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PROCRASTINATION, STRESS AND COPING DURING COLLEGE EXAM PREPARATION

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CHAPTER 1

INTRODUCTION

Overview

College these days can be a trying experience for many students. Whether in their first or final year, students must learn to deal with the stress of preparing for college exams which, typically, require the mastery of large amounts of material in a relatively short amount of time.

The exam is the most common way that teachers assess student performance. In many cases, exams comprise the greatest proportion of the final course grade. Therefore, exam performance is one of the primary determinants of academic success in college. Despite this fact, there is evidence that many students put off the preparation for an exam (e.g., Solomon & Rothblum, 1984). So, while presumably knowing of the great importance associated with exams and the evaluations that are based on their outcome, some students will nevertheless delay preparation simply making a stressful situation that much worse.

Investigation of academic procrastination is warranted because of the variety of unfavorable outcomes associated with this type of delay. Researchers have considered some of the more external outcomes of delay (Burka & Yuen, 1983), and these include poor grades, class withdrawal, failed classes, scholastic inefficiency, and missed opportunities in general (McCown et al., 1987; Semb et al., 1979; White, 1988).

The student not only bears these academic costs of procrastination, but the personal, more subjective costs as well. Less obvious repercussions (to others, that is) of procrastination involve the somatic and psychological effects (Burka & Yuen, 1983; McCown et al., 1987). In particular,

procrastination has been associated with increased stress, psychological distress, and anxiety. The psychological, or internal, dimension is very important to consider for two reasons. First, some students can be considered "successful" procrastinators. That is, they can delay performing a task as long as possible and still perform it successfully, thus avoiding the external consequences discussed earlier. Despite the resulting psychological distress, many students find themselves replicating this delay behavior on other tasks when they know they can "succeed" at them. This idea provides the rationale of the proposed study: instead of just examining the behavioral indicators of success, it is important to determine how the person is affected and what is experienced when they do procrastinate.

Second, there is a well-documented curvilinear relationship between performance and stress (e.g., Burka & Yuen, 1983). High performance is attained when a moderate level of stress is reached. As stress increases beyond this optimal level, however, performance deteriorates. For procrastinators, the characteristic last-minute frenzy may actually work to impair performance. How much this law applies to the case of academic procrastination remains to be seen: this issue will be discussed further in a later section.

The present study examined procrastination in a naturalistic academic setting. Since stress has been associated with the college exam experience, this idea will be expanded on to examine related experiences of students when preparing for an exam. In doing this, I will draw upon a theory of stress and coping and propose its application to the study of academic procrastination.

Literature Review

Procrastination is an issue with which all of us are familiar, either through others' or our own experience. As there are many ways in everyday life that one might put things off, ranging from paying bills to making major life decisions (Milgram et al., 1989), academic life presents many

opportunities for delay. Only the preparation for a college exam, however, will be studied here. The exam is of interest for several reasons. As discussed above, this is usually the primary determinant of one's performance in a course. Furthermore, while other tasks, such as daily reading assignments or administrative tasks, are important, exam preparation is imperative. The delay of performing some other types of academic tasks, such as administrative tasks, will not affect the performance quality, i.e., even if you register for classes late, you are still registered. Further, the quality of the outcome, in this case enrollment in a particular class, does not vary among students.

Despite the seriousness of the problem and its potential impact, there remains a paucity of solid, systematic research on this common phenomenon. The work that has been done does give some idea of the extent of the problem. In one rather extensive study of 342 psychology undergraduates (Solomon & Rothblum, 1984), the numbers were quite staggering . Almost one-half (i.e., 46%) of the sample reported that they "nearly always or always" postponed writing a term paper, almost one-third (i.e., 27.6%) postponed studying for an exam, and 30.1% postponed weekly reading assignments. The number of students who actually engage in (as opposed to report) this behavior may be even higher. Indeed, it has been estimated that as many as 95% of college students procrastinate on academic tasks to some degree (Ellis & Knaus, 1977). Considering the consequences of these tasks (exam preparation in particular) for college success, academic procrastination is a serious problem.

The operational definition of procrastination used in the proposed study includes three dimensions. The first can be characterized as behavioral delay (Solomon & Rothblum, 1984). Simply, this is the repeated putting-off of a task that needs to be performed.

The second dimension suggests that one's procrastination is felt to be problematic for the student. In their examination of academic procrastination, Solomon & Rothblum (1984) not only asked students how much they procrastinate but whether they deemed their behavior problematic as

well. While not limiting the ways in which procrastination may pose a problem, it is assumed that problems are likely to involve the internal consequences of procrastination, such as negative feelings about oneself.

The third dimension characterizes procrastination as a process. That is, a student's level of procrastination and related internal consequences can fluctuate over time as a deadline approaches (Rothblum et al., 1986). A person does not procrastinate forever but eventually takes action at a certain point. Several explanations have been offered for this. First, action on a task may occur when anxiety and worry reach peak levels (Rothblum et al., 1986). This implies that a person is behaviorally inactive up to a certain point and acts only when he or she is forced to. Ironically, the peak level of anxiety that gets a student to perform may reach a point where it actually impairs performance. Second, it has been suggested that one may perform a task up until a certain point and then be unable to continue. Silver (1974) hypothesized that the simpler, less complex components of a task are performed initially, with perseveration occurring at the point where more cognitive effort is required. For example, in the case of an exam this may occur when a student is unable to "switch gears" from outlining textbook chapters to actually studying this material. For a term paper, perseveration may occur when a switch needs to be made from taking notes to actually writing the paper. In both cases, the common theme is change: a person changes from either action to inaction, or inaction to action, implying a dynamic aspect of procrastination.

In summary, the three components of interest here are that procrastination (1) involves delay and (2) is a problem for the person and (3) is characterized as a dynamic process.

Historically, procrastination studies have not examined the issue from a process-oriented perspective. It has been studied using a more static conceptualization of the phenomenon. Prior research has treated procrastination as a unidimensional construct, i.e., discussing it simply as a behavioral issue. This behavioral approach conceptualizes procrastination as resulting from deficits

in study skills, time management, and time orientation, for example (Blatt & Quinlan, 1967; White, 1988). This approach does not consider characteristics of the person that may interact with the environment and that may change over time, such as what the person is feeling or perceiving at a given time.

As an alternative to simply focusing on deficits in study skills associated with this type of behavior, personality- (or trait-) oriented and clinical interpretations have been forwarded (White, 1988). These approaches deal more directly with the person and with the psychological mechanisms underlying procrastination.

Trait-oriented research has tried to determine whether certain personality types are associated with this behavior (Lay, 1986, 1987; McCown et al., 1989). The focus of this research has typically been on traits or structures within the individual that remain relatively stable over time and across situations. For example, in several studies procrastination has been correlated with neuroticism. In one study of undergraduates, a curvilinear relationship between neuroticism and procrastination was detected (McCown et al., 1987). Specifically, those on the extremes, i.e., the punctual people and the late people, scored highest on the neuroticism scale.

Although clinical interpretations of procrastination have become very popular, they have received the least empirical attention. Only recently have systematic attempts been made to understand the psychodynamic properties of procrastination. Explanations for this behavior have included fears of failure (e.g., Beswick et al., 1988; Burka & Yuen, 1983), of success (e.g., Burka & Yuen, 1983; White, 1988), and even of death (e.g., Blatt & Quinlan, 1967). In the latter case, people are said to procrastinate in order to put off the inevitable. Unfortunately, even the most severe procrastinators cannot delay this from happening. Resentment toward authority and evaluation anxiety are two other commonly cited causes of procrastination.

Interestingly, the subject of stress has been discussed quite a bit in the trait-oriented

literature (Lay, 1986; McCown et al., 1987, 1989). Because of their static approach to the problem, however, these studies have ultimately failed to capture the richness of stress as a dynamic process. Discussion of stress has been limited to how certain types of people react to stressors. These reactions have typically been considered stable across and, more importantly, within situations. The limited treatment stress has received in this literature provided further impetus for the present investigation of the role of stress and coping in the procrastination process.

While these approaches are very useful in terms of identifying the types of people who tend to procrastinate, one shortcoming is that they reveal nothing about procrastination as it is occurring for the person in a particular context at a particular time. In short, changing situational or environmental demands have still not been fully considered.

The Stressful Encounter

The dynamic nature of procrastination led me to explore theories of stress and coping that would be consistent with this particular behavior. Lazarus and his colleagues (e.g., Folkman & Lazarus, 1980; Lazarus, 1966) have done a substantial amount of work in this area. The theoretical model they proposed considers stress and coping from a process-oriented perspective, and views it as a process that occurs as a result of the person-environment interaction.

Stress

Perhaps the most critical feature of the stressful encounter is that the same event or situation may elicit disparate reactions among people. People's emotional reactions to stress (often referred to as the "stress reaction") is a function of the person and the environment and it occurs "...when situational demands tax or exceed a person's resources" (Lazarus, 1990, p. 3). Therefore, instead of being an automatic reaction, stress is the result of a disturbed person-environment relationship or

transaction. It is not the event alone that determines whether a stress reaction will be experienced. Stress occurs only after an event or situation is appraised by an individual and this transaction, in turn, is in a constant state of flux (Lazarus, 1990). As the situation unfolds, individuals are constantly assessing (or *appraising*), reassessing, and adjusting to (or *coping* with) the environment around them.

<div align="center">Appraisal</div>

Reaction to a potential stressor depends on how it is perceived. Hence, the same situation can be perceived differently both between and within individuals - it is a highly subjective process that can change over time (Lazarus & DeLongis, 1983). The stressor is appraised to determine what kind of action, if any, is required in order to deal with the stressor either before or after it occurs. According to Folkman et al. (1986), the *cognitive appraisal* of an event or situation reveals two things: 1) what, if anything, is at stake for the person assessing the stressor (primary appraisal), and 2) if the abilities and resources are available to deal with the stressor (secondary appraisal). The function of primary appraisal is to determine how he or she will be affected by a stressful event or situation. Prior to a stressful event, anticipatory appraisal will determine whether the person feels threatened or challenged, and outcome appraisals will determine whether the stressful event brought harm or benefit to the person (Lay et al., 1989). The function of secondary appraisal is to determine if the event can be managed. This is based on the person's perception of resources and abilities one has with which to cope.

In anticipation of a stressful event, such as a college exam, appraisal generates emotional responses in the individual. Depending on how the encounter is appraised, certain positive or negative emotions will be experienced. Figure 1 illustrates that emotions can be used as indicators of how the situation has been appraised by the individual (see Figure 1). Positive emotions, such as

confidence and eagerness, reflect an appraisal of challenge, whereas negative emotions, such as worry and fear, reflect an appraisal of threat (Abella & Heslin, 1989; Folkman & Lazarus, 1985).

When one feels threatened by a particular stressor, this results in feelings of stress (Baum et al., 1982). In short, emotions are a consequence of one's appraisal of a stressor. As a result of the appraisal and subsequent perception of the stressor, the individual will then begin to "mobilize" his or her coping resources.

Coping

Coping plays two distinct roles in the management of stress. *Emotion-focused coping* can be used to regulate the stressful emotions that accompany a stressful event or situation; *problem-focused coping* can be used to alter the troubled person-environment relationship (Folkman et al., 1986).

Emotion-focused coping is characterized by "avoidance" types of strategies that remove the person from the stressor. Wishful thinking, distancing, isolation, and self-blame are all examples of this type of coping. On the other hand, a more active or "approach" type of strategy is characteristic of problem-focused coping, such as analyzing or attacking the problem according to a plan.

The Process

The dynamic nature of the entire process becomes clear as it is played out. Upon initial encounter with a situation, the individual makes primary and secondary appraisals. From this, one can determine their interest or claim in the encounter and what, if anything, can be done about it. The appraisal phase generates emotions, characterized as threat and challenge, as a result of the initial appraisal. Next the person engages in what is usually a combination of both emotion-focused and problem-focused coping (see Figure 1).

After a person begins to cope with an encounter, subsequent appraisals occur. Reappraisal occurs after coping has been employed as a result of the initial encounter. Therefore, the emotions that are generated by the reappraisal phase will be mediated by the coping that has been used by the individual (Folkman & Lazarus, 1985).

The outcome of this process is a person-environment relationship that is different compared to the initial encounter. This can be seen clearly if we again look at the coping phase. The individual's relationship to the situation, such as exam preparation, will differ if he or she studies versus putting it off. Studying may be the result of certain initial appraisals of the situation that will shape the entire coping process. Avoiding the task, on the contrary, may result from a different pattern of appraisals and may shape the process in an entirely different way.

Measurement Issues

The measurement of stress has changed during recent years in some important ways. When it was first studied, stress was thought to occur primarily as a consequence of major life events (e.g., Holmes & Rahe, 1967). More recently, the study of stress has come to include the daily stressors that people encounter, which are referred to in the literature as "hassles" of everyday life (Lazarus, 1990). The focus is now on events and situations that may have a cumulative impact on stress reactions instead of just on the life-altering events that have been studied in the past.

Not only has attention shifted from larger events to daily hassles, but more attention is now given to the process of stress and coping. As discussed above, the trait-oriented approach assumes that there is something inherent in the person that affects the use of coping strategies. The process-oriented approach, in contrast, highlights the transactional nature of stress and how it fluctuates over time. As a result, Lazarus and others have called for the microanalysis of the process. This approach requires assessment of the stress process: 1) within a distinct context, i.e., during a stressful situation

or event; 2) from moment to moment; and 3) to include observation of actual behaviors (Lazarus, 1990; Folkman & Lazarus, 1985). The goal of the microanalytic approach is to enable researchers to "capture the changing person-environment relationship" (Lazarus, 1990). Until recently, this theoretical ideal has been shortchanged by methodological and logistical realities.

Research questions

1. The Behavioral Component of Procrastination

The first objective of the study was to look at the behavioral delay component of procrastination. As previous research suggests, the behavioral aspect of procrastination can be complicated. For example, as noted in Silver (1974), perseveration, a repetition of simpler tasks, may occur. This implies that a person has started a task and fails to "switch gears" as the task becomes more cognitively complex. Thus, two things can occur at this point. First, if the person stops acting on the task altogether, then their behavior pattern will show some activity followed by a sharp decline. Second, if the person simply repeats the less cognitively complex activities they, technically speaking, remain on-task and behavior continues, but their progress toward completion of the task levels off and the quality of their work will most likely suffer. In the latter case presents a quality versus quantity issue.

In order to gain a clearer understanding of procrastination as a behavior, the following questions have been posed:

A. Are there differences in the study patterns of low and high procrastinators?
B. Do procrastinators leave most of their studying for the last minute?
C. Is there a visible "switch" in behaviors? Can we detect a change from inaction to action and vice versa? It is hypothesized that procrastinators will act later than the nonprocrastinators, and there will be a corresponding change in the intrapersonal experience.
D. Does a measure of one's general tendency to procrastinate relate to actual behavioral delay on the exam preparation task?

2. The Intrapersonal Correlates of Procrastination

The second goal of the study was to examine the ways in which procrastination is problematic for college students in terms of the internal consequences. By examining the procrastination experience in a stress and coping framework, the underlying internal, psychological correlates of procrastination are examined. As discussed earlier, simply completing a task by a deadline does not mean that the process or experience leading up to completion was similar for everyone.

Based on prior research, it is hypothesized that nonprocrastinators and procrastinators will differ in terms of their psychological reactions to the same event, in this case, an upcoming college exam. It is hypothesized that those who tend to procrastinate on exam preparation will experience cognitions, feelings, and behaviors associated with a stressful encounter. Specifically, procrastinators will experience appraisals associated with greater risk; feelings associated with negative emotions; coping behaviors associated with controlling or targeting emotions. The description of the procrastinator will be based on results from correlational analyses using an existing measure of general academic procrastination.

3. The Description of the Procrastination Process Over Time

Procrastination can occur when a student fails to "switch gears" and tackle more complex material, which implies that they were doing something but then stopped. It is also possible that exam preparation does not occur at all until shortly before the exam (i.e., one or two days). Either scenario presents change from one pattern of behavior to another and also represents a change in the person's relationship with the stressor.

The third question addresses the dynamic nature of the procrastination experience. Does

one's temporal proximity to the stressor alter the stressful encounter? Does change occur in behavior (as predicted in hypothesis 1) as well as in the internal stress and coping process? It is predicted that procrastinators and nonprocrastinators will experience different levels of intrapersonal consequences of procrastination.

CHAPTER 2

METHOD

Subjects

Subjects were recruited from several introductory psychology courses at Loyola University

of Chicago. Participation was in partial fulfillment of course requirements and was completely

voluntary. All subjects were told that they could withdraw at any point during the study, though none

chose to do so.

A total of 171 students from six different introductory psychology classes participated in the

study. The sample consisted mostly of females (80.6%); 19.4% were male. In terms of class status,

the sample was composed of 62.0% freshman; 19.3% sophomores; 14.5% juniors; and 4.2% seniors.

Mean age of the sample was 19.37 years.

Overview and Design

The study focused on college students in a naturalistic setting as they progressed toward a

deadline for a specified academic task (i.e., college examination). The exam preparation task was

chosen because: 1) exams are the primary way by which student performance is evaluated; and 2) a

large number of students are known to procrastinate on this task (Rothblum et al. 1986).

Rothblum et al. (1986) developed a scale called the *Procrastination Assessment Scale for

Students* (PASS). The PASS assesses one's tendency to procrastinate on a variety of academic tasks,

including exams, and the degree to which this has been a problem. The PASS was used as the main

independent variable in determining the extent to which each student tends to procrastinate for exam preparation.

Based on scores obtained using the PASS (for which 157 provided complete data), 85 subjects (68 females and 17 males) were characterized as nonprocrastinators and 72 subjects (60 females and 11 males) as procrastinators. This does not represent a true median split since each group does not represent 50% of the sample. The interpolated median (Jaccard, 1983) fell between two score categories, therefore the computed median was rounded to the nearest whole number which was then used as the median. The result was two groups that each do not represent 50% of the sample (54% and 45%, respectively).

The Structured Diary

Information about the variables in the process model of procrastination was obtained on a daily basis over a seven day period using a structured diary technique. The structured diary technique is particularly attractive in the context of the present study. The common denominator in all studies of stress, coping, and adaptation is change (Folkman & Lazarus, 1985). People make appraisals when they are facing some stressful situation, and these appraisals are carried out to determine two things: what is at stake for the person and what can be done about it (Folkman et al., 1986). The latter component of appraisal, namely secondary appraisal, involves assessment of the person's coping options available to manage the stress of a particular situation. The appraisal and coping process is constantly changing, it is not static. Reactions to a particular stressor unfold as time progresses. For this reason, multiple measures are of vital importance if one desires to observe these changes. The structured diary method fulfilled the need for the microanalysis of the appraisal and coping process. Thus, there is a close correspondence of the application of a theory and the method that is used to study it (DeLongis et al., 1992).

Observation Period

Ideally, academic procrastination should be assessed from the time a task is assigned until the deadline. This, however, would be difficult to achieve in a practical sense and was not done in this study. For example, exam dates are often announced at the outset of the semester and, theoretically, students may begin studying for an exam (or appraising the situation) starting with the first day of the semester. In terms of this study, an attempt to follow students throughout the entire semester would not have been feasible.

Instead, the time period during which respondents were asked to complete the structured diary was based on the time period used in studies conducted previously in the same area. The college exam "experience" has been the subject of several investigations. In their study of a college examination and stress, for example, Folkman and Lazarus (1985) divided the examination process into three stages: anticipatory, waiting, and outcome. In this case, however, the anticipatory stage, or the period prior to the exam, was only 2 days. Similarly, Lay et al. (1989) examined academic procrastination at three distinct points in time. Stage 1 in their study, however, occurred 7 days prior to the subjects' first exam of the final exam period; stage 2 occurred 1 day prior to the first exam; and stage 3 occurred 5 days after the students' last final exam. Since only the anticipatory stage was of interest in the present study, the observation period began 7 days prior to the specified exam.

Measurement Interval

In the previous section, discussion involved the determination of the time period during which the data were to be collected. The next concern is how frequently measurements were made during that period. Typically, researchers employing the structured diary method have subjects record their responses at the end of the day. There have been, however, studies that required subjects

to record responses at several times during one day. Some of these studies have incorporated electronic beepers to remind subjects that it is time to complete another section of the questionnaire (Larson et al., 1990).

This, however, was not done in this study for several reasons. For instance, the use of the beeper system presents additional costs to the project. These costs could not be met for this study. Furthermore, when it comes to exam stress, it is as yet unclear the degree to which the appraisal and coping process fluctuates within a single day. Intuitively, one may argue that the process will fluctuate since students are repeatedly bombarded with reminders that the exam is coming up. During the day, one may encounter other students in the same class who wish to discuss the task, thereby forcing the person to confront the issue. This may, in turn, act to increase the stress experienced by the student and alter his or her appraisal of the situation and, consequently, motivate either further distancing from the task or a renewed attack.

A second reason for using only one daily recording of responses is that the study represents the first attempt at a microanalysis of the assessment of appraisals and coping among procrastinators. A daily assessment is beyond the time interval that has been used in similar previous studies (e.g., Folkman & Lazarus, 1985; Lay et al., 1989). The study will help determine if further partitioning of this time period is required in future studies. Research has indicated that daily assessments are biased in favor of the most salient events that occurred during the day. In one such study (Hedges et al., 1985), retrospective bias, which daily reporting was intended to avoid, may even have taken place over the course of a single day. In sum, each subject in the present study was asked to complete the diary once a day before going to bed.

Questionnaire Materials

The first instrument assessed procrastination in terms of self-reported tendency to delay as

well as delay that is taking place on the task of interest, i.e., preparation for a particular exam.

Second, instruments designed for the study of stress and coping were used to assess the degree of

psychological distress reported during the exam preparation period.

Procrastination Measure

Solomon and Rothblum (1984) developed the Procrastination Assessment Scale for

Students. The PASS, which contains 18 items, addresses procrastination on six academic tasks:

writing a term paper, studying for exams, keeping up with weekly reading assignments,

administrative tasks, attendance tasks, and general school activities. Three questions were presented

for each task, and responses were given on 5-point scales. For each task, subjects were asked to what

degree they procrastinate (1=never; 5=always), to what degree procrastination is a problem for them

(1=not at all; 5=always), and to what extent they want to decrease their tendency to procrastinate

(1=do not want to; 5=definitely want to). Under each academic task, item 1 (extent of self-reported

procrastination) and 2 (extent to which it presents a problem) are summed. Within a given academic

task, high procrastinators are those with a score from 8 to 10, summed across the two questions

described above.

The PASS measure was designed to determine whether an individual has the tendency to

procrastinate on a variety of academic tasks, including exam preparation. It does not, however, tell

us anything about delay on the present task. Therefore, a more situation-specific measure of delay

was included to assess delay in preparation for this particular exam. Two additional items were used

to obtain a behavioral assessment of delay. These items were later correlated with the PASS in order

to assess the validity of this measure. Prior research has shown that the PASS correlates highly with

behavioral measures, such as self-paced quizzes (Solomon & Rothblum, 1984).

Stress Measure

The Stress Questionnaire (Folkman & Lazarus, 1985) was used to assess students' appraisals in anticipation of an academic task. In its original use, the questionnaire was designed to assess emotions associated with both the anticipatory and outcome stages surrounding a college examination (Folkman & Lazarus, 1985). Since the present study focuses on the anticipatory stage of preparing for a given academic task, only the anticipation version of the questionnaire was used.

Appraisals were assessed in two ways. First, subjects were asked to indicate the reasons why they find the upcoming exam stressful; these represent what is at stake for the individual (i.e., primary appraisal). Subjects were asked to rate each of the possible reasons exams could be so stressful. For example, the reasons include:

1.   "not achieving the grade I want in this class."

2.   "not maintaining my GPA at the level I want."

3.   "appearing incompetent to others."

4.   "jeopardizing my view of myself as a capable student"

Rating were made using a 5 point scale ranging from 0 to 4 (0 = "does not apply", 1 = "applies a little", 2 = "applies somewhat", 3 = "applies a lot", 4 = "applies a great deal").

Second, controllability of the situation and perceptions of abilities (i.e., secondary appraisal) were assessed with the following five items:

To what extent do you think the outcome of the exam depends on:

1.   "seeking information about what the exam was like and what to study"

2.   "how much time and effort you put into studying"

3.   "your general intellectual ability"

4.   "your test-taking skills"

5.   "controlling your anxiety"

Each of these items was answered on a 5-point scale, ranging from one to five, with the choices "not at all," "a little," "somewhat," "quite a bit," and "a great deal," respectively.

For the measure of emotions, subjects were asked how they felt "now" about the upcoming exam. The emotions presented were characterized as threat (e.g., fearful, anxious, worried), challenge (eager, confident, hopeful), harm (e.g., guilty, disappointed, angry), or benefit (happy, pleased, exhilarated, relieved). Responses were given on a 5-point scale and ranging from 0 to 4 (0=not at all, 1=a little, 2=somewhat, 3=quite a bit, 4=a great deal).

Coping Measure

To some degree or another, students must deal with an academic task from the time it is assigned through the final deadline. Coping, as a process, is best studied as actual behavior, within context, and as it occurs over time. As discussed earlier, appraisal and coping as well as procrastination are characterized by change. The Ways of Coping Checklist (WOCC; Folkman & Lazarus, 1985) was used as part of the structured diary to make repeated assessments of coping during the anticipatory stage. The present study assessed coping with the three conditions -- the study of an actual behavior, in context, over time -- satisfied.

The full WOCC consists of 66 items describing options that are most often available for managing stressful situations. In the present study, a revised 60-item form was administered. Certain items which have no particular relevance to academic procrastination were omitted. For example, the coping option "Apologized or did something to make up for it" was eliminated. The WOCC was completed over a week-long period on multiple occasions.

Responses to the WOCC were given on a 4-point scale (with response options "does not apply and/or not used;" "used sometimes;" "used quite a bit;" and, "used a great deal"). For convenience, the response format was altered slightly. Following each item, subjects were asked to

indicate the most appropriate response with a check mark. In previous studies utilizing the WOCC, simple "yes/no" as well as scales ranging from 0 to 3 have been used. Since the WOCC was used as part of the structured diary and the same questionnaire was filled out multiple times, subjects were able simply to proceed through the items and easily check the most appropriate response. Folkman and Lazarus (1985), in their study of college exam stress, factor analyzed the WOCC to create eight subscales. Their analysis resulted in a revised WOCC, since 9 items were eliminated from the analysis due to high skewness and restricted variance (Folkman & Lazarus, 1985). Their analysis reflects scales produced on the 57 remaining items. One scale represented problem-focused coping, six scales represented emotion-focused coping, and one scale represented a mixture of both problem- and emotion-focused coping. The eight scales as described in Folkman and Lazarus (1985) are:

> *Problem-focused coping* (11 items) - This scale includes items that reflect coping strategies that directly deal with and attack the problem at hand. e.g., 'I'm making a plan of action and following it."
> *Emotion-focused coping*:
>> *Wishful thinking* (5 items) - Items in this scale are related to thoughts of the situation being different than what it really is, e.g., "Wish that the situation would go away or somehow be over with."
>> *Distancing* (6 items) - Items that reflect efforts to push the problem away, e.g., "Try to forget about the whole thing."
>> *Emphasizing the positive* (4 items) - Items that reflects efforts to look at the situation in a favorable light, e.g., "I'm changing or growing as a person."
>> *Self-blame* (3 items) - Items that reflect efforts to disparage oneself for what is happening, e.g., "Realize I brought the problem on myself."
>> *Tension-reduction* (3 items) - Items reflect efforts to reduce tension, e.g., "I jog or exercise."
>> *Self-isolation* (3 items) - Items that reflect efforts to separate oneself from others, e.g., "Avoid being with people in general."
> *Mixed problem and emotion-focused coping*:
>> *Seeking social support* (7 items) - Items that reflect efforts to deal with the problem with the help of others or to accept sympathy from others, e.g., "Talk to someone to find out more about the situation."

Behavioral Measure

One of the strengths of the present study is its repeated-measures design. As compared to similar studies, the present one is designed to assess changes that occur throughout the preparatory stage of an exam and does not rely on a single one-shot measure as a way to examine an ongoing process. Since stress, appraisal, and coping are being measured repeatedly, some measure of delay is also necessary to assess this pattern over time as well. Therefore, two items were included to address this particular issue.

One item was included that asked if subjects studied for the upcoming exam at all in the past 24 hours, to which subjects responded either yes or no.. A second item asked subjects to estimate the amount of studying (as a percentage) they felt they still need to do before the exam.

Procedure

The initial questionnaire was presented to each class participating in the study. All students who wished to participate were given the initial questionnaire containing the PASS. Following completion this questionnaire, students were told that a study was being conducted on college life and stress, and that participation would include completing a questionnaire once a day for one week. Once participation was secured, subjects were given a package containing full instructions and a structured diary. Students were asked to bring the completed questionnaires to class with them the following week. The structured diary was in booklet form so all questionnaires were returned together. In the instructions presented to the subjects, two main points were stressed: 1) that when responding to all questions they should refer to the upcoming paper/exam in the class in which they received the questionnaire packet, and 2) that for each daily questionnaire, responses should be given that apply to how they felt and what they were doing during that particular day.

CHAPTER 3

RESULTS

PASS Statistics

General vs Exam Procrastination

The PASS measured general academic procrastination in six different areas of academic life,

including exam preparation. In the present study, the event that was studied was a college exam,

therefore the level of specificity of the PASS was too broad. Items related to other academic areas

may present construct validity problems since we were interested only in the college exam.

Therefore, before dropping the items related to other academic areas, like writing terms papers and

registering for classes, the exam-specific items were correlated with the remaining general academic

procrastination items. There was a moderate correlation, $r=.45$, $p<.001$, between exam

procrastination and general academic procrastination. Next, to determine which academic task(s)

exam preparation was specifically related to, all of the PASS items were subjected to factor analysis.

This analysis yielded 4 factors, with exam preparation items and term paper preparation forming one

of the factors. Those who tended to procrastinate exam preparation also tended to procrastinate on

term paper writing. Does this information add anything to the definition and measurement of exam

procrastination? That is unclear. However, since subjects are asked to report cognitions, feelings,

and behaviors that relate directly to an upcoming exam, it was decided that only those items directly

related to exams would comprise the exam procrastination score derived from the PASS.

Prevalence of Procrastination

Results from the first of the two exam procrastination items revealed prevalence rates similar to those reported in Solomon and Rothblum (1984). Of the 157 students providing complete data, 39.5% reported "nearly always/always" procrastinating on exam preparation. Almost half (42.0%) reported "sometimes" procrastinating, and 18.4% reported "almost never/never" procrastinating (see Table 1).

Results of the second exam item, procrastination as a problem, were similar. Almost 34% reported exam procrastination as "always a problem," 40.1% reported it as "sometimes" a problem, and 26.1% reported exam procrastination as "almost never/never" a problem (see Table 2).

The Behavioral Component of Procrastination

A primary component of procrastination is behavioral delay. Subjects answered two study behavior items which were used to determine whether procrastinators and nonprocrastinators showed the same patterns of studying in terms of: 1) days that they studied and 2) rate at which they got through the material.

First, subjects were categorized using a median-split of the exam procrastination score. Then for each day of the week the proportion of each group that studied was obtained through a series of cross-tabulations, the results of which are summarized in Figure 2. Then for each day of the week the mean percentage of studying that remained for each group was obtained and summarized in Figure 3.

The procrastinators tended to report slightly less studying, but the difference was not significant. The patterns for both groups were similar, starting at less than 50% on days 1 and 2 and steadily increasing to over 90% by day 7. For each day of the week a Chi-square analysis was

conducted and none of the results were significant, all $\chi^2 < 2.10$, $p > .14$. In summary,

procrastinators did not report studying any less than low procrastinators and they did not, as a group,

exhibit a delay in the onset of studying.

The second behavior-related item asked students to estimate the amount of exam preparation

they had remaining at the end of each day. The two groups displayed similar patterns of study rate as

the week progressed (see Figure 3). While procrastinators tended to report having more studying

remaining each day (even on the last day), the difference was not significant.

It should be pointed out that the behavioral items used here were very limited in scope. For

example, one student's idea of studying could have been very different from another's. Simply

responding "yes, I studied today" does not reveal the quality of studying. Quality of study becomes

an important issue when dealing with procrastination. As discussed earlier, procrastinators' study

behaviors may sometimes be characterized by perseveration. Studying may be continuing on

material that is less demanding, or the procrastinator may be doing tasks, such as note-taking, that

are less demanding and do not involve actively studying the material and committing it to memory.

In addition, there may have been a socially desirability element involved. Despite

reassurances that instructors would not see their answers, students may have been motivated to say

they studied even if they did not.

Methodologically speaking, the fact that a median split was used results in some information

being lost. Sensitivity of the measure is compromised; the split results in those near the median

being more like each other than those at the extremes thereby attenuation group differences.

The Intrapersonal Correlates of Procrastinators

As seen above, the self-reports of study behavior did not provide any information that would

help distinguish procrastinators and nonprocrastinators. This section presents the results of

correlational analyses that looked for a relationship between procrastination and internal, psychological factors.

To examine the procrastination experience in terms of what students may be thinking, feeling, and doing, the exam procrastination scores were used in their original form as a continuous variable and correlated with measures of these constructs. Scores for each of the measures were averaged across the seven days of the measurement period. In this way, day to day changes were not examined, rather the average responses given over the entire 7-day period.

Exam Ratings

Subjects completed items that pertained to different ways in which students may "rate" an upcoming exam: confidence in studying, perceived exam difficulty, and expected exam grade (see Table 3). Correlations of exam procrastination with confidence, $r = -.43$, $p < .001$, and expected grade, $r = .28$, $p < .001$, were significant (for expected grade, higher grades were coded with lower numbers, and vice versa). Higher levels of exam procrastination were related to lower levels of confidence in preparing for the upcoming exam. Exam procrastinators also tended to think they would do worse on the upcoming exam. The correlation between procrastination and difficulty was not significant.

The interesting thing here is that the largest correlation is with confidence, a rating that may be considered more subjective than the other two exam ratings. Difficulty, for example, is more indicative of the material studied and how it will be asked on the exam and not how I feel about myself. Expected grade on the exam probably includes subjective and objective assessments: a combination of how I think I will do, how the teacher grades the exam, and exam difficulty. In sum, difficulty and grade relate to one's feeling about the exam, whereas confidence relates to one's self-perception of ability.

Primary Appraisal

Cognitive appraisals involve reasons why a student may think an exam is stressful (see Table 4). Those who had a tendency to procrastinate exam preparation also tended to feel the exam posed a risk to their view of self, $r = .23$, $p < .01$, and was a risk to the grades they wish to be achieving, $r = .25$, $p < .01$. Interestingly, the correlation between self and grades is also significant, $r = .54$, $p < .001$. Appraisals having to do with risks to one's resources and future opportunities were not significantly related to procrastination.

Perhaps the self and grade appraisals are viewed as more immediate or proximal, thereby posing greater relative risk than risk to resources and opportunity. The latter two risks are not as likely (e.g., risk to physical health) since they are more global or far reaching scenarios upon which one specific exam may not have a big effect (i.e., risk to scholarship and financial aid). It should be noted, however, that persistent exam procrastination may eventually lead to perceived risks in these two areas. That issue was not examined in the present study.

Emotion

Exam procrastinators tended to report feelings more associated with negative emotions, $r = .43$, $p < .001$. There was no relationship, however, between procrastination and positive emotions (see Table 5). The latter result presents an interesting occurrence. Apparently, procrastination may be more related to the production of negative feelings and less related to the suppression of positive feelings. In other words, procrastinators may report no less positive feelings than non-procrastinators, but they do indeed report experiencing more negative feelings.

Coping

Exam procrastination was related to emotion-focused coping strategies (see Table 6). Exam

procrastination was correlated with wishful thinking, $r = .35$, $p < .001$, detachment, $r = .31$, $p < .001$, social support, $r = .24$, $p < .01$, and self-blame, $r = .38$, $p < .001$. Interestingly, there was no relationship between procrastination and problem-focused coping. Intuitively, it makes sense that procrastinators would not be attacking the problem, thus resulting in a negative correlation with problem-focused coping. The results from the behavioral measures, however, indicate the possibility that procrastinators do study; it is the quality of the studying that is unknown. As with emotions, procrastination may not be about the suppression of positive coping behaviors as much as it is about the simultaneous reliance on negative ones. Despite the use of emotion-focused types of coping as an effort to psychologically distance oneself from the stressor, procrastinators have still been shown to be more likely to experience negative emotions vis a vis the upcoming exam.

<div align="center">Stress</div>

Exam procrastinators tended to report higher levels of stress related to preparation for the upcoming exam, $r = .38$, $p < .001$. In general, procrastinators tended to report feeling more stressed about preparation for the upcoming exam as compared to nonprocrastinators.

In terms of the stress literature, procrastinators tend to demonstrate a disturbed person-environment relationship or transaction. Preparation for the upcoming exam taxes or exceeds their resources (Lazarus, 1990). The higher levels of stress reported by procrastinators are not surprising since they also reported greater risks, negative emotions, and reliance on emotion-focused coping.

To examine the differences in stress for procrastinators and nonprocrastinators even further, a correctional analysis of stress with exam ratings, appraisals, coping, and emotions was conducted separately for each of the groups. Overall, the correlations for the two groups are similar across measures regardless of group membership. On most variables the groups are similar in direction or "sign" of the correlations except for one set of variables. Positive emotions are correlated positively

with stress for nonprocrastinators but negatively correlated with stress for procrastinators. For both groups, the presence of stress is associated with negative emotions as evidenced by the high positive correlations for both groups. However, nonprocrastinators tended to report elevated stress along with elevated positive emotions ($r=.26$, $p<.05$), whereas the procrastinators tended to report elevated stress along with lower positive emotions ($r= -.20$, $p<.10$). The significance of the latter correlation is marginal, but the direction of the correlation is negative while the correlation for the other group is positive.

We cannot address the causal relationships between stress and positive emotions for the two groups: does stress lead to increased positive emotion in nonprocrastinators, or do positive emotions lead to increased stress? For now, we can only say that the two exist together for nonprocrastinators. For procrastinators, does stress reduce positive emotions, or do positive emotions reduce stress?

Procrastination as a Process

Results presented earlier did reveal a relationship between one's tendency to procrastinate on exam preparation and intrapersonal factors such as cognitive appraisals when averaged across the 7 days. Profile analysis was conducted so we could account for time using each of the 7 measurement points to examine the dynamic nature of exam preparation. Did the subjects' cognitions change during the 7 day period? Did this change occur for one or both groups?

The analyses were conducted on the exam rating and primary appraisal items. It would be impractical to analyze the relationship (over time) between procrastination and all of the intrapersonal factors. Exam ratings and primary appraisals were examined for several reasons. First, the analyses are presented as an example of one way to assess the stress and coping process; it was neither meant to represent the definitive method nor to be a test of the entire model. Instead, the goal was to test a piece of the model using a repeated measures design, which has not been done

before. Second, exam ratings and appraisals were chosen as they are informative of the rest of the process. Appraisals are the first step of the stress and coping process and from the theory we know that other intrapersonal patterns arise from these cognitions.

Profile analysis is used to conduct three tests on the data: 1) parallelism test, 2) levels test, and 3) and flatness test (Clement, 1989). The **parallelism** test assesses whether or not the two groups have the same response profiles over the 7 days. In other words, do procrastinators and nonprocrastinators show the same pattern of responses on a given measure over the 7 days they were studied? The test will reveal the presence of a time-by-group interaction and it is the primary test of profile analysis (Tabachnick & Fidell, 1989). The null hypothesis for this test is that the response profiles are parallel. The **levels** test assesses whether or not one group scores higher, on average, than the other group. In other words, when averaged across the 7 days, do procrastinators and nonprocrastinators differ in their response on a given measure? This is the test of main effect for group. The null hypothesis for this test is that, on average, the groups have the same response mean. The **flatness** test averages the scores across groups and assesses change in scores over time. In other words, when collapsing across group, are the responses similar for the 7 days? The null hypothesis for this test is that the response profile is flat across the 7 days (the averaged responses for the two groups are the same from day 1 to day 7). The flatness test is achieved by a series of univariate tests examining line segments that are formed by using each of the measurement points as the endpoints of the segments. Thus, for the 7 day measurement period, six separate segments are created and six separate F statistics are provided when the analysis is run using SPSS. For the flatness test, only significant results are reported below.

<div align="center">Confidence</div>

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, F

(6,110) = 1.51, p < .18. Therefore, the response profile for the two groups was parallel throughout the 7 days. The levels test of the group effect did show a significant effect of procrastination, F (1,115) = 16.8, p < .001. As a main effect shows, the difference between the two groups was consistent across the seven days: from day 1 to day 7, procrastinators had lower confidence about the upcoming exam than the nonprocrastinators. The test of flatness failed to show that the averaged response mean for the two groups deviated significantly from flatness.

Difficulty

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, F (6,109) = .69, p < .66. Therefore, the two groups exhibited similar, parallel response profiles on the difficulty measure from day 1 through day 7. The levels test for the group effect did not show a significant effect of procrastination, F (1,114) = 1.26, p < .26. The two groups, when responses were averaged across days, were not significantly different. The test of flatness also failed to reject the null hypothesis which means that the mean scores for each day, averaged across groups, was the same from day 1 through day 7.

Expected Grade

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, F (6,110) = .81, p < .56. Therefore, the two groups exhibited similar, parallel response profiles on the expected grade measure from day 1 through day 7. The levels test for the group effect was significant, F (1,115) = 11.73, p < .001. The two groups, when responses were averaged across days, were different with nonprocrastinators expecting a better exam grade than procrastinators. The test of flatness failed to reject the null hypothesis showing that the group mean scores were similar for day 1 through day 7.

Primary Appraisal: Grades

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, F (6, 113) = 1.54, p < .17. Therefore, the two groups exhibited similar, parallel response profiles on the appraisal of grades measure from day 1 through day 7. The levels test, which examined the group main effect, was not significant, F (1,118) = 2.97, p < .09. The two groups were not significantly different when their responses were averaged across the 7 days. The test of flatness showed, when averaged across groups, that the response profile deviated significantly from flatness between days 4 and 5, F (1,118) = 6.75, p < .011.

Primary Appraisal: Self

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, F (6,113) = .66, p < .68. Therefore, the two groups exhibited similar, parallel response profiles on the appraisal of self measure from day 1 through day 7. The levels test, which examined the group main effect, was not significant, F (1,118) = .53, p < .47. The two groups were not significantly different when their responses were averaged across the 7 days. The test of flatness showed that there was no significant differences in the responses from day 1 through day 7 when averaged across groups.

Primary Appraisal: Resources

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, F (6,113) = 2.03, p < .07. Therefore, the two groups exhibited similar, parallel response profiles on the appraisal of resources measure from day 1 through day 7. The levels test, which examined the group main effect, was not significant, F (1,118) = 2.34, p < .14. The two groups were not significantly different when their responses were averaged across the 7 days. The test of flatness showed no significant differences in the responses from day 1 through day 7 when averaged across

groups.

Primary Appraisal: Opportunity

Using Wilks' criterion, we failed to reject the null hypothesis for the parallelism test, $F (6,113) = 1.19$, $p < .31$. Therefore, the two groups exhibited similar, parallel response profiles on the appraisal of opportunity measure from day 1 through day 7. The levels test, which examined the group main effect, was not significant, $F (1,118) = .50$, $p < .48$. The two groups were not significantly different when their responses were averaged across the 7 days. The test of flatness showed no significant differences in the responses from day 1 through day 7 when averaged across groups.

Emotion, Coping, and Stress

Emotion, coping, and stress were also examined via profile analysis. Initially, we were mainly interested in appraisal-related measures but as a pattern emerged for a consistent main effect for group, additional analyses were conducted on the remaining measures.

For most of the measures, there was no significant interaction of group with time (days). The results for an interaction for positive emotions did, however, approach significance, $F(6,101)=1.85$, $p<.10$. Inspection of the plotted means for the two groups revealed a decrease in positive emotions for nonprocrastinators between days 3 and 4. At day 4, the level of positive emotions for nonprocrastinators was almost the same as the level for procrastinators. After day 4, however, positive emotions increased again. The level of positive emotions reported by non procrastinators were never lower than the level for procrastinators, and when averaged across the seven days, there was a main effect for group despite the decrease in the middle of the week,

F(1,106)=2.85, p<.10.

A group effect was observed for all measures except problem focused coping and self-blame coping. Procrastinators consistently reported higher levels of negative emotions, stress, as well as wishful thinking, distancing, emphasizing the positive, tension reduction, self-isolation, and seeking social support coping strategies. As mentioned earlier, nonprocrastinators reported higher levels of positive emotions, the only measure on which they were higher than the other group, throughout the seven days.

CHAPTER 4

DISCUSSION

Overview

Take two people and expose them to the same stressful situation. The present study, in

agreement with previous research, demonstrates that different people do not react the same way to a

single stressor. This reaction is not always manifested as an observable behavior or tangible

outcome, as the results showed. This is especially true when relying on self-reports of behaviors.

The reaction can, however, be detected in one's cognitions, emotions, and perceptions related to the

stressor. In the present study, students with a tendency to procrastinate were found to experience

greater negative appraisals as compared to those who did not tend to procrastinate as they prepared

for an upcoming exam. From this they also tended to generate greater negative emotions and were

more likely to rely on coping strategies that took them away, both physically and emotionally, from

the task. As if this was not bad enough, the pattern of negative appraisals and expectations was

detected as early as, and often persisted for, seven days before the exam took place. Perhaps the

most compelling finding is that procrastinators did not diverge significantly from this pattern as the

exam got closer.

Procrastination and Appraisal

The meaning assigned to an event is produced within the individual in the form of cognitive

appraisals. On average, individuals reporting that they had a tendency to procrastinate when

studying for exams appraised an upcoming college exam more as a "risk to self" and a "risk to grades" than did nonprocrastinators. This is an important finding for several reasons. First, consider the role of appraisal in the stress and coping process as described by Lazarus and his colleagues (e.g., Lazarus, 1990; Lazarus & Folkman, 1985). Cognitive appraisals serve to prepare the student for the stressful encounter, serving to help the individual "arm" him or herself for the situation in which they find themselves. In the case of the procrastinating student, the assessment of the situation as threatening to oneself will likely lead to other cognitions and, subsequently, emotions that will make it difficult for him or her to tackle the task. In other words, according to the Lazarus stress and coping model, the procrastinators' appraisals will likely lead to a limited view of options and resources available for dealing with the task.

Second, the data from the present study revealed that the cognitions formed early on in the transaction, as early as seven days before the exam in this case. Procrastinators had an entire week to form, and further reinforce, an appraisal that proved to ultimately result in the generation of negative emotions. This was revealed in the profile analysis to be the case for exam ratings, where procrastinators reported having consistently lower levels of confidence and lower expected grade ratings throughout the entire 7 days prior to the exam.

In sum, this appraisal pattern existed from day 1 to day 7 of the measurement period. Potentially, this appraisal of the situation prevented high procrastinators from taking action throughout the entire period. Even if procrastinators had taken action in the later days of the period, a subsequent change in these exam ratings was not observed.

It may be that these students have a predisposition to react to exam situations in this way. It should be remembered that for procrastinators negative appraisals were at heightened levels at day 1 and could have been that way well before the measurement period began. These students appeared to have brought these things with them into the situation. It may be that they react in this way for any

exam and this "cognitive set" kicks in around exam time.

Procrastination and Emotion

As mentioned above, following the appraisal of the situation procrastinators were found to experience significantly higher levels of emotions related to threat as compared to low procrastinators. As explained by Folkman and Lazarus (1985):

> Emotions are...of tremendous diagnostic value, because their intensity and quality reveal how people think they are managing what is important to them in any particular context.

Clearly, the procrastinators in this study were troubled by the task with which they were faced, as indicated by the correlations of procrastination and negative emotions. In this particular context, what the procrastinators thought about their situation clearly affected the way they felt about the situation. Their feelings were associated more with negative emotions as compared with the emotions reported by nonprocrastinators. The increase in negative emotions did not result in the reduction of positive emotions, as one may expect. There was no correlation between procrastination and positive emotion. Here the key is not the absence of positive emotions but a surplus of negative emotions for procrastinators.

Procrastination and Coping

From our life experiences, we know that procrastination enables us to be removed from a task, emotionally if not physically. Since the task usually does not magically "disappear," what the procrastinator changes is not the stressor per se, but rather his or her relationship with the stressor. The results from the present study show that as the students procrastinated they did, in fact, rely more on strategies that removed them emotionally from the task, a task that, nevertheless, still existed despite their efforts.

Throughout the seven-day period, procrastinators reported relying more on emotion-focused types of coping. This type of coping tends to bring the individual further from the things that need to be done in order to complete the task.

Procrastination and Stress

A strong association was observed between stress and procrastination, with procrastinators exhibiting a tendency to report elevated stress when averaged across the seven day period. Further analysis yielded an interesting pattern for stress and other variables when analyzed separately for the two groups. The correlations for stress and the other variables showed that (1) some things (e.g., exam difficulty, expected grade, negative emotions) are more highly related to stress than others, and (2) these correlations are about the same for both procrastinators and nonprocrastinators. This is true for all the other variables except positive emotions. Interestingly, nonprocrastinators tend to associate stress with positive emotions whereas procrastinators were more likely to associate decreased positive emotion with stress. It is this association that sets the two groups apart; the presence of positive emotion during a stressful encounter may give nonprocrastinators a way to counter the negative emotions that are produced concurrently. In sum, positive emotion may protect nonprocrastinators from the potential detrimental effects of negative emotions.

The Dynamic Nature of Stress

Results of the present study failed to provide convincing evidence that the stressful encounter is a dynamic, unfolding process. Previous studies on stress and the college exam (e.g., Folkman & Lazarus, 1985) viewed a stressful encounter as a dynamic and changing process. It therefore was anticipated that as the exam day approached, changes would be observed in how much and how often subjects studied as well as changes in some of the intrapersonal indicators we looked

at, such as exam ratings and primary appraisals.

So why, then, did this study not support this previous finding? There are several possible explanations. Previous studies, upon which the dynamic nature of stress is supported, measured stress and coping once or twice when students were in the exam preparation or anticipatory phase. After the exam was completed they were assessed again and it was these pre- and post-exam assessments that were compared. Once the stressor was removed (i.e., the exam completed) the relationship, by definition, changed. The student could, once finishing the exam, resume "normal" activities and not deal with the situation until the next exam.

With this in mind, the fact that no significant change was observed during the exam preparation period in this study is of some interest. Students may be "locked in" to a pattern of cognitions, feelings, and coping until after the exam is completed. Perhaps the dynamic aspect of stress and coping reveals itself only when one compares the intrapersonal experiences first when the stressor is present and then again when the stressor is removed.

From Inaction to Action

The literature has been able to describe the behavioral patterns of the procrastinator as an exam approaches. For example, Silver (1974) discussed the idea that an individual may work at a task and perseverate when they reach a point that requires increased cognitive effort. At this point, when stress becomes too great, they become "paralyzed" when it comes to working on that particular task. Conversely, when one reaches the point to where they must begin or else they will not finish the task, they spring into action and, in the case of the college student, may pull an "all-nighter" to prepare for the exam. Based on this, one would expect to see patterns of behaviors other than the ones that were observed here. Both groups showed similar behavior patterns throughout the entire period and no evidence to support an "inaction to action" hypothesis. Again, in the examination and

definition of procrastination, we have to distinguish between the quality and quantity of preparation that students report. Future research in the area may benefit from looking more closely at how procrastinators study. It may simply not be sufficient to ask subjects when and how much studying they may have done, as evidenced in the results of the present study. It is difficult to get reliable self-reports on behaviors that the subjects know they should be doing.

The "Successful" Procrastinator

The focus of the present study was clearly on the experiences of the college student during the preparation phase of an exam and not so much on outcome, i.e., grade on the exam. It should be recognized, however, that there are successful procrastinators, those who excel on exams despite behaviors that potentially may lead them to failure.

Instead, of interest here were the personal costs incurred by the procrastinator in terms of cognitions produced, feelings generated, and coping strategies used in response to the situation. Many people are able to thrive under these conditions ("I work best under pressure!") in terms of grades or simply completing the task. However, the present research shows that procrastinators experienced decidedly more negative cognitions and feelings than those who do not procrastinate. Therefore, mere exam performance or task completion may tell only part of the story of how a student is doing.

Strengths of the Study

Since cognitions, emotions, and perceptions are not tangible, these reactions must be studied by methods other than direct observation. The present study utilized a paper-and-pencil approach in the form of the structured diary. This approach provided several important advantages. First, multiple measurements in a naturalistic setting were possible over the study period. In this way it

was not necessary to have the students return to the lab each day in order to report what they were experiencing, a procedure that would have been inconvenient and time consuming. The diary approach, therefore, enabled the subjects to record experiences in close proximity to when they lived them. Which brings us to a second advantage. The naturalistic setting of the study enabled the procrastination phenomenon to be studied in a meaningful way and approaches what Aronson and Carlsmith (1968) described as "mundane realism." In this case, the "real world" was the college student in an exam preparation situation and that is exactly where they were studied. In fact, not only were the subjects followed throughout a real-life experience, but the fact that a sample was taken from the actual population of interest (i.e., college students) should also be noted. Today, many studies are conducted on college campuses and external validity suffers because results serve as a proxy for those using a sample from the general public. This has long been an issue that researchers have had to address but it was not a factor in the present study.

Perhaps the strengths of the study design can be further highlighted by considering what may have occurred had this design not been used. Had a one-shot paper-and-pencil approach been used, we would not have known what was experienced before or after the single measurement point. Data collected with a one-shot questionnaire administration, on the other hand, typically relies more on how a subject responds at one specific moment in time. What was gained from the multiple measurements was the knowledge that procrastinators, as early as seven days prior to the exam, experienced elevated feelings of threat. Furthermore, we were able to show that this pattern did not deviate significantly even as the exam approached and students began studying.

Limitations of the Study

One of the limitations of the study is, ironically, inextricably linked to its major strength. As is the nature of self-reported data, it is impossible to isolate the experiences students are being asked

to report. Their conceptualization of their experience is affected by factors beyond the control of the experimenter.

An additional trade-off when using the structured diary is that subjects are left unsupervised when recording their experiences at the end of each day. The researcher needs to trust that the subjects are completing the diary the way it was intended. This along with the fact that procrastinators were being studied here presents the possibility that some students completed the entire diary on the night before it was to be returned. It is feasible that the procrastinator's all-nighter included finishing the diary. To safeguard against this as much as possible, clear instructions were provided at the outset of the study and suspicious looking diaries were pulled out of the sample. Those that appeared to have been completed in a very similar fashion for each of the days (in terms of responses given, handwriting, and similarity of writing/ink) were not included in the analysis.

It must be remembered, in addition, that the results reflect changes from day to day. It is possible, as was discussed earlier, that a student experienced changes within each day. While the diary may not provide the most sensitive form of measurement with respect to changes that occur within each day, this approach is always better than a one-shot assessment of what students may be experiencing. Among other difficulties when conducting a one-shot measurement is deciding where the one-shot measurement would occur. In studies that involve processes that may change over time, the risk is always there of creating an incomplete picture of the phenomenon. In the present study, the structured diary was invaluable in determining that procrastinators did not diverge from their pattern of thinking even as the exam approached and they began to study.

Due to limitations of time, subject availability, and resources, many studies today rely on self-reported information using samples of college students enrolled in a psychology course. The data collected in this study was self-reported and is subject to recall error and self-presentational censorship on the part of the subject.

Construct Validity

One construct validity issue is that of the definition of procrastination. Specifically, one of the dependent measures, coping, may be highly related to procrastination and, in fact, can be viewed as either a cause or a type of coping. I would offer this important distinction. In the present study, procrastination is dealt with as a recurring condition that students experience when they face an upcoming exam. It is this that identifies them as procrastinators and not the specific actions taken in this particular situation as determined by their responses to a coping checklist.

Conclusions and Implications

Evidence has been presented here that shows procrastinators experience strong negative and potentially threatening cognitions when faced with an upcoming exam. These cognitions, in turn, lead to a cycle of thoughts and behaviors that take one away from the task at hand. It is possible that procrastinators would benefit if these cognitions are targeted and modified early in the studying process. According to the Lazarus model, if more positive and challenge-related cognitions can be generated early on in the stressful encounter then there is an increased likelihood that these will lead to positive emotions and to coping that will result in the task being tackled.

The familiar slogan "Just Do It" may be good enough for some, but advice of this sort does not take into account the intrapersonal cognitions and emotions experienced by the procrastinators. These thoughts and feelings are the ones that are hindering the student from changing the stressful encounter in a psychologically meaningful and productive way. With this in mind, an alternative slogan could be, "Just Think it, Feel it, and Do it."

Future Directions for Research

The present study focused on the intrapersonal cognitions and emotions experienced by

college students during exam preparation. Two possible directions for research may include: (1) how to alleviate the intrapsychic consequences of procrastination, and (2) the examination of procrastination in social settings.

Common procrastination "remedies" found in self-help books call for changes in the way people do things (e.g., making a "to do" list, prioritizing tasks). The present study has provided evidence for the fact that not only do people need to change the way they do things, but also need to change the way they think about and perceive what they do. Research focusing on combined cognitive-behavioral approaches to reducing procrastination may not only prevent the behavior but also maintain cognitions (e.g., promoting adaptive "challenge" appraisals) associated with getting things done. In this way, the person-situation transaction will be redefined from the inside out.

Future research may also turn from the intrapersonal realm and consider the effects of stress and procrastination on interpersonal relations. For example, relations can be examined using a social comparison framework to determine the type of comparisons procrastinators may rely on when in the stressful encounter. Do procrastinators look towards others who are procrastinating to make them feel better? Do they look toward non-procrastinators for encouragement and inspiration? The mutual effects procrastination and social factors may have on each other would give a more comprehensive view of what the procrastinator experiences in the real world.
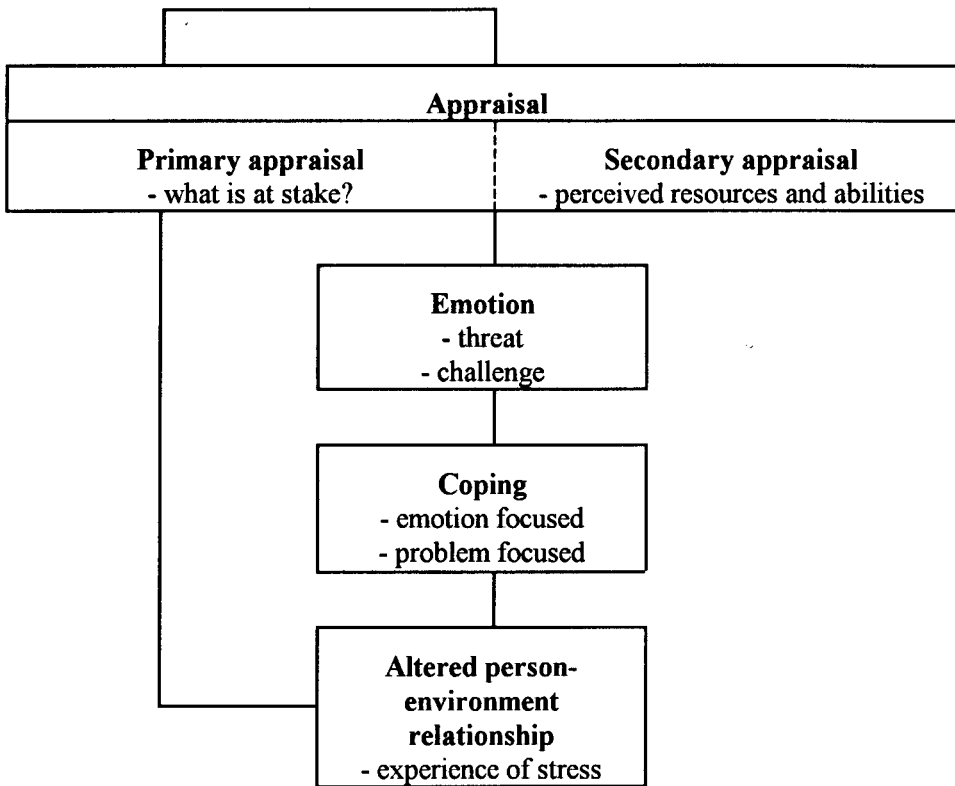
APPENDIX A

FIGURES

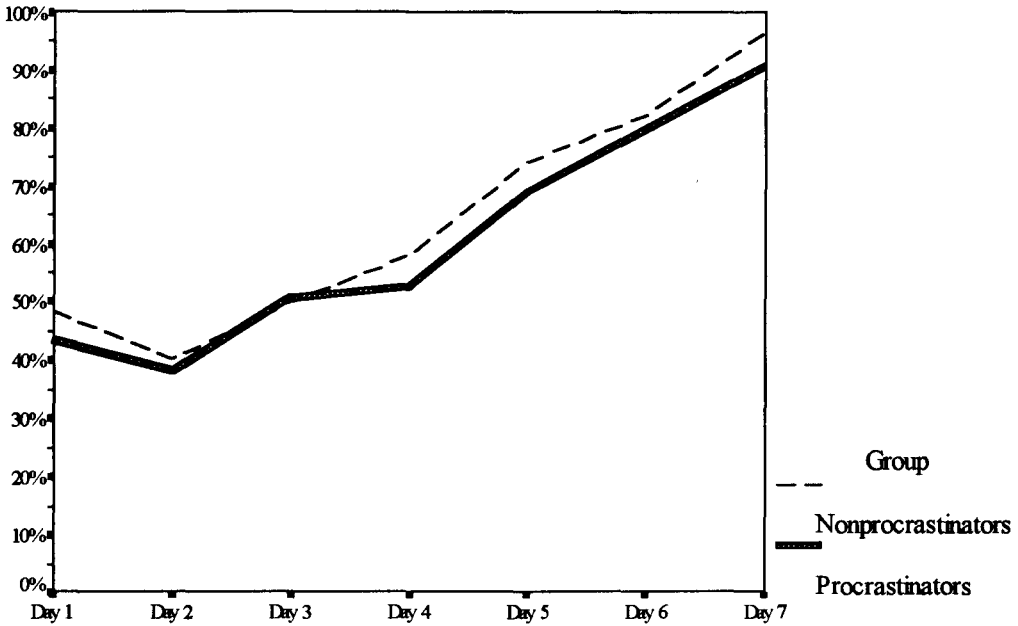Figure 1. A graphic representation of the stress, appraisal and coping process

Figure 2. A graphic representation of the percentage of subjects who studied each day
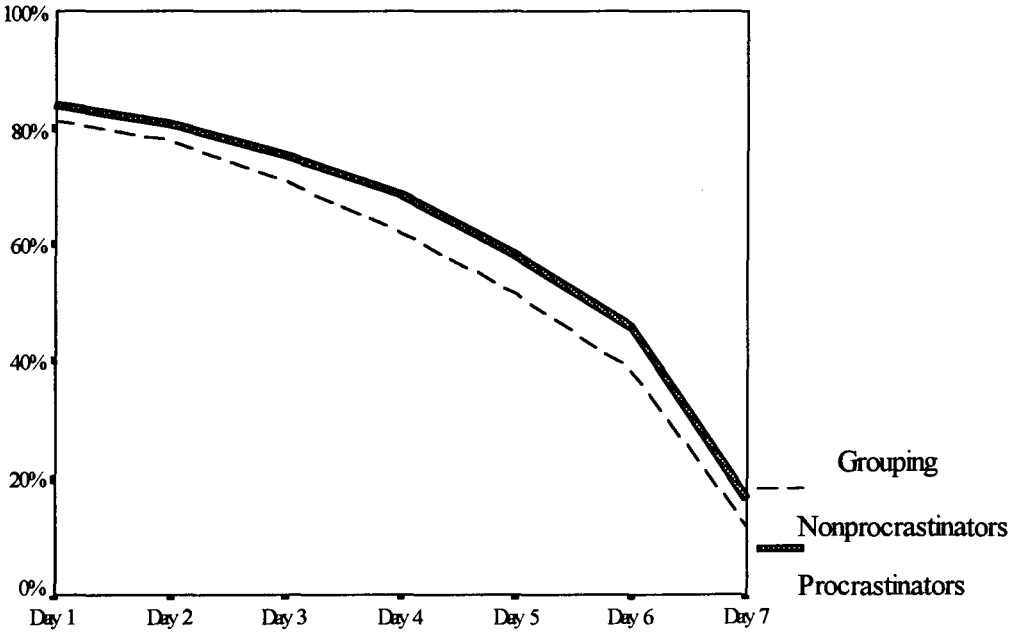

Figure 3. A graphic representation of the amount of studying that remained each day

APPENDIX B

TABLES

TABLE 1. Prevalence of exam procrastination tendency in sample

To what degree do you procrastinate?	N	Percent
never procrastinate	4	2.5
almost never	25	15.9
sometimes	66	42.0
nearly always	46	29.3
always procrastinate	16	10.2

Valid cases   157
Missing cases   14

TABLE 2. Degree to which exam procrastination considered problematic

To what degree is this a problem for you?	N	Percent
not at all a problem	5	3.2
almost never	36	22.9
sometimes	63	40.1
nearly always	35	22.3
always a problem	14	11.5

Valid cases   157
Missing cases   14

TABLE 3. Correlations: Exam procrastination with exam ratings

	Difficulty	Confidence	Expected grade
Exam procrastination	.10	-.43**	.28**
Difficulty		.08	.49**
Confidence			-.28**

** p < .001

TABLE 4. Correlations: Exam procrastination with primary appraisal

	Self	Grade	Resources	Opportunity
Exam procrastination	.23*	.25*	.14	.05
Self		.54**	.36**	.51**
Grade			.17	.52**
Resources				.17
Opportunity				

* p < .01
** p < .001

TABLE 5. Correlations: Exam procrastination with emotions

	Positive	Negative
Exam procrastination	-.14	.43**
Positive		.15

** p < .001

TABLE 6. Correlations: Exam procrastination with coping

	Wishful thinking	Distancing	Emphasize positive	Tension reduction
Exam procrastination	.35**	.31**	.24*	.38**
Wishful thinking		.65**	.66**	.76**
Distancing			.57**	.50**
Emphasize positive				.61**

* p < .01
** p < .001

TABLE 7. Correlations: Stress with exam ratings, appraisal, coping, and emotions stress for nonprocrastinators and procrastinators

	Nonprocrastinators	Procrastinators
EXAM RATINGS		
Confidence	-.30**	-.36*
Difficulty	.75***	.68***
Expected Grade	.48***	.35*
APPRAISALS		
Self	.37***	.54***
Grade	.57***	.58***
Opportunity	.32**	.25*
Resources	.39***	.24*
COPING		
Problem focused	.38**	.33**
Wishful thinking	.44***	.47***
Distancing	.25*	.35**
Emphasize positive	.33**	.26*
Self-blame	.20*	.24*
Tension-reduction	.51***	.47***
Self-isolation	.26*	.20*
Seeking social support	.29**	.38**
EMOTIONS		
Negative	.65***	.71***
Positive	.26*	-.20*

* $p < .10$
** $p < .01$
*** $p < .001$

APPENDIX C

MATERIALS

Year: Fr So Jr Sr

Sex: M F

Age: _____

SS#: ___ ___ ___ ___
(lastfourdigits)

SEVEN DAY DIARY
Fall 1992
Loyola University of Chicago
Department of Psychology
Stephen Serio
(312) 262-6170

STRESS QUESTIONNAIRE

Take a few moments and think about the upcoming exam in this course. We are interested in your thoughts, feelings, and behaviors regarding this exam. Please answer the following questions keeping this exam in mind.

1. How difficult do you think this exam will be? (Please circle the appropriate letter.)

Not at all difficult	A little	Somewhat	Quite	Extremely difficult
1	2	3	4	5

2. What letter grade do you expect to get on this exam? (Please circle the appropriate letter.)

A   B   C   D F   P   NP

3. Below is a list of reasons why exams can be so stressful. Please indicate below how much each item applies to you by circling the appropriate number.

	Does not apply	Applies a little	Applies somewhat	Applies a lot	Applies a great deal
In this exam there is the possibility of:					
a. not achieving the grade I want in this class	0	1	2	3	4
b. not maintaining my GPA at the level I want	0	1	2	3	4
c. appearing incompetent to others	0	1	2	3	4
d. jeopardizing my eligibility for a scholarship, fellowship or financial assistance	0	1	2	3	4
e. jeopardizing my view of myself as a capable student	0	1	2	3	4
f. losing the approval or respect of someone important to me	0	1	2	3	4
g. having to take time to study that is badly needed for other purposes	0	1	2	3	4
h. harm to my physical health	0	1	2	3	4
i. other_____ _____	0	1	2	3	4

3A. If more than one item in the above question applies in this situation, which one applies the most? (Please circle the appropriate letter.)

a   b   c   d e   f   g   h   i

4. As best as you can, tell us how you are feeling <u>now</u> about this exam. (Please circle the appropriate number for each item.)

	Does not apply	Applies a little	Applies somewhat	Applies a lot	Applies a great deal
a. angry	0	1	2	3	4
b. jealous	0	1	2	3	4
c. worried	0	1	2	3	4
d. challenged	0	1	2	3	4
e. exhilarated	0	1	2	3	4
f. sad	0	1	2	3	4
g. threatened	0	1	2	3	4
h. disappointed	0	1	2	3	4
i. secure	0	1	2	3	4
j. harmed	0	1	2	3	4
k. confident	0	1	2	3	4
l. in control	0	1	2	3	4
m. fearful	0	1	2	3	4
n. pleased	0	1	2	3	4
o. guilty	0	1	2	3	4
p. hopeful	0	1	2	3	4
q. disgusted	0	1	2	3	4
r. eager	0	1	2	3	4
s. frustrated	0	1	2	3	4
t. embarrassed	0	1	2	3	4
u. anxious	0	1	2	3	4
v. happy	0	1	2	3	4
w. envious	0	1	2	3	4
x. relieved	0	1	2	3	4
y. other	0	1	2	3	4

_____

_____

5. To what extent do you think the outcome of the exam depends on: (Please circle appropriate number for each item.)

	Not at all	A little	Somewhat	Quite a bit	A great deal
a. seeking information about what the exam will be like and what to study	1	2	3	4	5
b. how much time and effort you put into studying	1	2	3	4	5
c. your general intellec- tual ability	1	2	3	4	5
d. your test-taking skills	1	2	3	4	5
e. controlling your anxiety	1	2	3	4	5

6. How stressful is it to prepare for this exam? (Please circle appropriate number.)

Not at all stressful	A little	Somewhat	Quite	Extremely stressful
1	2	3	4	5

7. How confident are you about how to prepare for this exam? (Please circle appropriate number.)

Not at all confident	A little	Somewhat	Quite	Extremely confident
1	2	3	4	5

8. Did you study for the upcoming exam today? (circle one)

a) YES   b) NO

9. If you answered "NO" to question #8, how stressful was it not to study today?

Not at all stressful	Slightly stressful	Somewhat stressful	Quite stressful	Extremely stressful
1	2	3	4	5

10. Approximately what percentage of studying remains before you are prepared for this exam? (For example: If you have not studied at all, 100% of the studying remains. If you are finished studying for the exam, 0% of the studying remains. If you are half way through the studying, 50% remains, etc.)

_____ %

11. Think about the people you have talked to regarding this exam. Has anyone been helpful to you in preparing for this exam? Please circle the number of the person who has been most helpful. If no one, circle "8" and skip question 9.

     1. a fellow student taking the course

     2. a friend outside the course

     3. TA (teaching assistant)

     4. professor

     5. a family member

     6. a professional person (e.g., counselor, tutor, etc.)

     7. other (Please specify)_____

     8. no one

12. Keeping in mind the person you indicated in Question 11 who has been helpful to you in preparing for this exam, Please indicate how much this person has: (Please circle appropriate number.)

	Not at all	Slightly	Moderately	Very	Extremely
a. given you information, suggestions, and guidance	1	2	3	4	5
b. given you tangible assistance (e.g., helped you with chores, errands, etc.)	1	2	3	4	5
c. Given you emotional support (e.g., boosted your spirits, made you feel he/she cares)	1	2	3	4	5

WOCC INSTRUCTIONS

Please indicate the extent to which you used each of the strategies listed below during the past 24 hours with regard to the upcoming exam/paper in the class you were given this questionnaire packet.

Please answer each question as honestly and naturally as possible. Of course, all of the responses you give as well as your participation in this study will be kept strictly confidential. There will be no way to associate you and your responses once the questionnaire is completed. So Please be as honest as possible.

		Does not apply and/or not used	Used Sometimes	Used quite a bit	Used a great deal
1.	Just concentrated on what I had to do next--the next step.	_____	_____	_____	_____
2.	I tried to analyze the problem in order to better understand it.	_____	_____	_____	_____
3.	Turned to other work or substitute activity to take my mind off things.	_____	_____	_____	_____
4.	I felt that time would make a difference--the only thing to do was wait.	_____	_____	_____	_____
5.	Bargained or compromised to get something positive from the situation.	_____	_____	_____	_____
6.	I did something which I didn't think would work, but at least I did something.	_____	_____	_____	_____
7.	Tried to get the person responsible/in charge to change his or her mind.	_____	_____	_____	_____
8.	Talked to someone to find out more about the situation.	_____	_____	_____	_____
9.	Criticized or lectured myself.	_____	_____	_____	_____
10.	Hoped a miracle will happen.	_____	_____	_____	_____
11.	Went on as if nothing is happening.	_____	_____	_____	_____
12.	I tried to keep my feelings to myself.	_____	_____	_____	_____

		Does not apply and/or not used	Used Sometimes	Used quite a bit	Used a great deal
13.	Looked for the silver lining, so to speak; tried to look on the bright side of things.	____	____	____	____
14.	Slept more than usual.	____	____	____	____
15.	I expressed anger to the person(s) who caused the problem.	____	____	____	____
16.	Accepted sympathy or understanding from someone.	____	____	____	____
17.	I told myself things that helped me feel better.	____	____	____	____
18.	I was inspired to do something creative.	____	____	____	____
19.	Tried to forget the whole thing.	____	____	____	____
20.	I got professional help.	____	____	____	____
21.	I waited to see what would happen before doing anything.	____	____	____	____
22.	I made a plan of action and followed it.	____	____	____	____
23.	I accepted the next best thing to what I wanted.	____	____	____	____
24.	I let my feelings out somehow.	____	____	____	____
25.	Realized I brought the problem on myself.	____	____	____	____
26.	Told myself I'd come out of the experience better than I went into it.	____	____	____	____
27.	Talked to someone who could do something concrete about the problem.	____	____	____	____
28.	Got away from it for a while; tried to rest or take a vacation.	____	____	____	____

		Does not apply and/or not used	Used Sometimes	Used quite a bit	Used a great deal
29.	Tried to make myself feel better by eating, drinking, smoking, using drugs or medication, etc.	____	____	____	____
30.	Took a big chance or did something risky.	____	____	____	____
31.	I tried not to act too hastily or follow my first hunch.	____	____	____	____
32.	Found new faith.	____	____	____	____
33.	Maintained my pride and kept a stiff upper lip.	____	____	____	____
34.	Rediscovered what is important in life.	____	____	____	____
35.	Changed something so things would turn out all right	____	____	____	____
36.	Avoided being with people in general.	____	____	____	____
37.	Didn't let it get to me; refused to think too much about it.	____	____	____	____
38.	Asked a relative or friend I respect for advice.	____	____	____	____
39.	Kept others from knowing how bad things were.	____	____	____	____
40.	Made light of the situation; refused to get too serious about it.	____	____	____	____
41.	Talked to someone about how I was feeling.	____	____	____	____
42.	Took it out on other people.	____	____	____	____
43.	Drew on my past experience.	____	____	____	____
44.	I knew what had to be done, so I doubled my efforts to make things work.	____	____	____	____

		Does not apply and/or not used	Used Sometimes	Used quite a bit	Used a great deal
45.	Made a promise to myself that things would be different next time.	____	____	____	____
46.	Came up with a couple of different solutions to the problem.	____	____	____	____
47.	Accepted it, since nothing could be done.	____	____	____	____
48.	I tried to keep my feelings from interfering with other things too much.	____	____	____	____
49.	Wished I could change what was happening or how I felt.	____	____	____	____
50.	Changed something about myself.	____	____	____	____
51.	I daydreamed or imagined a better time or place than the one I was in.	____	____	____	____
52.	Wished that the situation would go away or somehow be over with.	____	____	____	____
53.	Had fantasies or wishes about how things might turn out.	____	____	____	____
54.	I prayed.	____	____	____	____
55.	I prepared myself for the worst.	____	____	____	____
56.	I went over in my mind what I would say or do.	____	____	____	____
57.	I thought about how a person I admire would handle this situation and used that as a model.	____	____	____	____
58.	I reminded myself how much worse things could be.	____	____	____	____
59.	I jogged or exercised.	____	____	____	____
60.	I tried something entirely different from any of the above.	____	____	____	____

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VITA

The author, Stephen J. Serio, completed his undergraduate education at the University at Albany, State University of New York, where he graduated with a Bachelor of Arts with a major in psychology.

In August, 1988, Mr. Serio entered the Applied Social Psychology Program at Loyola and is presently conducting research at the Prevention Research Center in Chicago.

THESIS APPROVAL SHEET

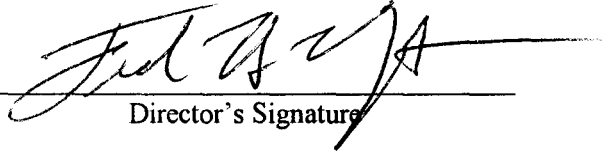The thesis submitted by Stephen J. Serio has been read and approved by the following committee:

Fred Bryant, Ph.D., Director
Professor, Psychology
Loyola University Chicago

John Edwards, Ph.D.
Associate Professor, Psychology
Loyola University Chicago

The final copies have been examined by the director of the thesis and the signature which appears below verifies the fact that any necessary changes have been incorporated and that the thesis is now given final approval by the committee with reference to content and form.

The thesis is, therefore, accepted in partial fulfillment of the requirements for the degree of master of arts.

4/4/96
Date

Director's Signature