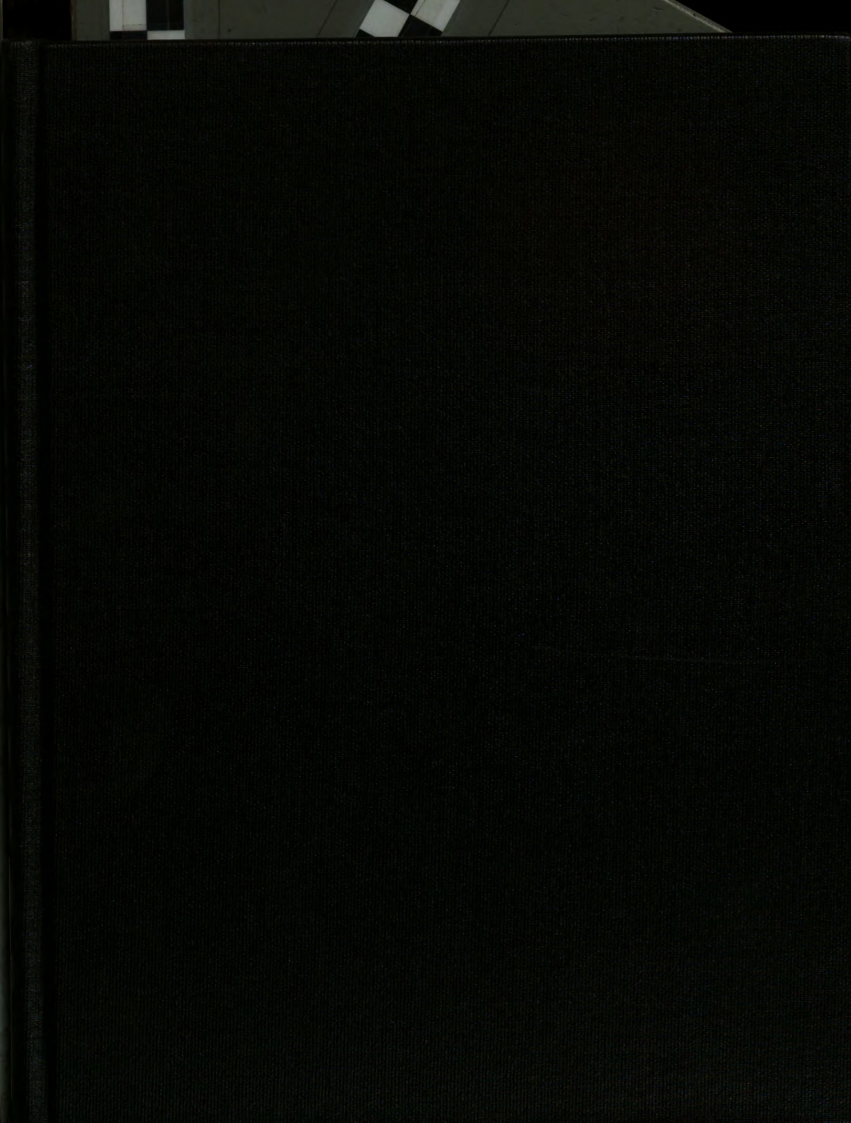




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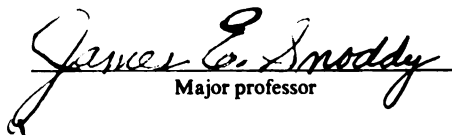
THE USE OF SELECTED COPING STRATEGIES
AS PREDICTORS OF ACADEMIC PERFORMANCE
IN MEDICAL SCHOOL

presented by

Norma Irene Baptista

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**THE USE OF SELECTED COPING STRATEGIES AS PREDICTORS OF
ACADEMIC PERFORMANCE IN MEDICAL SCHOOL**

By

Norma Irene Baptista

DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

Department of Education

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ABSTRACT

THE USE OF SELECTED COPING STRATEGIES AS PREDICTORS OF ACADEMIC PERFORMANCE IN MEDICAL SCHOOL

By

Norma Irene Baptista

Stress among medical students has been linked to poor academic performance, while supportive social relationships have been associated with the alleviation of psychological stress. This study examines students' coping mechanisms and social support as predictors of academic performance. A total of 73 students from the College of Human Medicine at Michigan State University participated in the study.

The Coping Response Inventory (CRI-Adult) was the data collection procedure used for this study. This inventory provides areas for the students to record demographic information, description of a problem or situation they experienced within the past 12 months, and their responses to 48 items related to that specific situation.

The problems the students described were categorized as follows: academic performance, workload, adjustment to medical school, family relationships, social relationships, health, financial constraints, multiple events and other or unspecified.

The Independent Sample T-Test and the Levene's test at a significant level of $P > .05$ were used to test the study's hypothesis.

The data show that the major stressors for the students were workload, academic performance and social relationships. It was found that 25.7% of males reported workload concerns, while 18.4% of females reported having academic difficulties and 18.4% of females also reported having multiple stressors. It was also found that 26.3% of students age 21 to 25 reported social concerns, while 36% of students age 26 to 30

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reported academic difficulty as their main stressor. Additionally, 21% of single students reported social stressors, while 36% of married students reported workload as their main concern. 26.9% of second year students reported workload as their main source of stress, while 19.1% of first year students reported social stressors.

The statistical tests results showed: (1) that students reporting academic difficulties used more cognitive avoidance coping mechanisms than the students who did not report academic difficulties, (2) that females in the sample used more cognitive avoidance coping mechanisms than males, and (3) that students ages 21 to 25 used more cognitive avoidance coping mechanisms than the older students.

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TABLE OF CONTENTS

CHAPTER I

INTRODUCTION	Page
Stress and Coping Mechanisms	2
Social Support.....	5
Statement of Purpose	6
Significance of the Research	9
Limitations	9
Research Questions	9
Hypothesis	10
Definition of Terminology	11
Organization of the Study	12

CHAPTER II

REVIEW OF RELATED LITERATURE	14
The General Adaptation Theory	14
The Cognitive Appraisal	15
The Transactional Model	16
The Main Sources of Stress Experienced by Medical Students and Their Effect on Academic Performance	17

CHAPTER III

RESEARCH METHODOLOGY	24
Research Questions	24
Hypothesis	25
Population and Sample	26
Informed Consent	27
Data Collection	27
Instrumentation	27
CRI-Adult Scales	29
CRI-Adult Scales and Descriptions	29
Reliability	30
Organization of the Inventory	31
Criteria for Interpreting CRI-Adult Standard Scores	32
Academic Performance	32
Data Analysis	33

CHAPTER IV

DISCUSSION OF FINDINGS	34
Results of the CRI-Adult Inventory	35
Table 1	35
Table 2	36
Table 3	37
Table 4	38
Table 5	39
Table 6	40
Testing of Hypothesis	41

CHAPTER V

SUMMARY AND RECOMMENDATIONS	46
Summary of Findings	48
Recommendations	49

APPENDICES

A. Sample Letter	53
B. Consent Form	55
C. CRI-Adult Answer Sheet	57
Part 1	58
Part 2	59,60
D. CRI-Adult Profile	62
E. The Pearson Correlation Table 7	65
Table 8	66
Table 9	67
Table 10	68
Table 11	69
Table 12	70
Table 13	71
Table 14	72
Table 15	73
Table 16	74

BIBLIOGRAPHY	75
--------------------	----

CHAPTER 1

INTRODUCTION

Traditionally, medical education has long been the route to an attractive career. Usually, pre-medical and entering medical students have idealistic views about becoming physicians. They often express their desire to serve humanity or participate in break through research or treatment to eliminate diseases. They also tend to glamorize the physician's life more than the students in the advanced levels. Some students admit they are attracted to the social position, respect, income and prestige that doctors enjoy. For these reasons and others, medical schools have traditionally received a great number of applicants. From society perspective the selection of students is critical because of the length and the cost of training. Therefore, a considerable amount of attention has been focused on finding accurate and valid predictors of success in medical school.

In 1976, The Association of American Colleges compiled the results of a series of studies. The authors, Cuca, Sakakeeny and Johnson, (1976), related medical students' personality factors, Medical College Achievement Test (MCAT) scores, and premedical Grade Point Averages (GPA's) to their academic success. The studies suggested that there was not a clear and definitive correlation between these factors and academic success, and

that other factors may have intervened. Although none of the studies reviewed identified specific predictors for the academic success of medical students, medical colleges across the country still make their admission decision based heavily on high MCAT scores and high GPA's.

Admissions officers will certainly find solace in Mitchell's review of recent research validating the use of pre-admission academic data in selecting medical school applicants, (Mitchell, 1990). He presents evidence that the MCAT can be combined with GPA's for college selectivity, to yield median validity coefficients of 0.49 for pre-clinical (first and second year of medical school) studies and 0.38 for clinical (third and fourth year of medical school) performance at several medical schools.

However, Rogers (1989) cautions against over emphasis on psychometric and statistical influences in determining who is to be selected for medical training. He also suggests that medical schools could either select students to match the demands of their curriculum or they can design a curriculum that assures success of those students they seek to attract.

Perhaps, a useful approach to the selection of applicants for medical school is the one that includes the assessment of the individual's ability to deal successfully with highly stressful situations.

Stress and Coping Mechanisms

Stress continues to play an important role in current theoretical approaches to psychological health and disorder. Since the 1960's, the prevalent research approach to stress and its relation to physical and mental health has been directed at the study of

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significant life events or life changes. The measurement of these life events was pioneered by the development of the Schedule of Recent Experiences (SRE) by Holmes and Rahe (1967). Many research studies have utilized this scale for assessing stress in relationship to a wide variety of physical and psychological outcomes (Dohrenwend and Dohrenwend, 1976).

Since the original development of the SRE and the studies that followed, many questions have been raised with regard to the psychometric properties of the scale and the adequacy of the research employing it (e.g., Brown and Harris, 1978). The early phases of stress research had a characteristic emphasis on the prediction of illness rates from knowledge of stressful life events and conditions. More recent research has focused on 1) the impact of life events and conditions; 2) the psychological and social situations that determine both the meaning of the events and 3) the individual or group capacities for dealing with stressors.

Recent research has also moved away from defining stress in terms of amount of change, per the Schedule of Recent Experiences, to a consideration of other properties of life events or other aspects of context that may be more useful in explaining the meaning and impact of events. Much attention, for example, has been given to questioning the commonsense expectation that events with undesirable implications are more stressful than those with desirable implications. More recently, stressful life events and their role in facilitating life transitions have been closely studied through a structured approach that is intended or directed to understand the ways people handle transitions and manage change (Selye, 1978).

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Brammer (1990) defines stress as a condition that causes a reaction. In other words, the greater the intensity of the conditions, the greater the chances for these conditions to cause the stress reactions-called stressors. The results of these external stressors leads to stress responses. The intensity of the stress response is related to the strength of the stressors opposed by the strength of the person's coping resources/skills. Brammer believes that one key in managing our stressors is the condition of our coping skills. Although stress management includes a cluster of special coping skills, the extent of stress reduction is also a function of our support systems, attitudes about change, problem-solving capacities, thought control, and behavior change methods. According to Schneider (1984) each potential source of stress becomes a stressor only when the person: 1) fails to recognize the event or circumstance stressful; 2) does not fully understand what makes the circumstance stressful; 3) does not see any alternative way to react to the source of stress in order to reduce its impact; 4) currently lacks positive factors in his or her life; and 5) lacks the presence of supportive, ongoing relationships. Schneider also considers that individuals who are able to recognize, understand, and maintain flexibility in the context of ongoing support are able to limit, and often thrive on, the impact of stress on their lives.

Most recently, growing research among psychologists, such as Suls and Fletcher (1985), Clark and Hovanitz (1989); and Endler and Parker (1990) has indicated that coping skills help to alleviate health-destroying stressors. Kobassa and Pucetti's work (1983) with executives indicates that perceived support from superiors was associated with low illness rates. Key protective attitudes uncovered by these studies were hope,

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positive self-regard, and self-empowerment. These attitudes are postulated to reduce subjects' sense of helplessness; to serve as buffers against depression, and to facilitate immune responses.

Social Support

"Social Support" refers to all that is involved in the caring relationships among people. Our embeddedness in a continuing network of such relationships is perhaps what counts most.

Gottlieb, Hobfoll and Stokes (1980) focused on social networks, their structure, density and the personal characteristics of the provider and the needy person, and they also identified some approaches to social support to call attention to the transactions occurring in personal relationships.

This secure place in one or more networks has profound effect upon how we think and how we feel about our surroundings, and particularly about how we affirm the value of ourselves, (Pilicuk and Hiller Parks, 1986). In general, as social support has been more widely used to describe the help or guidance received by people such as relatives, friends and competent individuals who also provide the culturally expected close personal relationships.

The research on social support is profuse and confirms the common sense observation that support is essential to good mental health and psychological growth (Gottlieb, B., Social Networks and Social Support, 1981).

Brammer (1990) describes support as the help we receive from friends, relatives, colleagues, and mentors. This support is organized into informal systems called

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networks. He also defines support system as a network of all the helpers working for the benefit of the person. Other research, such as Sarason and Sarason (1983), has found significant relationships between social support and life transitions, job performance and improved performances on academic tasks and exams.

For this study the researcher will concentrate on the Approach and the Avoidance coping mechanisms. Approach coping mechanisms are problem - focused behavioral coping responses, they include overt actions intended to deal directly with the situation. Individuals using this mechanisms are directed towards dealing with the problem, they intend to involve attempts to manage the way in which stressful events are perceived. Looking for personal or professional help is an example of Approach coping mechanisms. In contrast, Avoidance coping mechanisms are disengagement or passive responses in attempt to withdraw without steps to change or solve stressful situations. An example of passive coping is day dreaming. Individuals who use these type of responses perceive stressful events as being uncontrollable (Moos, Rudolf H., 1993).

Statement of Purpose

The educational process of becoming a physician involves a series of stressful events students must deal with as they progress through medical school. While many of the stressful events that medical students experience are the result of social pressure and the maturation process common to all young adults, some are unique to the process of medical education. It is well known that all medical students face stressful circumstances during the course of their education, and that their success in dealing with stress is dependent upon how well they can adjust to a continually changing and demanding

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environment. At most medical schools, issues of increased stress appears to come about and interfere with the student's progress through the four year curriculum. First year students must deal with stress involving their sense of competency. They find that not only is the course material complex, placing increased intellectual demand on them, but also that competition is keen and they may no longer be earning honor grades as they once did as undergraduates. Exacerbating competency concerns, first year students must master a vast quantity of material in a limited time period and must learn to set self-imposed limits on the amount of material which can be learned. They also must come to recognize the sacrifices a career in medicine will require and must make personal and social adjustments (Elam, 1994).

First and second year students receive little personal formative feedback from faculty and no immediate reward for their hard work. They also note an increased level of fatigue stemming from continuous academic pressures. Often, they may question their commitment to medicine, lose some early idealism, and question their motives for becoming a physician (Gaensbauer and Mizner, 1980).

According to Mosley, et al. (1994), it has been found that medical education is an extremely intense and stressful experience, and that the continuous demanding and competitive environment students face often exerts a negative effect on their academic performance, physical health, and psychological well-being.

Numerous common academic frustrations can precipitate a stress reaction in medical students. The following are just few examples of issues which can contribute to stress reactions: having to master large amounts of difficult material, fearing failure on final

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examinations, receiving limited positive feedback, having problems in interaction with other fellow students (peer-group study), and having to manage diverse demands during extremely long study hours both inside and outside the classroom.

Beyond curricular and personal oriented stresses, medical students also face maturational stressors. Personal development issues include relations with a spouse or significant other, childbearing and child care, physical health and wellness, finances, housing concerns, and lack of leisure time. The complexity of stressful situations from curricular and/or personal events, can have an impact upon medical school performance.

Medical students may react to academic frustrations with anxiety responses which may either enhance or impede their actions. Debilitating anxiety may manifest itself in dysfunctional behaviors; for example, students may stop attending classes, resort to ineffective study techniques such as spending hours listening to tape lectures, become cynical, and, more destructively, may resort to cheating, drug or alcohol abuse, and suicidal thinking. The net result of such dysfunctional behaviors is decreased self-esteem, depression, anxiety, loneliness and alienation, and failure to perform to their capability (Westo and Peterson, 1980).

The purpose of this study is to investigate whether the use of selected (Approach and/or Avoidance) coping mechanisms by first and second year medical students, is related to their academic performance.

With this study, the researcher will examine coping strategies medical students use while going through considerable stress. Participants will be first and second year medical

students who are enrolled and attending classes at the College of Human Medicine, Michigan State University during Fall of 1997.

Significance of the Research

Stress among medical students has been linked to poor academic performance, while supportive social relationships have been associated with the alleviation of psychological stress. This study will examine students' coping skills as potential buffers against stress. The study will also attempt to raise awareness about the need for greater attention to the psychological well-being of medical students; in particular those students in the first and second pre-clinical years.

Limitations

This study will be limited by:

1. The sample subjects will be students from one medical program.
2. The extent to which the selected inventory measures all stress related situations, and the impact of stress on each student's life over the course of the study.
3. The inability to control for past experiences of each student in dealing with stress, and the uniqueness of their impact.
4. The accuracy of the description of the source of stress that students will report.
5. The accuracy of the student's reports regarding their academic standing, i.e., good academic standing, academic difficulties and/or on academic probation.

Research Questions

1. Is there variation in students' selected (Approach and/or Avoidance) coping strategies and their academic performance

2. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by gender?
3. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by age?
4. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by marital status?
5. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by ethnic background?
6. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by pre-clinical year.

Hypothesis

To respond to the research questions, the following hypothesis will be tested:

Hypothesis 1: There is a positive relationship between the students' use of selected (Approach and/or Avoidance) coping strategies and their academic performance.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping strategies and their academic performance.

Hypothesis 2: There is a relationship between the students' use of (Approach and/or Avoidance) selected coping mechanisms and their gender.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their gender.

Hypothesis 3: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their age.

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Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their age.

Hypothesis 4: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their marital status.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their marital status.

Hypothesis 5: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their ethnic background.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their ethnic background.

Hypothesis 6: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their year in the program.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their year in the program.

Definition of Terminology

Stress: The response of the body to any demands or pressure. It is the force that precipitates the disruption of a person's normal sense of well-being. Stress also refers to any factor that threatens the health of the body or has adverse effects on its functioning, such as injury, disease or worry. The existence of one form of stress tends to diminish resistance to other forms. (The Bantam Medical Dictionary, 1990)

Coping Skills/Responses: Coping refers to efforts to master conditions or harm, threat or challenge. Lazarus defines coping responses as "those direct active tendencies aimed at

eliminating or minimizing a stressful event which are task and reality oriented.”

(Lazarus,1997).

Social Support: It is help we receive from friends, relatives, colleagues and mentors.

Early definitions referred to an emotional caring dimension. For example, Moss (1973) defined support as “the subjective feeling of belonging, of being accepted or being loved, of being needed all for oneself and for what one can do.”

Approach Coping Responses: In general, approach coping is problem-focused; it reflects cognitive and behavioral efforts to master or resolve life stressors.

Avoidance Coping Responses: Avoidance coping tends to be emotion-focused; it reflects cognitive and behavioral attempts to avoid thinking about a stressor and its implications, or to manage the effect associated with.

Academic Performance: For the purpose of this study, academic performance will be defined as the students’ academic status (i.e., in good standing, on academic probation, failing courses at the time they complete the study’s inventory).

Organization of the Study

For the purpose of convenience and methodical procedure, this study will be organized in five chapters.

Chapter I is the introduction to the study and background, a statement and purpose of the study, the significance of the research and the limitations of the project. This chapter will also address the research questions, hypothesis and the definition of terminology.

Chapter II is a review of the literature, focusing on research involving medical students and their stress coping mechanisms.

Chapter III is an introduction and description of the methodology, study's population sample, the process of survey, description of the survey instrument and the analysis of data.

Chapter IV is a detailed discussion of the findings.

Chapter V is the summary and recommendations.

CHAPTER II

REVIEW OF RELATED LITERATURE

This chapter does not purport to be an exhaustive review of the literature available on the general topic of stress coping mechanisms. Instead, it is intended to be a brief historical review on the subject of stress coping mechanisms, and in more detail, the literature pertinent to this study. These include a review of the following: (a) the General Adaptation Theory, (b) the Cognitive Appraisal Model, (d) the Transactional Model and (e) the main sources of stress experienced by medical students and their effect on academic performance.

The General Adaptation Theory

Hans Selye (1956) was one of the first who tried to explain the process of stress-related illness. His “General Adaptation Syndrome” theory consists of three stages that individuals encounter in dealing with stressful situations:

1. The alarm reaction, in which an initial shock phase of lowered physiological/immune resistance is followed by countershock during which the individual’s defense mechanisms become active.

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2. The stage of maximum adaptation which if successfully accomplished, the individual returns to an equilibrium. However, if the stressor continues or the defense does not work, he will encounter the third stage.
3. Exhaustion stage which results when the adaptive mechanisms collapse. This stage is seen as the precursor to a host of somatic and emotional illness.

In spite of its popularity, Selye's theory has been criticized for failing to take under consideration individual differences in relation to how people deal with stressful situations (e.g. some people thrive in extremely stressful jobs, without negative health consequences). Nevertheless, Selye's theory initiated research efforts that have focused more on the psychological aspects of stress, such as the nature of the stress and its effect on the individual's behavior.

The Cognitive Appraisal

The Cognitive Appraisal Model is one of the psychological models that seeks to explain stress and individual differences in people's reaction to it. According to Lazarus and Folkman's model (1984) appraisal is composed of primary and secondary processes. In the primary appraisal, the person may ask him or herself how relevant to his/her well being a situation may be. This represents a basic risk assessment. If the encounter is relevant to the person's well being, he or she may judge the situation (in terms of Lazarus and Folkman's model, 1984) as a challenge, threat or harm. With the secondary appraisal, the individual is concerned with what can he or she do to resolve the situation. In other words, during the secondary appraisal, the individual makes a conscious decision about how to deal with the stressful event. The decision-making process must take under

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consideration the individual's coping resources (e.g. social support), his or her preferred coping style (e.g. Approach or Avoidance coping mechanisms), the options available to the person and the nature of the situation (Cox; 1987).

The Transactional Model

Cox, (1985), Cox and Mackay, (1981), Ferguson and Cox, (1991), discuss their model as a primary appraisal process that takes into account a number of different personal and situational factors. Each person, according to his/her different experiences, judges a particular situation as challenging, anxiety-producing or depressing. The last two appraisals are the only ones experienced as negatively stressful. The four factors that contribute to the appraisal process are:

- the external and internal demands that the person experiences,
- their personal coping abilities and resources,
- the amount or degree of control they have over coping, and
- the support that they received from others in coping with stressful situations.

The transactional model has given more importance to the concept of control, since under this model control, contributes to both primary and secondary appraisals. For example, when a person is faced with a situation, the primary appraisal occurs when the person asks him or herself if the situation represents a problem to him or her. On the other hand, a secondary appraisal occurs when the person asks him/herself, how and how well they can cope with the problem, (Cox, 1987). Therefore, in the transactional model, primary appraisal is seen as a continual process or monitoring process while the

secondary appraisal is seen as an activity that involves decision making contingent upon the primary appraisal.

According to Cooper and Payne (1991), primary appraisal is a subject of mediation dictated by individual differences. Individual differences may exist in relation to the person's perception of the situation as being negatively stressful or not. For example, a negatively stressful situation is usually accompanied by a person's negative feelings or emotions such as anxiety or depression. These emotions could vary in intensity according to each individual, and they could also indicate the level of stress experienced by each individual. (Cox, 1985,1990).

According to Bandura (1977), an eminent Social Learning theorist, people vary in their ability to cope with demands, and in their perceptions of those abilities. Such variations may be a function of their intelligence, their experience and education, or their beliefs in their ability to cope. As Bandura, Cooper and Payne (1991) also believe that people may vary in the amount of control they can exercise over any situation but not only as a function of that situation but also as a function of their beliefs about control. Additionally, people may vary in their need for social support, the skills that they have in utilizing that support and their perception of that support.

The Main Sources of Stress Experienced by Medical Students and Their Effect on Academic Performance.

Even though numerous studies have documented the stress that medical students experience, the literature related to stress coping mechanisms and how they may affect the academic performance of medical students is sparse. Also, no study on this subject

utilizing the CRI-Adult inventory has appeared in the literature. Therefore, only the most relevant literature sources related to the subject of this study are considered in this section.

In their book, *Making It In Medical School*, Coombs and St. John (1979), refer to freshman medical students' source of stress as falling into two broad categories: actual and anticipated. Some examples of actual sources of stress are those related to the workload and the increased pressure to study constantly. The fear of academic failure is an anticipated source of stress. Some of the other stressors that these authors mention have to do with status loss, unfamiliar academic pressures, financial constraints and social isolation. They also report that 20-30% of medical students seek psychological assistance, while some 40% acknowledge considering dropping out during the first two years.

Early studies on medical student stress such as the Gaensbauer and Mizner (1980), hypothesize that "students' emotional problems derive as much from the nature of developmental stresses they must face as from their own individual vulnerability and that to study this developmental stresses might prove fruitful in determining what type of coping strategies or tasks would be most helpful" (page 60). To support their hypothesis, Gaensbauer and Mizner reviewed the files of all students who sought psychiatric consultation at the University of Colorado Medical School over ten years. After reviewing the case files, they "attempted to identify recurring themes which might reflect specific developmental issues which must be dealt with by all medical students" (pages. 66-67). They concentrated on specific developmental tasks that confront students and the ensuing stresses that are likely to occur if they are not successfully managed.

Gaensbauer and Mizner's findings support Boyle and Coomb's observation (1971), which identifies academic pressure and fear of failure as two of the main stressors for the first year medical student. According to Gaensbauer and Mizner, the initial task for the first year student is "to determine personal capabilities in this new context and to perform in a manner that equals one's ability, while maintaining sense of adequacy" (pages 57-68). They also suggest that failure to develop such coping strategies could likely result in the student's decreased self-esteem, depression and anxiety. Additional results could be the students' withdrawal from competition and their inability to perform academically at their best level. Another major source of stress for first year medical students is the load or vast amount of information that needs to be learned within a short period of time. This is often referred to as "load". In addition to the academic demands, a third source of stress for first year medical students is the lack of time for personal and social relationships. Due to the demands on the students' time, the tasks of reestablishing and building new social relationships may become difficult. A common mistake that first year students make is to give to academics their exclusive attention, to the neglect of their personal and emotional needs. The result is often a feeling of dehumanization deriving from this "tunnel vision". It occurs when students' excessive academic demands preclude time for any pursuit of personal needs or interests.

According to Elam (1994), all medical students face stressful circumstances during the course of their medical education. Success in dealing with stress is dependent upon how well they can adjust to a changing and demanding environment. At most medical schools, issues of developmental stress appear along the lines of the four-year curriculum. First

year students must deal with stresses involving their sense of competency . They find that not only is the course material complex, placing increase intellectual demands on them, but also that competition is keen and they may no longer be earning honors grades as they once had as undergraduates. Exacerbating competency concerns, first year students must master a vast quantity of material in a limited time period and they must learn to set self-imposed limits on the amount of material which can be learned. They also must come to recognize the sacrifices a career in medicine will require and must make personal and social adjustments in response. Some of developmental stressors that medical students encounter in the third and fourth years have to do with their transition from the lecture hall to the hospitals where they directly participate in patient care during the last two years of medical school. Throughout this time, students continue to participate in regular lectures with attending physicians, residents and other allied health professionals. All together depending on the rotation, the students spend between ten and fourteen hours per day in the hospital and generally take overnight calls every third or fourth day.

Besides curricular and medically oriented stresses, Elam mentions other developmental issues that medical students face. Those are: relationships with spouse or significant other, childbearing and child care, physical health and wellness, finances, housing concerns, and lack of leisure time. She asserts that the complexity of developmental stress—either from curricular or personal events, or interaction between the two—can have an impact upon the student’s medical school performance.

Thomas H. Mosley, et al. (1994) reviewed the effects of the medical school environment on the academic performance, physical health, and psychological well-being

of 69 third year students. The results of the study showed that 23% of the students suffered clinical depression and 57% endorsed high levels of somatic distress. Stress accounted for a large percentage of distress variance (i.e., 29% to 50%), and coping efforts contributed significant variance to the prediction of distress. Coping efforts classified by Engagement (Approach) strategies were associated with fewer depressive symptoms, while Disengagement (Avoidance) strategies were associated with higher levels of depressive symptoms. These results suggest that training in Engagement strategies may be a useful intervention to lessen the negative consequences of stress among medical students.

In terms of social support, it is well known that the heavy work load and uncertainty become more difficult to manage when medical students are unable to find strength in a group of close friends. Students often complain about the difficulties that they have in developing a new support network or just making friends and socializing, which can be frustrating due also to the lack of free time. In addition, family and close friends may have difficulty in understanding why medical students must dedicate most of their time studying, thus creating more stress.

Rospenda, Halpert and Richman's study (1994), they examined social support as a defense against stress and hence as a potential strengthener of student's academic performance of 112 third year medical students. After assessing role stress (stress involving compelling demands between school, social and family life), social support, and sources of support (outside or inside medical school), their findings reveal that no buffering effect was found for social support. In fact, social support from outside medical school exhibits significant variance in academic performance and the students' levels of stress. For

instance, higher levels of outside support were associated with poorer clerkship grades for women, but with lower levels of stress for men. Contrary to the study hypothesis, social support in general was related to lower levels of academic performance for both men and women.

Stewart, et al. (1995), conducted a study on stress and vulnerability in medical students. They gave a survey to 140 Hong Kong Chinese students in their second year of their medical education, and compared them with 138 students who completed the same survey prior to the beginning of their first year of medical school, and 74 non-medical university students in their second year. The relevant findings of the research were the following: there was a loss of opportunity to maintain social and recreational sources of gratification correlated with increased anxiety. There was no difference between the sexes with regard to the development of anxiety and depression symptoms. Academically less successful students reported somewhat higher levels of depressive ideation and symptomatology. Trait anxiety (chronically experienced anxiety, as opposed to situational anxiety) correlated with the development of distress. Active coping styles (Approach) and positive reinterpretation (Positive Appraisal) as coping strategies correlated negatively with distress, while wishful thinking (Avoidance) correlated positively with distress.

Finally, one of the most recent considerations regarding medical students stress is that of John A. Toews, et al. (1997). This study based on the self-reporting of 1,681 medical students, medical residency program trainees, and graduate science students from four Canadian schools of medicine. The study results showed few significant differences between the respondents at the four schools. For example, in terms of the medical

students and medical residency program trainees, it was found that the main concerns of the respondents in these groups were the volume of their work and the limited time available for learning. Among other findings, while all groups reported having support from friends and spouses/partners, medical residency program trainees received more support from these sources than the other groups. In terms of gender, the study mentions some differences related to women reporting higher levels of stress than men, and also women as more likely than men to report concerns about the volume and complexity of the learning material. The study supports the notion that, for medical students, stressors include the volume of material to be learned, academic performance anxiety and evaluations. The researchers assert that while the external demands of a situation affect the response to it, a person's assessment of his or her own coping skills, and the ability to negotiate the situation also significantly affects the response.

CHAPTER III

RESEARCH METHODOLOGY

The purpose guiding this study is to investigate if the use of selected (Approach and/or Avoidance) coping strategies and by pre-clinical (first and second year) medical students, is related to their academic performance . The study will focus on two basic types of coping strategies: approach versus avoidance. The efficacy of these strategies when applied to academic and non-academic sources of stress in medical students will be examined. Quantitative methodology will be used in this study.

Due to its ability to identify attributes of the sample population (first and second year medical students); the economy of its design; the rapid turn around in data collection; and convenience, the Coping Response Inventory (CRI-Adult) is the preferred type of data collection instrument for this study. The nature of the inventory is cross sectional, and it will be administered to groups of forty to thirty students at a single time.

Research Questions

1. Is there variation in students' selected (Approach and/or Avoidance) coping strategies and their academic performance
2. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by gender?

3. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by age?
4. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by marital status?
5. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by ethnic background?
6. Is there variation in students' selected (Approach and/or Avoidance) coping mechanisms when they are grouped by pre-clinical year.

Hypothesis

To respond to the research questions, the following hypothesis will be tested:

Hypothesis 1: There is a positive relationship between the students' use of selected (Approach and/or Avoidance) coping strategies and their academic performance.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping strategies and their academic performance.

Hypothesis 2: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their gender.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their gender.

Hypothesis 3: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their age.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their age.

Hypothesis 4: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their marital status.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their marital status.

Hypothesis 5: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their ethnic background.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their ethnic background.

Hypothesis 6: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their year in the program.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their year in the program.

Population and Sample

The population of the study will be comprised of all medical students in the first and second years of the College of Human Medicine at Michigan State University. This school has at least 110 students in each class or academic year. The total population for the first and second year of this particular program is comprised by 205 students, of these, 106 are males and 99 are females. The youngest student is 23 years old, with the oldest being 44 years of age. To gain access to this population, the researcher will contact the office of student affairs at the medical program (see Appendix A, page 53).

To assure representativeness of sample, all students in the first and second year class attending the selected medical school, will be invited to participate in completing the

Coping Response Adult Inventory (CRI- Adult). Since the researcher will have access to all students in the two academic levels or years, a single stage sampling procedure will be used. The selection of individuals for this study will be based on each student's willingness to participate. No less than 70 students will constitute the sample for this study.

Informed Consent

Prior to the administration of the CRI-Adult Inventory, the students will be asked to give their informed consent to use the information given on the Inventory for the research by signing a letter of consent, (see Appendix B, page 54).

Data Collection

The CRI-Adult Inventory will be administered to groups of thirty to forty medical students at a time on a designated date and room at the selected school. Consideration in timing will be given to accommodate the students' schedule.

The researcher will have to rely on the accuracy of the students' reports regarding their academic standing.

Instrumentation

Contemporary theories emphasize the multidimensional aspects of appraisal and coping processes. In brief, researchers have used two main conceptual approaches to classify coping responses. One approach emphasizes the orientation or focus of coping (problem-focused or emotion focused), whereas the other emphasizes the method of coping (cognitive or behavioral), (e.g., Billings & Moos, 1981, 1984; Folkman & Lazarus, 1985; Lazarus & Folkman, 1984; Roth & Cohen, 1986). The Coping Responses

Inventory-Adult Form (CRI-Adult) combines these two approaches. It assesses eight types of coping responses that reflect these focus-and methods of coping domains. The inventory considers the orientation or focus of coping and separates coping responses into approach and avoidance responses. Each of these two sets of coping responses is divided into two categories that reflect cognitive or behavioral coping methods. In general, approach coping is problem-focused; it reflects cognitive and behavioral efforts to master or resolve life stressors. In contrast, avoidance coping tends to be emotion-focused; it reflects cognitive and behavioral attempts to avoid thinking about a stressor and its implications, or to manage the affect associated with it.

Over 100 studies have been conducted on the reliability and validity of the CRI-Adult. Developed and designed by Rudolf H. Moos. In 1981, the CRI-Adult was a 19-item inventory which was originally used in studies of alcoholic patients (Billing & Moos, 1981). Later on, a revised 32-item version was utilized in studies done on depressed patients (Billing & Moos, 1984). In these earlier studies, researchers primarily focused on findings based on indices of coping that are conceptually and empirically comparable to the scales in the current version of the CRI-Adult. A new 72-item version was administered to a group of more than 1,800 adults, some of whom had drinking problems. Overall, the group included more than 1,100 men and 700 women. The subjects in the study were asked to identify a recent stressful event and to rate their reliance on each of the coping items on a four-point scale. Analysis of the data from this field trial led to the current 48-item version of the CRI-Adult which is composed of eight scales that reflect approach and avoidance coping. The eight scales are shown in Table 1.

Table 1

CRI-Adult Scales

	<u>Approach coping responses</u>	<u>Avoidance coping responses</u>
Cognitive	1. Logical Analysis 2. Positive Reappraisal	5. Cognitive Avoidance 6. Acceptance or Resignation
Behavioral	3. Seeking Guidance & Support 4. Problem Solving	7. Seeking Alternative Rewards 8. Emotional Discharge

According to Rudolf Moos, (CRI-Adult, Professional Manual, page 14) to reduce redundancy and shorten the inventory, he combined dimension that were conceptually similar and highly intercorrelated. This resulted in the eight scales described in Table 2

Table 2

CRI-Adult Scales and Descriptions

Scales	Descriptions
Approach Coping Responses	
1. Logical Analysis	Cognitive attempts to understand and prepare mentally for stressor and its consequences.
2. Positive Reappraisal	Cognitive attempts to construe and restructure a problem in a positive way while still accepting the reality of the situation.
3. Seeking Guidance and Support	Behavioral attempts to seek information, guidance or support.
4. Problem Solving	Behavioral attempts to take action to deal directly with the problem.
Avoidance Coping Responses	
5. Cognitive Avoidance	Cognitive attempts to avoid thinking realistically about a problem.
6. Acceptance or Resignation	Cognitive attempts to react to the problem by accepting it.
7. Seeking Alternative Rewards	Behavioral attempts to get involved in substitute activities and create new sources of satisfaction.
8. Emotional Discharge	Behavioral attempts to reduce tension by expressing negative feelings

Reliability

More than 90% of the respondents in the final field trial participated in a 12-month follow-up in which they again complete the CRI-Adult. In general, the coping indices were moderately stable over time among men and women (average $r_s = .45$ and $.43$, respectively, for the eight indices). Positive Reappraisal, Seeking Guidance and Support, Cognitive Avoidance, and Emotional Discharge were somewhat more stable (average $r_s = .49$ and $.47$ for men and women respectively) than Logical Analysis and Problem Solving (average $r_s = .41$ and $.39$ for men and women respectively) these stability's are comparable to those found in a study done over 1 to 2 year interval among alcoholic and depressed patients and normal controls. (Billings & Moos, 1985a; Fondacaro & Moos, 1987; Holahan & Moos, 1987a).

Individual propensities toward approach and avoidance coping may remain moderately stable over longer intervals. For example, in a study done by Swindle, Cronkite & Moos, 1989, a 3 year stability coefficients of between $.34$ and $.48$ for Seeking Guidance and Support, Problem Solving, and Emotional Discharge coping among depressed patients was found. Among alcoholic patients and their spouses, it was also found somewhat lower 8-year stability coefficients averaged between $.13$ and $.38$ for indices of cognitive approach, behavioral-approach, and avoidance coping. Avoidance coping was the most stable ($r_s = .38$ and $.30$ for patients and spouses, respectively). Thus, there is some consistency over time in individuals' coping responses despite the variety of stressful circumstances they encounter.

Organization of the Inventory

The front (top sheet) of the CRI-Adult answer sheet contains areas for recording basic demographic information and the description of the problem or situation. (see Appendix C, page 55).

The description of the problems or situations the students will respond will be categorized as follows:

1. Academic Performance
2. Load or Academic Load
3. Adjustment to medical school
4. Family
5. Health
6. Social Relationships
7. Financial
8. Multiple (more than one of the above)
9. Other (Unspecified)

A template for scoring the scales of the inventory is also provided. Part 1 of the Inventory, includes 10 stressor-appraisal items which are not scored but provide important information about how the individual perceives the stressor.

Part 2 of the Inventory, includes forty eight items that relate to both approach and avoidance coping responses, (see Appendix C, pages 58,59). A four point scale is used to rate students' reliance on each coping item. Also, a profile form which allows the conversion of raw scores to T scores is included, (see Appendix D, page 60).

The CRI-Adult can be hand-scored by using the provided scoring template. A profile area is provided on the reverse side of the answer sheet. This profile allows the researcher to convert the subject's raw scores to T scores ($M = 50$; $SD = 10$) and to plot the

respondent's coping responses profile. The coping response profile is based on two types of coping responses, those are: *approach coping responses* and *avoidance coping*. The profile will be marked with horizontal lines to facilitate interpretation of scores. A dotted horizontal line marks the mean of the T-score distribution. The higher the T-score, the more the student utilizes a specific coping response. The lower the T-score, the less the student utilizes a specific coping response. The T-score interpretation is shown in Table 3.

Table 3

Criteria for Interpreting CRI-Adult Standard Scores

T- score range	Equivalent percentile range	Description
≥ 34	≥ 6	Considerably below average
35 - 40	7 - 16	Well below average
41 - 45	17 - 33	Somewhat below Average
46 - 54	34 - 66	Average
55 - 59	67 - 83	Somewhat above average
60 - 65	84 - 93	Well above average
≥ 66	≥ 94	Considerably above average

Academic Performance

The information data about the academic performance of students will be gathered through the student's own volunteered response to the description of the problem or situation section on the CRI-Adult answering sheet. The student will have the opportunity to explain if the nature of his/her problem was due to his/her academic difficulties, e.g., failing to pass a course or more, and being on academic probation.

Data Analysis

An attempt will be made to find if there is a relationship between the students' coping response and their academic difficulties. The approach coping response identified as Seeking Guidance (SG) will be used to measure the students' social support.

After obtaining students' CRI-Adult T-scores, these will be used for statistical analysis, and the researcher will compare results among individuals according to the following independent variables: gender, age, marital status, ethnic background and pre-clinical year. This will be done by obtaining the means and standard deviation for each one of the variables already mentioned.

To measure the relationship between the selected (Approach and/or Avoidance) coping responses, the Pearson Correlation Coefficient will be used.

Null hypothesis will be tested at a significant level of $p > .05$, using the Statistical package for Social Sciences (SPSS).

To test the independent variable (Academic Performance), the Analysis of Variance (ANOVA) will be used. The purpose of the ANOVA is to test whether the difference or variance among the means of the two samples is significant or can be attributed to change.

To examine the main and interactive effects of coping mechanisms and social support on academic performance, multiple regressions will be performed between the two samples.

CHAPTER IV

DISCUSSION OF FINDINGS

The Coping Response Inventory for Adult (CRI-Adult Inventory) which consists of two parts. Part 1 has 10 questions that assess the students' sources of stress. These questions are not scored but provide important information about how the student perceives the stressor(s). The sources of stress are categorized as follows : academic performance, academic or workload, adjustment to medical school, family, health, social relationships, financial, multiple and other. In Part 2, which includes 48 items, the students are asked to indicate how often they engaged in a particular behavior in connection with the problem or source of stress they described in Part 1. Each of the 48 items measures either an Approach or an Avoidance coping response. The Approach coping responses are defined as follows: LA or logical analysis, PR or positive reappraisal, SG or seeking guidance and support, and PS or problem solving. The Avoidance coping responses are defined as follows: CA or cognitive avoidance, AR or acceptance and resignation, SR or seeing alternative rewards, and ED or emotional discharge. A four-point scale was used to rate the students' reliance on each coping item, (see Appendix C, page 57 for CRI-Adult Inventory).

Results of the CRI-Adult Inventory

The results of the administration of the CRI-Adult Inventory to the students can be seen by the following tables:

Table 1

Number and Percent of Students Responding to the CRI-Adult Inventory: N = 73

Year in School	Number	%
1	47	64.5
2	26	35.5
Total	73	100%
<u>Gender</u>		
Male	35	48.0
Female	38	52.0
Total	73	100%
<u>Age Group</u>		
21-25	39	54.0
26-30	24	33.0
31-35	4	5.5
36-40	5	6.5
41-44	1	1.0
Total	73	100%
<u>Marital Status</u>		
Single	53	73.0
Married	19	26.0
Divorced	1	1.0
Total	73	100%

Table 2

Frequency of Types of Stressor Reported by Medical Students: N = 73

Stressor	# of Students Responding	%
Academic	11	15.0*
Load	14	19.3*
Adjustment	7	9.7
Social	11	15.0*
Family	6	8.2
Health	4	5.5
Finances	4	5.5
Multiple	10	13.6
Other	6	8.2
Total	73	100%

1. Academic = academic performance, i.e., failing courses, on academic probation.
2. Load = workload or amount of material to be learned.
3. Adjustment = transition into medical school.
4. Social = social relationships, i.e., friendships and dating.
5. Family = family relationships and marriage difficulties.
6. Health = own or family.
7. Finances = financial difficulties or constraints.
8. Multiple = having more than one type of stressor.

9. Unspecified = student selected not to specify the source of stress.

* Most frequently reported stressors were related to load, academic difficulties and social relationships.

Table 3

Frequency of Types of Stressor Reported by Gender: N=73

<u>Stressor</u>	<u>Gender</u>				Total
	Male	%	Female	%	
Academic	4	11.4	7	**18.4	11
Load	9	*25.7	5	13.1	14
Adjust	4	11.4	3	8	7
Social	6	17	5	13.1	11
Family	2	5.7	4	10.5	6
Health	1	2.8	3	8	4
Finances	3	8.5	1	2.6	4
Multiple	3	8.6	7	***18.4	10
Unspecified	3	8.6	3	8	6
Total	35	100	38	100	73

The most frequent type of stressors reported by gender were as follows:

*Workload or academic load, with males expressing more concerns related to the workload than females.

**Academic standing or difficulties, with females reporting as having more difficulties than males.

***Multiple, with a high percentage of females reporting this as their main stressor.

****More females than males reported having multiple sources of stress.

Table 4

Frequency of Types of Stressors Reported by Age Group: N=73

<u>Stressor</u>	<u>Age Group</u>										Total
	21-25	%	26-30	%	31-35	%	36-40	%	41-44	%	
Academic	1	2.6	9	**36	1	16.6					11
Load	9	23.6	3	12	2	33.4					14
Adjust	4	10.5	2	8	1	16.6					7
Social	10	26.3	1	4							11
Family	1	2.6	3	12			2	67			6
Health	3	8	1	4							4
Finances	2	5.2			1	16.6			1	100	4
Multiple	5	13.1	3	12	1	16.6	1	33			10
Unspecified	3	8	3	12							6
Total	38	100	25	100	6	100	3	100	1	100	73

The most frequent type of stressors reported by age were as follows:

*Load, with students ages 21 to 25 years old reporting more workload type of stressor than the older the students.

**Academic, with students ages 26 to 30 years old reporting more academic difficulties than the rest of the students.

***Social, with students ages 21 to 25 years old reporting more social stressors than the older students.

Table 5

Frequency of Types of Stressor Reported by Marital Status: N=73

<u>Stressor</u>	<u>Marital Status</u>						Total
	Single	%	Married	%	Divorced	%	
Academic	8	15	3	15			11
Load	7	13.2	7	**36			14
Adjust	7	13.2					7
Social	11	*21					11
Family	2	3.7	4	20			6
Health	3	5.6	1	5			4
Finances	2	3.7	2	10	1	100	4
Multiple	8	15	2	10			10
Unspecified	5	9.4	1	5			6
Total	53	100	19	100	1	100	73

The most frequent type of stressor reported by marital status were as follows:

*Workload or academic load, with equal number of single and married students expressing workload as their main stressor.

**Academic standing or performance, with single students expressing more academic difficulties than married students.

***Social relationships, with single students reporting social as their main stressor.

****Multiple, with more single students reporting multiple sources of stress than married students.

Table 6

Frequency of Types of Stressor Reported by Year in School: N=73

<u>Stressor</u>	<u>Year</u>		<u>Years 1 & 2</u>		<u>%</u>
	1	%	2	%	
Academic	7	14.7	4	15.3	15
Load	7	14.7	7	*26.9	***19
Adjust	6	12.7	1	3.8	9.6
Social	9	**19.1	2	7.5	15
Family	4	8.5	2	7.5	8.2
Health	2	4.2	2	7.5	5.5
Finances	3	6.3	1	3.8	5.5
Multiple	6	12.7	4	15.3	14
Unspecified	3	6.3	3	11.5	8.2
Total	47	100	26	100	73
					100%

The most frequent type of stressor reported by first and second year students were:

*Workload or academic load, with equal number of first and second year students reporting workload as their main stressor.

**Academic standing or performance, with more first year students reporting academic difficulties than second year students.

***Social relationships, with more first year students reporting social relationships type of stressor than second year students.

The Pearson Correlation Sample coefficient Analysis was applied to both Approach and Avoidance coping responses to examine how they, as test variables, were related to each other, (see Appendix E, Table 7, page 65 for The Pearson Correlation).

The results of the Pearson Correlation Coefficient showed no relationship among the test variables. Therefore, an Independent Sample T-Test and the Levene's Test for Equality of Means procedures, at a significant level of $P > .05$ were used to compare means among the test variables (Approach and Avoidance coping responses) and the grouping variables (gender, age, marital status, academic performance, workload, social, etc.)

Testing of Hypothesis

On the basis of the T-test and the Levene's Test for Equality of Variance, the researcher reports the following findings:

Hypothesis 1: There is a positive relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their academic performance.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their academic performance.

No statistically significant difference was found between the Approach coping responses (LA, PR, SG and PS) and the students who reported academic difficulties. Therefore, there is no relationship between the student's academic performance and the use of Approaching coping mechanisms, (see Appendix E, Table 8, page 66).

In terms of the Avoidance coping responses (CA, AR, SR and ED), only CA or Cognitive Avoidance showed a statistically significant difference ($F = 3.884, P < 0.53$), with students who reported academic difficulties scoring higher in the use of cognitive avoidance type of coping mechanisms.

Hypothesis 2: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their gender.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their gender.

No statistically significant difference was found between the Approach coping responses (LA, PR, SG and PS) and the students' gender. Therefore, there is no positive relationship between the students' gender and their use of Approach coping mechanisms, (see Appendix E, Table 9, page 67).

In terms of the Avoidance coping responses (CA, AR, SR and ED), only CA or Cognitive Avoidance showed statistically significant difference ($F = 8.691, P < .004$), with females using more cognitive avoidance type of responses than males. This suggests, that there is a positive relationship between the students' gender and their use of CA or Cognitive Avoidance coping mechanisms. Some examples of cognitive avoidance type of responses that the students with academic difficulties mentioned they used were: try to forget about the problem or source of stress, try not to think about the problem, daydreaming or imagine a better time or place they were in, put off thinking about the situation, even though they knew they would have to deal with it at some point, they try to deny how serious the problem really was, and they wish the

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problem would go away or somehow be over with, (see Appendix E, Table 10, page 68).

Hypothesis 3: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their age.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their age.

No statistically difference was found between the Approach coping responses (LA, PR, SG and PS), and the students' age. Therefore, there is no positive relationship between the students' age and their use of Approach coping mechanisms, (see Appendix E, Table 11, page 69).

In terms of the Avoidance coping responses (CA, AR, SR and ED), only CA or Cognitive Avoidance showed statistically significant difference ($F = 9.138, P < .003$) with students ages 21 to 25 years old scoring higher in the use of cognitive avoidance type of coping mechanisms than the other students. This finding suggests that there is a positive relationship between the students' ages 21 to 25 years old and their use of CA or Cognitive Avoidance mechanisms, (see Appendix E, Table 11, page 69).

No statistically significant difference was found between the Approach coping responses (LA, PR, SG and PS) and students ages 26 to 30 years old. Therefore, there is no positive relationship between students ages 26 to 30 years old and their use of Approach coping responses, (see Appendix E, Table 12, page 70).

There is some statistically significant difference ($F = 3.72, P > .56$) between CA or Cognitive Avoidance and students ages 26 to 30 years old. Therefore, there is some

positive relationship between students ages 26 to 30 years old and their use of Cognitive Avoidance.

Some statistically significant difference was ($F = 3.020$, $P > .087$) found between the Approach coping response PR or Positive Reappraisal and students ages 36 to 44 years old. Therefore, there is some positive relationship between students ages 36 to 44 years old and their use of positive Reappraisal while undergoing stress, (see Appendix E, Table 13, page 71).

Hypothesis 4: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their marital status.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their marital status.

No statistically significant difference was found between both the Approach and the Avoidance coping responses (LA, PR, SG, PS, CA, AR, SR and ED), and the students' marital status. Therefore, there is no positive relationship between the students' marital status and their use of Approach and /or Avoidance coping responses, (see Appendix E, Table 14, page 72).

Hypothesis 5: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their minority/non-minority status.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their minority/non-minority status.

No statistically significant difference was found between both the Approach and the Avoidance coping responses and the minority versus non-minority students.

Therefore, there is no positive relationship between the minority versus non-minority

students and their use of Approach and/or Avoidance coping responses, (see Appendix E, Table 15, page 73).

Hypothesis 6: There is a relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their year in the program.

Null: There is no relationship between the students' use of selected (Approach and/or Avoidance) coping mechanisms and their year in the program.

Finally, in terms of the students' use of selected coping responses and their year in the program, no statistically significant difference was found between both the Approach and the Avoidance coping mechanisms (LA, PR, SG, PS, CA, AR, SR and ED) and the students' year in the program. Therefore, there is no positive relationship between the students' year in the program and their use of Approach and/or Avoidance coping mechanisms, (see Appendix E, Table 16, page 74).

CHAPTER V

SUMMARY AND RECOMMENDATIONS

Medical schools have always received a great number of applicants. Selection of students is critical because of the length and the cost of training. Therefore, a considerable amount of attention had been focused on finding accurate and valid predictors of success in medical school.

Studies such as Cuca, Sakakeeny and Johnson, (1976) have tried to identify predictors of academic success in medical students. Factors included in these studies were the students' personality, the Medical College Achievement Test (MCAT) scores, and premedical Grade Point Averages (GPA's). The studies suggested that there was not clear and definite correlation between these factors and academic success, and that other factors may have intervened.

Medical colleges across the nation still make their admission decision based heavily on high MCAT and GPA scores.

It is well known that all medical students face stressful circumstances during the course of their education and that their success in dealing with stress is dependent upon how well they can adjust to a continually changing and demanding environment.

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Perhaps, a more accurate approach to the selection of applicants for medical school is the one that assesses the individual's ability to deal successfully with highly stressful situations.

This study focuses on the medical students' use of selected (Approach and/or Avoidance) coping mechanisms and their effect on academic performance.

The Coping Response Inventory (CRI-Adult) was the selected instrument for the data collection of the study.

First and second year students from the College of Human Medicine at Michigan State University were the selected population sample for this study. This inventory provides areas for recording the students' demographic information, the description of a problem or situation they experienced within the past year, and their responses to 48 items related to the specific situation. Each item measures either an Approach and/or Avoidance response. The approach coping response identified as Seeking Guidance (SG) was used to measure the students' social support.

The problems the students' described were categorized as follows: academic performance, workload, adjustment to medical school, family relationships, social relationships, health, financial constraints, multiple stressors and other or unspecified.

The Pearson Correlation Coefficient Analysis was applied to both Approach and Avoidance coping mechanisms. The results of the Pearson Correlation showed little or no relationship among them. Therefore, an Independent Sample T-Test and the Levene's Test at a significant level of $P > .05$ were used to test the study's hypothesis.

Summary of Findings

The results of the administration of the CRI-Adult Inventory show that the major stressors for the surveyed medical students were: workload or academic load (19.3% of the students reported workload as the main source of stress) followed by academic difficulties and social relationships as second major stressors (15% of the students reported academic difficulties as major source of stress, and also 15% of the students reported social relationships as major source of stress).

With respect to gender differences, the study shows that more men than women reported workload or academic load concerns. More women than men reported having academic difficulties and more women than men reported having multiple sources of stress.

In regards to students' age, the study shows that students ages 21 to 25 years old reported more workload concerns than the rest of the surveyed students. Students ages 26 to 30 years old reported having more academic difficulties than younger or older students did.

In terms of the students' marital status, the study shows that equal number of single and married students expressed workload or academic load concerns. Single students appeared to have more academic difficulties than married students did. Single students also reported more social relationship difficulties than the married ones.

In terms of year in school or first versus second year students, both first and second year students reported workload or academic load as their main source of stress. First year students reported more academic difficulties than second year students did. First

year students also reported more social relationship difficulties than second year students did. For example, most of the single students mentioned having difficulties in continuing friendships or breaking engagements or long term relationships.

The T-Test and Levene's Test results show 1). that the students who reported academic difficulties used more cognitive avoidance mechanisms when compared with students who did not report having academic difficulties, 2). that females in the sample used more cognitive avoidance than males, 3). that students ages 21 to 25 years old used more cognitive avoidance than the older students, and 4). that students ages 36 to 44 years old used more Positive Reappraisal coping mechanisms than the younger students.

Recommendations

The study results show that the students who reported academic difficulties used more cognitive avoidance mechanisms than the other students' in the sample. These results suggest that, in assessing the personal qualities of applicants to medical school, admissions officers should include some techniques for determining an applicant's basic strategies in identifying and addressing stressors. This can be done through several means: objective measures (e.g., the CRI-Adult Inventory), and asking applicants to answer problem solving and/or stress related type of questions on their written essays at the time of their application or during their interviews at the prospective medical schools. While there is no evidence to suggest the use of these techniques as screening devices, the results of these measures could be useful in other ways.

Pre-medical and academic advisors of medical students need to raise awareness among their students about the importance of having experience in problem solving, as well as the use of effective coping mechanisms, since they could enhance the students' well being while in their pre-medical and pre-clinical years.

More prevention services are needed to help pre-medical and medical students acquire effective long-term stress reduction skills. Perhaps, classes or lectures as part of the pre-medical, as well as the first-year medical curriculum could be introduced in schools and used as training opportunities for students to develop both problem solving and effective coping skills.

Other services that can be provided by medical schools are consultation and referral services to students who require psychological type of evaluation and treatment due to extreme stressful experience(s).

In order to manage the vast amount of material to be learned in medical schools, pre-medical as well as medical students need to be trained about effective cooperative learning techniques or group study techniques. These are participatory study groups in which each student is in charge of a task or learning material, and each student contributes with a specific information. When the group comes together, each student presents his or her information to the other members of the group. In this way, at the end of each study group meeting, the students not only have learned their independent pieces of information but they have also integrated all relevant pieces of the learning material effectively.

Finally, in contrast to the traditional school system of lectures supported by laboratory work that occurs in the pre-clinical years, medical schools could explore more alternatives to the traditional system, such as the “problem based learning system”. Under this approach, the students with faculty guidance present themselves or are presented with case scenarios. The students research and discuss the sample cases, learning the information necessary to diagnose a fictional patient. With this system, the students exercise initiative in directing their education, there is more opportunity for cooperative or team learning, and problem solving skills are developed more towards clinical thinking skills. This system when effectively used could provide the students with training in Approach coping mechanisms such as logical analysis, positive reappraisal, seeking guidance or looking for assistance in gathering accurate information, and problem solving. Most importantly, medical students under the “problem based learning system” are provided with the opportunity to develop effective coping devices that they can apply while under going stress due to school, career and life pressures.

More in depth ad longitudinal studies are needed to demonstrate particular trends among medical students; especially those trends that are related to problem solving and the use of coping mechanisms. Future research should also investigate samples from other medical schools, data collected longitudinally through out the program, the effects of the stress intervention efforts on medical school students and comparative studies between pre-clinical and clinical years.

APPENDIX A

November 17, 1997

Director
College of Human Medicine
A-254 Life Sciences Building

Dear Director:

I am requesting your consideration and support in conducting a study about the types of coping mechanisms and social support medical students use in dealing with stress, and how these relate to their academic success. This particular study will include students from the College of Human Medicine at Michigan State University. The study will be conducted as a doctoral degree requirement in higher educational administration.

Students will be asked to complete the Coping Responses Inventory for Adults. This brief (30 minutes) self-report inventory will identify cognitive and behavioral responses that first and second year medical student used to cope with a recent problem or stressful situation. In order to administer the inventory I will carefully make the necessary arrangements (date, location and time), taking under consideration the students' academic schedule.

Individual students are free to participate or not in the study. At any time, a student can decide to withdraw from the study even after agreeing to participate. There will be no penalty for those students who choose not to participate or to withdraw. Any data collected from those who decide to withdraw will be destroyed immediately.

Numbers will be assigned to students' responses to ensure the students' anonymity.

Sincerely,

Norma Baptista
Ph.D Candidate

APPENDIX B

**CONSENT FORM FOR
FIRST AND SECOND YEAR MEDICAL STUDENTS**

I voluntarily agree to participate in the research study, **THE USE OF SELECTED COPING STRATEGIES AS PREDICTORS OF ACADEMIC PERFORMANCE**, which will be conducted during the 1997/98 academic year. I know that this study is being conducted as dissertation research for Norma Baptista's doctoral studies at Michigan State University. The purpose of this research is to explore the relationship between the use of coping mechanisms as predictors of academic performance in medical students. It is my understanding that my participation in this study involves the following:

- I will allow the researcher to administer the research inventory. This will take about one half-hour to one hour of my time.
- I will allow the researcher to utilize the information collected through the inventory. I understand that the collected information will be kept in the researcher's home in a locked cabinet, to ensure no other person could take or read it.
- I realize that although my name will not be used and every effort will be made to keep my identity confidential, it is possible someone at the School could determine my identity.

In addition, I understand that:

- The data collected through the research inventory will be used in the dissertation, as well as possible articles, presentations or instruction.
- The College may or may not choose to make changes based on the findings of this study.
- I may choose not to participate in this study or withdraw from it at any time without penalty.

Signature _____

Date _____

If you have any questions or concerns, please contact Norma Baptista at (517) 355-9674 or (517) 663-2320

APPENDIX C

CRI-ADULT ANSWER SHEET

Form: Actual ____ Ideal ____

Name _____ Date ____ / ____ / ____ Sex ____ Age ____

Marital Status _____ Ethnic Group _____ Education _____

Part 1

Describe the problem or situation _____

DN = Definitely No **MN = Mainly No** **MY = Mainly Yes** **DY = Definitely Yes**

1. Have you ever faced a problem like this before? DN MN MY DY
2. Did you know this problem was going to occur? DN MN MY DY
3. Did you have enough time to get ready to handle this problem? DN MN MY DY
4. When this problem occurred, did you think of it as a threat? DN MN MY DY
5. When this problem occurred, did you think of it as a challenge? DN MN MY DY
6. Was this problem caused by something you did? DN MN MY DY
7. Was this problem caused by something someone else did? DN MN MY DY
8. Did anything good come out of dealing with this problem? DN MN MY DY
9. Has this problem or situation been resolved? DN MN MY DY
10. If the problem has been worked out, did it turn out all right for you? DN MN MY DY

Part 2

N = No, Not at all **O = Yes, Once or twice** **S = Yes, Sometimes** **F = Yes, Fairly often**

1 N O S F	2 N O S F	3 N O S F	4 N O S F	5 N O S F	6 N O S F	7 N O S F	8 N O S F
9 N O S F	10 N O S F	11 N O S F	12 N O S F	13 N O S F	14 N O S F	15 N O S F	16 N O S F
17 N O S F	18 N O S F	19 N O S F	20 N O S F	21 N O S F	22 N O S F	23 N O S F	24 N O S F
25 N O S F	26 N O S F	27 N O S F	28 N O S F	29 N O S F	30 N O S F	31 N O S F	32 N O S F
33 N O S F	34 N O S F	35 N O S F	36 N O S F	37 N O S F	38 N O S F	39 N O S F	40 N O S F
41 N O S F	42 N O S F	43 N O S F	44 N O S F	45 N O S F	46 N O S F	47 N O S F	48 N O S F

PAR Psychological Assessment Resources, Inc./P.O. Box 998/Odessa, FL 33556/Toll-Free 1-800-331-TEST

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This form is printed in blue ink on carbonless paper. Any other version is unauthorized.

Reorder # RO-2329 Toll Free 1-800-331-TEST

Part 1

This booklet contains questions about how you manage important problems that come up in your life. Please think about the most important problem or stressful situation you have experienced in the last 12 months (for example, troubles with relative or friend, the illness of a relative or friend, an accident or illness, financial or work problems). Briefly describe the problem in the space provided in Part 1 of the answer sheet. If you have not experienced a major problem, list minor problem that you have had to deal with. Then answer each of the 10 questions about the problem or situation (listed below and again on the answer sheet) by circling the appropriate response:

Circle "DN" if your response is DEFINITELY NO.

DN	MN	MY	DY
----	----	----	----

Circle "MN" if your response is MAINLY NO.

DN	MN	MY	DY
----	----	----	----

Circle "MY" if your response is MAINLY YES.

DN	MN	MY	DY
----	----	----	----

Circle "DY" if your response is DEFINITELY YES.

DN	MN	MY	DY
----	----	----	----

1. Have you ever faced a problem like this before?
2. Did you know this problem was going to occur?
3. Did you have enough time to get ready to handle this problem?
4. When this problem occurred, did you think of it as a threat?
5. When this problem occurred, did you think of it as a challenge?
6. Was this problem caused by something you did?
7. Was this problem caused by something someone else did?
8. Did anything good come out of dealing with this problem?
9. Has this problem or situation been resolved?
10. If the problem has been worked out, did it turn out all right for you?

Part 2

Read each item carefully and indicate how often you engaged in that behavior in connection with the problem you described in Part 1. Circle the appropriate response on the answer sheet:

Circle "N" if your response is NO. Not at all.

N	O	S	F
---	---	---	---

Circle "O" if your response is YES. Once or Twice.

N	O	S	F
---	---	---	---

Circle "S" if your response is YES, Sometimes.

N	O	S	F
---	---	---	---

Circle "F" if your response is YES, Fairly often.

N	O	S	F
---	---	---	---

There are 48 items Part 2. Remember to mark all your answers on the answer sheet. Please answer each item as accurately as you can. All your answers are strictly confidential. If you not wish to answer an item, please circle the number of that item on the answer sheet to indicate that you have decided to skip it. If an item does not apply to you, please write NA (Not Applicable) in the box to the right of the number for that item. If you wish to change an answer, make an X through your original answer and circle the new answer. Note that answers are numbered across in rows on Part 2 on the answer sheet.

1. Did you think of different ways to deal with the problem?
2. Did you tell yourself things to make yourself feel better?
3. Did you talk to your spouse or other relative about the problem?
4. Did you make a plan of action and follow it?
5. Did you try to forget the whole thing?
6. Did you feel that time would make a difference--that the only thing to do was to wait?
7. Did you try to help others deal with a similar problem?
8. Did you take it out on other people when you felt angry or depressed?
9. Did you try to step back from the situation and be more objective?
10. Did you remind yourself how much worse things could be?

11. Did you talk with a friend about the problem?
12. Did you know what had to be done and try to make things work?
13. Did you try not to think about the problem/
14. Did you realize that you had no control over the problem?
15. Did you get involved in new activities?
16. Did you take a chance and do something risky?
17. Did you go over in your mind what you would say or do?
18. Did you try to see the good side of the situation?
19. Did you talk with a professional person (e.g., doctor, lawyer, clergy)?
20. Did you decide what you wanted and try hard to get it?
21. Did you daydream or imagine a better time or place than the one you were in?
22. Did you think that the outcome would be decided by fate?
23. Did you try to make new friends/
24. Did you keep away from people in general?
25. Did you try to anticipate how things would turn out?
26. Did you think about how you were much better off than other people with similar problem?
27. Did you seek help from persons or groups with the same type of problem?
28. Did you try at least two different ways to solve the problem/
29. Did you try to put off thinking about the situation, even though you knew you would have to at some point?
30. Did you accept it; nothing could be done?
31. Did you read more often as a source of enjoyment?
32. Did you yell or shout to let off steam?
33. Did you try to find some personal meaning in the situation?
34. Did you try to tell yourself that things would get better?
35. Did you try to find out more about the situation?

36. Did you try to learn more things on your own?
37. Did you wish that the problem would go away or somehow be over with?
38. Did you expect the worst possible outcome?
39. Did you expend more time in recreational activities?
40. Did you cry to let your feelings out?
41. Did you try to anticipate the new demands that would be placed on you?
42. Did you think about how this event could change your life in a positive way?
43. Did you pray for guidance and/or strength?
44. Did you take things a day at a time, one step at a time?
45. Did you try to deny how serious the problem really was?
46. Did you lose hope that things would ever be the same?
47. Did you turn to work or other activities to help you manage things?
48. Did you do something that you didn't think would work, but at least you were doing something?

APPENDIX D

CRI-ADULT PROFILE

TSCORE	RAW	RAW2	RAW3	RAW4	RAW5	RAW6	RAW7	RAW8	TSCORE
80+								14-18	80
79								13	79
78							18		78
77									77
76					18		17		76
75						18		12	75
74					17		16		74
73						17			73
72			18		16			11	72
71							15		71
70						16			70
69			17		15		14	10	69
68		18							68
67	18		16	18	14	15	13		67
66								9	66
65	17	17			13	14			65
64			15	17			12		64
63						13		8	63
62	16	16	14	16	12		11		62
61						12			61
60	15	15		15	11		10	7	60
59			13			11			59
58		14			10		9		58
57	14		12	14				6	57
56		13				10			56
55	13			13	9		8		55
54			11			9		5	54
53		12			8		7		53
52	52		10	12		8			52
51		11			7		6	4	51
50	11			11					50
49		10	9			7			49
48				10	6		5	3	48
47	10	9	8			6			47
46					5		4		46
45		8		9				2	45
44	9		7			5	3		44
43				8	4				43
42	8	7	6			4	2	1	42
41				7	3				41
40		6				3			40
39	7		5		2		1	0	39
38		5		6					38
37	6		4		1	2	0		37
36		4		5					36
35						1			35
34	5	3	3	4	0				34
33						0			33
32	4		2						32
31		2		3					31
30									30
29	3	1	1	2					29
28		0							28
27	2		0	1					27
26									26
25									25
24	1			0					24
23									23
22	0								22
21									21
20									20
	LA	PR	SC	PS	CA	AR	SR	ED	

APPENDIX E

Table 7

		LA	PR	SG	PS	CA	AR	SR	ED
Pearson Correlation	LA	1.000	.426**	.555**	.545**	-.032	-.145	.233*	.099
	PR	.426**	1.000	.504**	.469**	.064	-.203	.296*	-.108
	SG	.555**	.504**	1.000	.513**	-.028	-.033	.020	.002
	PS	.545**	.469**	.513**	1.000	-.164	-.331**	.097	.141
	CA	-.032	.064	-.028	-.164	1.000	.473**	.157	.284*
	AR	-.145	-.203	-.033	-.331**	.473**	1.000	-.223	.278*
	SR	.233*	.296*	.020	.097	.157	-.223	1.000	.160
	ED	.099	-.108	.002	.141	.284*	.278*	.160	1.000
Sig. (2-tailed)	LA	.	.000	.000	.000	.789	.221	.049	.405
	PR	.000	.	.000	.000	.591	.085	.012	.364
	SG	.000	.000	.	.000	.816	.781	.870	.989
	PS	.000	.000	.000	.	.169	.005	.421	.238
	CA	.789	.591	.816	.169	.	.000	.189	.015
	AR	.221	.085	.781	.005	.000	.	.060	.017
	SR	.049	.012	.870	.421	.189	.060	.	.179
	ED	.405	.364	.989	.238	.015	.017	.179	.
N	LA	73	73	73	72	73	73	72	73
	PR	73	73	73	72	73	73	72	73
	SG	73	73	73	72	73	73	72	73
	PS	72	72	72	72	72	72	71	72
	CA	73	73	73	72	73	73	72	73
	AR	73	73	73	72	73	73	72	73
	SR	72	72	72	71	72	72	72	72
	ED	73	73	73	72	73	73	72	73

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Table 8

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	1.886	.174	-.558	71	.579	-1.5205	2.7250	-6.9540	3.9130
	Equal variances not assumed			-.629	15.462	.538	-1.5205	2.4158	-6.6562	3.6152
PR	Equal variances assumed	.061	.806	-2.089	71	.040	-5.8563	2.8040	-11.4473	-.2653
	Equal variances not assumed			-2.316	15.183	.035	-5.8563	2.5286	-11.2403	-.4723
SG	Equal variances assumed	.437	.511	-.912	71	.365	-3.3299	3.6530	-10.6139	3.9540
	Equal variances not assumed			-.928	13.997	.369	-3.3299	3.5894	-11.0287	4.3689
PS	Equal variances assumed	.040	.841	-.741	70	.461	-2.0596	2.7796	-7.6034	3.4842
	Equal variances not assumed			-.677	12.940	.510	-2.0596	3.0433	-8.6374	4.5182
CA	Equal variances assumed	3.884	.053	-.948	71	.346	-2.7185	2.8677	-8.4364	2.9995
	Equal variances not assumed			-1.294	20.157	.210	-2.7185	2.1007	-7.0982	1.6613
AR	Equal variances assumed	1.615	.208	.527	71	.600	1.4648	2.7813	-4.0810	7.0107
	Equal variances not assumed			.607	15.831	.553	1.4648	2.4144	-3.6580	6.5876
SR	Equal variances assumed	.039	.845	-.770	70	.444	-2.2101	2.8700	-7.9342	3.5139
	Equal variances not assumed			-.716	13.099	.487	-2.2101	3.0874	-8.8751	4.4548
ED	Equal variances assumed	.964	.329	.236	71	.814	.7933	3.3542	-5.8948	7.4813
	Equal variances not assumed			.207	12.558	.839	.7933	3.8281	-7.5066	9.0931

*CA shows statistically significant difference ($F+3.889, P>.053$), with students reporting academic difficulties using more cognitive avoidance than students who did not report academic difficulties.

No statistically significant difference between Approach coping responses and the students reporting academic difficulties.

Table 9

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	.196	.659	1.311	71	.194	2.5338	1.9324	-1.3192	6.3868
	Equal variances not assumed			1.311	70.410	.194	2.5338	1.9330	-1.3210	6.3887
PR	Equal variances assumed	.457	.501	1.080	71	.284	2.2158	2.0519	-1.8755	6.3071
	Equal variances not assumed			1.082	70.952	.283	2.2158	2.0470	-1.8658	6.2974
SG	Equal variances assumed	1.932	.169	2.438	71	.017	6.1632	2.5274	1.1236	11.2027
	Equal variances not assumed			2.400	58.513	.020	6.1632	2.5683	1.0231	11.3033
PS	Equal variances assumed	.085	.771	1.403	70	.165	2.7833	1.9833	-1.1723	6.7389
	Equal variances not assumed			1.403	69.090	.165	2.7833	1.9835	-1.1736	6.7402
CA	Equal variances assumed	8.691	.004	2.827	71	.006	5.5391	1.9591	1.6328	9.4454
	Equal variances not assumed			2.861	68.158	.006	5.5391	1.9360	1.6760	9.4022
AR	Equal variances assumed	.496	.484	1.122	71	.265	2.2203	1.9781	-1.7239	6.1645
	Equal variances not assumed			1.126	70.985	.264	2.2203	1.9724	-1.7127	6.1533
SR	Equal variances assumed	.065	.800	-.410	70	.683	-.8486	2.0722	-4.9814	3.2841
	Equal variances not assumed			-.410	69.939	.683	-.8486	2.0706	-4.9784	3.2811
ED	Equal variances assumed	.635	.428	2.137	71	.036	4.9767	2.3291	.3326	9.6208
	Equal variances not assumed			2.146	70.966	.035	4.9767	2.3189	.3528	9.6006

*CA shows statistically significant difference ($F+8.691, P>.004$).

No statistically significant difference between Approach coping responses and the students' gender.

Table 10

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	3.691	.059	.489	71	.626	1.0162	2.0762	-3.1237	5.1560
	Equal variances not assumed			.526	55.408	.601	1.0162	1.9312	-2.8534	4.8857
PR	Equal variances assumed	.211	.648	-.649	71	.519	-1.4226	2.1934	-5.7962	2.9510
	Equal variances not assumed			-.626	41.869	.535	-1.4226	2.2718	-6.0077	3.1625
SG	Equal variances assumed	.016	.900	-.235	71	.815	-.6582	2.7970	-6.2353	4.9190
	Equal variances not assumed			-.245	51.164	.807	-.6582	2.6816	-6.0413	4.7249
PS	Equal variances assumed	.329	.568	-.861	70	.392	-1.8438	2.1419	-6.1157	2.4280
	Equal variances not assumed			-.864	43.545	.392	-1.8438	2.1339	-6.1458	2.4581
CA	Equal variances assumed	3.762	.056	.832	71	.408	1.8197	2.1870	-2.5409	6.1804
	Equal variances not assumed			.926	60.440	.358	1.8197	1.9650	-2.1102	5.7497
AR	Equal variances assumed	.032	.859	1.417	71	.161	2.9651	2.0928	-1.2079	7.1381
	Equal variances not assumed			1.444	48.166	.155	2.9651	2.0527	-1.1618	7.0921
SR	Equal variances assumed	1.063	.306	.066	70	.947	.1458	2.1996	-4.2411	4.5327
	Equal variances not assumed			.061	37.557	.952	.1458	2.3855	-4.6852	4.9768
ED	Equal variances assumed	.086	.770	.469	71	.641	1.1956	2.5514	-3.8917	6.2829
	Equal variances not assumed			.452	41.678	.654	1.1956	2.6474	-4.1482	6.5394

No statistically significant difference between Approach coping responses and students' age.

Table 11

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	.018	.893	-1.670	71	.099	-3.2081	1.9212	-7.0389	.6226
	Equal variances not assumed			-1.655	66.332	.103	-3.2081	1.9383	-7.0777	.6614
PR	Equal variances assumed	.199	.657	.463	71	.645	.9570	2.0687	-3.1678	5.0818
	Equal variances not assumed			.465	70.568	.644	.9570	2.0599	-3.1508	5.0648
SC	Equal variances assumed	.619	.434	-.052	71	.959	-.1365	2.6351	-5.3907	5.1177
	Equal variances not assumed			-.052	70.842	.959	-.1365	2.6184	-5.3576	5.0846
PS	Equal variances assumed	1.823	.181	1.052	70	.297	2.1026	1.9992	-1.8847	6.0898
	Equal variances not assumed			1.065	69.961	.291	2.1026	1.9749	-1.8363	6.0414
CA	Equal variances assumed	9.138	.003	-1.510	71	.136	-3.0754	2.0371	-7.1373	.9865
	Equal variances not assumed			-1.547	67.625	.126	-3.0754	1.9876	-7.0419	.8911
AR	Equal variances assumed	.288	.593	-1.133	71	.261	-2.2436	1.9808	-6.1931	1.7059
	Equal variances not assumed			-1.139	70.744	.259	-2.2436	1.9700	-6.1718	1.6846
SR	Equal variances assumed	.276	.601	-.672	70	.504	-1.3916	2.0704	-5.5209	2.7376
	Equal variances not assumed			-.668	66.401	.507	-1.3916	2.0845	-5.5531	2.7698
ED	Equal variances assumed	.042	.839	-1.498	71	.139	-3.5483	2.3693	-8.2726	1.1760
	Equal variances not assumed			-1.497	69.561	.139	-3.5483	2.3701	-8.2758	1.1792

No statistically significant difference between Approach coping responses and students' ages 21 to 25.

*CA shows statistically significant difference ($F+9.138, P>.003$).

Table 12

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	3.691	.059	.489	71	.626	1.0162	2.0762	-3.1237	5.1560
	Equal variances not assumed			.526	55.408	.601	1.0162	1.9312	-2.8534	4.8857
PR	Equal variances assumed	.211	.648	-.649	71	.519	-1.4226	2.1934	-5.7962	2.9510
	Equal variances not assumed			-.626	41.869	.535	-1.4226	2.2718	-6.0077	3.1625
SG	Equal variances assumed	.016	.900	-.235	71	.815	-.6582	2.7970	-6.2353	4.9190
	Equal variances not assumed			-.245	51.164	.807	-.6582	2.6816	-6.0413	4.7249
PS	Equal variances assumed	.329	.568	-.861	70	.392	-1.8438	2.1419	-6.1157	2.4280
	Equal variances not assumed			-.864	43.545	.392	-1.8438	2.1339	-6.1458	2.4581
CA	Equal variances assumed	3.762	.056	.832	71	.408	1.8197	2.1870	-2.5409	6.1804
	Equal variances not assumed			.926	60.440	.358	1.8197	1.9650	-2.1102	5.7497
AR	Equal variances assumed	.032	.859	1.417	71	.161	2.9651	2.0928	-1.2079	7.1381
	Equal variances not assumed			1.444	48.166	.155	2.9651	2.0527	-1.1618	7.0921
SR	Equal variances assumed	1.063	.306	.066	70	.947	.1458	2.1996	-4.2411	4.5327
	Equal variances not assumed			.061	37.557	.952	.1458	2.3855	-4.6852	4.9768
ED	Equal variances assumed	.086	.770	.469	71	.641	1.1956	2.5514	-3.8917	6.2829
	Equal variances not assumed			.452	41.678	.654	1.1956	2.6474	-4.1482	6.5394

No statistically significant difference between Approach coping responses and students' ages 26 to 30.

*CA shows some statistically significant difference ($F = 3.72, P > .56$).

Table 13

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	1.889	.174	1.557	71	.124	7.5333	4.8396	-2.1166	17.1833
	Equal variances not assumed			.913	2.054	.455	7.5333	8.2473	-27.0663	42.1330
PR	Equal variances assumed	3.020	.087	1.510	71	.135	7.7381	5.1244	-2.4796	17.9558
	Equal variances not assumed			4.555	5.212	.005	7.7381	1.6988	3.4240	12.0522
SG	Equal variances assumed	1.047	.310	.285	71	.777	1.8857	6.6178	-11.3098	15.0813
	Equal variances not assumed			.196	2.077	.862	1.8857	9.6301	-38.1090	41.8804
PS	Equal variances assumed	.891	.349	.596	70	.553	2.9855	5.0114	-7.0095	12.9805
	Equal variances not assumed			.823	2.366	.485	2.9855	3.6294	-10.5318	16.5028
CA	Equal variances assumed	.000	.992	1.575	71	.120	8.0524	5.1119	-2.1404	18.2452
	Equal variances not assumed			1.309	2.117	.315	8.0524	6.1512	-17.0625	33.1672
AR	Equal variances assumed	2.535	.116	-.758	71	.451	-3.7905	5.0019	-13.7640	6.1830
	Equal variances not assumed			-.451	2.056	.695	-3.7905	8.4112	-39.0519	31.4709
SR	Equal variances assumed	1.653	.203	1.378	70	.172	7.0580	5.1201	-3.1537	17.2696
	Equal variances not assumed			3.119	3.268	.047	7.0580	2.2626	.1806	13.9353
ED	Equal variances assumed	1.621	.207	1.259	71	.212	7.5286	5.9806	-4.3964	19.4536
	Equal variances not assumed			2.323	2.721	.112	7.5286	3.2406	-3.4099	18.4671

*PR shows some statistically significant difference ($F+3.020, P>.87$).

Table 14

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
									Lower	Upper
LA	Equal variances assumed	.722	.398	-2.592	71	.012	-5.4274	2.0937	-9.6021	-1.2526
	Equal variances not assumed			-2.382	29.450	.024	-5.4274	2.2782	-10.0838	-.7710
PR	Equal variances assumed	.516	.475	-1.326	71	.189	-3.0349	2.2890	-7.5991	1.5293
	Equal variances not assumed			-1.387	37.571	.174	-3.0349	2.1884	-7.4667	1.3969
SG	Equal variances assumed	.606	.439	.020	71	.984	.755E-02	2.9473	-5.8191	5.9342
	Equal variances not assumed			.019	33.274	.985	.755E-02	2.9924	-6.0286	6.1436
PS	Equal variances assumed	1.348	.250	-.599	70	.551	-1.3605	2.2721	-5.8920	3.1710
	Equal variances not assumed			-.673	40.540	.505	-1.3605	2.0223	-5.4459	2.7250
CA	Equal variances assumed	.025	.876	-1.421	71	.160	-3.2434	2.2825	-7.7945	1.3078
	Equal variances not assumed			-1.403	33.407	.170	-3.2434	2.3125	-7.9461	1.4593
AR	Equal variances assumed	.993	.322	.217	71	.829	.4840	2.2346	-3.9717	4.9396
	Equal variances not assumed			.202	30.058	.842	.4840	2.4016	-4.4204	5.3883
SR	Equal variances assumed	2.870	.095	-3.176	70	.002	-6.8731	2.1644	-11.1898	-2.5563
	Equal variances not assumed			-3.774	51.414	.000	-6.8731	1.8214	-10.5289	-3.2173
ED	Equal variances assumed	2.946	.090	-2.846	71	.006	-7.2575	2.5500	-12.3420	-2.1730
	Equal variances not assumed			-3.254	46.109	.002	-7.2575	2.2306	-11.7472	-2.7679

No statistically significant difference between Approach and Avoidance coping responses and the students' marital status.

Table 15

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
LA	Equal variances assumed	.130	.719	-1.714	69	.091	-3.5408	2.0661	-7.6626	.5811
	Equal variances not assumed			-1.743	48.637	.088	-3.5408	2.0312	-7.6234	.5419
PR	Equal variances assumed	.018	.895	-.323	69	.748	-.7066	2.1879	-5.0713	3.6582
	Equal variances not assumed			-.320	45.177	.751	-.7066	2.2102	-5.1577	3.7446
SG	Equal variances assumed	2.797	.099	-2.597	69	.011	-6.9353	2.6704	-12.2627	-1.6079
	Equal variances not assumed			-2.238	32.199	.032	-6.9353	3.0991	-13.2464	-.6242
PS	Equal variances assumed	.095	.759	-2.725	68	.008	-5.5272	2.0282	-9.5743	-1.4800
	Equal variances not assumed			-2.778	49.309	.008	-5.5272	1.9897	-9.5249	-1.5295
CA	Equal variances assumed	.812	.371	1.771	69	.081	3.7757	2.1323	-.4782	8.0296
	Equal variances not assumed			1.909	56.803	.061	3.7757	1.9783	-.1860	7.7374
AR	Equal variances assumed	.025	.876	1.998	69	.050	4.0691	2.0370	.414E-03	8.1329
	Equal variances not assumed			2.008	47.091	.050	4.0691	2.0265	7.39E-03	8.1457
SR	Equal variances assumed	.369	.545	.713	68	.478	1.5471	2.1685	-2.7800	5.8742
	Equal variances not assumed			.674	40.005	.504	1.5471	2.2970	-3.0954	6.1896
ED	Equal variances assumed	1.963	.166	1.546	69	.127	3.7979	2.4570	-1.1037	8.6995
	Equal variances not assumed			1.470	40.677	.149	3.7979	2.5828	-1.4195	9.0153

No statistically significant difference between Approach and Avoidance coping responses and the students' race.

Table 16

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Mean	
LA	Equal variances assumed	.724	.398	.191	70	.849	.3923	2.0540	-3.7042	4.4889
	Equal variances not assumed			.184	44.433	.855	.3923	2.1282	-3.8956	4.6803
PR	Equal variances assumed	.179	.674	-.669	70	.506	-1.4672	2.1933	-5.8416	2.9071
	Equal variances not assumed			-.690	53.514	.493	-1.4672	2.1268	-5.7320	2.7975
SG	Equal variances assumed	2.978	.089	.199	70	.843	.5549	2.7930	-5.0156	6.1254
	Equal variances not assumed			.174	34.749	.863	.5549	3.1828	-5.9082	7.0180
PS	Equal variances assumed	1.679	.199	-1.319	69	.191	-2.7470	2.0824	-6.9013	1.4074
	Equal variances not assumed			-1.412	59.598	.163	-2.7470	1.9454	-6.6388	1.1449
CA	Equal variances assumed	.075	.785	-.905	70	.369	-1.9745	2.1829	-6.3282	2.3792
	Equal variances not assumed			-.928	52.799	.357	-1.9745	2.1269	-6.2410	2.2920
AR	Equal variances assumed	.382	.538	-.423	70	.674	-.8860	2.0940	-5.0623	3.2904
	Equal variances not assumed			-.416	46.901	.679	-.8860	2.1280	-5.1672	3.3953
SR	Equal variances assumed	1.246	.268	1.503	69	.138	3.2548	2.1662	-1.0667	7.5762
	Equal variances not assumed			1.608	59.598	.113	3.2548	2.0236	-.7937	7.3032
ED	Equal variances assumed	1.232	.271	.555	70	.580	1.3617	2.4514	-3.5275	6.2509
	Equal variances not assumed			.588	57.438	.559	1.3617	2.3161	-3.2755	5.9989

No statistically significant difference between Approach and Avoidance coping responses and students' year in school.

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