = 0.865 + 0.00511(\text{pressure-overload}) + 0.0129(\text{anxiety}) + 0.00839(\text{depression})$$

Model B:

$$Y = 1.16 + 0.0140(\text{anxiety}) + 0.00985(\text{depression}) - 0.108(\text{gender})$$

The R^2 between health distress and the predictor variables of pressure-overload, anxiety and depression was computed to be 16.8 percent. The R^2 between health distress and the predictor variables of anxiety, depression and gender was also computed to be 16.8 percent.

The six-predictor regression equation associated with the sixteen variables is presented as Model C.

Model C:

$$Y = 0.713 + 0.00535(\text{pressure-overload}) + 0.00659(\text{anger-frustration}) + 0.0103(\text{anxiety}) + 0.00917(\text{depression}) + 0.00425(\text{social support}) - 0.0692(\text{exercise})$$

The R^2 between health distress and these six predictor variables was computed to be 18.9 percent. While this model is slightly more predictive than the three-predictor models, it is still not highly effective.

The models developed at this time are presented in Table 46.

Table 46: Variables and R^2 of the Best Regression Models Predicting Health Distress

Variable	Model A	Model B	Model C
Pressure-overload	X		X
Anxiety	X	X	X
Depression	X	X	X
Gender		X	
Anger-frustration			X
Social support			X
Exercise			X
R^2	16.8%	16.8%	18.9%

Thus, developing regression equations to predict health distress were attempted but the results were not particularly meaningful. The preponderance of variables which have power in predicting health distress were subscales of the *BPS*. In the process of obtaining these *BPS* scores, one would also obtain a measure of health distress from the *BPS* itself.

COLLEGE-STUDENT STRESSOR FINDINGS

Subjects were asked to indicate which of 78 sources of college-student stress they had experienced within the previous six months. They were also requested to indicate the stress magnitude associated with each stressor with a zero-

to-four (not stressful to extremely stressful) rating scale. The analyses associated with these data will be described in terms of stressor correlations, the rank ordering of stressors and a presentation of the top stressors for special segments of the research sample.

Stressor Correlations

Correlations between the 78 stressors were calculated. The correlations above the .500 level are listed in Table 47.

Table 47: A Rank Order of the Correlations at or Above .500
Between 78 College-Student Stressors

Rank	<i>r</i>	Stressors (Question Number and Item)
1	.706	64: Having an alcoholic parent 70: Marital difficulties
2	.698	70: Marital difficulties 74: Making child care arrangements
3	.685	63: Past or present sexually abusive relationship 64: Having an alcoholic parent
4	.682	4: Making plans for my future 12: Worry about career opportunities after graduation
5	.659	63: Past or present sexually abusive relationship 70: Marital difficulties
	.659	67: Contemplating suicide 70: Marital difficulties
6	.639	30: Self-image 38: Being accepted by others
7	.630	18: Overweight or underweight 19: Personal appearance
	.630	17: Dealing with emotions 21: Depression
8	.614	16: Eating habits 18: Overweight or underweight
9	.613	45: Serious illness or injury of close family member 54: Serious illness or injury of a friend
10	.608	63: Past or present sexually abusive relationship 67: Contemplating suicide
11	.607	7: Grades received 8: Guilt for not doing better

Continued...

Rank Con't	r Con't	Stressors (Question Number and Item) Continued
12	.595	48: Difficulty getting along with roommate 57: Studying for examinations
13	.594	45: Serious illness or injury of close family member 46: Emotional problems of family member
14	.593	19: Personal appearance 30: Self-image
15	.584	64: Having an alcoholic parent 67: Contemplating suicide
16	.582	67: Contemplating suicide 74: Making child care arrangements
17	.577	6: Financial pressures 44: Parents having financial difficulties
	.577	35: Family members not getting along 46: Emotional problems of family member
18	.575	37: Loneliness 38: Being accepted by others
19	.569	39: Breaking off a relationship 49: Trouble with boy/girlfriend
20	.568	58: Unclear assignments 59: Fast-paced lectures
21	.565	28: Lack of confidence 30: Self-image
22	.554	37: Loneliness 71: Being alone when others are socializing
23	.553	2: Test anxiety 57: Studying for examinations
24	.549	59: Fast-paced lectures 60: Pop quizzes
25	.544	42: Need to work but unable to find job 43: Trouble getting along with employer
26	.539	50: Concern over possible pregnancy of self or partner 63: Past or present sexually abusive relationship
27	.536	64: Having an alcoholic parent 74: Making child care arrangements
28	.532	66: Cheating on a test 70: Marital difficulties
29	.529	25: Getting along with family 26: Gaining independence from parent(s)
30	.526	1: Final examination week 56: Waiting for graded tests
30 con't	.526	19: Personal appearance 38: Being accepted by others
31	.524	1: Final examination week 57: Studying for examinations
32	.520	28: Lack of confidence 38: Being accepted by others
33	.516	55: Term papers 60: Pop quizzes
34	.515	57: Studying for examinations 58: Unclear assignments

Continued...

Rank Con't	<i>r</i> Con't	Stressors (Question Number and Item) Continued
35	.514	38: Being accepted by others 75: Making, keeping friends
	.514	47: Being away from home and not being able to go home when you want to 57: Studying for examinations
36	.512	1: Final examination week 2: Test anxiety
	.512	7: Grades received 56: Waiting for graded tests
37	.511	50: Concern over possible pregnancy of self or partner 67: Contemplating suicide
38	.510	21: Depression 37: Loneliness
39	.508	50: Concern over possible pregnancy of self or partner 70: Marital difficulties
	.508	60: Pop quizzes 61: Incorrect answers in class
	.508	21: Depression 30: Self-image
40	.506	11: Managing time and schedule 20: Sleeping habits
	.506	58: Unclear assignments 60: Pop quizzes
	.506	66: Cheating on a test 67: Contemplating suicide
41	.505	57: Studying for examinations 59: Fast-paced lectures
42	.502	66: Cheating on a test 77: Lectures not in your native language

Of the top ten stressor correlation rankings only one pairing relates to academics: "making plans for my future" and "worry about career opportunities after graduation." The majority of correlations reflect a psychosocial nature. Because of the lengthy nature of Table 47, a brief synopsis of the highlights is presented in the following paragraphs.

A total of 52 correlations were found at or above $r = .500$. Of these, six, including the top two correlations, pertained to a small segment of the research population: married students. The highest correlation obtained (.706) was between the stressors "having an alcoholic parent" and "marital difficulties." Approximately 14 percent of the respondents indicated that marital difficulties were

highly or extremely stressful. Marital difficulties were also linked to "making child care arrangements" (.698), "past or present sexually abusive relationship" (.685), "contemplating suicide" (.659), "cheating on a test" (.532) and "concern over possible pregnancy of self or partner" (.508). These correlations suggest that while married students constitute a small portion of the target population, they do have significant needs. Because they are less accessible as commuter students does not mean that effort should not be made to meet those needs.

The stressor "having an alcoholic parent" was correlated to numerous stressors. In addition to the "marital difficulties" already mentioned, it was connected with "past or present sexually abusive relationship" (.685), "contemplating suicide" (.584) and "making child care arrangements" (.536).

"Contemplating suicide" is associated with several stressors with this study sample. The strongest correlations were with "marital difficulties" (.659), "past or present sexually abusive relationship" (.608), "having an alcoholic parent" (.584) and "cheating on a test" (.506).

The twentyfifth ranked correlation pairs "need to work but unable to find a job" and "trouble getting along with employer" (.544). Because correlations are non-directional, the findings do not indicate if these are paired because past employment difficulties have resulted in the student being harder to please in a work situation.

It is important to acknowledge that some negative correlations were found between stressors, although these were very weak. Each of the stronger correlations, which have been presented in Table 46, suggest possible areas of need that students have.

Stressor Rankings

The stressor ratings of all subjects were considered. The percentage of subjects responding to each item as highly stressful or extremely stressful were calculated. The stressors were then ranked from highest to lowest based on these combined response percentages. Eight of the top ten stressors were directly related to academics. The complete ranking is presented in Table 48.

Table 48: Rank Order of Stressors Identified as Highly Stressful or Extremely Stressful for All Subjects (N=317)

Rank	%	Stressor (Question Number and Item)
1	66.67	1: Final examination week
2	55.21	55: Term papers
3	48.26	57: Studying for examinations
4	47.78	39: Breaking off a relationship
5	44.62	3: Too much schoolwork
6	42.59	58: Unclear assignments
7	42.09	60: Pop quizzes
8	39.87	68: Fear of failure
9	38.80	2: Test anxiety
10	35.67	45: Serious illness or injury of close family member
11	35.27	49: Trouble with boy/girlfriend
12	35.02	59: Fast-paced lectures
13	34.07	27: Oral presentation(s)
14	33.22	6: Financial pressures
15	31.86	7: Grades received
16	31.23	5: Putting off assignments, responsibilities
17	30.47	8: Guilt for not doing better
18	30.16	44: Parents having financial difficulty
19	29.52	4: Making plans for my future
20	28.79	17: Dealing with emotions
21	27.76	56: Waiting for graded tests
22	27.62	46: Emotional problems of family member
23	27.53	54: Serious illness or injury of friend
	27.53	71: Being alone when others are socializing
25	26.58	51: Carrying on long-distance relationships
26	26.11	61: Incorrect answers in class
27	24.76	53: Disagreements/misunderstandings with friend(s)
28	24.68	11: Managing time and schedule
29	23.49	42: Need work but unable to find job
30	23.10	12: Worry about career opportunities after grad
31	22.65	77: Lectures not in your native language

Continued...

Rank Con't	% Con't	Stressor (Question Number and Item) Continued
32	22.15	24: Concern for friend(s) with problem
33	21.80	67: Contemplating suicide
34	20.70	65: Competing on athletic team
35	20.50	37: Loneliness
	20.50	69: Difficulty in budgeting money
37	19.68	35: Family members not getting along
38	19.61	50: Concern over possible pregnancy of self/partner
39	19.56	9: Finding time to exercise or worrying about not exercising
	19.56	36: Meeting program requirements
41	19.24	38: Being accepted by others
42	18.67	18: Overweight or underweight
43	18.35	40: Decisions about course selection or major
44	18.33	66: Cheating on a test
45	18.30	22: Difficulty in making decisions
	18.30	28: Lack of confidence
47	18.04	47: Being away from home and not getting to go home when you like to
48	17.41	23: Teaching methods of instructor(s)
49	17.14	48: Difficulty getting along with roommate
50	16.72	31: Guilt feelings
51	16.67	63: Past or presently sexually abusive relationship
52	16.45	72: Lack of assertiveness or ability to speak up for beliefs
53	16.09	32: Decisions or worries about sexual behavior
54	15.82	13: Expectation(s) of parent(s)
55	15.77	10: Competitiveness for grades
56	15.46	29: Lack of energy
57	15.19	15: Beginning of semester
58	15.14	33: Attending classes as required
59	14.56	41: Problems with instructor
60	14.38	64: Having an alcoholic parent
61	13.73	70: Marital difficulties
62	13.60	43: Trouble getting along with employer
63	13.25	14: Registration
	13.25	19: Personal appearance
65	12.62	30: Self-image
66	12.34	20: Sleeping habits
67	11.99	21: Depression
68	11.67	16: Eating habits
69	11.36	25: Getting along with family
70	11.04	75: Making, keeping friends
71	10.76	76: Dealing with administration
72	10.73	26: Gaining independence from parent(s)
73	6.65	34: Boredom
74	5.41	73: Finding parking space
75	4.73	62: Learning new skills
76	3.82	78: Lighting, temperature of classroom
77	2.94	74: Making child care arrangements
78	2.84	52: Meeting people of different lifestyles, views, backgrounds

Stressors and Special Populations

The combined percentages of highly stressful and extremely stressful stressors were also calculated based on special subject population segments. This allowed for the ranking of the top stressors based on gender, academic year, residential status, race, academic major and on being an international student and/or a varsity athlete. Looking at the issue of sources of college-student stress in this manner makes it possible to identify key issues for specific groups on campus and potentially heighten the effectiveness of intervention programs.

The top ten stressors are presented for gender. For the remainder of the special groupings, the top five stressors are presented.

Gender:

Eight of the top ten stressors are shared by both females and males, although often given a different ranking. Two stressors are unique to female respondents: "fast-paced lectures" and "serious illness or injury of close family member." Two stressors were also unique to male subjects: "test anxiety" and "trouble with boy/girlfriend." Table 49 presents a summary of the top ten stressors for females. The top ten stressors for males are presented in Table 50.

Table 49: Top Ten Stressors Identified as Highly Stressful or Extremely Stressful by Females (n=212)

RANK	%	STRESSOR (Question Number and Item)
1	72.9	1: Final examination week
2	60.8	55: Term papers
3	54.2	57: Studying for examinations
4	49.3	39: Breaking off a relationship
5	48.9	3: Too much schoolwork
6	47.7	58: Unclear assignments
7	47.4	60: Pop quizzes
8	43.4	68: Fear of failure
9	39.2	59: Fast-paced lectures
10	38.6	45: Serious illness or injury of close family member

Table 50: Top Ten Stressors Identified as Highly Stressful or Extremely Stressful by Males (n=105)

RANK	%	STRESSOR (Question Number and Item)
1	54.2	1: Final examination week
2	44.8	39: Breaking off a relationship
3	43.8	55: Term papers
4	37.2	2: Test anxiety
5	36.2	57: Studying for examinations
6	35.2	3: Too much schoolwork
7	32.7	68: Fear of failure
8	32.4	49: Trouble with boy/girlfriend
9	32.4	58: Unclear assignments
10	31.5	60: Pop quizzes
		7: Grades received

While differences in the top rankings do exist, some similarities are noteworthy. A relatively equal ranking for "fear of failure" was given by males and females. In the past, this would have been expected to exclusively reflect a concern of males. It is also noteworthy that the percentages rating stressors as highly or extremely stressful are greater for females than for males, at each ranking.

Academic Year:

The top five stressors were identified based on academic year. For ease of comparison, Table 51 presents the stressor item number and the percentage indicating this to be highly or extremely stressful by academic year.

Table 51: Top Five Stressors Identified as Highly Stressful or Extremely Stressful by Academic Year

Rank	Freshman n=118	Sophomore n=97	Junior n=59	Senior n=42
1	1: Final examination week 69.3%	1: Final examination week 73.2%	1: Final examination week 62.1%	4: Making plans for my future 57.2%
2	55: Term papers 55.1%	55: Term papers 65.9%	55: Term papers 54.2%	12: Worry about career opportunities after graduation 54.8%
3	57: Studying for examinations 53.4%	57: Studying for examinations 47.4%	39: Breaking off a relationship 53.5%	1: Final examination week 50.0%
4	58: Unclear assignments 51.8%	3: Too much schoolwork 39: Breaking off a relationship 46.4%	2: Test anxiety 45.8%	3: Too much schoolwork 44.4%
5	39: Breaking off a relationship 48.4%	60: Pop quizzes 44.4%	3: Too much schoolwork 57: Studying for examinations 47.4%	39: Breaking off a relationship 42.9%

There was remarkable similarity between the top stressors for freshmen, sophomores and juniors. Seniors share some of the same stressors as other students, but also have some peculiar to their own life stage: "making plans for my future" and "worry about career opportunities after graduation." "Breaking off a relationship" is a significant stressor regardless of academic year. Only juniors report "test anxiety" as one of the top five stressors.

Residential Status:

The campus where the research was conducted has four different residential situations in gradations of autonomy and independence. Traditional residences are on campus and are either single sex or co-ed buildings. Apartment buildings are also on campus. Upperclass students, who are not on any type of probation, are given preference for apartments. Off-campus, but still within the jurisdiction of the college is satellite housing. The final residential status is that of off-campus, in non-college housing. This latter category would include married students and commuter students. Table 52 summarizes the top five stressors for subjects in each type of housing situation.

Table 52: Top Five Stressors Identified as Highly Stressful or Extremely Stressful by Residential Status

RANK	On-campus, Traditional n=231	On-campus, Apartments n=67	Off-campus, Satellites n=7	Off-campus n=6
1	1: Final examination week 68.7%	1: Final examination week 60.6%	39: Breaking off a relationship 71.5%	4: Making plans for my future 57.2%
2	55: Term papers 57.1%	55: Term papers 49.2%	12: Worry about career opportunities after graduation 71.4%	12: Worry about career opportunities after graduation 54.8%
3	57: Studying for examinations 49.4%	39: Breaking off a relationship 47.0%	4: Making plans for my future 42.9%*	1: Final examination week 50.0%
4	39: Breaking off a relationship 45.9%	3: Too much schoolwork 46.3%		3: Too much schoolwork 44.4%
5	3: Too much schoolwork 44.8%	4: Making plans for my future 44.8%		39: Breaking off a relationship 42.9%

*NOTE: 42.9% also indicated stressors 1, 6, 33, 48, 55, 57, 58, 67, 68, 69 and 71 which can be found in Appendix B5

For all students, "breaking off a relationship" was an important source of stress, although those living off-campus in satellite housing appeared to be the

most impacted. These rankings of stressors suggested that final exams were no longer the predominant source of stress once students were in an off-campus housing situation.

Race:

Subjects were asked to indicate their race from the following options: Caucasian (white), African-American, Asian, Latino or Other. Table 53 provides a summary of the top five stressors which each grouping indicated as highly or extremely stressful.

Table 53: Top Five Stressors Identified as Highly Stressful or Extremely Stressful by Race

RANK	Caucasian n=290	African-American n=8	Asian n=8	Latino n=4	Other n=7
1	1: Final examination week 67.1%	1: Final examination week 87.5%	3: Too much schoolwork 87.5%	1: Final examination week 7: Grades received	39: Breaking off a relationship
2	55: Term papers 54.8%	3: Too much schoolwork 75.0%	55: Term papers 75.0%	39: Breaking off a relationship	44: Parents having financial difficulties
3	57: Studying for examinations 47.9%	68: Fear of failure 75.0%	7: Grades received 8: Guilt for not doing better	51: Carrying on a long-distance relationship	58: Unclear assignments
4	3: Too much schoolwork 42.5%	55: Term papers 62.5%	27: Oral presentation 58: Unclear assignments	59: Fast-paced lectures	63: Past or present sexually abusive relationship
5	60: Pop quizzes 41.6%	57: Studying for examinations 62.5%	59: Fast-paced lectures 68: Fear of failure 62.5%	68: Fear of failure 75.0%	68: Fear of failure 57.2%

NOTE: Because of the small n's for the categories Asian, Latino and Other only the highest ranked stressors are presented. For Asians, these are only those ranked 1-3; for Latinos and Other, only those ranked first.

Given that the majority of students included in this research are Caucasian, it is not surprising that the top five stressors of this group fall into line with previous segments presented. "Fear of failure" is a significant stressor for all but the Caucasian subjects.

Sixty-two percent of the eight Asian students report being highly or extremely stressed over "grades received" and "guilt for not doing better." Of the seven subjects classifying themselves as "Other," 57.2 percent indicate a "past or present sexually abusive relationship" as one of the top five stressors.

Academic Majors:

Of those subjects participating, 309 indicated their academic major. The top five stressors, by academic department, were calculated on the basis of those indicating a stressor to be highly or extremely stressful. The summary of these findings are presented in Table 54.

Table 54: Top Five Stressors Identified as Highly Stressful or Extremely Stressful by Academic Major

Academic Major	Stressors and Ranking				
	1	2	3	4	5
Behavioral Science n=43	1: Final examination week 67.5%	39: Breaking off a relationship 53.5%	49: Trouble with boy/girl-friend 51.2%	55: Term papers 46.5%	60: Pop quizzes 45.9%
Bible n=5	1: Final examination week 60.0%	3: Too much schoolwork 40.0%	6: Financial pressures 40.0%	39: Breaking off a relationship 40.0%	55: Term papers
Education n=34	1: Final examination week 76.5%	55: Term papers 52.9%	58: Unclear assignments 52.9%	39: Breaking off a relationship 51.5%	60: Pop quizzes 51.5%
Engineering n=12	1: Final examination week 66.7%	68: Fear of failure 66.7%	39: Breaking off a relationship 58.4%	55: Term papers 50.0%	58: Unclear assignments 50.0%
Health & Phys. Ed. n=14	2: Test anxiety 71.4	1: Final examination week 64.3%	55: Term papers 57.2%	58: Unclear assignments 50.0%	68: Fear of failure 60: Pop quizzes 50.0%
History & Poli. Sci. n=17	3: Too much schoolwork 58.8%	55: Term papers 55.8%	1: Final examination week 53.0%	60: Pop quizzes 53.0%	57: Studying for examinations 47.1%
Literature, Language & Communication n=31	1: Final examination week 61.3%	55: Term papers 51.6%	39: Breaking off a relationship 48.5%	68: Fear of failure 42.0%	60: Pop quizzes 38.7%
Mathemat'l Science n=11	1: Final examination week 72.9%	39: Breaking off a relationship 54.6%	55: Term papers 54.6%	3: Too much schoolwork 45.5%	50: Concern over possible pregnancy of self or partner 45.5%
Management & Business n=45	1: Final examination week 53.3%	39: Breaking off a relationship 46.6%	55: Term papers 42.2%	57: Studying for examinations 37.8%	6: Financial pressures 37.7%

Continued

Academic Major	Stressors and Ranking				
	1	2	3	4	5
Music n=6	5: Putting off assignments, responsibilities 50.0%	8: Guilt for not doing better 50.0%	57: Studying for examinations 50.0%	58: Unclear assignments 50.0%	71: Being alone while others are socializing 72: Lack of assertiveness or ability to speak up for beliefs 50.0%
Natural Science n=43	1: Final examination week 73.9%	57: Studying for examinations 60.5%	55: Term papers 58.1%	2: Test anxiety 55.8%	58: Unclear assignments 48.8%
Nursing n=21	57: Studying for examinations 85.7%	1: Final examination week 85.0%	55: Term papers 81.0%	39: Breaking off a relationship 71.5%	68: Fear of failure 61.9%
Visual & Theater Arts n=6	55: Term papers 83.3%	57: Studying for examinations 83.3%	1: Final examination week 4: Making plans for my future 25: Getting along with family 66.7%	13: Expectation of parent(s) 17: Dealing with emotions 24: Concern for friend(s) with problem 66.6%	27: Oral presentation(s) 68: Fear of failure 66.6%
Undeclared n=21	55: Term papers 76.2%	1: Final examination week 71.4%	60: Pop quizzes 64.2%	44: Parents having financial difficulty 57: Studying for examinations 52.4%	45: Serious illness or injury of family member 47.7%

These stressor rankings, by major, will be discussed in detail in Chapter Five. Overall, the top five stressors by academic major reveals many of the same patterns of concern over "final examination week" and "breaking off a relationship" identified in previous sectors of the population.

Some sources of stress, however, were noteworthy by virtue of their absence from the rankings. College students who have yet to declare a major did

not identify stressor #40 ("decisions about course selection or major") as one of their top five sources of stress. Undeclared majors, along with Bible and Management/Business majors, were the only students to indicate that finances were a significant source of stress. It was absent in the top five rankings for other majors.

International Students:

In the sample 4.7 percent were international students, compared with 2.2 percent in the research population. While these groups are small, the literature review suggested that attending to the needs of these students is important. Table 55 presents a summary of the stressors most frequently rated as highly or extremely stressful by international students. Note that the number of subjects responding in this category is small.

Table 55: Top Five Stressors Identified as Highly Stressful or Extremely Stressful by International Students
n=15

RANK	STRESSOR and PERCENTAGE
1	1: Final examination week (66.7)
2	2: Test anxiety (64.4)
3	57: Studying for examinations 58: Unclear assignments (60.0)
4	27: Oral presentation(s) (53.4)
5	8: Guilt for not doing better (50.0)

The stressors most frequently identified as highly or extremely stressful are all associated with academics. "Expectation(s) by parent(s)" and "eating habits" were only reported as significant by 6.7 percent of international students. Only 26.7 percent identified "being away from home and not getting to go home when

you like to" or "carrying on long-distance relationships" as major sources of stress.

Varsity Athletes:

The final subpopulation to be examined was that of varsity athletes. This group comprised 18.8 percent of the study population. Table 56 presents a summary of the stressors most frequently identified by athletes as highly or extremely stressful.

Table 56: Top Five Stressors Identified as Highly Stressful or Extremely Stressful by Varsity Athletes
n = 59

RANK	STRESSOR and PERCENTAGE
1	1: Final examination week (62.0)
2	55: Test anxiety (55.9)
3	57: Studying for examinations (52.9)
4	3: Too much schoolwork (44.1)
5	65: Competing on an athletic team (43.1)

With the exception of the fifth most frequently cited stressor, "competing on an athletic team," the responses of athletes are remarkably similar to those of other subpopulations. Athletes at the college where the research was conducted do not receive any athletic scholarships. They are also not given any extra academic assistance in the form of tutoring. Indeed the athletes perceived the reverse: over 42 percent felt that faculty do not support them as athletes. As a result, varsity athletes' top concerns appear to be those of balancing school pressures (ranked 1 through 4) and competition (ranked 5).

Summary:

The fifteen stressors most frequently identified as highly or extremely stressful include the majority of top stressors indicated by subpopulations. These

typically focused on academic concerns such as "final examination week" or "term papers," as well as interpersonal concerns ("breaking off a relationship").

Within each subpopulation explored there were similarities and/or differences that were unexpected. A high percentage of females (43.4) and males (32.7) indicated "fear of failure" as a potent stressor. As anticipated, Seniors were concerned about their futures. Regardless of academic year "breaking off a relationship" was a major source of stress. Fifty-seven percent of the race classification of 'Other' (those not Caucasian, African-American, Asian or Latino) cited sexually abusive relationships as stressful in their lives in the past six months.

The top stressors for other groups were also covered. These included specific academic majors, international students and varsity athletes. Understanding the top stressors of all of the subpopulations can be very instructive for programming. By identifying the top stressors by majors, academic departments can attempt to meet the needs of their majors. It is unnecessary for departments to wait for the institution to develop and implement some form of more wide-spread interventions.

***BPS* SUBSCALE FINDINGS**

The data were also studied for elevations on the *BPS* stress response subscales and deficits on the *BPS* stress resource subscales. These elevations and deficits measure areas of critical need for individuals who are not a part of a psychiatric population, but who have a significant need for assistance.

Significant elevations on the stress-indicating *BPS* subscales of pressure-overload, anger-frustration, anxiety and depression were calculated. These

subscales measure the "ways in which persons experience or react to stress" (Mauger, 1989, p.1). Based on the guidelines established in the *BPS* manual, subjects' responses were considered to be critically elevated on the stress response scales when their T-scores were equal to or greater than 65.

Significant below normal scores on the *BPS* resource subscales of social support, philosophical-spiritual resources and coping confidence were also tabulated. These subscales "tap into the coping resources with which a person attempts to handle stress" (Mauger, 1989, p.1). Based on the guidelines established in the *BPS* manual, subjects' responses were considered to be critically deficient on the stress resource scales when their T-scores were equal to or less than 34.

Identifying those scores within critical high (stress subscales) or low (resource subscales) ranges allows for areas of need to be pin-pointed and programming developed. The *BPS* interpretative statements for T-scores equal to or above 65 for each of the stress-related subscales indicated such areas of need:

Pressure-Overload: You are under a heavy burden of pressure and need to take immediate steps to reduce your stress level, such as getting counseling to prevent becoming overloaded or burning out. This level is too high for efficient functioning and suggests problems in relationships due to impatience.

Anger-Frustration: Life is filled with frustration and anger for you. Your temper tends to be quick and you have a lot of conflict and hurt feelings in relationships. Counseling focused on these hurts, temper control and stress reduction would help.

Anxiety: You are experiencing so much anxiety that it is interfering with your efficiency in doing your work and makes enjoying life difficult. You are worried, tense and anxious. It is hard for you to relax and free your mind from your problems. You are a sensitive person who takes things hard. You could benefit from counseling

focused on stress management, anxiety reduction and developing problem-solving skills.

Depression: Life for you seems filled with burdens and gloom. You are feeling depressed and pessimistic. You spend time brooding over your situation and your problems seem unsolvable at times. You feel like crying and it is hard to be cheerful even when your friends and family members try to encourage you. You are more irritable than usual and may tend to avoid being around people. It is difficult to push yourself to meet the normal everyday demands of your job and your life. You could benefit from getting the help of a mental health professional. (Webb, 1988)

Also considered in the presentation of these findings are resource scales which are considered to be significantly deficient i.e. equal to or below a T-score of 34. The *BPS* interpretative statements for these subscales also indicated areas of need:

Social Support: People such as family members or friends are not available to you as you would like them to be. You hesitate to share some things in your life for fear of being misunderstood or rejected.

Philosophical-Spiritual: Religion does not provide much solace or meaning in life to you. The strength some other people seem to get from their personal faith is not an effective resource for you.

Coping Confidence: Things in your life often seem to be difficult for you to cope with. You wonder if you can handle all of the problems which confront you, and at times feel like you are losing control. You feel a need for help with your problems. (Webb, 1988)

These above normal and below normal scores are initially presented for all subjects. Data are also presented by academic year, residential status, academic majors and varsity athletes. Gender is not presented because males' and females' scores have already been presented in the Hypotheses Findings, H-19 to H-25.

All Subjects

The percentages of subjects with clinically significant *BPS* subscale scores were first calculated for the total research population. Table 57 presents a summary of these scores.

Table 57: The Percentage of Clinically Elevated* and Low**
BPS Subscale Scores for All Subjects (n=317)

PO*	AF*	Ax*	Dr*	SS**	PS**	CC**
34.4	13.6	44.5	25.9	15.1	8.8	19.9

PO = Pressure-Overload

AF = Anger-Frustration

Ax = Anxiety

Dr = Depression

* Elevated scores for subscales that are considered detrimental

** Below normal scores for subscales that are considered strengths

SS = Social Support

PS = Philosophical-Spiritual Resources

CC = Coping Confidence

As a total group, the area that appeared to present the least difficulty is philosophical-spiritual resources (8.8 percent). The greatest area of concern was the large number of college students with significantly elevated levels of anxiety (44.5 percent).

While many reported high pressure-overload scores, this may be "normal" for those involved in the variety of curricular and cocurricular activities available on campus. Of greater concern is the 25.9 percent who were attempting to function under the cloud of depression. Each of these areas highlighted is a potential focus for prevention and intervention programs.

Academic Year

Clinically significant *BPS* subscales were calculated on the basis of academic year: freshman, sophomore, junior and senior. The summary of these findings is presented in Table 58.

Table 58: The Percentage of Clinically Elevated* and Low**
BPS Subscale Scores by Academic Year

Year	PO*	AF*	Ax*	Dr*	SS**	PS**	CC**
Freshman n=118	30.5	12.7	39.9	18.7	9.4	5.9	16.9
Sophomore n=97	39.2	12.3	51.7	30.8	16.6	8.1	20.6
Junior n=59	33.9	10.2	53.0	25.5	27.2	6.8	17.0
Senior n=43	33.3	23.9	47.6	33.3	11.4	19.2	28.5
Total N=317	34.2	13.7	44.3	25.6	15.3	8.5	19.6

PO = Pressure-Overload

AF = Anger-Frustration

Ax = Anxiety

Dr = Depression

* Elevated scores for subscales that are considered detrimental

** Below normal scores for subscales that are considered strengths

SS = Social Support

PS = Philosophical-Spiritual Resources

CC = Coping Confidence

Seniors reported the highest levels of anger-frustration and the lowest levels of philosophical-spiritual resources and coping confidence. Many Juniors had high anxiety levels and low social support. The group experiencing the most pressure-overload were Sophomores. The first year students reported the lowest percentage of individuals experiencing clinically significant depression.

Residential Status

As discussed in previous sections, subjects were asked to indicate their current residential status. On the basis of these responses, data were sorted into the four types of residences. The clinically elevated stress-response scores and clinically depressed stress-resource scores were then determined. Table 59 presents a summary of the significantly high and low *BPS* subscale scores by residential status.

Table 59: The Percentage of Clinically Elevated* and Low**
BPS Subscale Scores by Residential Status

Residence	PO*	AF*	Ax*	Dr*	SS**	PS**	CC**
On-campus, Trad'l n=231	35.5	13.9	47.3	26.9	13.5	7.4	18.6
On-campus, apartmts n=67	32.9	12.0	37.3	24.0	24.0	9.0	24.0
Off-campus, satellite n=7	42.9	28.6	42.9	28.6	14.3	33.3	14.3
Off campus n=6	33.4	16.7	33.3	16.7	0.0	8.7	33.4
Total N=311	35.1	13.9	44.8	26.0	15.5	8.7	20.0

PO = Pressure-Overload

AF = Anger-Frustration

Ax = Anxiety

Dr = Depression

* Elevated scores for subscales that are considered detrimental

** Below normal scores for subscales that are considered strengths

SS = Social Support

PS = Philosophical-Spiritual Resources

CC = Coping Confidence

The highest proportion of students indicating significant levels of pressure-overload and anger-frustration were those who live off-campus in satellite housing.

This group also reported low levels of philosophical-spiritual resources. Those living on-campus in traditional residences had the highest percentage with clinically significant anxiety. None of those in off-campus housing indicated a lack of social support but 33.4 percent lacked coping confidence.

Academic Majors

Individual majors were clustered by academic department. Significant *BPS* subscale scores were summated for each department. Those scores of importance are presented in Table 60.

Table 60: The Percentage of Clinically Elevated* and Low**
BPS Subscale Scores by Major

Major	PO*	AF*	Ax*	Dr*	SS**	PS**	CC**
Behav. Science N=43	39.6	16.3	48.9	37.3	11.7	7.0	25.6
Bible N=5	20.0	0.0	40.0	0.0	0.0	0.0	20.0
Educational N=34	29.4	5.9	44.1	20.5	11.7	5.9	26.4
Engineering N=12	33.4	0.00	25.0	8.3	25.0	8.3	25.0
Health & Phys. Ed N=14	50.0	14.3	42.8	21.3	14.2	0.0	14.2
History & Pol. Science N=17	47.1	23.6	41.0	29.5	23.6	5.9	5.9
Lang., Lit. & Comm. N=31	29.1	12.9	45.2	16.1	22.6	9.7	9.6
							<i>Con't</i>

Major Con't	PO* Con't	AF* Con't	Ax* Con't	Dr* Con't	SS** Con't	PS** Con't	CC** Con't
Math Science N=11	18.2	9.1	18.2	18.2	18.2	0.0	9.1
Management & Business N=45	26.6	13.3	44.4	22.2	13.3	13.3	13.3
Music N=6	33.3	16.7	50.0	50.1	0.0	16.7	33.4
Natural Science N=43	44.3	16.3	55.9	30.2	9.3	9.3	16.4
Nursing N=21	28.5	19.1	43.0	19.1	4.8	4.8	38.2
Visual & Theater Arts N=6	50.0	16.7	67.7	67.7	33.4	33.4	33.4
Un- declared N=21	38.1	9.6	38.2	28.6	19.1	9.6	23.9
TOTAL N=309	35.0	13.3	44.8	25.4	14.3	8.3	19.8

PO = Pressure-Overload

AF = Anger-Frustration

Ax = Anxiety

Dr = Depression

* Elevated scores for subscales that are considered detrimental

** Below normal scores for subscales that are considered strengths

SS = Social Support

PS = Philosophical-Spiritual Resources

CC = Coping Confidence

Difficulties with pressure-overload appeared to be greatest for those students in Health and Physical Education (50.0 percent) and Visual and Theater Arts (50.0 percent) majors. Visual and Theater Arts majors also ranked highest with anxiety, followed by Natural Science majors. Nursing majors had the highest percentage experiencing elevated levels of anger-frustration. This group also had the highest number with deficits in coping confidence. None of the Bible, Health and Physical Education or Mathematical Science majors reported lacking philosophical-spiritual resources.

Varsity Athletes

Over 18 percent of the subjects included in this study were currently varsity athletes. The percentage of varsity athletes with significant *BPS* subscale scores are summarized in Table 61.

Table 61: The Percentage of Clinically Elevated* and Low**
BPS Subscale Scores of Varsity Athletes (n=59)

	PO*	AF*	Ax*	Dr*	SS**	PS**	CC**
Athlete n=59	34.0	17.0	40.8	26.9	25.1	11.9	8.5
Non-athlete n=255	35.6	13.0	45.1	19.3	12.9	8.0	21.9
Total N=314	34.5	13.0	44.2	17.9	15.2	8.5	19.4

PO = Pressure-Overload

AF = Anger-Frustration

Ax = Anxiety

Dr = Depression

* Elevated scores for subscales that are considered detrimental

** Below normal scores for subscales that are considered strengths

SS = Social Support

PS = Philosophical-Spiritual Resources

CC = Coping Confidence

There was little difference in the percentage of athletes and non-athletes reporting elevated pressure-overload scores. A slightly higher proportion of athletes had difficulty with anger-frustration but proportionately fewer had elevated levels of anxiety. More athletes reported significant depression scores. The most dramatic difference between varsity athletes and non-athletes was with regard to the stress-resource of coping confidence. While only 8.5 percent of varsity athletes experienced a deprivation in this area, 21.9 of non-athletes reported a difficulty. Perhaps being chosen for and playing on a varsity athletic team greatly enhances the sense of being able to have confidence in one's coping skills.

ADDITIONAL FINDINGS

Additional findings of interest were tabulated in two areas. The first area deals with five stressor items that were arbitrarily chosen because they were deemed to be potentially very powerful sources of stress by the researcher. The second area of additional findings presents the subjects' responses to anticipated intervention and assistance.

Stressor Items

The percentages of subjects responding "highly stressful" or "extremely stressful" to five stressor items were calculated. The five stressors of interest were:

- #32. Decisions or worries about sexual behavior
- #41 Problems with instructor
- #63 Past or present sexually abusive relationship
- #64 Having an alcoholic parent
- #67 Contemplating suicide

Subjects' responses to these items were identified by gender, race, residential status, academic year and academic major.

Gender:

Table 62 summarizes the percentages of students who indicated that these five stressors were highly or extremely stressful.

Table 62: Percentages of Subjects Responding to Specific Stressors as Highly or Extremely Stressful by Gender

Gender	Worries re: sexual behavior	Problem with instructor	Sexually abusive relationship	Alcoholic parent	Contemplating suicide
Female (n=212)	13.7	15.6	19.0	13.1	22.3
Male (n=105)	21.0	12.5	11.9	16.8	21.2

The findings suggested that a higher percentage of males find decisions or worries about their sexual behavior as stressful (21.0) while more women have been in sexually abusive relationships (19.0 percent). There is relative parity between males and females on the item "contemplating suicide."

Race:

Table 63 summarizes the percentages of students who indicated that these five stressors were highly or extremely stressful.

Table 63: Percentages of Subjects Responding to Specific Stressors as Highly or Extremely Stressful by Race

Race	Worries re: sexual behavior	Problem with instructor	Sexually abusive relationship	Alcoholic parent	Contemplating suicide
Caucasian (n=290)	15.9	13.5	14.3	12.9	20.7
African-American (n=8)	12.5	25.0	50.0	25.0	25.0
Asian (n=8)	25.0	37.5	12.5	12.5	37.5
Latino (n=4)	50.0	25.0	50.0	50.0	33.3
Other (n=7)	0.0	14.3	57.2	42.9	42.9

Asian subjects have the highest percentage of respondents indicating difficulty with instructors (37.5). Over 57 percent of the seven subjects classifying themselves as "Other" reported that sexually abusive relationships have created significant stress for them in the past six months. This group also had the

largest percentage contemplating suicide (42.9 percent), followed by Asians (37.5 percent).

Residential Status:

Table 64 summarizes the percentages of students who indicated that these five stressors were highly or extremely stressful on the basis of residential status.

Table 64: Percentages of Subjects Responding to Specific Stressors as Highly or Extremely Stressful by Residential Status

Residential Status	Worries re: sexual behavior	Problem with instructor	Sexually abusive relationship	Alcoholic parent	Contemplating suicide
On-campus, traditional residences (n=231)	16.5	16.5	16.2	15.3	21.5
On-campus, apartments (n=67)	16.4	9.0	15.4	12.4	18.8
Off-campus, satellites (n=7)	14.3	0.0	14.3	0.0	42.9
Off-campus (n=6)	0.0	16.7	40.0	20.0	50.0

All of the groups were relatively consistent, with a few exceptions. None of the students in satellite housing reported having difficulties with instructors. Of the six subjects living off-campus, 40.0 percent are or have been in sexually abusive relationships. Those living off-campus and in satellite housing had the highest percentage indicating contemplation of suicide (50 and 42.9 percent respectively).

Academic Year:

Table 65 summarizes the percentages of students who indicated that these five stressors were highly or extremely stressful on the basis of academic year.

Table 65: Percentages of Subjects Responding to Specific Stressors as Highly or Extremely Stressful by Academic Year

Academic Year	Worries re: sexual behavior	Problem with instructor	Sexually abusive relationship	Alcoholic parent	Contemplating suicide
Freshman (n=118)	12.7	16.2	19.3	17.5	25.0
Sophomore (n=97)	15.5	15.5	16.3	16.3	19.6
Junior (n=59)	18.7	17.0	15.5	10.4	21.8
Senior (n=42)	23.8	4.8	12.2	7.3	16.6

The group with the highest percentage of individuals indicating concern over sexual decisions and behaviors was Seniors (23.8 percent). Seniors also have the lowest percentages having problems with instructors (4.8) and dealing with an alcoholic parent (7.3). As with all previous sub-groupings in the study population, the percentages contemplating suicide were alarmingly high.

Majors:

Table 66 summarizes the percentages of students who indicated that these five stressors were highly or extremely stressful on the basis of academic major.

Table 66: Percentages of Subjects Responding to Specific Stressors as Highly or Extremely Stressful by Academic Major

Major by Department	Worries re: sexual behavior	Problem with teachers	Sexually abusive relationship	Alcoholic parent	Contemplating suicide
Behavioral Science n=43	18.6	11.6	19.1	14.2	23.8
Bible n=5	0.0	0.0	0.0	0.0	0.0
Education n=34	8.8	8.8	27.2	21.2	39.4
Engineering n=12	16.7	16.7	0.0	0.0	25.0
Health & Phys. Ed. n=14	7.1	21.4	30.8	30.8	42.2
History & Poli. Science n=17	17.7	11.8	0.0	11.8	0.0
Language, Lit. & Comm. n=31	29.0	9.7	22.6	6.4	16.2
Mathematical Science n=11	9.1	20.0	18.2	27.3	27.3
Management & Business n=45	15.5	11.1	7.0	4.7	11.9
Music n=6	0.0	16.7	0.0	0.0	16.7
Natural Science n=43	16.3	14.0	21.4	23.8	24.4
Nursing n=21	19.0	23.8	14.3	9.6	33.4
Visual & Theater Arts n=6	33.0	16.7	40.0	20.0	0.0
Undeclared n=21	19.0	23.8	14.3	14.3	14.3

Of those participating in the study, 33 percent of Visual and Theater Arts majors and 29 percent of Language, Literature and Communications majors shared a concern over their sexual behavior. Those who indicated having the greatest problems with instructors were Nursing and Undeclared majors. None of the Bible, Engineering or Music majors included in the study reported having an alcoholic parent. Similarly, none of the Bible, History and Political Science or Visual and Theater Arts majors included reported contemplating suicide.

Resistance to Intervention

Of the 317 subjects included in the data pool, 68.6 percent reported that they exercise more than once a week. Life fitness is a required course for any major at this institution. Over 67 percent reported that they have experienced zero to two days of restricted activity in the last six months due to illness. These data would make it appear that subjects tend to be proactive with regard to intervention strategies. However, their *BPS* subscale scores and responses to other items would suggest otherwise.

When asked if they would describe themselves as highly or extremely stressed, 33.2 percent indicated they were. Almost 85 percent did not wish to receive counseling for their concerns. Similarly, 83.5 percent did not wish to receive stress management training although 68.7 percent thought that if taught techniques they would be willing and able to use them. This suggested that with college students, altruism should not be assumed to be the primary motivator in learning stress management and/or health behaviors.

These data suggested that intervening in any way with college students is likely to present a challenge. To be effective, any program would have to understand the nature of the needs of this population and attempt to meet those needs directly.

Summary

This section on additional findings presented the data related to five specific stressors. It also looked at how open college-students were to the idea of intervention strategies on their behalf.

Looking at the percentages of those indicating that the areas of sexual behavior, instructor conflicts, abusive relationships, alcoholic parents and/or suicidal thoughts are significant identified important programming targets. While these issues were not identified as top stressors by any of the groups, these were potentially powerful sources of stress and significant numbers of students are troubled by them. Anyone attempting to meet the needs of these students would do well to be appraised of these key stressors.

SUMMARY OF FINDINGS

Chapter Four presented the findings that arose from the data collection process and the subsequent data analysis. The responses of 317 subjects were included in the final data pool. The findings were presented in six major divisions.

The first segment presented the demographic findings. This reviewed who was included in the study and compared their characteristics to the research population and to those excluded.

The second group of findings focused on the hypotheses. A total of 25 hypotheses were tested. Sixteen of these hypotheses related to subjects classified as Resilient, Average or Vulnerable. Hypotheses 1 through 12 were found to be significant at the $p < .01$ level. Resilient subjects experienced less pressure-overload, anger-frustration, anxiety and depression than did Average or Vulnerable subjects. Resilient subjects had the highest level of coping confidence. Resilient subjects did not evidence significantly higher levels of social support nor philosophical-spiritual resources.

The remaining hypotheses tested were related to gender issues. No significant differences were found between males and females with regard to pressure-overload, anger-frustration or depression. As hypothesized, females experienced greater anxiety and stressor magnitude than males but also had significantly more social support and philosophical-spiritual resources. A significant difference on health distress was found but not in the direction hypothesized: males evidenced less health distress than females, rather than more.

Information was also presented on the findings related to identifying variables to predict health distress. The regression equations developed via stepwise regression and best regression techniques were presented. Neither technique produced meaningful results.

The fourth sector of Chapter Four dealt with the findings related to college-student stressors. Correlations between the stressors, while minimal, were furnished. The rank ordering of the 78 stressors included in the questionnaire were described. The top college-student stressors were also identified by the following special populations: gender, academic year, residential status, race, academic majors, international students and varsity athletes. The two stressors most frequently mentioned were "final examination week" and "breaking off a relationship."

The fifth area presented those findings related to the *BPS* subscales. The data were tabulated to indicate the percentages of students who had clinically significant elevations on the pressure-overload, anger-frustration, anxiety and depression subscales. Also calculated were the percentages of those with significantly below normal scores on the social support, coping confidence and philosophical-spiritual resource subscales. As with other findings, the data were

presented on the larger research population as well as by academic year, residential status, academic major and varsity athletes.

Additional findings were also presented. Five stressors of interest were identified. None of these had surfaced in the top ranks but each was considered to be potentially toxic. These included concerns about sexual behavior, conflict with instructors, sexually abusive relationships, alcoholic parents and the contemplation of suicide.

The additional findings also addressed the inherent problems in assisting college students in the management of their own stress. The majority of subjects indicated that they were not interested in counseling or in receiving stress management training.

Thus, all of the findings presented in Chapter Four clearly pointed out the great need of college students for prevention and intervention programs. It is equally clear, however, that administering effective programs will not be simple.

**CHAPTER FIVE:
IMPLICATIONS
and
RECOMMENDATIONS**

INTRODUCTION

Before delving into specific areas, it is prudent to make some broad observations. It is noteworthy that many researchers studying issues related to college students are forced to use samples of convenience. One of the values of this current study is that by use of random sampling techniques, the empirical evidence of the representativeness of participants was presented. It is therefore expected that at the very least these results and recommendations should generalize to other Christian, liberal-arts colleges.

The second overarching issue is the prevalence of college-student stress identified by this study. Using the criteria of the physical sequela of health distress, 56 percent of the 317 subjects surveyed were categorized as Vulnerable. This not only justifies the current investigation but suggests that further studies are warranted. Only 13.6 percent of subject pool were identified as Resilient to stress. Determining how to increase the ranks of the Resilient should be a high priority on any college campus.

A section on the limitations of the study was presented in Chapter Three. Three limitations surfaced which were not anticipated and planned for in advance. The questionnaire did not include questions regarding marital status or identification of which campus the subject attended (i.e. the Grantham or

identification of which campus the subject attended (i.e. the Grantham or Philadelphia campus). Rather than separating by group at the time of administration, having an item on the questionnaire about campus affiliation would have allowed for detailed comparisons of the Grantham and Philadelphia campuses. The other limitation to data analyses was the use of the term "Latino" as a category for classification of race. By not using the term "Hispanic" the number responding as "Other" may have possibly been increased.

What follows in Chapter Five is a discussion of the implications of the present study and recommendations that flow from those implications. The implications and recommendations are presented in four sections: how the findings relate to the stress and coping model proposed in Chapter One; program implications; research implications; and finally, the relevance for health education. This Chapter concludes with a summary of the research project.

RELATING THE FINDINGS TO THE MODEL

The literature review presented in Chapter Two revealed numerous key components of a comprehensive stress and coping model. These components had been identified and tested by researchers. This present research assimilated these components into one model and then tested the various components simultaneously. While the stress and coping model proposed in Chapter One was not the exclusive focus of this research, many of the components of the model were affirmed. The findings related to hypotheses H-1 to H-12 provide

considerable support for the model. To aid in the discussion of the stress and coping model, Figure 1 is re-introduced at this point.

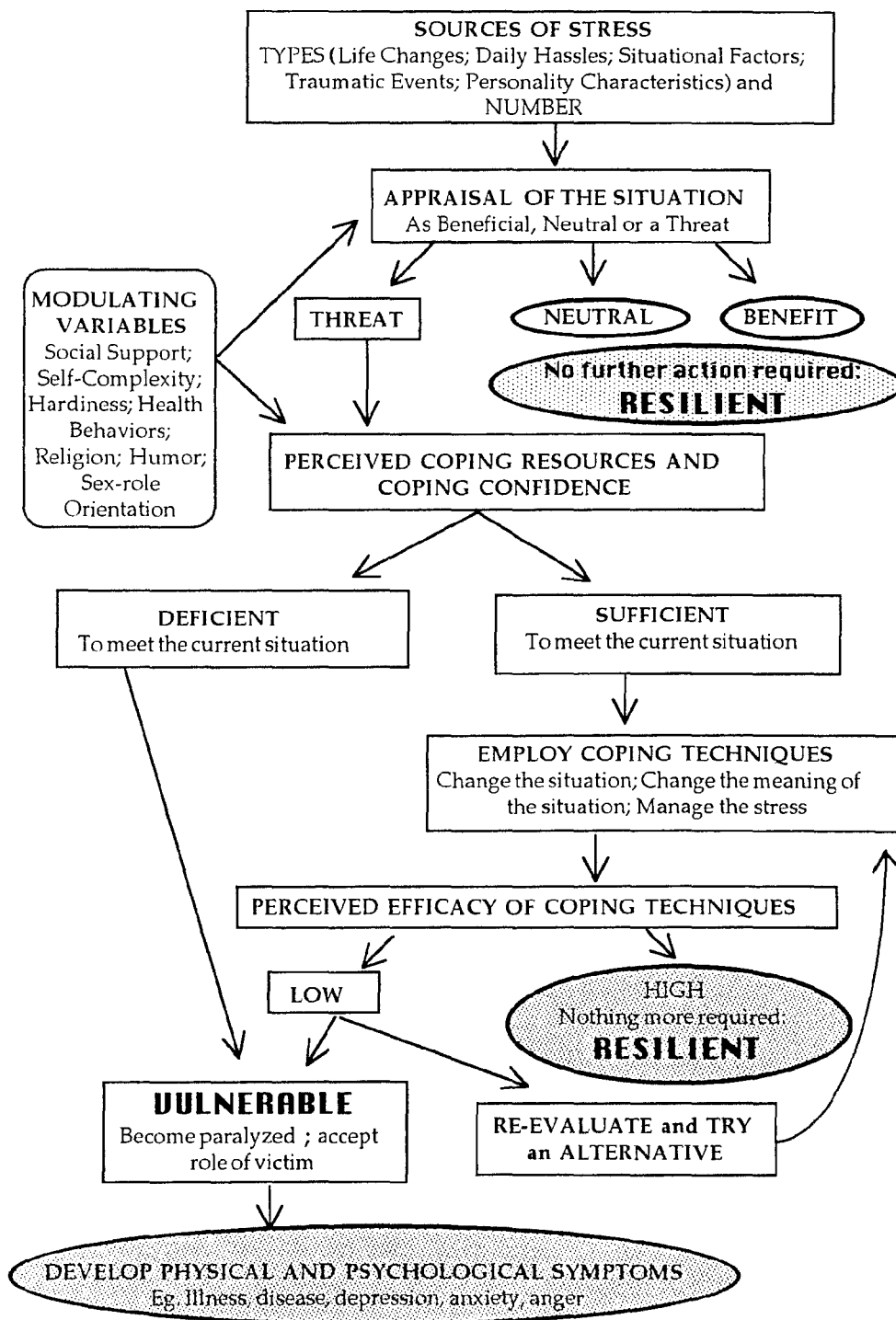


Figure 1: Stress and Coping Model

Seventy-eight stressors were presented to respondents. Those subjects who were classified as Vulnerable more typically reported more of these 78 stressors to be highly or extremely stressful. This suggests that Vulnerable subjects' *appraisal* tended to result in more situations being seen as highly or extremely stressful, as indicated by the significantly higher stressor magnitude scores. The stress and coping model in Figure 1 also suggests that those reporting more *sources of stress* will likely develop physical and psychological symptoms.

As predicted by the stress and coping model, those subjects categorized as Vulnerable on the basis of physical symptoms also evidenced higher levels of *psychological sequelae of stress*. They reported a significantly greater sensation of pressure-overload, that general feeling of being overwhelmed. Anger-frustration, long substantiated as psychologically derived detrimental physical arousal, was also higher for those subjects who were considered to be Vulnerable. As a consequence, Vulnerable subjects would be expected to have more difficulty controlling their tempers or in expressing their feelings in an appropriate manner. The sequelae of anxiety and depression were measured as separate mood symptoms. Anxiety, as measured by the *BPS*, taps into the extent an individual is tense and preoccupied with worry. Depression, as measured by the *BPS*, describes the extent to which one feels burdened, gloomy or pessimistic. All of these psychological consequences of stress will have an impact on the quality of life for those who are Vulnerable. For those who are Vulnerable, the higher levels of pressure-overload, anger-frustration, anxiety and/or depression would be expected to interfere with the quality of their work and their enjoyment of life. By contrast, Resilient subjects had significantly lower scores in all of these areas, as would be predicted by the stress and coping model.

The stress and coping model purports that Resilient persons perceive themselves as having more *confidence in their coping resources*. In this present research, the Resilient subjects did have significantly higher levels of coping confidence than either Average or Vulnerable subjects. Those who have high coping confidence are able to respond more appropriately in the midst of challenging circumstances. Resilient subjects may find themselves in comparably stressful situations to Vulnerable subjects but they are able to more frequently maintain their sense of personal control over their lives. This suggests not only physical resiliency but also psychological resiliency.

Two of the *modulating variables* presented in the model were addressed in the current investigation: social support and religion. Neither of these were affirmed at this time, although that is not considered to negate their potential importance in the stress and coping model. Given the profound importance of friends at the developmental stage college-students are in, it is not entirely surprising that Resilient subjects did not report significantly more social support than Vulnerable subjects. Indeed, because of the importance of friends, students may have tended to over-report the extent and/or availability of their social supports. An alternative explanation may also be that Vulnerable students, who reported slightly higher levels of social support than Average students, may find it easy to connect with those who are willing to help because of the campus-wide emphasis on helping and service to others. It is also possible that the instrumentation employed was unable to accurately measure the social support of college students because this population may define social support differently than the general population.

Similarly, the present research did not affirm the prediction that Resilient individuals would have more philosophical-spiritual resources than Vulnerable

individuals. Anecdotally, faculty at the college where subjects were drawn from acknowledge that there are indeed gradations in the extent of philosophical-spiritual resources students have. The measured lack of differentiation on philosophical-spiritual resources may reflect that by choosing to attend a Christian college these subjects are a homogeneous group on this variable. This may suggest that on this type of campus a more sensitive instrument would be needed to differentiate between those students with high philosophical-spiritual resources from those with low resources. Another alternative is that tapping into this particular modulating variable on a Christian liberal-arts campus requires qualitative research in addition to the quantitative methods employed at present. It is unknown if participants in the current study may actually have more philosophical-spiritual resources than the college-student population at large.

In conclusion, the data supporting the stress and coping model presented in Chapter One suggests a larger picture of what might be included in intervention and prevention programs for Vulnerable subjects. Those who are experiencing increased pressure-overload, anger-frustration, anxiety and/or depression are also experiencing significantly higher levels of health distress than Resilient subjects. Stated more simply, Vulnerable individuals were found to be experiencing considerably more physical responses to stress than Resilient individuals. This highlights the need to go beyond merely focusing on the end-points of stress produced physical or psychological symptoms and deal with the total person. Intervention may be addressed to more than one facet of the stress and coping model simultaneously. For example, a Vulnerable individuals may alter the types or number of *sources of stress* in their lives. They may also learn how to *appraise situations* differently so that fewer are considered to be threats. It is also possible for Vulnerable individuals to intentionally develop a larger and more

effective repertoire of *modulating variables* in their lives. This would also impact their *appraisal of situations* as well as their perceptions of their own *coping confidence*. Vulnerable individuals can also be taught how to employ more appropriate and effective *coping techniques*. Providing Resilient individuals with similar prevention training would also be expected to enhance their existing resources.

Overall, the present investigation suggested that the model presented in Chapter One is a viable manner of conceptualizing the process of stress and coping. It also suggested that more research using the model is desirable.

PROGRAM IMPLICATIONS

While many of the findings are directed to a specific facet of campus life, there are key issues identified which are best dealt with in a multidisciplinary fashion. Recurrent sources of stress were "trouble with boy/girlfriend" and "breaking off a relationship." These were significant in the lives of students regardless of gender, academic year, academic major or residential status. These issues could be addressed in the residence halls, in chapel sessions and in classrooms. Seminars, mini-workshops, printed and/or multimedia materials or drama presentations could be utilized to disseminate information.

Two other issues should also be addressed simultaneously on multiple levels: suicide and depression. Twenty-two percent of females and 21 percent of males found thoughts of suicide in the previous six months as highly or extremely stressful. Those in satellite housing (43 percent) and off campus (50 percent) also seem to be at risk. This highlights that suicidal ideation is significant in the lives

of a large segment of the student body. Programming should be developed and implemented which would teach students how to identify suicidal tendencies in themselves and others and how to get appropriate help.

The absence of a statistical difference between females and males on depression scores is particularly noteworthy. The literature review strongly suggested a difference would be found. Another interesting finding was the incidence level of depression amongst varsity athletes. Does this stem from playing on a team that is not in a top ranked division or from the athletes' perception that they are not supported by faculty? It may also come from their accentuated sense of having low social support resources.

Twelve percent of respondents indicated that "depression" was highly or extremely stressful for them in the past six months. This is in stark contrast to the 26 percent who had clinically elevated levels of depression, as measured by the *BPS*. This disparity between self-perception and measured depression levels connotes that college students are unable to recognize the signs of depression in themselves. If, indeed this is an accurate conclusion, then it also suggests that without accurate self-perception neither male nor female students will be unable to take appropriate self-responsibility for their health behavior.

There are numerous programming implications for the findings presented in Chapter Four. Some of these relate to larger institutional concerns, some to the areas for which the Student Development department is responsible and still others that are academic concerns. Each of these branches of college life will be addressed in this section.

Major Institutional Concerns

One of the subscales included in this research was a measurement of philosophical-spiritual resources. Individuals scoring low on this resource were indicating that religion does not provide much solace or meaning in life to them. This is considered a significant deficit under any circumstances, but particularly so for individuals who are attending a liberal-arts college with a Christian emphasis.

Almost nine percent of subjects indicated they were severely lacking in philosophical-spiritual resources. Males appear to be more vulnerable in this area than females, as indicated by hypothesis H-25. An area of future research is suggested by the trend that philosophical-spiritual resources decrease over the four years in college. If a longitudinal study were conducted, would an actual decreasing trend exist? Or do the present data simply reflect that the current Freshmen have more philosophical-spiritual resources than the Seniors?

The most dramatic drop in philosophical-spiritual resources surfaced with those students living off-campus in satellite housing: a third of these students experienced a deficit. This may be misleading given the small number living in satellite housing ($n=7$). It is noteworthy, however, that only nine percent of those living off-campus have low philosophical-spiritual resources, a group with an equally low number of subjects ($n=6$). Do these findings suggest that students living in satellite housing have an increased sense of autonomy without the sense of responsibility that comes from being completely independent? Does the decrease in structure simultaneous with an increase in personal freedom contribute to the lowered philosophical-spiritual resources? Is this suggestive that different criteria need to be established as to who is allowed to live in satellite housing? It

would appear that at the least, a review of the policy is warranted. It also points out that this group should be considered for specific programming.

Another vulnerable group with regard to philosophical-spiritual resources are varsity athletes. Twelve percent of varsity athletes indicate that religion does not provide much solace or meaning in life to them. Why is this more prevalent among varsity athletes than with the general student body? Varsity athletes appear to be a clearly identified group which could be targeted for programming on this variable.

Student Development

The Student Development office at the research institution consists of several departments: Student Life (including Residence Life), the Career Center, the Counseling Center, the Health Center and Campus Ministries. The staff of this department accounts for many of the cocurricular faculty on campus. Because of the overlapping roles of these offices, any of these segments of the Student Development office can and should respond to a number of issues.

Many of the top stressors indicated a need in the area of academics. Focusing on academics is crucial in Freshman residences where four of the top five stressors relate to school work. It is also important to Sophomores and Juniors. The Student Development office can contribute to lessening these needs by providing tutoring sessions in the residence halls on how to prepare for examinations, tests, term papers, time management, etc.. The on-campus Learning Workshop is a peer drop-in tutorial center. This current study strongly suggests

that the Learning Workshop needs to take its programming directly into the residence halls and not expect students to initiate contact.

In the male residence halls and in other settings where it is possible to work with the men, programming around interpersonal issues cannot be ignored. Male subjects indicated that "breaking off a relationship" was their second ranked stressor and "trouble with girlfriend" was eighth. Eighty-six percent of the men included in this study also indicated that they did not want counseling for their concerns. This suggests that the needs of this sector of campus life must be met through programming in more informal, low-key settings.

As previously indicated, respondents were asked whether or not they wished to receive counseling for the concerns which they were reporting. The following percentages, by academic year, indicate those who did not want any counseling:

Year	Percent
Freshmen	91.5
Sophomores	80.2
Juniors	81.6
Seniors	83.3

Why does the resistance to counseling not decrease more after students have been on campus for four years? This may suggest that the Counseling Center needs to consciously attempt to improve its image with the student body. It is also strongly suggestive of the need for a peer counseling program to be developed on campus. This would allow students to receive helpful input in a less formal setting making the process more approachable.

Subjects were also asked if they wished to receive training in stress management techniques. The following percentages, by academic year, indicate those who did not want to receive any stress management training:

Year	Percent
Freshmen	81.2
Sophomores	71.9
Juniors	71.2
Seniors	75.5

While more respondents are open to the possibility of stress management training than to counseling, the majority are still not interested in actively seeking it out. The group most receptive to receiving stress management training were those living in satellite housing. Fifty-seven percent of this sector of this subject pool *wanted* to receive stress management training. This could be set-up as on-site training for them in their small living groups.

A final area that Student Development personnel can be involved in is that of programming for the Adult Children of Alcoholics (A.C.O.A.). Thirteen percent of females and close to 17 percent of males indicate that dealing with an alcoholic parent is highly or extremely stressful. Being an A.C.O.A. does not appear to be exclusive to any gender, academic year, major, race or residential status: A.C.O.A.'s surfaced in every sector of the subject pool. Being an A.C.O.A. was correlated with many stressors including marital difficulties, having experienced a sexually abusive relationship and contemplating suicide. Since these data only reflect the percentages of A.C.O.A.'s who find the situation stressful, there may be a much higher percentage of the student body who could benefit from programming.

All of these areas outlined are ones of great need. They are also areas where multiple, ongoing efforts by the various components of the Student Development staff can make a difference in the lives of students. The development of nonpharmacological treatment strategies is important in college-aged individuals for they are likely to decrease individuals' future reliance on chemical

interventions as a coping resource (Williams et al., 1983). Indeed, tutoring, counseling and study skills programs have been shown to decrease the stress of undergraduates (Gill, 1985). The work of Valdes (1988) indicates that when given stress management training, the GPA's of college students increased while both physical and psychological symptoms decreased.

Academics

The data also showed that there are programming implications for academic faculty. Many of the top stressors identified by the respondents were academic in nature. Curricular faculty could minimize students' stress by clarifying expectations regarding examinations, term papers or assignments. It would be helpful to students if they had opportunities to demystify tasks by asking questions in class and/or in private.

Majors such as Behavioral Science, Health and Physical Education, Nursing and Sports Medicine have an obvious link to providing courses on stress management training. This would enable students to gain helpful skills while receiving academic credit. Romano's 1984 study showed that a semester long course significantly reduced stress and that this positive effect continued on follow-up three months later. Somerville, Allen, Noble and Sedgwick (1984) found similar results which were measurable one year later.

Forty-three percent of Nursing majors experienced clinical levels of anxiety and 38.2 percent lacked coping confidence. Twenty-four percent of this group reported difficulties getting along with an instructor. A higher percentage of nursing majors indicated "fear of failure" (the fifth ranked stressor) than other majors ranked their top stressor. This may reflect that Nursing students are a

more homogeneous group than other majors. It may also suggest that a higher percentage of Nursing students experience stressors common to the larger population more intensely. This is perhaps understandable, given that nursing students are not dealing with theoretical learning but real life and death issues when on their clinical rotations. This needs to be acknowledged by the faculty and active efforts made to create an affirming learning environment for these students.

Health and Physical Education majors are a group which appear to be at risk. Fifty percent of these subjects had clinically elevated pressure-overload scores and an additional 43 percent had elevated levels of anxiety. A high percentage of this major has experienced significant stressors in the form of sexually abusive relationships (31 percent), dealing with an alcoholic parent (31 percent) and contemplation of suicide (42 percent). These data suggest the profile of a group of people with significant difficulties. Providing required or elective courses on stress management training would be prudent.

Another high risk group may be Visual and Theater Arts majors. This major had high percentages of clinical elevations across all the *BPS* subscales. This combination is suggestive of experiencing significant stress while lacking resources to deal with the stress. Fifty percent had elevated pressure-overload scores and 68 percent had elevated anxiety and depression scores. One third of the respondents in this major lacked helpful levels of any of the coping resources measured. Visual and Theater Arts students also report several sources of stress that may be intertwined. "Making plans for my future," "getting along with family," "expectation(s) of parent(s)," and "fear of failure" may reflect the tensions that can arise from students drawn to this field and their families' possible concerns about employability. However, before overgeneralizing about the needs of Visual and Theater Arts majors, it is important to note that only six of the subjects

were of this major. Future research would be needed to determine if the results of the present study are representative of this major or if the small n skewed the results.

Faculty responsible for Music majors can build-in opportunities for these students to socialize within the department. Not only do these subjects feel they are alone when others are socializing, they see themselves as lacking in assertiveness. As a consequence, they will be less likely to make their needs known or to satisfy these needs themselves. This was the only major to indicate either of these sources of stress in the top five stressors. Those students majoring in Music highlight the potential loneliness because much of their day is spent in individualized instruction and practice time.

Another noteworthy source of college-student stress arises from the responses of Mathematical Science majors. Over forty-five percent of Mathematical Science majors, compared with 19.6 percent of the research population, indicated that "concern over possible pregnancy of self or partner" was highly or extremely stressful. It was not clear why this is so significant for this group, particularly in light of the fact that these students have lower percentages of clinical elevations on all *BPS* subscales when compared to other majors..

In summary, there are many program implications at the academic level. Departments can add courses such as stress management training to increase college-students' repertoire of coping behaviors. Departments can also actively attempt to create an atmosphere where students do not feel threatened. The curricular faculty can have a positive impact on students' stress levels by making minor modifications in teaching strategies, such as clarifying assignments.

RESEARCH IMPLICATIONS

There are numerous of areas for future research indicated by the present investigation. Some of these areas would clarify questions which have arisen out of the current study. Other research efforts could establish related, but new, bodies of information. Each of these research areas will be discussed in this section, as well as issues which can facilitate the research process.

Clarifying Research

Throughout the previous discussions of programming implications, some of the questions which need clarifying have already been asked. Others have not.

Forty-five percent of subjects reported critically elevated levels of anxiety sufficient to interfere with their efficiency in doing their work. What is the source(s) of this anxiety? And if the source(s) can be identified, what can be done to relieve this anxiety? Forty-one percent of varsity athletes report similar levels of anxiety. Is this the same type of anxiety experienced by the general student body or is it related to sports performance and/or academic pressures?

More Seniors experience significant levels of anger-frustration than any other academic year. One third of Seniors also have elevated levels of depression sufficient to warrant professional help. What drives this sense of anger and depression? Does it stem from high pressure-overload, which one third of Seniors also experience? Other alternative explanations are that the depression arises from the separation anxiety inherent in leaving friends at the end of the school year or that the depression may be in response to prolonged contact with the institutional

culture. Varsity athletes also experience high levels of depression. Why is it that 27 percent of varsity athletes have elevated depression scores compared to 19 percent of the general student body?

Of any academic year, Sophomores reported the highest levels of pressure-overload. Does this suggest that they are recognizing that there is still a long way to go in their programs, a recognition that is often referred to as the "sophomore slump."

Another area which begs clarification is the discrepancy between the *BPS* subscale scores of Freshmen and other academic years. Why is it that on virtually every subscale Freshmen have lower stress scores and higher resource scores than any other academic year? Does this mean students leave in worse shape than they came in at or that Seniors have a clear understanding of the "real world?" Does this reflect the instability of the developmental stage that the majority of college students are going through? Or does it reflect that there is perhaps more programming energy going into the Freshman class than to any other academic year?

Subjects were asked to indicate their race, selecting from the following categories: Caucasian (white); African-American, Asian, Latino or Other. Of the seven choosing "Other," 57.2 percent report that a sexually abusive relationship was highly or extremely stressful in the past six months. Who are the people who make up this "Other" group? How can they be assisted to get out of these abusive relationships and to experience healing?

Another race-related research question is why Asian students reported the highest level of difficulty with instructors. Does this reflect language difficulties or cross-cultural expectations on the part of both faculty and student? Asian students

also ranked the stressors "grades received" and "guilt for not doing better" as their highest sources of stress. Does this reflect actual academic difficulties or does it stem from a high need to achieve?

Facilitating the Research Process:

Two factors significantly facilitated the research process during this present study. Future efforts to replicate this study or to expand on it might wish to incorporate these components into the design.

The first factor relates to subject participation. Subjects were offered an incentive to come to the administration site. Once there, none of the potential participants chose to exercise their option of receiving chapel credit without completing the questionnaire. Offering some form of relevant incentive is considered important.

An additional factor which greatly enhanced the research process was the establishment of an informal network with college personnel prior to the research commencing. This was partially accomplished by the researcher volunteering her services for various activities sponsored by the Student Development Department and by accepting any requests to be a guest lecturer for faculty. This network gave visibility and professional credibility to the researcher.

New Research

Several potential areas of new research relate to the *Brief Personal Survey*, which showed itself to be a most useful tool in the present investigation. Collecting ongoing data for the purposes of developing college-student norms would be a benefit to the field. It would also be of great interest to identify the

BPS subscale levels for both curricular (teaching) and cocurricular (non-teaching) faculty and to compare these with students' *BPS* scores. Would student subscale elevations be different from faculty or would they mirror the models that they are exposed to on campus?

Longitudinal research with the *BPS* would also add to our knowledge base. Taking a random sampling of Freshmen each year and administering the *BPS* would enable an institution to determine the make-up of incoming classes with regard to Resilience and Vulnerability. Where flexibility would allow, it would then be possible to develop programming around the specific needs of Vulnerable students. In conjunction with this, it would be possible to conduct exit interviews with Seniors to ascertain how the college experience has benefited or hindered their capacity to cope with stress. This would make further programming refinements possible.

Replicating the study is another manner in which the information base can be broadened. In the first month of school the top ranked stressor was "final examination week." Would this be true in the spring semester when the final examination week is a reality? Would the physical and psychological sequelae of stress change over the course of the year, and if so, for better or for worse? Similarly, how would coping resources change over the course of the school year?

It would also be important to replicate this study with a different college-student population. How would students of other Christian, liberal-arts colleges compare to the present study population? How would students of state or nonsectarian colleges compare with the present target population?

IMPLICATIONS FOR HEALTH EDUCATION

There are extensive implications for health education inherent in the findings of this investigation. Health educators who understand the sources of and responses to college-student stress, as well as the coping techniques and coping confidence of students, can make a dramatic change in the individual and collective lives of students.

Knowledgeable health educators are capable of being the uniting element between students' needs and the many diverse campus professionals desiring to meet those needs. Health educators would be able to effectively present the information gleaned from this investigation to both curricular (teaching) and cocurricular (non-teaching) faculty through in-service training. Those in the field of health education would also be capable of meeting the needs of students directly.

One important service which a health educator could provide for curricular and cocurricular faculty would be the development of a brief list of pertinent questions to ask students. These questions should be based jointly on the model of stress and coping presented in Chapter One and on the findings of this research. These questions could be used by faculty in their advising sessions with students. The goal in developing such a list of questions would be to quickly tap into a particular student's current stress level and coping ability. This would increase the likelihood that students who are at higher risk for being Vulnerable could be identified as soon as possible.

With their training in needs assessment, education, and programming, health educators have a significant role to play. Equipped with the type of data

this research study provides, health educators can be effective change agents in improving the quality of life for students on campuses. The interventions of health educators to whom students are exposed during their college years can also improve the quality of life for students after they have graduated. Guyton and his associates (1989) looked at college students and the National Health Objectives for the Year 2000. They concluded that the college-student population is a unique population to target for interventions. If given the opportunity, college students are generally receptive to physical and psychological health messages. More importantly, if and when educated to the issues, many are willing to embrace health-promotion concepts.

How can health educators play a significant role directly with the college-student population? As previously discussed under the programming implications for Student Development and academic personnel, a stress management training course/program for students is considered essential. This is a key area where the input of a health educator would be important. Professionally, health educators are perhaps in the best position to go beyond stress management to a more comprehensive approach: wellness programming.

"Wellness" is a word that cannot be found in *Webster's Encyclopedic Unabridged Dictionary of the English Language* (1989), yet it has recently become a part of the language of many physical and mental health professionals. Wellness was first described by Dunn (1961) as an integrated method of functioning, which maximizes potential. Wellness has taken on the connotation of wholeness that arises from attending to and nurturing the physical, environmental, social/emotional, cognitive and spiritual dimensions of life. A health educator can develop and implement programming which addresses all of these key areas.

When talking of wellness programs on campus, one issue arising from this present research is particularly noteworthy. According to Chapman (1986), leaving spirituality out of any wellness program means it will have to fuel itself on the "intellectual equivalent of Wonder Bread" (p. 38). This investigation strongly suggests that philosophical-spiritual resources must be intentionally addressed even on a college campus where spirituality is assumed to be the norm.

SUMMARY

Because of the sampling technique employed, the numerous implications and recommendations arising from this research are considered to have some degree of generalizability. Replication of the study would be needed to determine if this generalizability extends beyond the confines of Christian liberal-arts institutions.

Those aspects of the stress and coping model addressed by this investigation were supported. Future research which would test the model further would be desirable.

Programming implications and recommendations were also presented in Chapter Five. These were broken into the areas of multidisciplinary interventions, institutional concerns, Student Development and academics. The implications for health educators were also presented. Suggestions were made in each area.

SUMMARY OF INVESTIGATION

In Chapter One an overview of the study was provided for the reader. This included the purpose of the study, related research questions and the rationale for investigating college-student stress. The conceptual framework for the study was summarized in the development of a comprehensive model of the process of stress and coping. The hypotheses were briefly described.

The extensive literature review presented in Chapter Two made it possible for the reader to not only understand the concept of stress but also its prevalence and ramifications within the college-student community. Using the framework of the stress and coping model, the relevant work of other researchers was summarized.

To conduct the research, 672 students from a Christian liberal-arts college in south-central Pennsylvania were randomly selected. Of these, 317 completed usable questionnaires. This rate was sufficient to establish statistical power at the .95 percent confidence level.

Subjects completed a 192 item questionnaire which included 78 items on potential stressors, the 88 items of the standardized *Brief Personal Survey* (Webb, 1988) and 26 demographic items. Subjects were classified into one of three groups: Resilient, Average or Vulnerable.

In total, 25 hypotheses were tested using these data. The results were presented in detail in Chapter Four. It was found that Resilient subjects experienced less pressure-overload, anger-frustration, anxiety and depression than either Average or Vulnerable groups. Males and females were not found to be different with regard to pressure-overload, anger-frustration or depression. Females experienced higher levels of anxiety, stressor magnitude, health distress,

social support and philosophical-spiritual resources. An attempt to identify strong predictor variables of health distress was not successful. Chapter Four also presented findings related to stressor correlations and rankings.

Chapter Five discussed the implications and recommendations inherent in the findings along six major themes. First, the findings were discussed in light of how they relate to the stress and coping model presented in Chapter One. The programming implications for the institution and for cocurricular and curricular faculty were also commented upon. Areas of potential research were outlined and ways in which health educators can be involved recommended.

In addition to the specifics, there are overall implications arising from the research having been conducted. This study resulted in the development of a conceptual model of stress and coping that is based on the research efforts of many individuals. Because of the nature of the stressors identified, this study has also shown the mutual importance of the curricular and cocurricular in the lives of college students. This research will enable determinations to be made about which programs and services to offer on the basis of empirical evidence. While the results are considered to be generalizable, it is important not to lose sight of a significant aspect of this study: for the first time effort has been made to understand the stress experience of college students in a Christian liberal-arts context.

APPENDICES

APPENDIX A: CORRESPONDENCE

- A1:** Letter of invitation to participate
- A2:** Voice-mail reminder to participants
- A3:** Administration instructions and letter of informed consent
- A4:** Follow-up letter
- A5:** Letter of permission to use the *Brief Personal Survey*

APPENDIX A1: Letter of Invitation to Participate

My name is Jan Yeaman. To complete work on a Ph. D. at the University of Maryland (College Park) I am conducting research on the topic of college-student stress. Messiah College has endorsed this research which will enable this school and others like it to better meet the needs of students.

You have been randomly selected to take part in this study. You can help by coming to Miller Auditorium in the Climehaga Fine Arts Building on (date) _____ at 9:30 a.m. during the regularly scheduled chapel. **You will be given chapel credit for participation in this study** so please bring your chapel card. Also bring a #2 pencil.

Your participation would require that you complete a questionnaire regarding your experience with stress as a college student. Your responses to all questions will be completely confidential and anonymous. The data collected for the study will only be considered as a group data pool. No one associated with the college, including the researcher, will be able to identify any individual responses to questions.

Your participation is greatly appreciated by the college and by myself. Thank you very much for your potential participation.

**REMEMBER:
JOIN US ON (DATE),
BRING A #2 PENCIL and
RECEIVE CHAPEL CREDIT**

APPENDIX A2: Voice-mail Reminder to Participate

This message is a campus-wide message to all students from the Student Development Department.

Students at Messiah College have been randomly selected to participate in a survey on college-student stress. If you are one of these students, you received a memo in your mailbox this morning.

This message is a reminder to those who were selected to come to Miller Auditorium in the Climehaga Fine Arts Building for an alternative chapel tomorrow. Since you will receive credit for chapel attendance, please bring your chapel card and a #2 pencil.

Your participation is greatly appreciated.

**APPENDIX A3: Administration Instructions
and
Letter of Informed Consent**

Welcome and thank you for responding to the invitation to participate in this dissertation research project conducted by Jan Yeaman, M.A., a doctoral student at the University of Maryland, College Park, MD.

The questionnaire that you will complete this morning will greatly assist this college and others like it to understand the magnitude and impact of stress on students. Knowing this information will make it possible to provide more effective services for students.

Your responses to all questions will be completely confidential and anonymous. **Do not put your name or student number on the computerized answer sheet.** The data collected for the study will only be considered as a group data pool. You will hand in the signed statement of informed consent and your chapel card separately from your questionnaire. No one associated with the college, including myself, will be able to identify any individual's questionnaire nor responses to specific questions.

This study involves no deceit and no risk or discomfort to you for participating. You may change your mind about participating at anytime. You will still receive a chapel credit. A report of the results of this study may be submitted to a professional publication or conference at a later time.

If you are willing to participate, you need to:

1. Sign the **Statement of Informed Consent** below.
2. Look at the top sheet of the questionnaire and determine the code number for your particular major. Write this number on the answer sheet where it says "Write I.D. Number Here."

3. Answer the questions, following the directions for each of the three sections. Please make dark marks. To change an answer erase completely. Periodically check to insure that you are placing the answer in the appropriate box on the answer sheet (eg. the answer to question 26 goes in the box on the answer sheet marked #26).

THANK YOU FOR PARTICIPATING IN THIS STUDY.

STATEMENT OF INFORMED CONSENT

I have read the above information about this research study. My signature below indicates that I voluntarily agree to participate as a subject in this study, based on the information above.

Date _____

Signature _____

APPENDIX A4: Follow-up Letter

**IMPORTANT INFORMATION REGARDING
CHAPEL ATTENDANCE
THURSDAY, SEPTEMBER 23
(TUESDAY, SEPTEMBER 28)**

You have received a letter in campus mail inviting you to participate in a research study on college-student stress. Those who participated in the study received a chapel credit for the time it took to complete a questionnaire. Based on the chapel cards submitted it appears you were unable to participate on the day designated.

If you would still like to participate in this study (and receive chapel credit for that participation) a make-up day has been scheduled for Thursday, September 23 (Tuesday, September 28) at 9:30 a.m. in Miller Auditorium (Climehaga Fine Arts Building). Bring your chapel card and a #2 pencil.

Your participation would require that you complete a questionnaire regarding your experience with stress as a college student. Your responses to all questions will be completely confidential and anonymous. The data collected for the study will only be considered as a group data pool. No one associated with the college, including the researcher, will be able to identify any individual's responses to questions.

Your participation is greatly appreciated by the college and by myself.

Thanks,

Jan Yeaman.

**APPENDIX A5: Letter of Permission to
Use the Brief Personal Survey**

**Affiliated
Counseling
Services**

Professional Psychological
Care in a Christian Context

Dear Jan,

Enclosed is my dissertation. I also
enclose the current version of the Brief
Personal Survey, new unique answer sheet,
profile sheet, T-scores + Interpretive Statement
Library. Also, enclosed is our preliminary
manual.

I hope these prove to be useful.

Sincerely,

James D. Hill, Ph.D.
(James)

APPENDIX B: QUESTIONNAIRE

- B1:** Codes for Majors
- B2:** Stressor Checklist Subscale
- B3:** *Brief Personal Survey* Questions
- B4:** Demographic Questions
- B5:** Research Questionnaire

**APPENDIX B1: Codes for Majors
(by department)**

Behavioral Science

1101 BEHS
1102 BSSS
1103 FS
1104 PSY
1105 SOC
1106 SOCW

Bible

1201 BIB
1202 CED
1203 CMM
1204 HUMP
1205 REL
1206 CM

Education

1301 ECE
1302 ELED
1303 HEC
1304 HED

Engineering

1401 ENGR

Health & Physical Education

1501 HPE
1502 PE
1503 SMED
1504 SPEX
1505 REC

History & Political Science

1601 HIS
1602 HSST
1603 HUMH
1604 POLS
1605 PREL

Language, Literature & Comm

1701 COMM 1707 JOUR
1702 ENG 1708 RTF
1703 ENG 1709 SPA
1704 GER 1710 SPTC
1705 HUM
1706 HUME

Mathematical Science

1801 CS
1802 MATC
1803 MATH
1804 PHYS

Management and Business

1901 ACCT
1902 BIS
1903 BUSA
1904 ECON
1905 HRM
1906 IB
1907 MKT

Music

2001 MUED
2002 MUS

Natural Science

2101 BIO
2102 BIOC
2103 BIOT
2104 CHEC
2105 CHEM
2106 DIET
2107 MEDT
2108 NSB
2109 NSC
2110 NTSC
2111 PT
2112 PRED
2113 PREM
2114 PREV

Nursing

2201 NUR
2202 RNBS

Visual and Theatrical Arts

2301 ART
2302 ARTE
2303 ARTH
2304 THE

Undeclared

2401 UND

APPENDIX B2: Stressor Checklist Subscale

The questions in this section ask you about situations which you perceive to be stressful *for you*. In each case, you will be asked to indicate to what extent you have personally experienced each stressor in the *previous six-month period*. Although some of the questions are similar, there are differences between them and you should treat each one as a separate item. Answer each question with the first response that comes to mind. Be certain that you are filling in the correct circle for your answer.

For each question choose from the following alternatives:

- A. NOT STRESSFUL
- B. MILDLY STRESSFUL
- C. MODERATELY STRESSFUL
- D. HIGHLY STRESSFUL
- E. EXTREMELY STRESSFUL

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
1. Final examination week	A	B	C	D	E
2. Test anxiety	A	B	C	D	E
3. Too much schoolwork	A	B	C	D	E
4. Making plans for my future	A	B	C	D	E
5. Putting off assignments, responsibilities	A	B	C	D	E
6. Financial pressures	A	B	C	D	E
7. Grades received	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
8. Guilt for not doing better	A	B	C	D	E
9. Finding time to exercise or worrying about not exercising	A	B	C	D	E
10. Competitiveness for grades	A	B	C	D	E
11. Managing time and schedule	A	B	C	D	E
12. Worry about career opportunities after graduation	A	B	C	D	E
13. Expectation(s) of parent(s)	A	B	C	D	E
14. Registration	A	B	C	D	E
15. Beginning of semester	A	B	C	D	E
16. Eating habits	A	B	C	D	E
17. Dealing with emotions	A	B	C	D	E
18. Overweight or underweight	A	B	C	D	E
19. Personal appearance	A	B	C	D	E
20. Sleeping habits	A	B	C	D	E
21. Depression	A	B	C	D	E
22. Difficulty in making decisions	A	B	C	D	E
23. Teaching methods of instructor(s)	A	B	C	D	E
24. Concern for friend(s) with problems	A	B	C	D	E
25. Getting along with family	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
26. Gaining independence from parent(s)	A	B	C	D	E
27. Oral presentation(s)	A	B	C	D	E
28. Lack of confidence	A	B	C	D	E
29. Lack of energy	A	B	C	D	E
30. Self-image	A	B	C	D	E
31. Guilt feelings	A	B	C	D	E
32. Decisions or worries about sexual behavior	A	B	C	D	E
33. Attending classes as required	A	B	C	D	E
34. Boredom	A	B	C	D	E
35. Family members not getting along with one another	A	B	C	D	E
36. Meeting program requirements	A	B	C	D	E
37. Loneliness	A	B	C	D	E
38. Being accepted by others	A	B	C	D	E
39. Breaking off a relationship	A	B	C	D	E
40. Decisions about course selection or major	A	B	C	D	E
41. Problems with an instructor	A	B	C	D	E
42. Need work but unable to find job	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
43. Trouble getting along with employer	A	B	C	D	E
44. Parents having financial difficulties	A	B	C	D	E
45. Serious illness or injury of close family member	A	B	C	D	E
46. Emotional problems of family member	A	B	C	D	E
47. Being away from home and not getting to go home when you like to	A	B	C	D	E
48. Difficulty getting along with roommate	A	B	C	D	E
49. Trouble with boy/girlfriend	A	B	C	D	E
50. Concern over possible pregnancy of self or partner	A	B	C	D	E
51. Carrying on long-distance relationships	A	B	C	D	E
52. Meeting people of different lifestyles, views, backgrounds	A	B	C	D	E
53. Disagreements or misunderstandings with friend(s)	A	B	C	D	E
54. Serious illness or injury of a friend	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
55. Term papers	A	B	C	D	E
56. Waiting for graded tests	A	B	C	D	E
57. Studying for examinations	A	B	C	D	E
58. Unclear assignments	A	B	C	D	E
59. Fast-paced lectures	A	B	C	D	E
60. Pop quizzes	A	B	C	D	E
61. Incorrect answers in class	A	B	C	D	E
62. Learning new skills	A	B	C	D	E
63. Past or present sexually abusive relationship	A	B	C	D	E
64. Having an alcoholic parent	A	B	C	D	E
65. Competing on an athletic team	A	B	C	D	E
66. Cheating on a test	A	B	C	D	E
67. Contemplating suicide	A	B	C	D	E
68. Fear of failure	A	B	C	D	E
69. Difficulty in budgeting money	A	B	C	D	E
70. Marital difficulties	A	B	C	D	E
71. Being alone when others are socializing	A	B	C	D	E
72. Lack of assertiveness or ability to speak up for beliefs	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
73. Finding parking space	A	B	C	D	E
74. Making child care arrangements	A	B	C	D	E
75. Making, keeping friends	A	B	C	D	E
76. Dealing with administration	A	B	C	D	E
77. Lectures not in your native language	A	B	C	D	E
78. Lighting, temperature of classroom	A	B	C	D	E

APPENDIX B3: *Brief Personal Survey*
Used with permission of author

If a statement is **true or mostly true**, fill in the box marked **A**. If the statement is **false or mostly false**, fill in the box marked the **B**. Leave boxes C, D and E unmarked.

1. I am in as good physical shape as most people my age.
2. I don't feel under a lot of pressure at the present time.
3. I seldom feel like crying.
4. I never feel uneasy in social situations.
5. I am almost always worrying about one thing or another.
6. I have a lot of stomach trouble.
7. I have a group of friends or family members who really care about me.
8. If someone is in trouble, I am always the first to help.
9. I feel so down I cannot get rid of the blues even when my family or friends try to cheer me up.
10. I am not the kind of person who can handle a lot of stress or problems.
11. I have never been worried about my health.
12. Sometimes in the midst of trials or problems I seem to discover deeper meaning in life.
13. I am able to control my feelings, even under trying circumstances.
14. I have a family member or friend I can tell anything to.
15. I am usually happy.
16. It is always easy for me to admit when I have made a mistake.
17. Right now I have more to do than I can handle.
18. I am a calm, easy going person who seldom gets nervous or upset.
19. I don't have a faith or religion that is a great source of strength for me.
20. I have friends or family members from whom I can get the emotional support I need.

A) True or mostly true**B) False or mostly false**

21. Sometimes when I am frustrated or irritated, I am hard on other people.
22. I have confidence in my ability to face the problems in my life.
23. I would never take on so many things that I didn't have time to relax and take it easy.
24. I fear I am losing my mind.
25. When life gets tough, I don't really have anybody to turn to.
26. I have no trouble getting to sleep due to being tense or anxious.
27. I am not a hard driving, highly competitive type of individual.
28. I seldom worry about my health.
29. I am not the kind of person who holds grudges for very long.
30. I find little comfort in faith or religion.
31. My worries keep running through my mind.
32. It sometimes seems things would be easier if I just weren't alive.
33. Sometimes I get several things going at once because I failed to look ahead.
34. People are putting too many demands on me at the present time.
35. Even when things are going wrong, I stay calm and in control.
36. Sometimes I do things that are selfish.
37. These days I find myself brooding or going over my problems a lot.
38. I feel my life plays a part in something that is bigger and more important than I am myself.
39. I have a lot of things to feel angry about.
40. It is hard to get excited about what the future holds.
41. At times my use of alcohol or drugs concerns me.
42. I am not the kind of person who tends to take things hard.

A) True or mostly true**B) False or mostly false**

43. I am always able to be totally honest with others about my feelings.
44. It is unusual for me to be bothered by health problems.
45. Things have gotten so bad that I have recently thought of taking my life.
46. I get so tense and anxious it is hard to keep my attention focused on my work.
47. It makes me nervous when people hug me or tell me they care.
48. I need to talk to a doctor or therapist about my personal problems.
49. My life is meaningful even in the hard times.
50. When people upset me, I fume and feel my blood boil.
51. Lately I have been anxious about something or someone almost all the time.
52. It is not uncommon for me to feel weak all over.
53. I have few headaches.
54. It takes a lot to get me to lose my temper.
55. I often use sarcasm when I think people deserve it.
56. I am more sensitive and easily upset than most other people.
57. When I pray or participate in a religious service, I seldom or never experience an inner calmness or peace.
58. If more than one or two things go wrong at the same time, I feel like I will go to pieces.
59. I find myself turning to alcohol or drugs to help me cope with life's stresses and disappointments.
60. I seem to get in a lot of arguments.
61. I find it hard to keep my mind on a task or job because my mind keeps drifting away to all my problems.
62. I seldom experience many aches or pains.
63. I currently feel so overwhelmed that I just try to keep my head above water.

A) True or mostly true

B) False or mostly false

64. My friends and family don't seem to understand my needs.
65. I am an easy going person who doesn't have much of a temper.
66. I can't seem to get the type of strength other people find in their religion.
67. I may need to be in a hospital to get treatment for my mental or emotional problems.
68. I have what it takes to handle more burdens than most people can cope with.
69. I frequently have feelings of shakiness, nervousness, or butterflies in the pit of my stomach.
70. I doubt that I have the personal strength or guts to keep going when things are really tough.
71. My faith is an important resource in difficult times.
72. I can count on my family or friends when I need sympathy and understanding.
73. No matter how bad the situation may be, I know I will come out all right.
74. I am afraid I might lose control and injure myself or somebody else.
75. I frequently get irritated by the faults of those around me.
76. A lot of the time I feel fatigued or worn out.
77. I feel depressed.
78. I don't feel under a lot of stress.
79. Lately I have found it difficult to enjoy being around my friends and family.
80. I have to handle most things alone, with little support from anyone else.

APPENDIX B4: Demographic Subscale

Please complete the following additional questions. Remember to completely fill in the appropriate box on the answer sheet. Make sure the number of the question and answer are the same.

1. Age in years: A) 18 or less
 B) 19 to 20
 C) 21 to 22
 D) 23 to 24
 E) more than 24
2. Gender: A) Female B) Male
3. Are you: A) Caucasian (white)
 B) African-American
 C) Asian
 D) Latino
 E) Other
4. Are you an international student: A) Yes B) No
6. Is English your native language: A) Yes B) No
7. Year in program: A) Freshman
 B) Sophomore
 C) Junior
 D) Senior
8. Student status: A) Full-time (12 or more credit hours)
 B) Part-time (6 to 11 credit hours)
 C) Part-time (less than 6 credit hours)
9. Residential status: A) On campus, traditional residence
 B) On campus, apartments
 C) Off campus, satellite housing
 D) Off campus
10. If a sophomore, junior or senior what is your last semester's GPA:
 A) 3.5 to 4.0
 B) 2.5 to 3.4
 C) 2.0 to 2.4
 D) 1.5 to 1.9
 E) less than 1.5

11. If a sophomore, junior or senior what is your cumulative GPA:
 - A) 3.5 to 4.0
 - B) 2.5 to 3.4
 - C) 2.0 to 2.4
 - D) 1.5 to 1.9
 - E) less than 1.5
12. If a freshman, what is your last semester in high school GPA:
 - A) A
 - B) B
 - C) C
 - D) D
13. If a freshman, what is your cumulative high school GPA:
 - A) A
 - B) B
 - C) C
 - D) D
14. How often do you engage in physical exercise:
 - A) Never
 - B) Once a month or less
 - C) Several times per month
 - D) Once a week
 - E) More than once a week
15. Do you currently take prescription medicine? A) Yes B) No
16. Do you currently take nonprescription medications?
 - A) Yes
 - B) No
17. If someone asked you to describe who you are to them, would that be
 - A) Very easy
 - B) Somewhat easy
 - C) Somewhat difficult
 - D) Very difficult
18. How many social roles (eg. student, friend, daughter/son, employee, spouse, etc) do you consider yourself to have:
 - A) Very few
 - B) Some
 - C) Many
19. How many types of activities do you engage in (eg. running, tennis, writing, music, student government, etc):
 - A) Very few
 - B) Some
 - C) Many
20. How many goals would you consider you have in your life right now:
 - A) Very few
 - B) Some
 - C) Many

21. I can usually find something comical, witty or humorous in most situations:
A) Never
B) Almost never
C) Sometimes
D) Fairly often
E) Very often
22. In the past six months, how many days of restricted activity have you experienced due to illness:
A) None
B) 1 to 2
C) 3 to 4
D) 5 to 6
E) More than 6
23. How often do you attend religious services:
A) Never
B) Up to several times per year
C) Once a month
D) Up to once a week
E) More than once a week
24. Do you feel you get sufficient feedback and support from your instructors:
A) Yes B) No
25. Do you feel that on the whole your instructors care about you:
A) Yes B) No
26. On the whole, would you consider yourself to be:
A) Not at all stressed
B) Somewhat stressed
C) Highly stressed
D) Extremely stressed
27. Would you like to receive counseling for your concerns:
A) Yes B) Maybe C) No
28. Would you like to receive stress management training for your concerns:
A) Yes B) Maybe C) No
29. If you were given training in stress management techniques do you feel you would be willing and able to practice:
A) Yes B) Maybe C) No
30. Have you ever received training in stress management techniques:
A) Yes B) Maybe C) No

31. Have you had training in stress management techniques:
- A) Never
 - B) Up to several times per year
 - C) Once a month
 - D) Up to once a week
 - E) More than once a week
32. I am participating in a varsity sport:
- A) Yes
 - B) No

**APPENDIX B5: Research Questionnaire
Presented to Participants**

SECTION 1

The questions in this section ask you about situations which you perceive to be stressful *for you*. In each case, you will be asked to indicate to what extent you have personally experienced each stressor in the *previous six-month period*. Although some of the questions are similar, there are differences between them and you should treat each one as a separate item. Answer each question with the first response that comes to mind. Be certain that you are filing in the correct circle for your answer.

For each question choose from the following alternatives:

- A. NOT STRESSFUL
- B. MILDLY STRESSFUL
- C. MODERATELY STRESSFUL
- D. HIGHLY STRESSFUL
- E. EXTREMELY STRESSFUL

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
1. Final examination week	A	B	C	D	E
2. Test anxiety	A	B	C	D	E
3. Too much schoolwork	A	B	C	D	E
4. Making plans for my future	A	B	C	D	E
5. Putting off assignments, responsibilities	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
6. Financial pressures	A	B	C	D	E
7. Grades received	A	B	C	D	E
8. Guilt for not doing better	A	B	C	D	E
9. Finding time to exercise or worrying about not exercising	A	B	C	D	E
10. Competitiveness for grades	A	B	C	D	E
11. Managing time and schedule	A	B	C	D	E
12. Worry about career opportunities after graduation	A	B	C	D	E
13. Expectation(s) of parent(s)	A	B	C	D	E
14. Registration	A	B	C	D	E
15. Beginning of semester	A	B	C	D	E
16. Eating habits	A	B	C	D	E
17. Dealing with emotions	A	B	C	D	E
18. Overweight or underweight	A	B	C	D	E
19. Personal appearance	A	B	C	D	E
20. Sleeping habits	A	B	C	D	E
21. Depression	A	B	C	D	E
22. Difficulty in making decisions	A	B	C	D	E
23. Teaching methods of instructor(s)	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
24. Concern for friend(s) with problems	A	B	C	D	E
25. Getting along with family	A	B	C	D	E
26. Gaining independence from parent(s)	A	B	C	D	E
27. Oral presentation(s)	A	B	C	D	E
28. Lack of confidence	A	B	C	D	E
29. Lack of energy	A	B	C	D	E
30. Self-image	A	B	C	D	E
31. Guilt feelings	A	B	C	D	E
32. Decisions or worries about sexual behavior	A	B	C	D	E
33. Attending classes as required	A	B	C	D	E
34. Boredom	A	B	C	D	E
35. Family members not getting along with one another	A	B	C	D	E
36. Meeting program requirements	A	B	C	D	E
37. Loneliness	A	B	C	D	E
38. Being accepted by others	A	B	C	D	E
39. Breaking off a relationship	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
40. Decisions about course selection or major	A	B	C	D	E
41. Problems with an instructor	A	B	C	D	E
42. Need work but unable to find job	A	B	C	D	E
43. Trouble getting along with employer	A	B	C	D	E
44. Parents having financial difficulties	A	B	C	D	E
45. Serious illness or injury of close family member	A	B	C	D	E
46. Emotional problems of family member	A	B	C	D	E
47. Being away from home and not getting to go home when you like to	A	B	C	D	E
48. Difficulty getting along with roommate	A	B	C	D	E
49. Trouble with boy/girlfriend	A	B	C	D	E
50. Concern over possible pregnancy of self or partner	A	B	C	D	E
51. Carrying on long-distance relationships	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
52. Meeting people of different lifestyles, views, backgrounds	A	B	C	D	E
53. Disagreements or misunderstandings with friend(s)	A	B	C	D	E
54. Serious illness or injury of a friend	A	B	C	D	E
55. Term papers	A	B	C	D	E
56. Waiting for graded tests	A	B	C	D	E
57. Studying for examinations	A	B	C	D	E
58. Unclear assignments	A	B	C	D	E
59. Fast-paced lectures	A	B	C	D	E
60. Pop quizzes	A	B	C	D	E
61. Incorrect answers in class	A	B	C	D	E
62. Learning new skills	A	B	C	D	E
63. Past or present sexually abusive relationship	A	B	C	D	E
64. Having an alcoholic parent	A	B	C	D	E
65. Competing on an athletic team	A	B	C	D	E
66. Cheating on a test	A	B	C	D	E
67. Contemplating suicide	A	B	C	D	E
68. Fear of failure	A	B	C	D	E

	NOT STRESSFUL	MILDLY STRESSFUL	MODERATELY STRESSFUL	HIGHLY STRESSFUL	EXTREMELY STRESSFUL
69. Difficulty in budgeting money	A	B	C	D	E
70. Marital difficulties	A	B	C	D	E
71. Being alone when others are socializing	A	B	C	D	E
72. Lack of assertiveness or ability to speak up for beliefs	A	B	C	D	E
73. Finding parking space	A	B	C	D	E
74. Making child care arrangements	A	B	C	D	E
75. Making, keeping friends	A	B	C	D	E
76. Dealing with administration	A	B	C	D	E
77. Lectures not in your native language	A	B	C	D	E
78. Lighting, temperature of classroom	A	B	C	D	E

SECTION 2

If a statement is **true or mostly true**, fill in the box marked

A. If the statement is **false or mostly false**, fill in the box marked the **B**. Leave boxes C, D and E unmarked.

79. I am in as good physical shape as most people my age.
80. I don't feel under a lot of pressure at the present time.
81. I seldom feel like crying.

A) True or mostly true

B) False or mostly false

82. I never feel uneasy in social situations.
83. I am almost always worrying about one thing or another.
84. I have a lot of stomach trouble.
85. I have a group of friends or family members who really care about me.
86. If someone is in trouble, I am always the first to help.
87. I feel so down I cannot get rid of the blues even when my family or friends try to cheer me up.
88. I am not the kind of person who can handle a lot of stress or problems.
89. I have never been worried about my health.
90. Sometimes in the midst of trials or problems I seem to discover deeper meaning in life.
91. I am able to control my feelings, even under trying circumstances.
92. I have a family member or friend I can tell anything to.
93. I am usually happy.
94. It is always easy for me to admit when I have made a mistake.
95. Right now I have more to do than I can handle.
96. I am a calm, easy going person who seldom gets nervous or upset.
97. I don't have a faith or religion that is a great source of strength for me.
98. I have friends or family members from whom I can get the emotional support I need.
99. Sometimes when I am frustrated or irritated, I am hard on other people.
100. I have confidence in my ability to face the problems in my life.
101. I would never take on so many things that I didn't have time to relax and take it easy.
102. I fear I am losing my mind.
103. When life gets tough, I don't really have anybody to turn to.

A) True or mostly true**B) False or mostly false**

104. I have no trouble getting to sleep due to being tense or anxious.
105. I am not a hard driving, highly competitive type of individual.
106. I seldom worry about my health.
107. I am not the kind of person who holds grudges for very long.
108. I find little comfort in faith or religion.
109. My worries keep running through my mind.
110. It sometimes seems things would be easier if I just weren't alive.
111. Sometimes I get several things going at once because I failed to look ahead.
112. People are putting too many demands on me at the present time.
113. Even when things are going wrong, I stay calm and in control.
114. Sometimes I do things that are selfish.
115. These days I find myself brooding or going over my problems a lot.
116. I feel my life plays a part in something that is bigger and more important than I am myself.
117. I have a lot of things to feel angry about.
118. It is hard to get excited about what the future holds.
119. At times my use of alcohol or drugs concerns me.
120. I am not the kind of person who tends to take things hard.
121. I am always able to be totally honest with others about my feelings.
122. It is unusual for me to be bothered by health problems.
123. Things have gotten so bad that I have recently thought of taking my life.
124. I get so tense and anxious it is hard to keep my attention focused on my work.
125. It makes me nervous when people hug me or tell me they care.
126. I need to talk to a doctor or therapist about my personal problems.

A) True or mostly true**B) False or mostly false**

127. My life is meaningful even in the hard times.
128. When people upset me, I fume and feel my blood boil.
129. Lately I have been anxious about something or someone almost all the time.
130. It is not uncommon for me to feel weak all over.
131. I have few headaches.
132. It takes a lot to get me to lose my temper.
133. I often use sarcasm when I think people deserve it.
134. I am more sensitive and easily upset than most other people.
135. When I pray or participate in a religious service, I seldom or never experience an inner calmness or peace.
136. If more than one or two things go wrong at the same time, I feel like I will go to pieces.
137. I find myself turning to alcohol or drugs to help me cope with life's stresses and disappointments.
138. I seem to get in a lot of arguments.
139. I find it hard to keep my mind on a task or job because my mind keeps drifting away to all my problems.
140. I seldom experience many aches or pains.
141. I currently feel so overwhelmed that I just try to keep my head above water.
142. My friends and family don't seem to understand my needs.
143. I am an easy going person who doesn't have much of a temper.
144. I can't seem to get the type of strength other people find in their religion.
145. I may need to be in a hospital to get treatment for my mental or emotional problems.
146. I have what it takes to handle more burdens than most people can cope with.

A) True or mostly true

B) False or mostly false

147. I frequently have feelings of shakiness, nervousness, or butterflies in the pit of my stomach.
148. I doubt that I have the personal strength or guts to keep going when things are really tough.
149. My faith is an important resource in difficult times.
150. I can count on my family or friends when I need sympathy and understanding.
151. No matter how bad the situation may be, I know I will come out all right.
152. I am afraid I might lose control and injure myself or somebody else.
153. I frequently get irritated by the faults of those around me.
154. A lot of the time I feel fatigued or worn out.
155. I feel depressed.
156. I don't feel under a lot of stress.
157. Lately I have found it difficult to enjoy being around my friends and family.
158. I have to handle most things alone, with little support from anyone else.

SECTION 3

Please complete the following additional questions. Remember to completely fill in the appropriate box on the answer sheet. Make sure the number of the question and answer are the same.

159. Age in years: A) 18 or less
 B) 19 to 20
 C) 21 to 22
 D) 23 to 24
 E) more than 24
160. Gender: A) Female B) Male

161. Are you: A) Caucasian (white)
 B) African-American
 C) Asian
 D) Latino
 E) Other
162. Are you an international student: A) Yes B) No
163. Is English your native language: A) Yes B) No
164. Year in program: A) Freshman
 B) Sophomore
 C) Junior
 D) Senior
165. Student status: A) Full-time (12 or more credit hours)
 B) Part-time (6 to 11 credit hours)
 C) Part-time (less than 6 credit hours)
169. Residential status: A) On campus, traditional residence
 B) On campus, apartments
 C) Off campus, satellite housing
 D) Off campus
170. If a sophomore, junior or senior what is your last semester's GPA:
 A) 3.5 to 4.0
 B) 2.5 to 3.4
 C) 2.0 to 2.4
 D) 1.5 to 1.9
 E) less than 1.5
171. If a sophomore, junior or senior what is your cumulative GPA:
 A) 3.5 to 4.0
 B) 2.5 to 3.4
 C) 2.0 to 2.4
 D) 1.5 to 1.9
 E) less than 1.5
172. If a freshman, what is your last semester in high school GPA:
 A) A B) B C) C D) D
173. If a freshman, what is your cumulative high school GPA:
 A) A C) C
 B) B D) D

174. How often do you engage in physical exercise:
A) Never
B) Once a month or less
C) Several times per month
D) Once a week
E) More than once a week
175. Do you currently take prescription medicine? A) Yes B) No
176. Do you currently take nonprescription medications?
A) Yes B) No
177. If someone asked you to describe who you are to them, would that be
A) Very easy
B) Somewhat easy
C) Somewhat difficult
D) Very difficult
178. How many social roles (eg. student, friend, daughter/son, employee, spouse, etc) do you consider yourself to have:
A) Very few
B) Some
C) Many
179. How many types of activities do you engage in (eg. running, tennis, writing, music, student government, etc):
A) Very few
B) Some
C) Many
180. How many goals would you consider you have in your life right now:
A) Very few
B) Some
C) Many
181. I can usually find something comical, witty or humorous in most situations:
A) Never
B) Almost never
C) Sometimes
D) Fairly often
E) Very often

182. In the past six months, how many days of restricted activity have you experienced due to illness:
- A) None
 - B) 1 to 2
 - C) 3 to 4
 - D) 5 to 6
 - E) More than 6
183. How often do you attend religious services:
- A) Never
 - B) Up to several times per year
 - C) Once a month
 - D) Up to once a week
 - E) More than once a week
184. Do you feel you get sufficient feedback and support from your instructors: A) Yes B) No
185. Do you feel that on the whole your instructors care about you:
A) Yes B) No
186. On the whole, would you consider yourself to be:
- A) Not at all stressed
 - B) Somewhat stressed
 - C) Highly stressed
 - D) Extremely stressed
187. Would you like to receive counseling for your concerns:
A) Yes B) No
188. Would you like to receive stress management training for your concerns:
A) Yes B) No
189. If you were given training in stress management techniques do you feel you would be willing and able to practice:
A) Yes B) No
190. Have you ever received training in stress management techniques:
A) Yes B) No
191. Have you use training in stress management techniques:
- A) Never
 - B) Up to several times per year
 - C) Once a month
 - D) Up to once a week
 - E) More than once a week

192. I am participating in a varsity sport:
- A) Yes
 - B) No

APPENDIX C:
BRIEF PERSONAL SURVEY INFORMATION

- C1:** Subscale Items and Scoring Direction
- C2:** Internal Consistency Reliabilities
- C3:** Difference Between Medical Patients and Controls
- C4:** Correlations Between Scales and Stressors for Medical Patients
- C5:** Correlations Between Scales and Stressors for Controls
- C6:** Correlations of Physician Ratings with Scales
- C7:** Intercorrelation Matrix of Scales in the Control Group

APPENDIX C1: *Brief Personal Survey*
Scale, Question, (Scoring Direction)
(Webb, 1988, pp. 191-199):

Denial: 4(T), 8(T), 11(T), 16(T), 21(F), 33(F), 36(F), 43(T)

Health Distress: 1(F), 6(T), 28(F), 44(F), 52(T), 53(F), 62(F), 76(T)

Pressure-Overload: 2(F), 17(T), 23(F), 27(F), 34(T), 63(T), 78(F)

Anger-Frustration: 18(F), 29(F), 39(T), 50(T), 54(F), 55(T), 60(T),
65(F), 75(T)

Anxiety: 5(T), 26(F), 31(T), 42(F), 46(T), 51(T), 56(T), 69(T)

Depression: 3(F), 9(T), 15(F), 32(T), 37(T), 40(T), 45(T), 61(T),
77(T), 79(T)

Social Support: 7(T), 14(T), 20(T), 25(F), 47(F), 64(F), 72(T),
80(F)

Philosophical-Spiritual: 12(T), 19(F), 30(F), 38(T), 49(T), 57(F),
66(F), 71(T)

Coping Confidence: 10(F), 13(T), 22(T), 35(T), 58(F), 68(T), 70(F),
73(T)

Note: The numbers refer to the questions as they appear on the *Brief Personal Survey* (see Appendix B2)

**APPENDIX C2: Internal Consistency Reliabilities of
Brief Personal Survey Scales** (Mauger, 1989, p. 7)

SCALE	NUMBER OF ITEMS	MEAN	SD	COEFFICIENT ALPHA
Total Test	80	37.89	6.80	.72
Denial	8	3.77	1.85	.54
Stress Responses:				
Health Distress	8	3.83	2.23	.72
Pressure-Overload	7	2.23	1.86	.68
Anger-Frustration	9	2.50	2.11	.70
Anxiety	8	3.18	2.21	.73
Depression	10	2.04	2.24	.78
Stress Resources:				
Social Support	8	7.21	1.45	.76
Philosophical- Spiritual	8	6.53	1.96	.80
Coping Confidence	8	5.95	1.97	.74

**APPENDIX C3: Difference Between Medical Patients and Controls on the
Brief Personal Survey Scales (Mauger, 1989, p. 8)**

Scale	Medical Patients ^a		Controls ^b		F(1, 262)	p
	Mean	SD	Mean	SD		
De	3.77	1.86	3.13	1.96	8.23	.004**
Stress Responses:						
HD	3.83	2.23	1.37	1.75	99.54	.004**
PO	2.23	1.86	2.04	1.72	.75	.386
AF	2.50	2.11	2.14	2.11	1.85	.175
Ax	3.18	2.22	2.11	1.92	17.57	.000**
Dr	2.04	2.25	1.24	1.55	11.30	.001**
Stress Resources:						
SS	7.21	1.46	7.40	.98	1.59	.209
PS	6.53	1.96	7.16	1.54	8.28	.004**
CC	5.95	1.97	6.71	1.59	11.91	.001**
Critical Items	.67	1.24	.41	.85	4.11	.044*
Infrequency	.47	.87	.26	.60	5.61	.019*

^an = 131

* p < .05

^bn = 133

** p < .01

De = Denial

HD = Health Distress

PO = Pressure-Overload

AF = Anger-Frustration

Ax = Anxiety

Dr = Depression

SS = Social Support

PS = Philosophical-Spiritual

CC = Coping Confidence

**APPENDIX C4: Correlations Between *Brief Personal Survey Scales* and Stressors
for Medical Patients (Mauger, 1989, p. 9)**

SCALES	STRESSORS		
	Physical Health	Living Situation	Relationships
Denial	-.163*	-.017	.043
Health Distress	.552***	.125	.135
Pressure-Overload	.323***	.259***	.269***
Anger-Frustration	.167*	.026	.206**
Anxiety	.508***	.330***	.355***
Depression	.386***	.435***	.459***
Social Support	-.246***	-.298***	-.314***
Philosophical-Spiritual	-.141	-.134	-.224**
Coping Confidence	-.243***	-.158*	-.217**

SCALES	STRESSORS		
	Family	Children	Friends
Denial	-.176*	-.147	.016
Health Distress	.255***	.286***	.134
Pressure-Overload	.255***	.156***	.118
Anger-Frustration	.197**	.274***	-.003
Anxiety	.312***	.331***	.129
Depression	.227**	.278***	.155*
Social Support	-.033	-.024	-.084
Philosophical-Spiritual	.026	-.040	-.109
Coping Confidence	-.220**	-.200**	-.139

* p < .10
 ** p < .05
 *** p < .01

APPENDIX C5: Correlations Between *Brief Personal Survey Scales and Stressors for Controls* (Mauger, 1989, p. 10)

SCALES	STRESSORS		
	Physical Health	Living Situation	Relationships
Denial	-.215**	-.153	-.214**
Health Distress	.127	.125	.125
Pressure-Overload	-.007	.217**	.191**
Anger-Frustration	.037	.085	.155*
Anxiety	-.207**	.336***	.399***
Depression	-.050	.320***	.379***
Social Support	.075	-.251***	-.331***
Philosophical-Spiritual	.022	-.225**	-.204**
Coping Confidence	.131	-.326***	-.387***

SCALES	STRESSORS		
	Family	Children	Friends
Denial	-.196*	-.142	-.033
Health Distress	.080	.093	-.061
Pressure-Overload	.212**	-.038	-.061
Anger-Frustration	.057	.142	-.051
Anxiety	.249***	.170*	-.029
Depression	.265***	.101	.035
Social Support	-.094	.120	-.074
Philosophical-Spiritual	.010	-.042	.045
Coping Confidence	-.224**	-.306**	-.060

- * p < .10
- ** p < .05
- *** p < .01

**APPENDIX C5 Continued: Correlations Between *Brief Personal Survey*
Scales and Stressors
for Controls (Mauger, 1989, p. 10)**

SCALES	STRESSORS		
	Work/School	Finances	Other
Denial	-.218**	-.070	-.086
Health Distress	.018	.059	.316***
Pressure-Overload	.214***	.183**	.156
Anger-Frustration	.139	.163*	.172
Anxiety	.072	.221**	.192*
Depression	.060	.093	.121
Social Support	.212**	-.191**	.116
Philosophical-Spiritual	.014	-.288***	-.154
Coping Confidence	-.118	-.079	-.087

* p < .10

** p < .05

*** p < .01

**APPENDIX C6: Correlations of Physician Ratings with
Brief Personal Survey Scales (Mauger, 1989, p. 11)**

SCALE	PHYSICIAN RATING				
	Stress ^a	Physical ^b	Psych- ological ^c	Overconcern ^d	Seriousness
Denial	0.032	-0.052	-0.668	-0.674	0.101
Health Distress	0.330***	-0.009	0.379***	0.201**	0.122
Pressure- Overload	0.241**	-0.074	0.306***	0.156*	-0.060
Anger- Frustration	0.050	-0.061	0.007	-0.101	-0.151
Anxiety	0.271***	-0.164*	0.226**	0.112	-0.048
Depression	0.239***	-0.294***	0.287***	0.167*	-0.021
Social Support	-0.059	0.343***	-0.100	-0.167*	0.063
Philosophical- Spiritual	0.004	0.093	0.020	-0.017	0.059
Coping Confidence	-0.132	0.112	-0.185**	-0.008	0.079

n = 115

The physician ratings give the physician opinion of the:

- a = influence of stress on the patient's physical complaint.
- b = extent of a physical bias for patient's complaint.
- c = degree of observable psychological distress in the patient.
- d = patient's overconcern about his/her physical condition.
- e = seriousness of patient's physical concern.

* p < .10
 ** p < .05
 *** p < .01

**APPENDIX C7: Intercorrelation Matrix of
Brief Personal Survey Scales in
the Control Group (Mauger, 1989, p. 12)**

	SOMATIC	PRESSURE	ANGER	ANXIETY	DEPRESS
SOMATIC	1.000				
PRESSURE	0.368	1.000			
ANGER	0.148	0.213	1.000		
ANXIETY	0.499	0.418	0.360	1.000	
DEPRESS	0.440	0.299	0.308	0.566	1.000
SOCSUPP	-0.195	-0.162	-0.139	-0.197	-0.268
SPIR	-0.062	-0.041	-0.231	-0.124	-0.278
COPE	-0.274	-0.183	-0.290	-0.458	-0.334

	SOCSUPP	SPIR	COPE
SOCSUPP	1.000		
SPIR	0.225	1.000	
COPE	0.137	0.171	1.000

**Intercorrelation Matrix of Brief Personal Survey Scales
in the Medical Group**

	SOMATIC	PRESSURE	ANGER	ANXIETY	DEPRESS
SOMATIC	1.000				
PRESSURE	0.307	1.000			
ANGER	0.289	0.377	1.000		
ANXIETY	0.423	0.435	0.477	1.000	
DEPRESS	0.238	0.389	0.414	0.614	1.000
SOCSUPP	-0.213	-0.157	-0.170	-0.335	-0.203
SPIR	-0.216	-0.177	-0.297	-0.155	-0.143
COPE	-0.185	-0.245	-0.341	-0.504	-0.539

	SOCSUPP	SPIR	COPE
SOCSUPP	1.000		
SPIR	0.264	1.000	
COPE	0.165	0.022	1.000

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