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**The Interrelationships among Goal Orientation, Coping and
Achievement Motivation after Perceived Academic Failures**

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Achievement Motivation after Perceived Academic Failures**

by

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Dedication

This dissertation is dedicated to my parents, Jay, and Serena.

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The Interrelationships among Goal Orientation, Coping, and Achievement Motivation after Perceived Academic Failures

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Academic failure, which is defined in this research as unsatisfactory performance on an exam, is a common cause of stress for students in academic settings. It may lead to either beneficial or detrimental effects on students' learning and motivation. Two factors that may influence the difference in reaction to academic failure are the goal orientation that students pursue in the learning context, and the ways that students cope with the academic failure. The purpose of this study is to provide a detailed understanding of the relationships among goal orientation and academic failure coping strategies, as well as their effects on students' achievement motivation, using the goal orientation theory framework proposed by Elliot and Church (1997) for the study of college students. Four additional exploratory analyses were also performed which further investigated the important issues regarding the relationships among goal orientation, coping mechanisms, and achievement motivation after failure.

The findings from a study of 71 college students indicated that differences in goal orientations tended to indicate a difference in the focus of coping strategies. In addition,

differences in the focus of coping strategies were associated with different patterns of achievement motivation. Results from the other exploratory analyses, revealed furthermore (1) the detailed associations between goal orientations and specific coping strategies, as well as the detailed relationship between specific coping strategies and motivation constructs, (2) high stability of goal orientations among college students (3) the mediating effect of coping in the relationship between goal orientations and achievement motivation, and, (4) patterns of coping while students pursue multiple goals in the classroom.

The results support past research that presumed the importance and the adaptiveness of mastery goals in the situation of failure. The creation of a classroom that promotes mastery goal orientation may be crucial to the encouragement of adaptive coping responses and the reduction of maladaptive ones. The results also suggest a set of coping strategies that are potentially effective at helping students stay motivated after an experience of failure, such as positive reinterpretation of failure.

Table of Contents

List of Tables	xiii
List of Figures	xv
Chapter 1: Introduction	1
Chapter 2: Literature Review	5
Academic Failure and Achievement Motivation	5
Goal Orientation Theory	7
Goal Orientation Model	8
The Role of Goal Orientation in Learning and Achievement Motivation	9
Coping Theory	13
What is Coping?	13
Coping Strategies	14
The Role of Coping Strategies in Stress Outcomes	16
Research on Coping with Test Situations	17
Integrated Discussion	19
The Role of Goal Orientation in Academic Failures	19
The Role of Coping in Academic Failures	20
The Role of Goal Orientation in Coping	22
Chapter 3: Overview of the Present Study: Statement of the Problem and Hypotheses	24
Statement of the Research Problems	24
Variables Measured in the Present Study	26
Hypotheses and Rationales	26
Hypothesized Relationships between Goal Orientation and Coping ..	28
Hypothesized Relationships between Mastery Goals and Coping	28
Hypothesized Relationships between Performance-Approach Goals and Coping	30

Hypothesized Relationships between Performance-Avoidance Goals and Coping.....	32
Hypothesized Relationships between Coping and Achievement Motivation	33
Hypothesized Relationships between Problem-focused Coping and Achievement Motivation.....	33
Hypothesized Relationships between Emotion-focused Coping and Achievement Motivation.....	35
Hypothesized Relationships between Avoidance-oriented Coping and Achievement Motivation.....	36
Chapter 4: Method	38
Overview of the Present Study	38
Participants	39
Procedure	40
Instruments	41
Summary of Statistic Analysis	48
Chapter 5: Results	49
Descriptive Statistics and the Preliminary Analyses	49
Overview	49
Results of Preliminary Analysis	49
Grade Distribution and Students' Self-perception of their Performance	49
Cronbach's Alpha for All Measures.....	52
Descriptive Statistics of Variables.....	52
Summary and Discussion	56
Test Hypotheses to Answer the Primary Research Questions	57
Overview	57
Results: Relationships among Goal Orientations, Coping, and Achievement Motivation	58
Summary and Discussion	59
Exploratory Analysis 1: Detailed Relationships among Goal Orientations, Coping, and Achievement Motivation	61
Overview	61

Results: Relationships among Goal Orientations, Coping, and Achievement Motivation	61
Relationships between Goal Orientations and Coping Strategies.....	61
Relationships between Coping Strategies and Achievement Motivation.....	63
Summary and Discussion	64
Exploratory Analysis 2: Do Students Regulate the Intensity of Goal Orientations they Pursued because of the Grade?	66
Overview	66
Results: Effects of Midterm Grade and Autonomous Support on Goal Orientations.....	67
Summary and Discussion	70
Exploratory Analysis 3: Mediating Effects of Coping on the Relationship between Goal Orientation and Achievement Motivation	71
Overview	71
Results: Mediating Effects of Coping on the Relationship between Goal Orientation and Achievement Motivation.....	74
Summary and Discussion	77
Exploratory Analysis 4: The Role of Multiple Goals in Coping	79
Overview	79
Cluster Analysis Procedures and Cluster Formation in the Present Study	81
Group Differences in Coping.....	83
Summary and Discussion	85
Chapter 6: General Discussion.....	87
Discussion and Implications	87
Limitations of the Present Study.....	92
Future Directions	95
Summary and Conclusions	97

Appendix A: Measure of Graded Performance and Perceptual/Contextual Perception of Exam Feedback	98
Appendix B: Measure of Goal Orientation.....	99
Appendix C: Measure of Coping Strategies	101
Appendix D: Measure of Intrinsic Interest	105
Appendix E: Measure of Learning Climate Questionnaire.....	106
Appendix F: Measure of Perceived Learning Competence	107
Appendix G: Measure of Willingness to Expend Effort: Change in Effort.....	108
Appendix H: Measure of Attribution to Failure (Grade).....	109
Appendix I: Format of Questionnaires Used in the First Data Collection.....	110
Appendix J: Format of Questionnaires Used in the Second Data Collection	112
References.....	119
Vita	126

List of Tables

Table 3.1:	Hypothesized Relationships between Goal Orientation and Coping.....	27
Table 3.2:	Hypothesized Relationships between Coping and Achievement Motivation.....	27
Table 5.1a:	Grade Distribution for All Students and for Students from Different Schools.....	50
Table 5.1b:	Grade Distribution for Students Who Were Satisfied with Their Grade (Group 1), Those Who Were Not (Group 2), and Those Who Were Not and Perceived Their Grade as a Failure (Group 3).....	50
Table 5.2:	Cronbach's Alpha for All Measures	53
Table 5.3:	Means and Standard Deviations for All Measures	55
Table 5.4:	Correlations among Goal Orientations, Coping, and Achievement Motivation.....	58
Table 5.5:	Correlations among Goal Orientations, Coping Subscales, and Achievement Motivation	62
Table 5.6a:	Regression Coefficients-Predicting Goal Orientations by Graded Performance and Perceived Autonomous Support from Instructors for Students who Perceived their Grade as a Failure.....	68
Table 5.6b:	Regression Coefficients-Predicting Goal Orientations by Graded Performance and Perceived Autonomous Support from Instructors for All Students.....	69

Table 5.7:	Regression Coefficients for Mastery Goals and Mediating Variables (Coping Strategies) Predicting Intrinsic Interest and Perceived Competence after Academic Failure.....	75
Table 5.8:	Regression Coefficients for Mastery Goals Predicting Mediating Variables (Coping Strategies)	76
Table 5.9a:	The number of students in each range of performance-approach and performance-avoidance goals, while mastery goals were high	80
Table 5.9b:	The number of students in each range of performance-approach and performance-avoidance goals, while mastery goals were medium ..	81
Table 5.9c:	The number of students in each range of performance-approach and performance-avoidance goals, while mastery goals were low.....	81
Table 5.10:	Means and Standard Deviations of Goal Orientations in Each Cluster	83
Table 5.11:	Means and Standard Deviations of Coping in Each Cluster	84

List of Figures

Figure 5.1: Summary of results of regression analyses	77
Figure 5.2: Summary of results of regression analyses	78

Chapter 1

Introduction

Students encounter a lot of challenges and stressors while pursuing their educational goals in school. One common cause of stress is the experience of academic failure. Academic failure refers to an unsatisfactory grade which students perceive as a sign of failure. The effects of failure on subsequent performance and learning have been an issue of much debate among motivation researchers for quite some time. Researchers who focus on the detrimental effects argue that failure experiences reduce students' outcome expectations and self-efficacy, and impair their sense of confidence that they will be able to achieve a desired level of performance on future tasks. As a consequence of these effects, motivation is reduced and performance is impaired. Additionally, they argue, the experience of failure is likely to trigger worry and test anxiety that commonly block cognitive resources and undermine performance. In contrast to this argument, some researchers suggest that experiences of failure may have positive effects. For example, if students can interpret failure in terms of valuable feedback on how to improve their learning or skills, failure becomes associated with increased efforts to master challenges (Elliott & Dweck, 1988).

Indeed, experiences of failure provide valuable feedback to students about the mistakes they have made. Knowing their weaknesses and specific errors committed may trigger students' desire to make changes that could lead to better learning patterns and performance. While the potential for growth from failure is evident, however, not all students are able to perceive and interpret their failure in such a positive manner.

The ways that students interpret their failure are determined by various factors. One crucial determinant is goal orientation. Goal orientation refers to the general purpose that students follow when they engage in academic tasks. Two common goal orientations, mastery and performance goals, have been widely discussed in the literature. Mastery goals reflect a focus on learning, mastering academic tasks, and self-growth. When experiencing academic failure, students who adopt a goal of high mastery are likely to view making mistakes as a natural part of learning and attribute the outcomes to low effort or poor use of strategy (Ames, 1992; Dweck & Leggett, 1988). This results in a level of high willingness to put forth more effort in future study, to take challenges, and to stay motivated toward learning after the experience of failure. In contrast to mastery goals, performance goals reflect a focus on demonstrating ability and performing better than others. Students with performance goals emphasize ability, and the need for increased effort is generally perceived as decreased ability. When experiencing academic failure, they are more likely to attribute it to low ability, to avoid challenges, and to reduce their effort in order to protect their sense of self-worth (Ames, 1992). Based on these definitions, failure experiences tend to result in positive effects for students who have high mastery goals, but in negative effects for students who have high performance goals.

Goal orientation theory helps clarify why failure is linked to different learning outcomes when students pursue different goals, but it does not explicitly demonstrate the influence of goal orientations on the underlying processes that affect failure – i.e. how students deal with the stress caused by academic failure. Not as much research has been conducted on this issue, particularly since the time that researchers made a distinction between two different forms of performance goals: performance-approach and performance-avoidance goals (e.g., Elliot & Church, 1997). In this modified goal

orientation model, performance-approach goals reflect a focus on performing better than others, whereas performance-avoidance goals reflect a focus on avoiding looking inferior. Research based on this modified framework has shown that students can be positively motivated to try to outperform others, and negatively motivated to try to avoid looking incompetent (e.g., Elliot, McGregor, & Gable, 1999). Making this distinction leads researchers to a better understanding of the nature of the goal orientations, but the effects of failure in this modified goal theory framework have not received much attention, though mastery goals are presumed to lead to a “mastery” motivational pattern in the face of failure. In addition, the impacts of goal orientation on how students cope with academic failure are not yet fully understood.

In general, the outcomes of a specific stressor on individuals are influenced not only by the ways that individuals interpret the stressor, but also by the ways that they cope with it (Zeinder, 1995). As mentioned previously, coping refers to an individual's effort to manage psychological stress in the face of a stressful event (Folkman and Lazarus, 1991; Zeidner, 1995). When faced with academic failure, students may use various coping strategies, and past research suggests that the coping strategies used have impacts on emotional outcomes as well as motivational outcomes (e.g., Mantzicopoulos, 1997).

Based on previous research on goal orientation theory and coping, there is a possible relationship between goal orientations and the coping strategies used to deal with academic failures. Therefore, the purpose of this study was to examine these relationships among goal orientations, coping strategies, and students' achievement motivation after failure. In addition, several exploratory analyses were conducted in order to further understand the roles of goal orientations and coping on the effects of failure. These exploratory analyses investigated: (a) whether goal orientation changed due to

unsatisfactory performance on an important exam, (b) whether coping served as mediator in the relationship between goal orientation and achievement motivation, and (c) how students coped with academic failure while pursuing multiple goals.

This dissertation was organized as follows: First, a theoretical framework of goal orientation, coping, and achievement motivation was described in the chapter following this one. Next was a discussion of the research questions that previous literature indicates were still open to study. After stating the primary research questions of this dissertation, a study was proposed as an attempt to answer these questions, and included descriptions of the hypotheses, rationales, procedures used to recruit participants and determine the final sample, and a detailed explanation of the utilized methodology. Results indicated that differences in goal orientations were linked to different tendencies of the use of coping strategies. In addition, differences in the use of coping strategies were associated with different patterns of achievement motivation. After the results were reported, detailed interpretations, implications, and limitations were discussed in a general discussion section.

Chapter 2

Literature Review

This section consists of four subsections that investigate the psychological processes underlying the effects of goal orientation and coping mechanisms on achievement motivation after academic failure. First, the impacts of academic failure on achievement motivation will be described briefly, followed by a discussion of the factors that may determine the effects of experiences of failure. This will be followed by two separate subsections that provide a detailed description of goal orientation and coping theories. Lastly, the roles of goal orientation and coping in academic failure will be demonstrated, with an attempt to explore the potential relationships among these constructs.

Academic Failure and Achievement Motivation

Academic failure is a common but unpleasant experience at school. It may lead to various effects, either positive or negative, on students' subsequent motivation, performance, and achievement behavior (Brunstein, 2000).

The negative impacts of failure have been extensively addressed in the achievement motivation literature (e.g., Seligman, 1975). When a student experiences failures, particularly repeated failures, it is likely that he will lose his sense of control over the learning tasks. This perception of loss of control may decrease his expectation of future success, and increase anxiety and worry about tests in a learning situation. This only enhances feelings of learning helplessness and produces motivational deficits such

as poor self-efficacy, a decrease in effort, and an inclination to give up easily (Dweck and Leggett, 1988), while also causing thoughts that may block effective task performance (Brunstein, 1994).

Failures tend to cause negative impacts on subsequent motivation and performance, but there are exceptions. A study by Brunstein and Gollwitzer (1996), in which they manipulated the feedback from students' performance and examined the effects of failure, showed that when students were highly committed to their own self-definitional goal, the experience of failure in the relevant self-definitional tasks motivated them highly to compensate for their prior failure. For these students, a subsequent task that was related to their goal afforded an opportunity to get back a sense of completeness. They became motivated in order to reassure themselves that they were capable of achieving their own goal. In other words, failure on a task characterized as relevant to students' self-definitional goal enhances their future performance on tasks that are also relevant to this same self-definitional goal.

Research that focused on the effects of academic failure revealed the importance of certain factors that help students to maintain or regain the sense of control over their learning while confronting academic failure. One factor that plays an important role in the effect of failure is how students perceive their ability to achieve a desired level of performance on a task — their sense of self-efficacy. Self-efficacy refers to “people’s judgments of their capabilities to organize and execute courses of action required to attain designated types of performances” (Bandura, 1986, p.391). Experiences of failure may lead students to have a low perception of self-efficacy, and they, in turn, are likely to reduce their effort on academic tasks and lose their motivation. However, if students already possess a high level perception of self-efficacy, their sense of self-efficacy won’t be affected easily by failure (Brunstein & Gollwitzer, 1996). Consequently, instead of

losing control over learning, students will still maintain a high expectation for future success and be willing to spend time and effort on desired tasks.

Another factor that results in the different effects of failure is an individual's interpretation of experienced failure. The effects of different interpretations of achievement outcome have primarily been studied through attribution theory (Weiner, 1986). If students can attribute their failures to uncontrollable or stable causes, such as ability, they tend to expect that failures will be forthcoming in the future, thus reducing their willingness to try harder. In contrast, students who attribute failures to some unstable yet controllable causes, such as lack of effort or poor selection of strategies, are likely to exert more effort and persistence towards difficult tasks, because they believe that if they try hard enough, they do have ability to succeed. Consequently, failure with a controllable attribution, like a lack of effort, will lead to an increase in motivation and performance.

In summary, failure may enhance students' subsequent performance if students (a) are highly committed to their self-definitional goal, (b) possess a sense of high self-efficacy, and (c) attribute their failure to unstable but controllable factors.

Goal Orientation Theory

Goal orientation theory is one of the most prominent theories within motivational research today. Goal Orientation refers to the purposes underlying students' engagement in learning activities and tasks, not the specific outcome the student is attempting to accomplish. It represents an integrated pattern of beliefs that leads to different ways of approaching the task, doing the task, and responding to different achievement situations (Ames, 1992). In addition, goal orientation also reflects a type of standard by which individuals will judge their own performance, which then has consequences for other

motivational beliefs such as attribution, as well as actual performance and behavior. There are a number of different models of goal orientation that have been advanced by different achievement motivation researchers. Although there are slight variations in the interpretation of goal orientations under various labels in the different models, two goal orientations are commonly discussed, and they will be referred to here as mastery and performance goals.

Goal Orientation Model

The distinctions between mastery goals and performance goals are in the differences in students' focus while engaging in academic tasks, as well as their beliefs about competence. Mastery goals, also called task goals, learning goals, or task-involved goals, reflect a focus on the development of new skills, knowledge, and competence. Students who have high mastery goals believe that competence develops over time through practice and effort, and the purpose of learning is to master the tasks in order to increase competence. For these students, success is defined as progress in learning such that they tend to evaluate their performance based on a comparison of current performance with their own previous performance, or with a self-set standard rather than with a normative standard. They also value effort, show a willingness to take challenges, and view making errors as a normal and useful part of the learning process. Based on these propositions, mastery goals are generally assumed to foster adaptive cognitive, motivational, and learning behavioral outcomes.

In contrast to mastery goals, performance goals, also called ability goals, or ego-involved goals, reflect a focus on demonstrating one's own ability by outperforming others (Ames, 1992). Students who have high performance goals believe that competence is a stable characteristic and think that competent people shouldn't have to try very hard. For these students, success is defined as getting a high grade, so they tend to evaluate

their performance in terms of how they compare to others. They also tend to view effort as a sign of low ability and making mistakes as a sign of failure. Based on these propositions, performance goals are generally assumed to discourage adaptive patterns of learning and motivation.

More recently, goal orientation theorists have begun to make a distinction between two different versions of performance goals: performance-approach goals and performance-avoidance goals (Elliot and Church, 1997). Performance-approach goals reflect a focus on outperforming others and therefore demonstrating one's ability and superiority, whereas performance-avoidance goals reflect a focus on avoiding looking inferior or incompetent. Goal orientation theorists suggest that students can be positively motivated by trying to outperform others and negatively motivated by trying not to look inferior. The logic underlying these propositions is that trying to demonstrate one's ability may lead students to be more involved in the task, and to try to use more self-regulatory cognitive strategies to achieve a desired level of performance. In contrast, trying to avoid being inferior, along with a negative impression of one's performance, may lead students to greater withdrawal and less engagement in the tasks (Harackiewicz et al., 1998). Therefore, students who adopt performance-approach goals do not necessarily display maladaptive patterns of learning in academic settings, while students who adopt performance-avoidance goals are likely to show these maladaptive learning and motivational patterns, such as low effort, less engagement in the task, and unwillingness to undertake challenges.

The Role of Goal Orientation in Learning and Achievement Motivation

It is posited that the specific type of goal orientation students adopt has effects on how they interpret, experience, and act in academic contexts. A fair amount of research

has been conducted in the academic learning and achievement motivation literature on how goal orientations are linked to various self-regulatory processes.

There is a good deal of evidence of the positive influence mastery goals have on the different aspects of learning. Students who adopt mastery goals are more likely to report that they monitor and attempt to control their cognition through the use of various learning and cognitive strategies, such as elaboration (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000), checking for understanding, using deeper processing strategies, and meaningful strategies use (e.g., Ames & Archer, 1988; Greene & Miller, 1996; Greene, Miller, Crowson, Duke, B. L., & Akey, 2004). They also tend to manage their time and effort (Pintrich et al., 1993; Wolters, 2004) and seek for adaptive help if necessary (Ryan, Gheen, & Midgley, 1998; Karabenick, 2003). In addition to cognitive and behavioral outcomes, mastery goals also have positive implications for achievement motivational outcomes. In the studies of interest and enjoyment, mastery goals not only positively predicted college students' interest in a course but also positively predicted a continued interest in terms of the courses taking in that discipline (Butler, 1987; Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000; Harackiewicz, Barron, Tauer, & Elliot, 2002). Besides a high level of interest, students who adopt mastery goals tend to report a high level of task value in terms of the utility and importance of school work (e.g., Wolters et al, 1996). They also show a tendency to make adaptive attributions for their success and failure (Ames, 1992; Pintrich & Schunk, 1996), such as attributing failure to low effort or poor strategy selection, which generally helps them to remain positive and stay motivated when they confront difficult tasks or failures (Dweck & Leggett, 1988; Ames, 1992). Moreover, mastery goals are linked to more positive affective reactions and psychological well-being, such as less anxiety, more pride, and

more satisfaction with one's own learning (Ames, 1992; Dweck & Leggett, 1988; Kaplan & Maehr, 1999).

In contrast to the positive impacts of mastery goals, those studies that do not make a distinction between performance-approach goals and performance-avoidance goals generally find a negative relationship between performance goals and various cognitive, motivational, and behavioral outcomes. For example, research has shown that performance goals are negatively related to students' use of deeper cognitive strategies (e.g., Meece et al., 1988) or positively related to superficial study strategy, such as rehearsal (Harackiewicz, Barron, Tauer, Carter, & Elliot, 2000). Additionally, the studies on self-handicapping demonstrate that students who have high performance goals are likely to report using self-handicapping strategies such as procrastination and low levels of effort (Midgley et al., 1996). While engaging in academic tasks, students who adopt performance goals are also less likely to display behaviors that may reflect poorly on their ability, such as trying to work hard (Covington, 1992) or looking for help when it is needed (Newman, 1998).

Prior research, which distinguishes between approach and avoidance versions of performance goals, indicates that there are differential effects of performance-approach goals or performance-avoidance goals on learning and motivational outcomes. High performance-avoidance goals are associated with low interest (Elliot & Church, 1997; Church, Elliot, & Gable, 2001), with threat affect toward the stress caused by an examination (McGregor & Elliot, 2002), and with the use of self-handicapping strategies (Midgley & Urdan, 2001; Urdan, 2004), such as procrastination while preparing for an exam (McGregor & Elliot, 2002) and disorganization, which may result in poor performance (Elliot, McGregor, & Gable, 1999). In contrast, performance-approach goals are positively related to task value (e.g., Bong, 2001; Elliot, McGregor, & Gable, 1999),

academic self-concept (Skaalvik, 1997), effort expenditure (Elliot, McGregor, & Gable, 1999), and strong performance (Elliot, McGregor, & Gable, 1999; Church, Elliot, & Gable, 2001; Elliot & McGregor, 1999). It should be noted that although some research supports the positive aspects of performance-approach goals, there are mixed results regarding the relationship between performance-approach goals and various learning and motivational outcomes. Some studies find that performance-approach goals have a positive relationship with interest and intrinsic motivation (e.g., Wolters et al., 1996), while some do not reveal any impact of performance-approach goals on intrinsic interest (Elliot and Church, 1997). In the studies that relate performance goals to the use of learning strategies, some researchers find a positive relationship between performance-approach goals and the use of deeper cognitive strategies (e.g., Wolters, et al., 1996), but this positive relationship is not shown in other studies (e.g., Kaplan and Midgley, 1997). In some of the studies of self-handicapping, results have even shown that students who adopt a performance-approach goal are likely to use self-handicapping strategies, such as procrastination (Midgley, et al., 1996) and avoid seeking help from others (Ryan and Pintrich, 1997). However, a recent study conducted by Urdan (2004) revealed a negative association between performance-approach goals and the use of self-handicapping strategies.

In summary, mastery goals are linked with various adaptive learning and motivational patterns, and performance-avoidance goals are linked with maladaptive patterns. It is difficult to draw conclusions about the effects of performance-approach goals because prior studies have revealed mixed findings with regard to the associations of these goals with cognitive and motivational outcomes. However, performance-approach goals do enhance students' grade performance and have the potential to be

positive for certain people in certain situations (Harackiewicz, Barron, Pintrich, Elliot, & Trash, 2002).

Coping Theory

The relationship between stress and psychological well-being is an important issue of continual interest to psychologists. In particular, studies related to the methods that people use to deal with a stressful situation have received considerable attention in the past decades, and are referred to as studies of coping. Coping can be viewed as a process and changes over time in accordance with the situational context in which it occurs. The following sections include a more detailed definition of coping based on the contextual approach, various coping strategies, and a discussion of research of coping in the context of a test situation.

What is Coping?

The most widely accepted definition of coping is a person's "cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding resources of the person" (Folkman and Lazarus, 1991, pp. 210). In other words, coping is what a person is thinking and doing in the effort to manage psychological stress.

Coping plays a crucial role on the effects of a stressful event that is caused by an unpleasant environment or experience. It acts as a powerful mediator of emotional outcomes. A traditional model proposed by Lazarus and Folkman (1984) describes the role of coping with stress and the process in which coping evolves. This model proposes that stress is a transaction between individuals and their environment in which the critical mediating variable is the individuals' perception of the stressful situation and of their

ability to cope with it. Stress in this view consists of three components. The first component of stress is *person-environment encounter*, which refers to a set of environmental events that may or may not cause stress. The second component, *primary appraisal*, is the individual's interpretation (cognitive appraisal) of the degree to which those environmental events cause stress. In primary appraisal, the individuals ask, "What do I have at stake in this encounter?" The answer to the question contributes to the quality and intensity of the emotion. The third component is *secondary appraisal*, which is the individual's appraisal of the adequacy of his or her resources and ability to deal with the stressors. In secondary appraisal, the individuals' concern is "What can I do? What are my options for coping? And how will the environment respond to my actions?" The answer influences the kinds of coping strategies that will be used to manage the demands of the encounter (Folkman and Lazarus, 1991, pp.220-211).

Coping Strategies

The literature concerning coping has recognized that individuals may respond to stressful situations in various ways. The strategies that individuals use to cope with their stress can be classified into three broad categories: problem-focused, emotion-focused, and avoidance-oriented coping (Zeidner, 1995). The first, problem-focused coping, aims to alter the individual's relationship with the environment for the better. This type of coping involves a focus on actions that may get rid of the problem. Examples of problem-focused coping strategies include taking active steps to try to remove or circumvent the stressor, thinking about how to cope with a stressor, getting advice from others, and trying to avoid becoming distracted by other events in order to deal with the stressor. The second category, emotion-focused coping, involves a change to the way the individual attends to or interprets the situation, and his affective reaction. This type of coping also involves concentrated efforts to reappraise the stressful situation. Examples of emotion-

focused strategies include seeking emotional support, venting the negative feelings, accepting and living with the stressor, and seeing the stressor in a different light in order to make it appear positive. The third category, avoidance-oriented coping, aims to circumvent or avoid the stressful situation. Examples of avoidance-oriented coping strategies include denying the reality, reducing efforts to deal with the stressor, watching TV, and engaging in irrelevant tasks.

Research has suggested that positive outcomes are associated with some coping strategies, negative outcomes with others. Problem-focused coping strategies are generally linked to psychological “adaptation,” such as reduced depression (Billings & Moos, 1984), and greater self-esteem (Swindle, Cronkite, & Moos, 1989). In contrast, avoidance-oriented coping is usually viewed as dysfunctional (Carver, Scheier, & Weintraub, 1989). Emotion-focused coping strategies that are described as an emotional response - such as self-preoccupation by negative emotion (i.e., self-blaming) - are generally associated with poorer psychological health (e.g., Billings & Moos, 1984), but positively interpreting the stressful situation is viewed as an adaptive coping strategy in many circumstances. Although a large body of literature supports the idea that problem-focused coping is related to better and more desired psychological outcomes, researchers agree that a coping strategy that works in one context may be counterproductive in another. For example, in a stressful situation where there is nothing one can do to get rid of the problem, some emotion-focused strategies that are viewed as passive ways to withstand a stressful event, such as venting emotion, may be helpful in order to maintain one’s own sense of well-being. The utility of any coping strategy therefore varies with the type of stressful encounter, the type of personality, and the outcome modality studied. With respect to coping with failure on an exam, adaptive coping would involve (1) the student’s need to enhance his or her prospects for success in the future, (2) learning to

tolerate or adjust to the reality of failure, (3) maintaining a positive self-image, (4) maintaining emotional equilibrium and decreasing emotional stress, and (5) maintaining a satisfying relationship with the environment (Zeidner, 1995, pp128).

The Role of Coping Strategies in Stress Outcomes

Coping can be viewed as a mediator on the link between the resources that affect coping and the emotional outcomes caused by stressors. For example, Carver et al. (1993) have found that breast cancer patients' optimism related inversely to their distress levels before and after surgery, and certain coping reactions, such as acceptance and denial, played mediating roles in the effects of optimism on distress. A study by Brissette, Scheier, and Carver (2002) also revealed that optimism led to the use of positive reinterpretation and growth coping, which in turn, resulted in better adjustment to a stressful life event. Because of the mediating effect of coping, in addition to its effects on affective outcomes of a stressor, research into coping also have identified resources that influence how individuals cope with a stressful situation.

The ways that individuals cope with a specific stressor are partly based on personal and social resources. Personal coping resources include relatively stable personal and cognitive characteristics that shape the appraisal of the situation and the resulting coping process. Three personal resources have been commonly discussed in coping research: self-efficacy, optimism, and internal locus of control. Research has found that people with high levels of self-efficacy are likely to approach challenging situations in an active way and with persistence (Bandura, 1982). High levels of perceived self-efficacy promote more persistent efforts to master new tasks. Optimism, another personal trait that facilitates adaptive coping, is linked to problem-focused coping strategies (Carver et al., 1989; Carver et al., 1993), which in turn, lead to positive outcomes such as depression reduction. In addition, an internal locus of control is

associated with more persistent coping and problem-focused coping as well as better outcomes from coping (Carver et al., 1989; Scheier, Carver, & Bridges, 1994; Scott & House, 2005).

Social resources, such as social support, can promote adaptive coping by providing emotional support. Social support may come from family, friends, or even the supervisor in the workplace. The function of this kind of emotional support is to bolster individuals' self-esteem and self-confidence. Many studies have shown that social support, especially from significant others, is linked to problem-solving coping. For example, in longitudinal studies, Fondacaro and Moos (1987) have found that family support predicts an increase in problem-solving coping among women and a decline in emotional discharge coping among men over time. Also, a study conducted by Hassall, Rose, and McDonald (2005) indicated that family support received by the mothers of children with an intellectual disability was negatively related to their parenting distress.

In summary, coping has been viewed in the literature as a strong determinant that predicts the effect of a stressful situation. It is influenced by individual personal characteristics as well as by available social resources. Although some coping strategies are commonly recognized as maladaptive in various stressful situations, such as avoidance-oriented coping, the adaptiveness of a coping strategy should be determined by the type of stressful encounter and by the outcome modality studied.

Research on Coping with Test Situations

In coping research, a major academic exam has been used as an example of a stressful event in order to examine the effects of coping strategies on students' emotional outcomes and psychological well-being. One approach of these empirical studies focused on exploring students' appraisals, coping behaviors, and emotion across various stages of a stressful examination encounter. The Folkman and Lazarus's (1985) study found that

subjects differed in their coping reactions and in their emotion across the three stages of a midterm examination: the anticipation stage before the exam, the waiting stage after the exam and before grades were posted, and the stage after grades were announced. In addition, at every stage of examination, students reported using combinations of most of the available forms of problem-focused and emotion-focused coping rather than just one form or the other. By replicating and extending Folkman and Lazarus's study, the Carver and Scheier's (1994) study not only showed a significant change in coping across the phases of a midterm exam but also suggested that some coping seemed to induce different emotional reactions, such as feelings of threat. Moreover, certain emotions in the early stage of an examination might induce several kinds of coping in the latter stage.

Instead of testing how coping and the relationships between coping and emotion vary across different phases of an examination, another approach is to focus on studying coping with a specific stressor caused by a major examination. For example, Bolger (1990) found that certain coping behaviors, such as wishful thinking that includes fantasies about escaping or avoiding the stressor, led to increases in anxiety under stress when students were preparing for an important exam. Consistent with this research, there are other correlational studies that indicate that palliative coping strategies, such as some emotion-focused and avoidance-oriented coping strategies, were associated with increased anxiety surrounding an important midterm exam (Blankenstein, Flett, & Watson, 1992; Zeidner, 1994). Moreover, research on trait anxiety and coping indicated that high test anxious college students used more emotion and avoidance oriented coping in the situation of exam failure (Losiak, 2002). Even though most studies that focused on coping with test anxiety did not find an impact of coping on graded performance, the ways that students coped with test situations are associated with emotional reactions to the test.

Integrated Discussion

Academic failure does not necessarily lead to negative patterns of learning and motivation if students possess a high self-perception of efficacy or competence, highly commit to their educational goal(s), or make adaptive attribution for their failure. These factors are potentially related to the goals that students adopt in an academic setting and the ways that students cope with academic failure.

The Role of Goal Orientation in Academic Failures

Goal orientation theories were developed to explain achievement behavior, including how students react to academic difficulty and experiences of failure. Findings from empirical studies have revealed that students who adopt mastery goals tend to show adaptive responses to difficulty and failure (Dweck & Leggett, 1988). While adopting mastery goals, students are concerned with learning and mastery of a task and increasing their competence (Dweck & Leggett, 1988). This orientation seems to help students maintain their self-efficacy in the face of failure, ward off negative affect such as anxiety, and lessen the probability that they will have distracting thoughts. Because students who adopt mastery goals tend to view making mistakes as a part of the learning process and believe that efforts lead to success, they are more likely to put forth more effort and show a willingness to take on challenges after failure. In contrast, while adopting performance goals, students are concerned with how their performance is evaluated, how it compares to others, and with trying to outperform others and gain public recognition of their ability. This orientation leads them to focus on their grades and view poor performance as a failure that generally indicates a low ability, which is a threat to their self-perception of learning competence. If students who adopt performance goals have high self-efficacy, experiences of failure may not lead to negative patterns of learning. If self-efficacy is low, students who adopt performance goals are likely to display the patterns of learned

helplessness after failure, such as reducing effort, avoiding challenges, and low persistence while the tasks are difficult.

The roles of goal orientation in academic failure have also been discussed by relating goals to how students attribute their failure. Adaptive attribution for failure refers to attributing one's failure to unstable but controllable internal factors, such as effort. While making an adaptive attribution for failure, students are motivated to put forth more effort in learning - their expectations for the future will not decline and their affect will remain positive (Weiner, 1986). Goal orientation has been associated with patterns of attributions in a number of studies. Dweck and Leggett (1988) showed that students who adopted a mastery goal were much more likely to make adaptive attributions for their performance, whereas students who adopted a performance goal tended to make maladaptive attributions. Therefore, mastery goals are usually linked with the adaptive or "mastery" patterns of learning and motivation after failure.

The Role of Coping in Academic Failures

The tactics that students use to react to and deal with their own academic failure play important roles in their learning and their experiences in school. Research that focuses on coping with academic failure has suggested that coping has impacts on emotional outcomes as well as motivational outcomes. In the study of children's coping reactions, Tero and Connel (1984) found that positive coping (including asking for help, finding out what one did wrong, and thinking that one would do better next time) was associated with the perception of control over academic outcomes, mastery motivation, and achievement. The coping strategies of projection - blaming teachers for one's failure - and denial - including trying to forget about it or telling oneself that what happened didn't matter - were related to the perception of unknown control and were negatively correlated with mastery motivation. Finally, noncoping, or self-blame - anxiety

amplifying behaviors and thoughts such as feeling terrible and stupid - was associated with anxiety and low achievement and negatively correlated with self-esteem and academic self-competence (cf. Kaplan and Midgley, 1999). By using the same measure of coping, Mantzicopoulos (1990) examined successful and unsuccessful strategies that elementary school students might employ to cope with school failure. Results showed that students who tended to employ positive coping strategies while confronting failure tended to perform better than those who blame others, to deny what happened, or to engage in destructive self-derogation. Besides, compared to those who tended to use self-blame, students who used positive coping strategies were more likely to have a higher sense of self-worth, to think of themselves as being competent in the area of academic achievement, and to express that they feel positive and successful in their peer relationships.

Besides the above, Mantzicopoulos (1997) also investigated the social and emotional factors that related to fourth and fifth graders' coping strategies by asking them to think of an academic situation in which it was important for them to perform well but where they did not. He classified students into four coping groups based on the predominant coping strategy assessed by their response to the aforementioned coping measure developed by Tero and Connel: positive, denial, projection, and self-blame. Results from this study indicated that those whose coping strategies were positive were likely to have an intrinsic orientation to success, to experience less negative emotions following failure, to attribute failure to unstable factors, and to have a higher perception of competence.

The Role of Goal Orientation in Coping

Although researchers have demonstrated the effects of goal orientation on student perception and interpretation of academic failure, the psychological processes underlying the impacts of goal orientation on failure have received little attention in past research. In the study of children's coping reactions, Tero and Connel (1984), who identified the four aforementioned coping reactions, found that a mastery goal was positively correlated to positive coping and negatively correlated to projective coping and denial (cf. Kaplan & Midgley, 1999). By using the same measure of coping, the relationship between student perceptions of the classroom goal structure and young adolescents' emotion toward school has been investigated by Kaplan and Midgley (1999). In their study, they examined how sixth graders coped with difficulties at school, including academic failure, and the emotions students experience in school under two classroom goal structures: task goals (conceptually similar to mastery goals) and performance goals. The classroom structure for task goals that encourages students to adopt mastery goals involves the teachers' emphasis on understanding rather than memorization, exploring new ideas, rewarding effort, and viewing mistakes as a part of learning; whereas the classroom for performance goals that encourages students to adopt performance goals refers to an environment in which teachers emphasize social comparison and evaluation, make public evaluations of performance, and exhibit differential treatment of their students. Results from this study suggest that a higher perception that the classroom emphasized task goals leads to an increased use of positive coping strategies, thus promoting students' experiences of positive emotions at school. In contrast, a higher perception that the classroom emphasized performance goals leads to an increase in projective and denial coping, thus resulting in an increase in negative emotional experiences at school. Lastly,

they found that positive coping also strengthened the future perception of a task goal structure.

Although the focus of the Kaplan and Midgley study was on the relationships between goal structure in the classroom, rather than on personal goals and students' coping reactions to difficulty at school, including but not limited to academic failure, their study reveals a potential association between the goal orientation that students adopt and the coping strategies that students use to deal with academic failure. Based on goal orientation theory and its impacts on achievement motivation after failure, the coping strategies that students use while confronting academic failure may be related to the goals that they adopt in the classroom and their subsequent achievement motivation after failure.

Chapter 3

Overview of the Present Study: Statement of the Problem and Hypotheses

Statement of the Research Problems

Research has related goal orientation to coping strategies, but some questions remain unanswered. First, past research does not completely reveal the relationship between students' personal goals and the strategies that students use to cope with academic failure. For example, even though the Kaplan and Midgley (1999) study demonstrated the relationship between the classroom goal structures and coping strategies with school difficulty, there is the possibility that students might pursue goals that are contrary to their perception of the goal structure in the classroom. For example, in the classroom that emphasizes normative performance, there may still be some students who pursue mastery goals if they really enjoy and value the learning materials. Similarly, in a classroom where mastery goals are emphasized, students who do not like what they learn or just want to get a good grade may still choose to adopt performance-approach or performance-avoidance goals rather than mastery goals. It is therefore important to re-examine the relationships between coping strategies and the goal orientations that students actually pursue.

Second, the relationship between coping and the two forms of performance goals remains unclear in the studies that related goal orientation to coping. In the early goal orientation model, the influences of goal orientations on reaction to failure are well described. However, researchers did not explicitly elaborate the relationships between goal orientations and effects of failure after they made a distinction between

performance-approach goals and performance-avoidance goals. The revised theoretical framework of goal orientation seems to suggest that failure would lead to maladaptive learning patterns only for students who pursue a performance-avoidance goal, but not for those who pursue a mastery goal. However, this claim is still not fully understood and is lacking empirical evidence that would reveal the effects of failure on subsequent learning and motivation for students who pursue a performance-approach goal. Moreover, what students actually do, think, and feel has not been discussed or investigated in detail in the revised goal orientation theory.

Lastly, the studies that examined the relationship between goal orientation and coping (e.g., Tero & Connel, 1984; Kaplan & Midgley, 1999) were mostly conducted using children or young adolescents as the sample, as well as with a coping measure that excluded a large number of coping strategies that have been extensively discussed in the coping literature such as actively coping, looking for social support, and positive reinterpretation, etc. Students in higher education settings such as in college may use these and various additional coping strategies more than the strategies that were measured in the samples of children or young adolescents. It is worthwhile to conduct research that expands the scope of coping strategies to examine the relationships between coping strategies used by adult students and the goals that they adopt in academic settings.

It has been shown that goal orientation and the means that students use to cope with failure play a crucial role in the effects of failure. Yet the associations between goal orientations and coping with academic failure have received little study. The present study was therefore conducted as an attempt to provide a broader picture of the relationships between goal orientation and coping strategies with academic failure on the basis of the goal orientation theory framework proposed by Elliot and Church (1997) in

college students. Moreover, their associations with achievement motivation after failure were investigated. The following research questions were addressed in the present study:

1. After experiencing academic failure, do students with different goal orientations use different types of coping strategies to deal with the failure?
2. Do coping strategies that students choose to use have any impact on their motivational and learning outcomes after they experience failure?

Variables Measured in the Present Study

To answer the above research questions, three sets of variables were examined. The first set of variables is goal orientation, which includes mastery, performance-approach, and performance-avoidance goals. The second set is coping, consisting of twelve specific coping strategies that can be classified into three broad categories, problem-focused, emotion-focused, and avoidance-oriented coping, to reflect the general tendency of students' coping responses. The third set of variables includes four constructs that generally represent an adaptive pattern of motivation: intrinsic interest, perceived learning competence, effort attribution for failure, and willingness to put forth effort for future study. Besides these three sets of variables, students' demographic data, their perception of autonomous support from instructors, their grade on a midterm examination, and their perception of their grade were also measured. The method section will provide detailed information on the procedures and instruments.

Hypotheses and Rationales

Two sets of hypotheses were tested in this study. First, I hypothesized that students' goal orientations were related to the strategies that they used to cope with

academic failure. More specifically, I hypothesized that mastery goals were positively related to the reported use of positive coping strategies, either problem-focused or emotion-focused coping, and negatively related to avoidance-oriented coping. In contrast, performance-avoidance goals were hypothesized to have a positive association with avoidance-oriented coping and a negative association with problem-focused coping. Performance-approach goals were hypothesized to have a positive association with problem-focused coping and avoidance-oriented coping due to the individual's strong desire for graded performance, but inability to accept their failure.

Table 3.1

Hypothesized Relationships between Goal Orientation and Coping

Coping	Goal Orientation		
	Mastery	Performance-approach	Performance-avoidance
Problem-focused	+	+	-
Emotion-focused	+	+ or n.s.	-
Avoid-oriented	-	+ or n.s.	+

Note. + = a positive relationship; - = a negative relationship; n.s. = non-significant relationship.

Table 3.2

Hypothesized Relationships between Coping and Achievement Motivation

Coping	Achievement Motivation			
	Intrinsic Interest	Perceived Competence	Effort Attribution	Willingness to Expend Effort
Problem-focused	+ or n.s.	+	+	+
Emotion-focused	+	n.s.	n.s.	n.s.
Avoid-oriented	-	-	-	-

Note. + = a positive relationship; - = a negative relationship; n.s. = non-significant relationship.

Second, I hypothesized that coping was related to student achievement motivation after failure. Specifically, problem-focused coping was hypothesized to be positively related to achievement motivation. In contrast, avoidance-oriented coping was hypothesized to be negatively related to achievement motivation. These two sets of hypotheses are summarized in Tables 3.1 and 3.2, and are elaborated in detail in the following sections.

Hypothesized Relationships between Goal Orientation and Coping

Hypothesized relationships between mastery goals and coping

a. Mastery goals are positively correlated with the reported use of positive problem-focused coping.

Rationale: Mastery goal orientation reflects a focus on increasing competence through learning, developing new skills, trying to understanding learning tasks, and achieving a sense of mastery based on self-referent standards (Ames, 1992). In the face of failure, students who have high mastery goals may be unsatisfied with their performance. However, because the purpose of their engagement in the task is to master the skills, students with mastery goals are likely to view failure as a natural part of the learning process, and attribute failure to low effort. As a consequence, they may try to figure out the problem that causes the poor performance and learn from their mistakes. Therefore, it was hypothesized that mastery goals would be positively correlated with the use of problem-focused coping.

b. Mastery goals are positively correlated with the reported use of positive emotion-focused coping.

Rationale: Students with high mastery goals are likely to view making mistakes as a natural part of learning (Ames, 1992). They may also tend to accept their failure and interpret it in a positive way because they know that failure or making mistakes is a natural part of learning. Thus, students with high mastery goal orientation may deal with their negative emotion in a positive way, such as positive reinterpretation and acceptance. It was hypothesized that mastery goals would be positively correlated with positive emotion-focused coping.

c. Mastery goals are negatively correlated with the use of avoidance-oriented coping.

Rationale: Mastery goals lead students to a focus on personal growth. Students who have high mastery goals are likely to attribute unsatisfactory performance to factors that are unstable yet controllable, like a lack of effort. For them, making mistakes is just part of the process of learning. When confronting academic failure, they may tend to accept it and learn from it rather than deny reality or reduce their efforts to solve their problem. Therefore, it was proposed that mastery goals would be negatively correlated with avoidance-oriented coping strategies.

Hypothesized relationships between performance-approach goals and coping

a. Performance-approach goals are positively correlated with the reported use of problem-focused coping.

Rationale: When students strive to succeed and to be the best in their classroom, it would seem that they should try to fight back after failure in order to regain control over their learning. Because graded performance is important to them, they may exert control over their own learning, and think about how to get rid of the problem in order to achieve their goals, which are to demonstrate ability and be superior to others. Therefore, performance-approach goals may direct students to use some problem-focused coping strategies to help them achieve future success. In addition, coping research has shown that some positive problem-focused coping strategies are associated with high self-esteem and hardiness (Carver, Scheier, & Weintraub, 1989), characteristics that students with high performance-approach goals generally possess. Therefore, it was proposed that performance-approach goals would be positively correlated with the reported use of positive problem-focused coping strategies.

b. Performance-approach goals are either positively correlated or uncorrelated with the reported use of positive emotion-focused coping.

Rationale: Although receiving an unsatisfactory grade may hurt students' self-perception of competence, students who adopt performance-approach goals may still look for future success. Because success is important to them, they may try to work hard in order to succeed in the future. Working hard to get rid of the problem seems irrelevant to spending any effort dealing with their emotion. Thus, students' performance-approach goals may not be related to the use of emotion-focused coping. However, past research has shown that some positive emotion-focused coping strategies are associated with self-

esteem and hardiness, which are positively associated with performance-approach goals. Therefore, it was proposed that performance-approach goals would be either positively correlated or not correlated with the reported use of positive emotion-focused coping.

c. Performance-approach goal orientation is either positively correlated or uncorrelated with the reported use of avoidance-oriented coping.

Rationale: Goal orientation theory suggests that students with high performance-approach goals can be positively motivated to try to outperform others and to demonstrate their competence and superiority. However, when facing failure, it is possible that these students are not able to accept their poor grade, which is associated with low ability to them. They may still study hard or even harder in order to succeed in the future, but negative feelings toward their grade remain strong, resulting in an increased use of avoidance-oriented strategies in order to think about it less. It therefore seemed reasonable to propose that students who have high performance-approach goals would be likely to use avoidance-oriented coping strategies, such as denial and mental disengagement. However, it is still unclear from goal orientation theory and past research how students with high performance-approach goals react to failure. There is still some possibility that students with high performance-approach goals do not really engage in avoidance coping behaviors while confronting their failure. Therefore, it was proposed that performance-approach goals would be either positively correlated or not correlated with avoidance-oriented coping.

Hypothesized relationships between performance-avoidance goals and coping

a. Performance-avoidance goals are negatively correlated with the use of positive problem-focused coping.

Rationale: Performance-avoidance goals are generally linked with low perception of self-competence because students with performance-avoidance goals strive to avoid looking inferior in the classroom. On the basis of Dweck's model (Dweck and Leggett, 1988), students with performance goals and low self-competence usually show maladaptive learning patterns after experiencing failure. In the revised goal orientation theory that makes the distinction between performance-approach and performance-avoidance goals, researchers suggest that performance-avoidance goals have negative impacts on achievement motivational outcomes. When encountering failure in an academic context, high performance-avoidance goals may lead students to blame themselves or avoid the situation, instead of focusing on their problem and tasks. Therefore, it was hypothesized that performance-avoidance goals would be negatively correlated with positive problem-focused coping.

b. Performance-avoidance goals are negatively correlated with the reported use of positive emotion-focused coping strategies.

Rationale: Students with high performance-avoidance goals tend to attribute their failure to lack of ability. Such tendency may lead them to the inability to accept it or to see it in a positive light. Consequently, they may not be able to cope with their emotion in a positive way. Therefore, it was hypothesized that performance-avoidance goals would be negatively correlated with positive emotion-focused coping.

c. Performance-avoidance goals are positively correlated with the reported use of avoidance-oriented coping strategies.

Rationale: When encountering academic failure, a poor grade may hurt the perception of self-competence for students who have high performance-avoidance goals. The feeling of incompetence may lead students to a belief that it is difficult for them to succeed in the future, which may result in a low sense of control over what happens. Consequently, they may refuse to accept their failure, to avoid the learning situations in order to forget the unpleasant experience, or even give up learning. Therefore, it was proposed that performance-avoidance goals would be positively correlated with avoidance-oriented coping strategies.

Hypothesized Relationships between Coping and Achievement Motivation

Hypothesized relationships between problem-focused coping and achievement motivation

a. Positive problem-focused coping is positively correlated with students' willingness to put forth effort for future study after academic failure.

Rationale: Problem-focused coping is aimed at problem solving or doing something to alter the source of the stress. Positive problem-focused coping involves active coping, making plans for what to do, and the suppression of competing activities, all of which require individuals to exert effort. When students can use positive problem-focused coping, it means that they are willing to exert efforts toward improving future study. Therefore, it was proposed that positive problem-focused coping would be positively correlated with the willingness after failure to expend effort on future study.

b. Positive problem-focused coping is either positively correlated or uncorrelated with intrinsic interest after students experience academic failure.

Rationale: Positive problem-focused coping strategies are aimed at solving problems and changing the situation. When students focus on getting rid of the problem, they are unlikely to fixate on failure. Instead, they are likely to focus on the academic tasks and stay motivated rather than lose interest in learning. In addition, research has shown that positive problem-focused coping strategies are negatively correlated with anxiety. Therefore, it seems reasonable to propose that positive problem-focused coping strategies are positively correlated with intrinsic interest. However, problem-focused coping may only direct students' attention toward the tasks rather than increasing how interesting they find the tasks to be. Thus, it was proposed that positive problem-focused coping strategies would be either positively correlated or uncorrelated with intrinsic interest.

c. Positive problem-focused coping is positively correlated with perceived learning competence after academic failure.

Rationale: Problem-focused coping reflects a belief that individuals are confident in their capability to deal with the stressor and change the situation. When confronting academic failure, students who believe that they are capable of mastering the learning tasks should display a high tendency to use problem-focused coping, especially the strategies that are task-oriented, such as active coping and planning. Therefore, it was proposed that problem-focused coping would be positively correlated with perceived learning competence.

d. Problem-focused coping is positively correlated with effort attribution for academic failure.

Rationale: As mentioned previously, when students attribute their failure to a lack of effort, they will work harder on future study because they feel that they still have control over their learning. They believe that if they exert more effort and deal with their problem, they can succeed in the future. Therefore, it was proposed that problem-focused coping would be positively correlated with effort attribution for academic failure.

Hypothesized relationships between emotion-focused coping and achievement motivation

a. Positive emotion-focused strategies are positively correlated with intrinsic interest after students experience academic failure.

Rationale: Experiences of failure generally induce negative emotional reactions for students. Students who can use positive emotion-focused coping strategies are likely to keep emotion in balance, thus enhancing a positive attitude and affect toward school and learning. If students can maintain a positive affect toward school or learning after failure, they usually view learning tasks positively and show an intrinsic interest in learning. Thus, students who use positive emotion-focused coping may tend to maintain their intrinsic interest after failure. It was hypothesized that positive emotion-focused coping would be positively correlated with intrinsic interest after receiving an unsatisfactory grade.

Hypothesized relationships between avoidance-oriented coping and achievement motivation

a. Avoidance-oriented coping is negatively correlated with the willingness to expend effort on future study after students experience academic failure.

Rationale: Avoidance-oriented coping strategies involve denial, behavioral and mental disengagement. These strategies are generally negatively correlated with self-esteem and hardiness (Carver, Scheier, & Weintraub, 1989). When students use avoidance strategies to cope with academic failure, they tend to give up, refuse to accept their failure, and feel threats to their perception of competence due to the poor grade. Consequently, they may not be willing to exert effort towards their studies. Therefore, it was proposed that avoidance-oriented coping would be negatively correlated with the willingness to expend effort towards future study after students experience academic failure.

b. Avoidance-oriented coping is negatively correlated with intrinsic interest after students experience academic failure.

Rationale: Avoidance-oriented coping may lead students towards a tendency to avoid the situation. When they avoid thinking about their problems, or engage in other irrelevant tasks in order to forget the problem, it is very difficult for them to stay motivated and enjoy working on academic tasks after encountering academic failure. Therefore, it was proposed that avoidance-oriented coping strategies would be negatively correlated with intrinsic motivation after students experience academic failure.

c. Avoidance-oriented coping is negatively correlated with perceived learning competence after academic failure.

Rationale: Avoidance-oriented coping reflects a tendency to avoid stressful situations. While confronting academic failure, students who believe in their capability to succeed with future study seem less likely to reduce effort, give up trying, or avoid the stressor. Therefore, it was proposed that avoidance-oriented coping would be negatively correlated with perceived learning competence.

d. Avoidance-oriented coping is negatively correlated with effort attribution for failure.

Rationale: Avoidance-oriented coping is defined as efforts to circumvent or avoid the stressful situation. If students attribute their failure to lack of effort, they are likely to work hard and try to solve the problem, instead of avoiding the situation or engaging in irrelevant tasks. Therefore, it was proposed that avoidance-oriented coping would be negatively correlated with effort attribution.

Chapter 4

Method

Overview of the Present Study

The primary concern of this study was to understand the relationships among goal orientation, the ways that students cope with academic failure, and students' achievement motivation after failure including intrinsic interest, perceived learning competence, the degree of attributing failure to effort, and the willingness to spend effort on future study. It was therefore appropriate to collect data after students received their grade from a major examination. In addition, I was also interested in (a) whether students' goal orientation changes because of their grade — the impacts of grade on goal orientations, (b) the impacts of the classroom climate on students' goals, (c) the possible causal order that exists between goal orientation, coping, and achievement motivation, and (d) the patterns of coping displayed by students while pursuing multiple goals in the classroom. Therefore, any information required for performing these exploratory analyses, such as students' motivation before they took the exam and their perception of the class, was also collected in the present study.

Data were collected twice for the study: once before the exam, and then again after students received their grade on the exam. The first data collection measured students' goal orientation, their intrinsic motivation, perceived competence, and perceived support of autonomy in the class prior to the midterm exam. The second data collection measured students' goal orientation after they received the grade on the exam, their strategies for coping with academic failure, and their motivation after a failure

experience. The data collected second were analyzed to answer the primary research questions. The data collected first were used for the aforementioned exploratory analyses.

It should be noted that students were asked to report their use of coping strategies to deal with academic failure after they received the grade. However, not all students were unsatisfied with their grade. Therefore, during the second data collection, students who received an unsatisfactory grade from the exam were asked to report what they did to cope with the stress caused by the poor grade. Students who were satisfied with their performance on the exam were asked to report what they typically do to cope with academic failure. Only the data from students who received an unsatisfactory grade and perceived their grade as a failure were further analyzed to test the primary research hypotheses.

Participants

Participants were recruited from various courses, either required or elective for them, from two college level schools. Courses from the first school were introductory or advanced level courses in Engineering. Courses from the second school were intermediate level courses in Psychology. The courses selected for this present study were usually considered difficult academically, so that it would be likely that many students would receive unsatisfactory grades. The characteristics and structures of these two college level schools and classes were different. A series of preliminary tests that examined the school differences concerning students' perception of their grade showed that differences in school did not influence how students perceived their grade. Therefore, it seems appropriate to merge data collected from these two schools.

Of the 350 undergraduate students from two college level schools who participated in the first data collection, 226 students continued to participate in the second

data collection. Among these students, 30 students were dropped from the data set because they seemed not to follow the instructions well (please see “procedures” for detailed information). Of the 196 students remaining, 90 students were satisfied with their grade, and 106 students were not satisfied with their grade. To ensure that stress and failure perceptions were most likely induced by a poor grade, the data that were used to test hypotheses included responses only from students who (a) thought that getting the grade they wanted was important, and (b) considered their grade as a failure. Therefore, the final set of students in the sample were those who scored 4 and above on the items of “Receiving the graded I wanted is important to me” and “I consider this grade as a failure” on a 7-point scale, where 0 meant “strongly disagree” and 7 meant “strongly agree”. Based on these two criteria, there were a total of 71 participants in the final data set (39 female and 32 male, M age=20.23).

Procedures

The participants were recruited as follows. First, instructors from various courses were contacted in order to obtain permission for data collection in their classes. Next, students were asked if they were willing to be volunteer participants in this study. Once students decided to participate in the study, they could withdraw if they wanted to discontinue their participation at any time.

As mentioned previously, data were collected twice for the study. The first data collection was conducted in the third or fourth week after the semester or quarter began and before students took their first midterm examination. Students who volunteered to participate in this study were given a set of questionnaires. These questionnaires were self-report scales, and were designed to measure (1) students’ goals for the course, (2)

intrinsic interest, (3) perceive learning competence, and (4) perceived autonomous support from instructors in the classroom.

For the second collection of data, two to seven days after receiving the results of the midterm exam, these students were asked first to report their grade and their feeling upon receiving it, as well as their attribution for the grade, the effort they exhibited to prepare for the exam, and the effort that they expected to put forth for future study. Next, students were asked to report their current (1) goal orientation, (2) intrinsic interest, (3) perceived learning competence to indicate their goals and motivation after the midterm exam, and (4) the use of coping strategies. There were two versions of the coping scales. If students were not satisfied with their grade, they were instructed to report what they did to cope with the stress caused by their grade (Version 1). Students who were satisfied with their performance were instructed to recall any academic failure based on their previous experience and report what they typically do to cope with it (Version 2).

Students who reported their coping strategies in the wrong version of coping scales are considered as those who did not follow instruction well. Eleven students who were satisfied with their grade reported their coping reactions on version 1 instead of Version 2. Eighteen students who were not satisfied with their grade chose to report their general coping responses on Version 2. One student did not respond to any version of the coping scales. To reduce any possible impact caused by this, these 30 students were excluded from the data set.

Instruments

Graded performance (See Appendix A). Students' graded performance was measured by asking students to report the number and letter grade they received on the midterm examination. Because the total scores of the midterm exams in selected courses

were not always 100, the graded performance was coded based on students' reported letter grade, which was transformed into numeric value on a 5 point scale, in which 5 represents a grade of A, 4 represents a grade of B, 3 represents a grade of C, 2 represents a grade of D, and 1 represents a grade of F.

Contextual perception of exam feedback (See Appendix A). This measure was developed by Turner (1998) to assess students' perception of the grade they received. Students were asked to rate four items by using a 7-point anchored scale from, 1 "Strongly disagree" to 7 "Strongly agree." The four items used to assess student perception of grade are: (1) "I received the grade I wanted," (2) "receiving the grade I want is important to me," (3) "I put forth a great deal of effort in studying for this exam," and (4) "I consider this grade to be a failure." The first, second, and fourth items were used to determine the final sample for testing research hypotheses. To ensure their stress was really induced by academic failure, students should have indicated they (1) received an unsatisfactory grade (scored 4 or less than 4 on item 1), (2) thought it was important to get the grade they wanted (scored 4 or more than 4 on item 2), and (3) perceived their grade as a failure (scored 4 or more than 4 on item 4).

Goal orientation (See Appendix B). Students' goal orientations were assessed using the Elliot and Church (1997) goal orientation scale. This measure has been effectively used to assess college students' goal orientation. There are three subscales, which are associated with different types of goal orientations: mastery, performance-approach, and performance-avoidance goals. Each subscale consists of six items, and the internal consistency of each subscale shown in past research ranges from fair to high (mastery: Cronbach's $\alpha = .89$; performance-approach: Cronbach's $\alpha = .91$; performance-avoidance: Cronbach's $\alpha = .71$). Responses were given on a 7-point anchored scale, from 1 "Not at all true of me" to 7 "Very true of me." The mean score on

each subscale was then calculated to indicate the intensity of the goals that students adopted in the classroom.

Coping with failure (See appendix C). Students' coping strategies were assessed by using a coping scale that was adapted from Carver, Scheier and Weintraub's (1998) COPE scale in its situational format. Students were instructed to indicate the extent to which they engaged in each coping response in order to deal with the stress caused by an unsatisfactory grade after they received their grade. It was based on a 4-point scale, from 1 "I haven't done this at all" to 4 "I've done this a lot". The items were altered slightly in wording to make it appropriate for the present study. For example, the original item "I make a plan of action" was modified as "I've made a plan of action to improve my future performance." The original COPE contained fourteen subscales and fifty items in total. Two subscales, Alcohol/Drug Use and Turning to Religion, were excluded in the present study because the primary purpose was to investigate the coping behaviors in academic context. Herein, only twelve subscales were incorporated in this study.

The subscales used in the present study can be classified into three categories: problem-focused, emotion-focused, and avoidance-oriented coping. Strategies belonging to problem-focused coping are: (1) Active Coping (taking action or exerting efforts to remove or circumvent the stressor; Cronbach's $\alpha = 0.62$ and test-retest reliability = 0.56), (2) Planning (thinking about how to confront the stressor, planning one's active coping efforts; Cronbach's $\alpha = 0.80$ and test-retest reliability = 0.63), (3) Suppression of Competing Activities (suppressing one's attention to other activities in which one might engage in order to concentrate more completely on dealing with the stressor; Cronbach's $\alpha = 0.68$ and test-retest reliability = 0.46), (4) Restraint Coping (coping passively by holding back one's coping attempts until they can be of use; Cronbach's $\alpha = 0.72$ and test-retest reliability = 0.51), and (5) Seeking Instrumental Social

Support (seeking assistance, information, or advice about what to do; Cronbach's $\alpha = 0.75$ and test-retest reliability = 0.64). Strategies belonging to emotion-focused coping are: (1) Seeking Emotional Social Support (getting sympathy or emotional support from someone; Cronbach's $\alpha = 0.85$ and test-retest reliability = 0.77), (2) Positive Reinterpretation and Growth (making the best of the situation by growing from it or viewing it in a more favorable light; Cronbach's $\alpha = 0.68$ and test-retest reliability = 0.48), (3) Acceptance (accepting the fact that the stressful event has occurred and is real; Cronbach's $\alpha = 0.65$ and test-retest reliability = 0.63), and (4) Focus on and Venting of Emotions (an increased awareness of one's emotional distress, and a concomitant tendency to ventilate or discharge those feelings; Cronbach's $\alpha = 0.77$ and test-retest reliability = 0.69). Strategies belonging to avoidance-oriented coping include: (1) Denial (an attempt to reject the reality of the stressful event; Cronbach's $\alpha = 0.71$ and test-retest reliability = 0.54), (2) Mental Disengagement (psychological disengagement from the goal with which the stressor is interfering, through daydreaming, sleep, or self-distraction; Cronbach's $\alpha = 0.45$ and test-retest reliability = 0.58), (3) Behavioral Disengagement (giving up, or withdrawing effort from the attempt to attain the goal with which the stressor is interfering; Cronbach's $\alpha = 0.63$ and test-retest reliability = 0.66). The alpha values and test-retest reliabilities reported here were provided by Carver et al. (1989) when measuring individuals' general coping tendencies to deal with stress in life. The alpha values and test-retest reliability of coping scales that are used to assess how individuals cope with a specific event are not available, but the results from the Carver et al. study suggested that people's ratings might have greater alpha values when rating specific behavioral situations than when rating general tendencies.

Two points should be addressed here before reporting the way to score the coping scale. The first is that the values of Cronbach's α on some subscales are low. The

possible reason is that COPE was developed to measure the patterns of coping tendency, displayed by individuals to deal with a stressor, instead of a latent psychological construct. The coping responses representing the same category of strategy may not be highly correlated with each other. For example, both watching TV and daydreaming can be viewed as mental disengagement strategy to distract individuals' attention from their stressor, but sleeping more than usual does not necessarily come along with watching a lot of TV. Therefore, the low alpha values in some scales of coping are considered acceptable. The second point is that the classification of the coping strategies is on the basis of the scheme proposed by Zeidner (1995). Studies which only make a distinction between problem-focused and emotion-focused coping generally consider denial, mental disengagement, and behavioral disengagement as tactics of emotion-focused coping. In the present study, emotion-focused coping is defined as strategies aimed to regulate, reduce, or eliminate the emotional stress in order to live with the stressor by cognitive and behavioral regulation, whereas avoidance-oriented coping is defined as the responses to circumvent or avoid stressful situations. Denial, mental disengagement, and behavioral disengagement are therefore classified as avoidance-oriented coping strategies in this study.

The mean score on each subscale was computed to indicate the extent to which students had engaged in each specific type of coping behaviors. The composite scores of problem-focused, emotion-focused, and avoidance-oriented coping were next obtained by summing the mean scores of subscales belonging in their categories to indicate the general focus of students' coping tendency.

Intrinsic interest (See appendix D). The intrinsic interest scale, developed by Elliot and Church (1997), was used to assess students' intrinsic interest toward the course. It is a 7-point anchored scale that ranges from 1 "Not at all true of me" to 7 "Very

true of me”, which consists of eight items. Sample items of this scale include: “I think this class is interesting,” “I’m glad I took this class,” “I don’t like this class at all,” and so forth. An index that reveals the level of students’ intrinsic interest toward learning in a specific course was constructed by averaging the eight items in this instrument. Previous research has shown a high alpha reliability of these items, Cronbach’s $\alpha = .92$ (Elliot and Church, 1997).

Learning climate questionnaire (See Appendix E). This scale was adapted from Williams and Deci’s (1996) Learning Climate Questionnaire (LCQ) and was used to assess the degree of students’ perception of support for autonomy from their instructor in a learning environment. It consists of fifteen items that are typically used with respect to specific learning settings, such as a particular class, at the college or graduate school level. Students were asked to use a 7-point anchored scale from 1 “Strongly disagree” to 7 “Strongly agree” to rate each item. The mean score was then calculated to form a general index that reflects the degree of autonomous support perceived by students in the classroom. A high alpha reliability has been reported in past research, Cronbach’s $\alpha = .96$ (Williams and Deci, 1996).

Perceived competence (See Appendix F). The Perceived Competence Scale (PCS) is a short, 4-item questionnaire developed by Williams and Deci (1996). The PCS assesses participants’ feelings of competence about taking a particular college course. Students were asked to rate the items based on how true each one is for them with respect to their learning in one specific course, from 1 “Not at all true” to 7 “Very true of me”. The mean score of the four items was calculated to indicate students’ self-perception of learning competence. A high Cronbach’s α has been reported, $\alpha = 0.88$ (Hsieh, Neff, and Dejitthirat, 2003).

Willingness to expend effort: Change in effort (See Appendix G). This measure is a two-item researcher-developed scale that was designed as an attempt to measure the extent to which they were willing to spend effort on future study. The relative willingness to exert effort for future study was assessed by the difference between the effort that students actually applied towards a midterm exam (by rating amount of study time and effort level that students actually spent on a midterm exam) and future effort (by rating amount of study time and effort level that students expect to spend on their next exam). To determine the willingness to spend effort after failure, two scores were calculated to measure the difference in effort by (1) subtracting the difference in amount of study time that students spent by the amount of study time they expected to put forth for future study, and by (2) subtracting the degree of effort that students reported in preparing for the midterm exam by the degree of effort that they expected to put forth in future study, measured on a 7-point scale that ranged from 1 “Not at all” to 7 “Extremely”. After standardizing the two difference in effort scores, a general index of willingness to spend effort on future study was obtained by averaging these two scores.

Attributions to failure (See Appendix H). This measure is a four-item researcher-developed scale used to assess the degree that students attribute failure to effort, ability, luck, and task difficulty. Students were asked several questions - “How much do you think that your grade on the midterm depends on your effort?” “How much do you think that your grade on the midterm depends on your ability?” “How much do you think that your grade on the midterm depends on test difficulty?” and “How much do you think that your grade on the midterm depends on luck?” Students were asked to rate each item by using a 7-point anchored scale that ranged from 1 “Not at all” to 7 “Extremely.”

The format of questionnaires used in the first data collection is presented in Appendix I, and the format of questionnaires used in the second data collection is presented in Appendix J.

Summary of Statistical Analysis

To test the primary research hypotheses, I first tested the differences in goal orientation associated with the differences in students' general focus of coping while confronting academic failure. The relationships between the students' different focuses of coping and achievement motivation after failure were also examined. After the broad picture of relationships among goal orientation, coping, and achievement motivation were obtained, I related goal orientation and achievement motivation to each specific coping response in order to obtain a detailed understanding of the associations among these constructs. Lastly, the aforementioned exploratory analyses investigated additional and relevant issues regarding the relationships between goal orientation, coping, and the effect of academic failure.

Chapter 5

Results

Descriptive Statistics and The Preliminary Analyses

Overview

To understand the characteristics of the data, I first calculated the grade distribution, Cronbach's alpha, means, and standard deviations for all measures.

Results of Preliminary Analyses

Grade Distribution and Students' Self-perception of Their Performance

Table 5.1a displays the students' grade distribution on a midterm exam for all students, as well as separated by their two different schools. Among the 196 students who participated in the present study and completed both data collections, 21.9% received a grade of A, 36.8% received a grade of B, 27.0% received a grade of C, 10.7% received a grade of D, and 3.1% received a grade of F. Among the 71 students who perceived their grade as a failure, 18.3% received a grade of B, 50.7% received a grade of C, 23.9% received a grade of D, and 7.0% received a grade of F. The data, separated by schools, revealed that 49.3% of students who perceived their grade as a failure were from school A, 50.7% were from school B. The majority of students who were included in the final sample from school A received a grade of B or C (88.6%), and similarly the majority of students from school B received a grade of B or C (77.8%).

Table 5.1a

Grade Distribution for All Students and for Students from Different Schools

Grade	A	B	C	D	F	Missing	Total
<u>All Students</u>							
Participating in the study	43	72	53	21	6	1	196
Perceiving their grade as a failure	0	13	36	17	5	0	71
<u>Students from School A</u>							
Participating in the study	12	23	23	15	2	0	75
Perceiving their grade as a failure	0	2	19	12	2	0	35
<u>Students from School B</u>							
Participating in the study	31	49	30	6	4	1	121
Perceiving their grade as a failure	0	11	17	5	3	0	36

Table 5.1b

Grade Distribution for Students Who Were Satisfied with Their Grade (Group 1), Those Who Were Not (Group 2), and Those Who Were Not and Perceived Their Grade as a Failure (Group 3).

Group	A	B	C	D	F	Missing	Total
<u>All Students</u>							
1	43	41	5	0	0	1	90
2	0	31	48	21	6	0	106
3	0	13	36	17	5	0	71
Total (1 + 2)	43	72	53	21	6	1	196
<u>Students from School A</u>							
1	12	16	1	0	0	0	29
2	0	7	22	15	2	0	46
3	0	2	19	12	2	0	35
Total (1 + 2)	12	23	23	15	2	0	75
<u>Students from School B</u>							
1	31	25	4	0	0	1	61
2	0	24	26	6	4	0	60
3	0	11	17	5	3	0	36
Total (1 + 2)	31	49	30	6	4	1	121

To further test if schools or courses in different disciplines cause differences in students' perceptions of their grade, I analyzed students' grade distribution, separated by students' satisfaction with their grade and by schools, in Table 5.1b.

Based on the results for all students displayed in Table 5.1b, no student who received a grade of A was unsatisfied with their grade. About 43.1% of students who received a grade of B were not satisfied with their grade, and 41.9% considered a grade of B as a failure. About 90.6% of students who received a grade of C were not satisfied with their grade, and 75.0% considered a grade of C as a failure. All students who received a grade of D or F were not satisfied with their grade, and over 80% of them considered their grade as a failure (81.0% for those who received a grade of D, and 83.3% for those who received a grade of F). The data were separated into two groups by the two different schools and both showed a similar pattern of students' grade distribution and their perception of the grade. All students who received a grade of D or F were not satisfied with their grade in both schools, and most of them perceived their grade as a failure. Most students who received a grade of C were unsatisfied with their grade in both schools, and a larger portion of these students from school A considered a grade of C as a failure than from school B (school A: 86.4%, school B: 65.4%). While receiving a grade of B, 30.4% of students from school A and 49.98% of those from school B were unsatisfied with their grade. Among those who were not satisfied with a grade of B, 28.6% of students from school A and 45.8% of those from school B considered a grade of B as a failure. Although these numbers and percentages suggested that courses selected from school A were more difficult for students than those selected from school B, none of these differences between schools reached significance in either Chi-square or Fisher's Exact Tests. Therefore, the results suggested that students from school A did not perceive their grade in a different way from those from school B.

Cronbach's Alpha of Each Scale

To test the internal consistency of items in each scale, Cronbach's alpha was computed. Only students who perceived their grade as a failure were included in this step. Table 5.2 displays the value of alpha for each scale. It shows a moderate to high alpha value on measures of goal orientation (mastery goals Time 1: 0.85, Time 2: 0.91; performance-approach goals Time 1: 0.89, Time 2: 0.91; performance-avoidance goals Time 1: 0.74, Time 2: 0.80), achievement motivational constructs (intrinsic interest Time 1: 0.95, Time 2: 0.95; perceived competence Time 1: 0.91, Time 2: 0.90), perceived autonomous support (0.94), and three broad coping strategies (problem-focused coping: 0.86; emotion-focused coping: 0.89; avoidance-oriented coping: 0.76). Some coping subscales also showed a moderate to high internal consistency (e.g., planning: 0.86 and suppression: 0.72), but alpha values for the others were slightly low (e.g., positive reinterpretation/growth: 0.66 and mental disengagement: 0.54).

Descriptive Statistics of Variables

Table 5.3 displays the means and standard deviations of all measures collected in the present data, not including the coping scales. A series of preliminary analyses were conducted here to understand the participants' characteristics in detail. First, dependent t-tests were conducted to examine if students' goal orientations, intrinsic interest, and perceived competence changed before and after a midterm exam. The results showed that students who considered their grade to be a failure showed a decline in their performance-approach goals, $t(70) = -2.57, p < .05$. The intensity of the mastery and performance-avoidance goals that students pursued before the exam were not different from those after the exam. Students' intrinsic interest and self-perception of learning competence did not significantly change either.

Table 5.2

Cronbach's Alpha for All Measures

Variable	Raw Alpha (n=71)
Mastery Goals Time 1	0.85
Mastery Goals Time 2	0.91
Performance-approach Goals Time 1	0.89
Performance-approach Goals Time 2	0.91
Performance-avoidance Goals Time 1	0.74
Performance-avoidance Goals Time 2	0.80
Intrinsic Interest Time 1	0.95
Intrinsic Interest Time 2	0.95
Perceived Competence Time 1	0.91
Perceived Competence Time 2	0.90
Perceived Autonomous Support	0.94
Problem-focused Coping	0.86
Emotion-focused Coping	0.89
Avoidance-oriented Coping	0.76
Active Coping	0.67
Planning	0.86
Suppression of Competing Activities	0.72
Restrain Coping	0.72
Use of Instrumental Support	0.87
Use of Emotional Support	0.89
Positive Reinterpretation & Growth	0.66
Acceptance	0.75
Venting of/Focus on Emotion	0.86
Denial	0.72
Behavioral Disengagement	0.73
Mental Disengagement	0.54

The same analyses were also conducted for all students, for students who were satisfied with their grade, and for students who were not satisfied with their grade. Results indicated that for all students, both performance goals showed a decline after the midterm exam (performance-approach: $t(192) = -5.69$, $p < .0001$; performance-

avoidance: $t(192) = -2.70, p < .01$). For students who were satisfied with their grade, both performance-approach and performance-avoidance declined (performance-approach: $t(86) = -4.67, p < .0001$; performance-avoidance: $t(86) = -4.62, p < .0001$), and moreover, their perceived competence increased, $t(86) = 3.49, p < .001$. For students who were not satisfied with their grade, only performance-approach goals declined significantly, $t(105) = -3.77, p < .001$.

I also conducted independent t-tests for all of the measures in order to investigate the difference between students who were satisfied with their grade and those who were not. Before the exam, students who later were satisfied with their grade reported a higher level of intrinsic interest, $t(187) = 2.32, p < .05$, and a lower level of both performance goals than those who were unsatisfied with their grade (performance-approach: $t(194) = -2.00, p < .05$; performance-avoidance: $t(194) = -2.12, p < .05$). After receiving their grade, students who were satisfied with their grade showed a significantly higher level of intrinsic interest, $t(182) = 2.80, p < .01$, and perceived learning competence, $t(183) = 4.81, p < .0001$, than those who were not satisfied with their grade. Students who had received a satisfactory grade also showed a lower level of pursuit of performance-avoidance goals than those who received an unsatisfactory grade $t(164) = -4.68, P < .001$. Lastly, satisfied students reported a lower level of pursuit of performance-approach goals than did unsatisfied students, $t(191) = -2.37, p < .05$.

When comparing attribution style, satisfied students were more likely to attribute their grade to their effort than either unsatisfied students, $t(194) = 2.86, p < .01$, or students who considered their grade to be a failure, $t(132) = 3.21, p < .01$. Most students, regardless of their satisfaction with their performance, thought that receiving the grade they wanted was important. One interesting finding was that most students believed that they had put a lot of effort into studying, and both those who were unsatisfied with their

grade and those who considered their grade as a failure reported higher degrees of willingness to put effort into preparing for future study than those who were satisfied with their grade (satisfied vs. unsatisfied: $t(184) = -5.67, p < .0001$; satisfied vs. perceived failure: $t(127) = -6.09, p < .0001$).

Table 5.3
Means and Standard Deviations for All Measures

	Group 1 + 2 All students N=196		Group 1 Students who were satisfied with their grade N=90		Group 2 Students who were not N=106		Group 3 Students who were not and perceived their grade as a failure N=71	
Variable	M	SD	M	SD	M	SD	M	SD
Mastery T1	5.46	0.91	5.45	0.93	5.46	0.90	5.45	0.93
Mastery T2	5.43 _a	0.97	5.41 _d	0.95	5.44	0.99	5.46	1.03
Performance-approach T1	4.25	1.32	4.05	1.31	4.23	1.32	4.58	1.29
Performance-approach T2	3.87 _a	1.47	3.60 _d	1.50	4.09	1.40	4.28	1.43
Performance-avoidance T1	4.51	1.26	4.31	1.35	4.68	1.15	4.84	1.12
Performance-avoidance T2	4.35 _a	1.33	3.87 _d	1.41	4.74	1.13	4.87	1.12
Intrinsic Interest T1	5.18	1.18	5.38	0.94	5.00	1.34	4.84	1.47
Intrinsic Interest T2	5.25 _a	1.22	5.51 _d	0.91	5.04	1.40	4.92	1.52
Perceived Competence T1	5.72	0.89	5.83	0.86	5.63	0.91	5.61	0.94
Perceived Competence T2	5.76 _a	0.96	6.10 _d	0.70	5.49	1.05	5.40	1.17
Effort Attribution	5.35	1.39	5.64	1.20	5.09	1.49	4.94	1.50
Willingness to expend effort	1.86	1.85	1.12	1.33	2.50	1.99	2.66	1.77
Perceived Autonomous Support	4.88 _b	0.94	4.91 _e	0.79	4.85	1.05	4.77	1.07
Receiving the grade they want	3.57	2.30	5.88	0.99	1.61	0.75	1.54	0.69
Importance of the grade	6.03	1.08	6.09	1.02	5.98	1.13	6.24	0.71
Degree of putting effort	4.90 _c	1.43	4.96 _e	1.40	4.86 _f	1.46	5.00	1.38
Perceived the grade as failure	4.24	2.17	1.67	1.21	4.58	1.90	5.68	1.13

Note. T1 and T2 are abbreviations of Time 1 and Time 2. ^a $n=193$. ^b $n=194$. ^c $n=195$. ^d $n=87$. ^e $n=89$. ^f $n=105$.

Summary and Discussion

The results reported in this section provide a broad picture of the characteristics of the data used in the present study. The grades received by the students who were included in order to test primary research hypotheses vary from a B to an F. Although courses from which students were recruited at school A seem more difficult than those at school B, that may not lead to a difference in students' perceptions of their grade.

Besides grade distribution and students' satisfaction with grade, Cronbach's alpha was reported for each scale used in this study. It should be noted that some coping scales did not yield a high value of Cronbach's alpha (please see Table 5.2). Since these alpha values are compatible with those reported in prior studies (e.g., Carver, et al., 1988), these alpha values are considered acceptable.

The last part of this section reports mean scores and standard deviations for each variable. A series of analyses that test the change of goals and motivational constructs before and after the examination suggests that mastery goals and intrinsic interest are stable, and performance-approach goals decrease after the exam. For students who received a satisfactory grade, both performance-approach and performance-avoidance goals declined after the exam. An increase in perceived competence is also shown by students who were satisfied with their grade, but not by students who were unsatisfied with their grade or by those who perceived their grade as a failure. These results suggest a possible impact of the students' grade on their perceived learning competence; that is, a satisfactory grade leads to an increased level of perceived learning competence. One interesting point is that most students thought that they had put forth a lot of effort into studying for the exam, and students who were unsatisfied with their grade or considered their grade as a failure thought that they should work harder for future study, and they did not just give up trying. In other words, the result suggests that after experiencing an

academic failure, students' first thought is to work harder, not to give up or to reduce effort. Based on prior research, a poor grade is likely to result in maladaptive learning and poor performance for students who have a high performance-avoidance goal (e.g., Senko and Harackiewicz, 2004). Because the results from the preliminary analyses imply that performance-avoidance goal oriented students may not drop their learning motivation immediately, why does their learning not improve given that they realized that they should try harder in future study? Is it because they do not deal well with the stress caused by academic failure? Is it because they do not possess sufficient skills to execute their plan such that that they are unable to learn from their mistakes? In the following sections, the relationships among goal orientations, coping, and achievement motivational constructs will be examined to provide a more detailed picture of how students react to academic failure while they pursue different goal orientations, as well as how their motivation is associated with their goals and with the ways they cope with academic failure.

Test Hypotheses to Answer the Primary Research Questions

Overview

In order to test the relationships among goal orientations, coping, and achievement motivation, a series of Pearson Product-Moment correlations was performed to determine if associations would be in the expected direction. The resulting inter-correlations are shown in Table 5.4.

Results: Relationships among Goal Orientations, Coping, and Achievement Motivation.

Table 5.4 displays the correlations between the goal orientations and coping strategies used by students when they experience academic failure. As expected, mastery goals were negatively correlated with avoidance-oriented coping ($r = -.26, p < .05$). Performance-approach goals were positively correlated with problem-focused coping ($r = .26, p < .05$) and avoidance-oriented coping ($r = .25, p < .05$). Also as expected, performance-avoidance goals were positively correlated with avoidance-oriented coping ($r = .24, p < .05$). One unexpected finding was that the results revealed a positive correlation between performance-avoidance goals and problem-focused coping ($r = .35, p < .01$).

Table 5.4

Correlations among Goal Orientations, Coping, and Achievement Motivation

	Mastery	Performance- approach	Performance -avoidance	Intrinsic Interest	Perceived Competence	Effort Attribution	Willingness to Expend Effort
Mastery	1.00						
Performance-approach	.27*	1.00					
Performance-avoidance	.05	.41***	1.00				
Intrinsic Interest	.69****	.17	-.12	1.00			
Perceived Competence	.56****	.22	-.18	.44***	1.00		
Effort Attribution	.21	.04	-.07	.21	.29*	1.00	
Willingness to Expend Effort	.22	.09	.02	.16	.19	.23	1.00
Problem-focused	.22	.26*	.35**	.05	.05	.05	.16
Emotion-focused	-.01	.13	.13	-.06	-.01	.14	.13
Avoid-oriented	-.26*	.25*	.24*	-.41***	-.21	-.03	.17

Note. $N=71$. * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$

The relationships between coping and achievement motivation were examined by correlating coping with four motivational constructs--intrinsic interest, perceived learning

competence, effort attribution, and willingness to spend effort. The associations of coping with these achievement motivational constructs are also reported in Table 5.4. As expected, intrinsic interest was negatively correlated with avoidance-oriented coping ($r = -.41, p < .001$). However, there was no significant relationship between intrinsic interest and the other types of coping. Moreover, no significant relationship was found between coping and the other three achievement motivational constructs.

Summary and Discussion

The associations reported here seem to suggest the potential maladaptiveness of the use of avoidance-oriented coping strategy when students experience academic failure. When their mastery goals are low or when their performance-avoidance goals are high, students exhibit a high tendency towards avoidance-oriented coping strategies to deal with their failure. A high tendency to use avoidance-oriented coping strategies is associated with a low level of intrinsic interest. Even though correlational data do not imply causal relationships, the directions of these associations suggest that using avoidance-oriented coping to deal with academic failure is linked to a decrease of intrinsic interest.

One unexpected finding was a positive relationship between problem-focused coping and performance-avoidance goals. Problem-focused coping is generally viewed as an adaptive way to cope with stress. Its association with performance-avoidance goals, which are linked to various maladaptive learning and motivational patterns in past research, suggests that a high performance-avoidance goal may not impair students' desire to solve the problem when they initially face failure in the classroom. Wortman and Brehm (1975) have suggested that individuals may try to fight back in the face of initial failures in a reactive attempt to reestablish control. It is only when failure experiences keep piling up that people are expected to give up and become helpless.

When performance-avoidance goals are high, students may still try to solve the problem right after failure on their first major exam in a class, instead of giving up immediately.

Although the results of these associations provide a broad picture of how goal orientations relate to coping and of how coping strategies relate to achievement motivation, some questions remain unanswered. First, does the non-significant relationship between mastery goals and problem-focused coping imply that a high mastery goal may not necessarily orient students to focus on dealing with their problem when facing academic failure? Second, does using problem-focused or emotion-focused coping strategies have no influence on maintaining students' achievement motivation, even though they have been shown to be effective responses in many stressful situations? Third, do performance-approach goals and performance-avoidance goals motivate students to cope with academic failure in the same way, since both of them are positively correlated to problem-focused and avoidance-oriented coping? While testing the research hypotheses, various coping strategies were classified into three broad categories in order to capture the general types of coping used by an individual when dealing with academic failure. Each coping category consists of several specific coping strategies. For example, the category of problem-focused coping was formed by combining five specific coping strategies: active coping, planning, suppression of competing activities, restraint, and seeking instrumental support. Using one specific problem-focused coping strategy, such as active coping, does not necessary imply that one will also use another problem-focused coping strategy, such as restraint. To understand further the relationships among goals, coping, and achievement motivation in detail, the next step was to examine the association between goal orientations and each specific coping strategy and between each specific coping strategy and achievement motivational constructs.

Exploratory analysis 1: Detailed Relationships among Goal Orientations, Coping, and Achievement Motivation

Overview

This section provides for a more detailed picture of the relationships among goal orientations, coping, and achievement motivations. The first step was to break down the three broad coping strategies into their specific components, and then correlate goal orientations and achievement motivational constructs to each specific coping strategy. The results are displayed in Table 5.5.

Results: Relationships among Goal Orientations, Coping, and Achievement Motivation

Relationships between goal orientations and coping strategies

In the previous section, mastery goals did not have a significant association with problem-focused coping. The results shown in Table 5.5 revealed a positive relationship between mastery goals and three of the problem-focused coping strategies. Mastery goals were positively correlated with active coping ($r = .28, p < .05$), planning ($r = .39, p < .001$), and suppression of competing activities ($r = .25, p < 0.05$). Mastery goals were also associated with one of the emotion-focused coping strategies--positive reinterpretation and growth ($r = .31, p < .01$). With regard to the association with avoidance-oriented coping strategies, mastery goals were negatively correlated with behavioral disengagement ($r = -.36, p < .01$) and mental disengagement ($r = -.25, p < .05$).

Performance-approach goals were found to have a significantly positive correlation with two of the problem-focused coping strategies--planning ($r = .25, p < .05$) and suppression of competing activities ($r = .25, p < .05$), and to have a negative correlation with one of the emotion-focused coping strategies--acceptance ($r = -.27, p < .05$). Although performance-approach goals were positively correlated with the overall

category of avoidance-oriented coping, there was no significant association between performance-approach goals and any particular strategy that was classified as avoidance-oriented coping.

Table 5.5

Correlations among Goal Orientations, Coping Subscales, and Achievement Motivation

	Mastery	Performance- approach	Performance- avoidance	Intrinsic interest	Perceived Competence	Effort Attribution	Willingness to Expend effort
Active Coping	.28*	.20	.11	.11	.27*	.15	.17
Planning	.39***	.25*	.22	.35**	.16	.10	.24*
Suppression	.25*	.25*	.28*	.01	.01	-.04	.17
Restraint Coping	-.16	.09	.32**	-.22	-.21	-.08	.01
Use of Instrumental Support	.01	.16	.34**	-.12	-.03	.01	-.002
Use of Emotional Support	-.06	.17	.24*	-.11	-.08	.06	.06
Positive Reinterpretation	.31**	.12	-.04	.35**	.27*	.34**	.28*
Acceptance	-.14	-.27*	-.14	-.10	-.02	.10	-.11
Venting of/focus on Emotion	-.10	.05	.26*	-.24*	-.15	-.07	.15
Denial	.05	.22	.20	-.04	.12	.06	.37**
Behavioral Disengagement	-.36**	.16	.21	-.53****	-.40***	-.15	.05
Mental Disengagement	-.25*	.21	.16	-.36**	-.17	.004	.03

Note. $N=71$. * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$

Lastly, performance-avoidance goals were positively correlated with three of the problem-focused coping strategies--suppression of competing activities ($r = .28$, $p < .05$), restraint coping ($r = .32$, $p < .01$), and seeking social support for instrumental reasons ($r = .34$, $p < .01$). Performance-avoidance goals were also positively correlated with two of the emotion-focused coping strategies--seeking social support for emotional reasons ($r =$

.24, $p < .05$) and venting of/focus on emotions ($r = .26$, $p < .05$). However, as with the results concerning the performance-approach goals, there was one unexpected finding for the performance-avoidance goals – they showed no significant correlation with the use of any specific avoidance-oriented coping strategy, even though there was a negative relationship with the general tendency to engage in avoidance-oriented coping.

Relationships between coping strategies and achievement motivational constructs

Several significant relationships between coping strategies and achievement motivational constructs were found here. First, planning was positively correlated with intrinsic interest ($r = .35$, $p < .01$). Second, positive reinterpretation/growth was positively correlated with intrinsic interest ($r = .35$, $p < .01$), perceived competence ($r = .27$, $p < .05$), and effort attribution ($r = .34$, $p < .01$). Third, the venting of or focus on emotions was negatively correlated with intrinsic interest ($r = -.24$, $p < .05$). Fourth, behavioral disengagement was negatively correlated with intrinsic interest ($r = -.53$, $p < .0001$) and perceived competence ($r = -.40$, $p < .001$). Last, mental disengagement was negatively correlated with intrinsic interest ($r = -.36$, $p < .01$). One surprising finding was that denial was positively correlated with students' willingness to expend effort in the future ($r = .37$, $p < .01$).

In summary, intrinsic interest was positively associated with planning and positive reinterpretation/growth, and negatively associated with venting of/focus on emotion, behavioral disengagement, and mental disengagement. Perceived learning competence was negatively associated with behavior disengagement. Effort attribution was positively associated with positive reinterpretation and growth. Willingness to expend effort on future study was positively associated with denial. No other significant relationships between coping and other motivational constructs were shown.

Summary and Discussion

Results of this exploratory study reveal that different goal orientations are linked to the use of different coping strategies in reaction to academic failure. When mastery goals are high, students are likely to put other competing activities aside, to take action, to come up with a plan to improve their performance, and to interpret failure experience in a positive way, and they are unlikely to reduce effort or engage in irrelevant activities to avoid the situation. Like mastery goals, when performance-approach goals are high, students are also likely to come up with a plan to improve their performance and put other competing activities aside in order to concentrate on dealing with the problem, but the likelihood to accept the reality of their failures is low. When students' performance-avoidance goals are high, they appear to show a high tendency to put other activities aside to concentrate on dealing with the problem, but they do not rush to take any action. They also appear to have a high tendency to talk about their own emotion and ask for social support, either for instrumental or emotional reasons. Lastly, even though no association between performance-avoidance goals and any particular avoidance-oriented coping strategies, except for the overall score, is shown in this exploratory analysis, students seem to demonstrate a general tendency to avoid thinking about their failure when the intensity of their performance-avoidance goals is high.

The results shown in the relationship between coping and achievement motivation suggest a set of coping strategies that are potentially adaptive coping responses to deal with academic failure. This may help to explain why mastery goals are adaptive goals when confronting academic failure. While using these potentially adaptive strategies, such as positive reinterpretation and planning, students may keep their attitude positive and realize what they need to do to improve their learning, thus resulting in adaptive patterns of learning and motivation after academic failure.

There are some unexpected findings shown in this study. One unexpected finding is that performance-avoidance goals are positively associated with students' tendency to search for instrumental support from others. This may reflect a desire to get advice in order to succeed in the future, even when students' performance-avoidance goals are high. In the general discussion section, I will discuss that possibility. Another unexpected finding is a positive association between denial coping and students' willingness to expend effort on future study. It is hard to explain this association based on the past literature, in which denial is generally linked to maladaptive adjustment (e.g., Mayou & Bryant, 1987). Denial coping may serve as a self-defensive mechanism to protect one's own self-worth. While denying their failures, students may want to prove that they are capable to achieve the desired level of performance. Consequently, they are likely to report a high willingness to expend effort on future study. To verify this explanation, future studies are needed.

The first exploratory analysis answers the primary research questions and provides a somewhat detailed understanding of the relationships among goal orientations, coping strategies and achievement motivation. There are some other research issues, which are relevant to goal orientation, coping, and the effect of academic failure that remained unanswered. Even though these issues are not the primary concerns of the present study, it is worthwhile to explore them based on the data available in the present study. In the following sections, I will report three exploratory analyses that investigated these issues.

Exploratory Analysis 2-Do Students Regulate the Intensity of Goal Orientations They Pursued Because of the Grade?

Overview

Although past research has shown that the intensity of goals adopted by students is stable through examination of the goals that students pursue from the beginning to the end of an academic period (e.g., Meece & Miller, 2001), Senko and Harackiewicz (2004) conducted two studies and found that students regulated and adjusted the achievement goals that they pursued based on their midterm grade. In their first study, the results showed that the goals that students pursued late in the semester were influenced not only by the goals that they pursued at the beginning of the semester but also by their midterm exam performance. Good performance on a midterm exam increased mastery and performance-approach goals, but decreased performance-avoidance goals. In other words, when students received a bad grade, their performance-avoidance goals would increase, which would, in turn, result in a decrease in their performance on the final exam. In their second study, a laboratory experiment, students' mastery goals decreased immediately after receiving negative feedback. Pursuit of performance-approach and performance-avoidance goals, in contrast, were unaffected by feedback.

These two studies reveal how competence feedback influences the goals that students pursue. In the preliminary analysis of the present study, however, the results only showed a decline in performance-approach goals. There was no significant change in the intensity of the mastery and performance-avoidance goals before and after a midterm exam. To examine the effect of midterm exam grade on achievement goals more closely, I conducted an exploratory analysis that replicated Senko and Harackiewicz's study for students who perceived their grade as a failure. Besides testing the effect of grade on achievement goals, the impact of an autonomous support classroom

environment on goals was also examined. An autonomous support environment is viewed as an important context cue that enhances learning and motivation in an academic context. Goal orientation theorists have often conceptualized students' goal orientation as a context dependent or classroom situated construct that is very amenable to change. An autonomous support environment should provide stronger environmental cues than do students' grades as an influence on the goals students pursue. Therefore, the impact of perceived autonomous support from the instructor was examined as well.

To test the effect of a midterm exam grade, the goals that students pursued after the midterm exam were regressed on the grade that students received, the goals that students pursued before they took the exam, students' school, and gender (as Model 1). After the effect of the grade was obtained, the variable that represented autonomous support from the instructor was incorporated in the regression model (as Model 2). The results are reported in Table 5.6a.

Results: Effects of Midterm Grade and Autonomous Support on Goal Orientations

Table 5.6a revealed that the goals that students pursued after the midterm exam were significantly predicted by the goals that they pursued before the exam. Midterm exam grade, on the other hand, did not affect students' goals at all. Results also showed that autonomous support had a significant effect on mastery goal orientation ($\beta = .33$, $p < .001$), even though it did not affect performance-approach and performance-avoidance goals.

In order to compare Senko and Harackiewicz's (2004) study, the same regression analyses were conducted by using all students - those receiving either a good or a poor grade - as the sample, and the results are reported in Table 5.6b. Consistent with Senko and Harackiewicz's study, results of this exploratory analysis indicated a main effect of

Table 5. 6a

Regression Coefficients-Predicting Goal Orientations by Graded Performance and Perceived Autonomous Support from Instructors for Students who Perceived their Grade as a Failure

	Mastery T2						Performance-approach T2						Performance-avoidance T2					
	Model 1			Model 2			Model 1			Model 2			Model 1			Model 2		
Predictors	B	SE	β	B	SE	β	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Mastery T1	.84	.09	.75*****	.66	.09	.60*****												
Performance-approach T1							.84	.08	.76*****	.83	.08	.75*****						
Performance-avoidance T1										.77	.07	.77*****	.78	.07	.78*****			
Midterm Grade	-.03	.10	-.02	-.06	.09	-.05	.17	.13	.10	.15	.13	.09	.03	.10	.02	.02	.10	.02
School	.23	.21	.11	.22	.19	.11	.47	.27	.17	.47	.27	.17	.40	.20	.18	.40	.20	.18
Gender	-.07	.21	-.03	-.12	.19	-.06	.34	.27	.12	.32	.27	.11	.27	.20	.12	.25	.20	.11
Autonomous Support				.32	.08	.33***				.13	.10	.10				.07	.07	.07
R-squared	.57			.66			.64			.65			.67			.68		

Note. $N=71$. T1 and T2 are abbreviations of Time 1 and Time 2. Model 1: Predicting goal orientations by grade, gender, school, and students' goal orientation before they took the exam. Model 2: Adding "autonomous support" as a predictor to model 1. * $p < .05$. ** $p < .01$, *** $p < .001$, **** $p < .0001$

Table 5.6b

Regression Coefficients-Predicting Goal Orientations by Graded Performance and Perceived Autonomous Support from Instructors for All Students

		Mastery T2		Performance-approach T2		Performance-avoidance T2			
		Model 1		Model 2		Model 1		Model 2	
Predictors	B	SE	β	B	SE	β	B	SE	β
Mastery T1	.79	.05	.75*****	.72	.05	.68*****			
Performance-approach T1							.86	.05	.77*****
Performance-avoidance T1							.85	.05	.76*****
Midterm Grade	-.06	.05	-.06	-.06	.05	-.06	-.04	.07	-.03
School	.08	.14	.04	.11	.14	.11	.05	.20	.02
Gender	-.09	.14	-.05	-.11	.14	-.06	-.04	.20	-.01
Autonomous Support				.17	.05	.16**			
R-squared	.56			.58			.59		
							.60		
							.61		
									.61

Note. $N=192$ in model 1. $N=190$ in model 2. T1 and T2 are abbreviations of Time 1 and Time 2. Model 1: Predicting goal orientations by grade, gender, school, and students' goal orientation before they took the exam. Model 2: Adding "autonomous support" as a predictor to model 1. * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$

graded performance on performance-avoidance goals ($\beta = -.17, p < .001$). However, the results did not reveal any effect of graded performance on mastery and performance-approach goals. As expected, the results showed a significant effect of autonomous support on mastery goal orientation. It is probable that including students who perceived their grade as failure, instead of all of the students regardless of their grade, may underestimate the effect of the grade on performance-avoidance goals. However, these results suggest high goal stability, and indicate that mastery and performance-approach goals are not impacted by the graded performance.

Summary and Discussion

These results suggest one conclusion: for students who perceived their grade as a failure, goal orientation seemed quite stable and not impacted easily by their grade. In other words, getting a good grade did not significantly enhance mastery or performance-approach goals immediately, nor did a poor grade significantly increase performance-avoidance goals immediately. For all students, goal orientation seemed also quite stable, except that performance-avoidance goals were impacted by students' grade on a midterm exam. In the Senko and Harackiewicz's (2004) studies, even though the mastery goal orientation was very stable throughout the entire semester, it dropped immediately after students received any negative feedback while performing on a task. The differences in findings may be caused by a difference in subject populations. Another possible explanation for the difference in findings is that receiving negative feedback on a problem-solving activity may not be equivalent to receiving a poor grade on a midterm examination. An academic failure may cause more negative emotional reactions and stress than negative feedback. Why do mastery goals decline immediately when students confront negative feedback on a task, but not when students confront academic failure? It seems reasonable to believe that receiving a poor grade would not impair students'

mastery goal orientation. Based on both the prior research and established theories of goal orientation, mastery goal orientation seems relatively stable and not impacted by normative performance feedback. In addition, Brunstein and Gollwitzer (1996) have found that students exposed to failure relevant to their professional self-definitions (e.g., becoming a physician) showed enhanced performance on a subsequent task relevant to the same self-definition. It is possible that mastering the course materials is so important for students to achieve their ultimate academic goals that their mastery goals are not influenced by an exam. In contrast, failing to perform well on a learning task, which may not be relevant to students' ultimate academic goals, may not be so important to students such that the negative feedback does not motivate students to fight back

Exploratory Analysis 3-Mediating Effects of Coping on the Relationship between Goal Orientation and Achievement Motivation

Overview

Because there were associations among goal orientations, coping, and achievement motivation, one additional research question remains unanswered; that is, is there any potential causal order among the relationships of these three sets of constructs? Goal orientation research has revealed that the goals that students pursue in an academic context influence the strategies that students choose to engage in learning, and that these strategies lead to different motivational and learning outcomes (e.g., Elliot, McGregor, & Gable, 1999). Even though the primary focus of most researchers is generally on the mediating roles of various cognitive and motivational strategies, it is possible that coping strategies also have the same mediating effects on the relationships between goals and achievement motivation when students experience academic failure. In addition, as mentioned previously, the ways that individuals cope with stressors are influenced by the

contexts and their own personal coping resources, which are defined as relatively stable personal and cognitive characteristics. The current study has shown that the goals that students adopt are quite stable and not impacted by their grade. These goals may serve as personal resources and influence students' coping process and their achievement motivation. The next exploratory analysis, therefore, was conducted to test if coping has a mediating effect on the relationship between goal orientation and achievement motivation.

The correlation matrix reported in the previous section indicates that mastery goals are associated with intrinsic interest and perceived learning competence. It also indicates that mastery goals are also associated with certain coping strategies, including active coping, planning, suppression of competing activities, positive reinterpretation/growth, behavioral disengagement, and mental disengagement, which are also related to achievement motivational constructs. Intrinsic interest is associated with planning, positive reinterpretation, and behavioral disengagement. Perceived competence is associated with active coping, positive reinterpretation, and behavioral disengagement. Based on Baron and Kenny (1986), to demonstrate mediation, strong relationships between (1) the predictor and the mediating variable and (2) the mediating and criterion variables must be established. Thus, it was hypothesized that mastery goals would have a significant association with intrinsic interest and perceived competence. It was also hypothesized that (1) the relationship between mastery goals and intrinsic interest would be mediated by three coping strategies: planning, positive reinterpretation, and behavioral disengagement; and (2) the relationship between mastery goals and perceived competence would be mediated by active coping, positive reinterpretation, and behavioral disengagement. These hypotheses are also supported by goal orientation theories, which generally presume that students would display adaptive patterns of learning and

motivation after failure such as not giving up or reducing effort, learning from their mistakes, and focusing on learning tasks. It should be noted here that mental disengagement coping is not hypothesized to have a mediating effect on the relationship between mastery goals and intrinsic interest. Engaging in irrelevant activities to avoid thinking of academic failure may be a sign of low intrinsic interest, instead of the cause of decreased intrinsic interest. Thus, mental disengagement coping is not hypothesized as a mediator in this exploratory analysis.

To determine its function as a mediator, a variable must meet the following three conditions. First, a relationship between the predictor variable and the outcome measure must be established. Second, to document the first link, a relationship between the predictor and the hypothesized mediator must be established. Third, to document the second link, a relationship between the mediator variable and the outcome variable must be established, and the relationship between the predictor variable and the outcome measure should be reduced or no longer significant after the link between the mediator variable and outcome variable is established (Baron & Kenny, 1986; Judd & Kenny, 1981). Based on these criteria, three sets of regressions were performed to test the hypothesized path model proposed in this exploratory analysis. The first set of analyses regressed intrinsic interest and perceived competence upon mastery goals, while controlling for students' intrinsic interest or perceived competence before academic failure in order to check the link between the independent variable and dependent variable. The second set of analyses regressed each hypothesized mediator upon mastery goals to examine the link between independent variable and hypothesized mediators. The third set of analyses regressed intrinsic interest and perceived competence upon hypothesized mediators, while controlling for mastery goals and intrinsic interest before academic failure (or perceived competence before academic failure) to test the mediating

effects on the relationships between independent variable and dependent variable. Before performing these three sets of regression analyses, I tested the effect of the graded performance and demographic data, such as school and gender on two dependent variables - intrinsic interest and perceived competence. None of these variables had significant relationships with intrinsic interest and perceived competence, so these variables were not included or controlled for in the aforementioned regression analyses. It should be noted that the independent variable—mastery goals—was students' self-reported ratings of mastery-goal orientation at the second data collection. The score of mastery goals obtained at the second data collection reflect the extent to which students pursued mastery goals after the midterm exam whereas scores obtained at the first data collection do not. Past research has shown a decline in mastery-goal orientation within a school year (Meece & Miller, 2001). Even though goal orientations are shown to be relatively stable in past research and in the current study, I preferred to choose scores from in the second data collection as the independent variable.

Results: Mediating Effects of Coping on the Relationship between Goal Orientation and Achievement Motivation

To document the link between mastery goals and two dependent variables - intrinsic interest and perceived competence - two separate regression models were used, controlled for students' intrinsic interest/ perceived competence before taking exam. The results, reported in Table 5.7 under the column labeled "Model 1", showed that mastery goals have a significant relationship with intrinsic interest ($\beta = .24, p < .01$) and perceived competence ($\beta = .45, p < .0001$).

To document the link between mastery goals and hypothesized mediators, each coping strategy that was hypothesized to mediate the relationship between mastery goals and intrinsic interest, or between mastery goals and perceived competence, was regressed

on mastery goals. The results from this step, reported in Table 5.8, showed that mastery goal orientation had a significant relationship with active coping ($\beta = .28, p < .05$), planning ($\beta = .39, p < .001$), positive reinterpretation and growth ($\beta = .31, p < .01$), and behavioral disengagement ($\beta = -.36, p < .01$).

Table 5.7

Regression Coefficients for Mastery Goals and Mediating Variables (Coping Strategies)
Predicting Intrinsic Interest and Perceived Competence after Academic Failure

	Intrinsic Interest T2						Perceived Competence T2					
	Model 1			Model 2			Model 1			Model 2		
Predictors	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Mastery T2	.35	.11	.24**	.28	.11	.19*	.51	.12	.45****	.42	.13	.37**
Intrinsic Interest T1	.75	.07	.72****	.67	.08	.65****						
Perceived Competence T1							.35	.13	.28**	.26	.14	.21
Active Coping										.10	.20	.06
Planning				.07	.12	.04						
Positive Reinterpretation				.20	.13	.09				.15	.18	.09
Behavioral Disengagement				-.48	.22	-.14*				-.47	.29	-.17
R ²	.79			.81			.38			.41		

Note. $N=71$. T1 and T2 are abbreviations of Time 1 and Time 2. Model 1: Predicting the outcome variable (intrinsic interest and perceived competence after failure) by mastery goals. Model 2: Adding hypothesized mediators (coping strategies) to model 1 in order to determine the mediating effect(s). * $p < .05$, ** $p < .01$, *** $p < .001$, **** $p < .0001$

To test the mediating effects of the hypothesized mediators, two regression models were used. The first one regressed intrinsic interest upon the hypothesized mediators of planning, positive reinterpretation, and behavioral disengagement, while

controlling for mastery goals and the level of intrinsic interest before students took exam. The second model regressed perceived competence upon the hypothesized mediators of active coping, positive reinterpretation, and behavioral disengagement, while controlling for mastery goals and the level of perceived competence before students took exam. The results were reported in Table 5.7 under the column labeled “Model 2.”

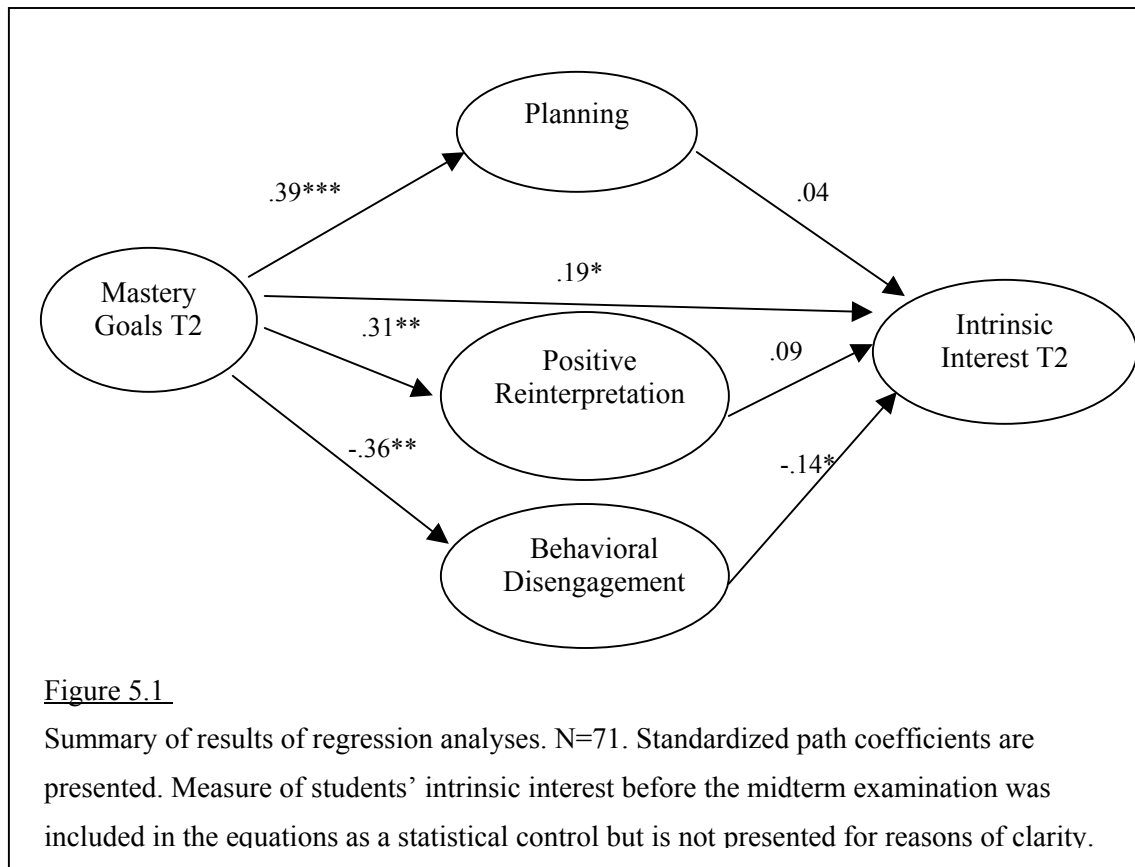
Table 5.8

Regression Coefficients for Mastery Goals Predicting Mediating Variables (Coping Strategies)

	Active Coping			Planning			Positive Reinterpretation			Behavioral Disengagement		
Predictor	B	SE	β	B	SE	β	B	SE	β	B	SE	β
Mastery Time 2	.18	.07	.28*	.30	.09	.39***	.21	.08	.31**	-.15	.05	-.36**
R-squared	.08			.15			.10			.13		

Note. $N=71$. * $p < .05$, ** $p < .01$, *** $p < .001$

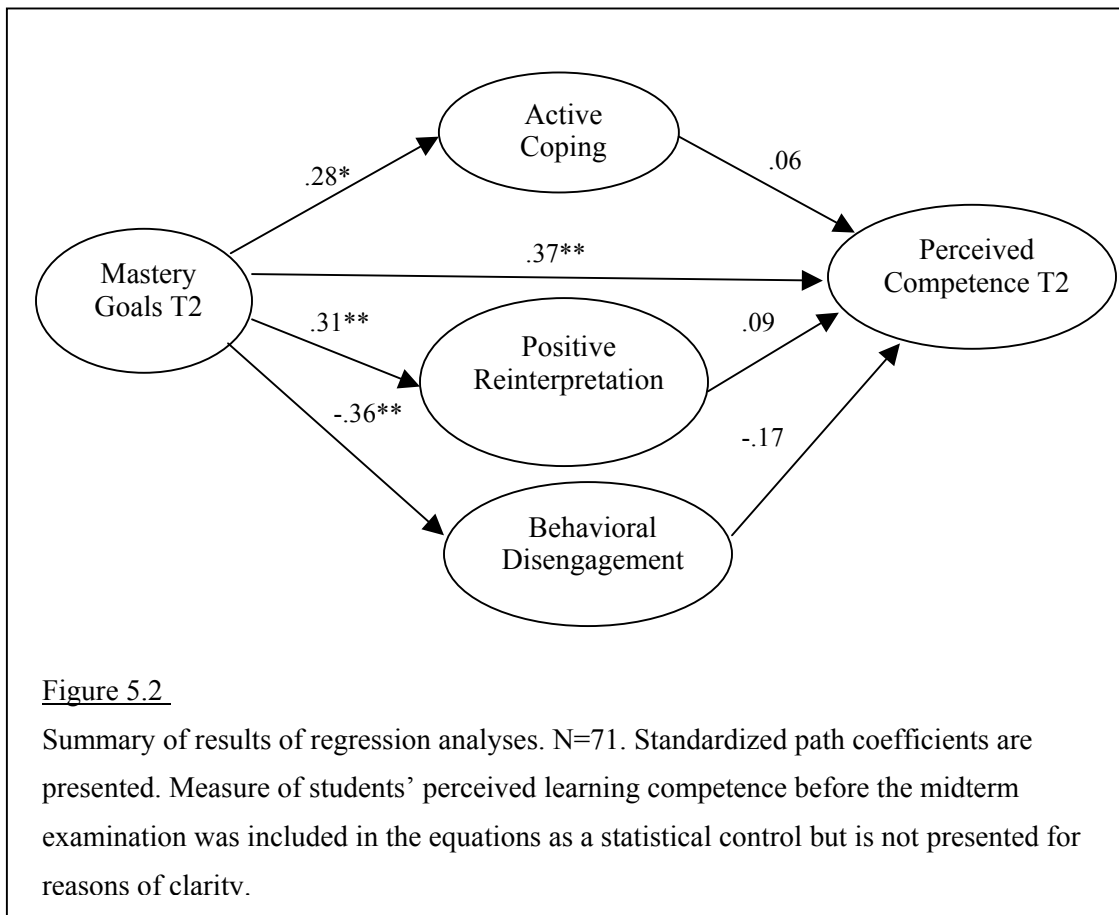
Results from this step indicated that behavioral disengagement has a significant relationship with intrinsic interest ($\beta = -.14$, $p < .05$), controlling for mastery goals and other hypothesized mediators. It suggested that behavioral disengagement has a mediating effect on the relationship between mastery goals and intrinsic interest. The results did not suggest any mediating effects of either planning or positive reinterpretation in the relationship between mastery goals and intrinsic interest. Moreover, no coping strategy was found to be a mediator in the relationship between mastery goals and perceived competence. The results of these regression analyses can be summarized in Figure 5.1 and Figure 5.2.



Summary and Discussion

These findings indicated that mastery goals are associated with the use of active coping, planning, positive reinterpretation, and behavioral disengagement. Mastery goals also have an association with intrinsic interest and perceived competence. The relationship between mastery goals and intrinsic interest is mediated by behavioral disengagement, since behavioral disengagement is significantly associated with intrinsic interest while controlling mastery goals. The results suggest that data are consistent with the model that proposes that there is a positive relationship between mastery goals and intrinsic interest, and behavioral disengagement helps to explain why mastery goals are

associated with intrinsic interest. Although causal statements are not conclusive when based on cross-sectional data, these findings support goal orientation theories, which presume that students who adopt mastery goals are less likely to give up or to reduce effort in dealing with their problem, thus resulting in the maintenance of a high level of intrinsic interest.



This exploratory study, however, does not reveal the mediating effects of other coping strategies in the relationship between mastery goals and intrinsic interest and between mastery goals and perceived competence. While controlling for mastery goals, neither active coping, planning, nor positive reinterpretation has a significant relationship with intrinsic interest and perceived competence. The results seem to suggest that these

coping strategies do not have an immediate independent effect on achievement motivation while controlling for mastery goals. However, there is a possibility that these coping strategies may have long term effects on maintaining students' motivation. For example, engaging in active coping and planning may direct students' attention to learning tasks and help students regain control over their own learning, such that their perceived competence and interest in tasks increase accordingly. In addition, even though the only purpose of this exploratory analysis is to test the mediating effects of coping, there may be other models that would better fit the data. For example, one coping response may lead to other coping responses. There may be a more complicated relationship among goal orientations, coping, and achievement motivation than in the model proposed in the present exploratory analysis. Due to the limits of the sample size and the lack of strong theoretical support that documents these causal relationships in detail, testing a complicated model that is embedded with all of these constructs is not possible with these data. To further explore this issue, more empirical studies are needed in the future.

Exploratory Analysis 4: The Role of Multiple Goals in Coping

Overview

How students represent and react to the multiple goals they may have for academic tasks has become an important issue in the area of achievement goal studies (Pintrich, 2000a). Goal orientation theorists have suggested that students can adopt multiple goals while engaging in learning activities. The multiple goals framework allows researchers to understand the effects of achievement goals on the nature of students' learning. For example, research has shown that performance-approach goals have an

adaptive impact on learning and achievement performance when students also adopt a high mastery goal (Pintrich, 2000b).

This exploratory analysis was therefore conducted to investigate the role of multiple goals on coping. Cluster analysis was used to classify students into different groups based on the goals they adopt after academic failure. After clusters were formed and the different goal profiles of each group were identified, a series of ANOVAs were used to test if there was any group difference in the use of coping strategies. The assumption of homogeneity was tested by Levene's Test. If significant effects of the group on coping were found, the Tukey-Kramer method was used as a post hoc analysis to do pair-wise comparisons if the homogeneity assumption was not violated

Table 5.9a.

The number of students in each range of performance-approach and performance-avoidance goals, while mastery goals were high.

		Performance-approach Goals		
		<u>High</u>	<u>Medium</u>	<u>Low</u>
Performance-avoidance Goals	<u>High</u>	19	10	3
	<u>Medium</u>	3	11	5
	<u>Low</u>	1	0	2

Note. N=54.

Before presenting the cluster analysis results, an overall view of the goal profiles that students might adopt in the classroom is provided in Tables 5.9a, 5.9b, and 5.9c. These tables summarize the number of students in each of nine categories. In these tables, “High” refers to scores of 5 and above, “Medium” refers to scores larger and equal to 3 but less than 5, and “Low” referred to score less than 3. These tables suggest that students did pursue multiple goals when they engaged in classroom learning. Most students

reported a medium to high degree of all three orientations. Few students pursued only one specific form of goal orientation. No students reported a low score on all of three of these goal orientations.

Table 5.9b.

The number of students in each range of performance-approach and performance-avoidance goals, while mastery goals were medium.

		Performance-approach Goals		
		<u>High</u>	<u>Medium</u>	<u>Low</u>
Performance-avoidance Goals	<u>High</u>	2	3	1
	<u>Medium</u>	2	4	2
	<u>Low</u>	0	1	0

Note. $N=15$.

Table 5.9c.

The number of students in each range of performance-approach and performance-avoidance goals, while mastery goals were low.

		Performance-approach Goals		
		<u>High</u>	<u>Medium</u>	<u>Low</u>
Performance-avoidance Goals	<u>High</u>	1	0	0
	<u>Medium</u>	1	0	0
	<u>Low</u>	0	0	0

Note. $N=2$.

Cluster Analysis Procedures and Cluster Formation in the Present Study

To classify students into different groups based on the goals they pursued, hierarchical cluster analysis was used. I selected the method of average linkage between groups to form initial clusters and used a forward inclusion clustering method by

observing the change in normalized Root-Mean-Square distance over successive steps of cluster formation (Hair & Black, 2002). The diagram of results from the initial cluster analysis suggests five outliers in the data set. Herein, the same cluster analysis was repeated after these outliers were removed. The results of this second cluster analysis suggested a five-cluster solution. However, there were only two observations in the fifth cluster. Thus, observations in this cluster were not discussed and removed from the data set. After re-performing the same cluster analysis procedures, it suggested a four-cluster solution. To test the stability of the initial clusters identified in the average linkage method of clustering, I reclustered the same sample (after removing the outliers and two observations from the fifth cluster in the initial cluster analysis) using Ward's method of clustering, which is biased toward producing clusters of approximately equal size. The results of both cluster analyses indicated a fairly stable pattern, with approximately 94% of the students maintaining their original cluster membership.

The mean scores and standard deviations of the three goal orientations are displayed in Table 5.10. To identify the characteristics of each cluster, a series of analyses of variance (ANOVA) were performed on the three goal orientation scores that defined the clusters. The first cluster, labeled *high mastery, medium high performance-approach, and medium low performance-avoidance*, consists of 14 students who were characterized as highly motivated by the presence of high mastery, medium high performance-approach goals, and medium low performance-avoidance goals. The second cluster, labeled *high mastery, high performance-approach, and high performance-avoidance*, consists of 29 students who were characterized as highly motivated by the presence of mastery, performance-approach, and performance-avoidance goals. The third cluster, labeled *medium high mastery, medium low performance-approach, and medium high performance-avoidance*, consists of 12 students who were characterized as highly

motivated by the presence of medium high performance-avoidance goals and mastery with medium performance-approach goals. The last cluster, labeled *high mastery, low performance-approach, and medium low performance avoidance*, consists of 9 students who were characterized as highly motivated by the presence of high mastery goals with low performance-approach and medium low performance-avoidance goals.

Table 5.10

Means and Standard Deviations of Goal Orientations in Each Cluster

Goal Orientation	Cluster 1 N=14		Cluster 2 N=29		Cluster 3 N=12		Cluster 4 N=9	
	M	SD	M	SD	M	SD	M	SD
Mastery Goals	5.80	0.45	6.01	0.52	4.33	0.57	5.80	0.58
Performance-approach Goals	4.63	0.40	5.33	0.60	3.61	0.82	1.03	0.65
Performance-avoidance goals	3.86	0.61	5.71	0.52	4.90	0.65	3.57	0.83

Note. N=64.

Group Differences in Coping

After determining the cluster characteristics, the next step tested if students with different but multiple goals used different patterns of coping strategies. Table 5.11 reported mean scores and standard deviations of the coping strategies displayed by students in each cluster. A series of one-way analyses of variance were performed to test the cluster differences in the three broad categories of coping, and in each specific coping strategy, followed by Tukey-Kramer post hoc tests to see if significant differences were found in the clusters. To avoid an increase in type one error, the significance level was set as 0.01 for all ANOVA tests.

Table 5.11

Means and Standard Deviations of Coping in Each Cluster

	Cluster 1		Cluster 2		Cluster 3		Cluster 4	
Goal Orientation	Cluster Characteristics of Goal Profiles							
Mastery	High		High		Medium High		High	
Performance-approach	Medium High		High		Medium Low		Low	
Performance-avoidance	Medium Low		High		Medium High		Medium Low	
	N=14		N=29		N=12		N=9	
Coping	M	SD	M	SD	M	SD	M	SD
Active Coping	2.46	0.80	2.84	0.58	2.31	0.63	2.47	0.58
Planning	2.78	0.89	3.29	0.64	2.25	0.68	3.50	0.40
Suppression of other activities	2.32	0.82	2.57	0.62	2.08	0.74	1.89	0.61
Restraint Coping	1.54	0.45	1.92	0.63	2.02	0.73	1.44	0.30
Use of Instrumental Support	1.46	0.59	2.02	0.98	1.52	0.60	1.50	0.61
Use of Emotional Support	1.84	0.76	2.31	1.01	1.90	0.77	2.06	0.69
Positive Reinterpretation	2.34	0.57	2.55	0.71	2.00	0.74	2.69	0.63
Acceptance	2.63	0.75	2.59	0.77	2.44	0.64	3.28	0.59
Venting/Focusing on Emotion	1.73	0.88	2.16	0.93	1.73	0.65	1.97	0.78
Denial	1.21	0.34	1.29	0.41	1.21	0.53	1.03	0.08
Behavioral Disengagement	1.21	0.31	1.37	0.45	1.52	0.49	1.08	0.18
Mental Disengagement	1.75	0.49	1.96	0.73	2.13	0.61	1.53	0.40
Problem-focused Coping	10.55	2.70	12.63	2.42	10.19	2.89	10.31	1.72
Emotion-focused Coping	8.54	2.36	9.61	2.45	8.06	1.83	10.00	1.79
Avoidance-oriented Coping	4.18	0.65	4.26	1.26	4.35	1.38	3.64	0.50

Note. N=64.

The results showed that there were group differences concerning the use of problem-focused coping, $F(3, 60) = 4.38, p < .01$ and planning, $F(3, 60) = 6.90, p < .001$. The results from post hoc analyses indicated that students in Cluster 2 (high mastery/performance-approach/performance-avoidance) used more planning strategies to cope with academic failure than students in Cluster 3 (medium high

mastery/performance-avoidance and medium low performance-approach). The results also revealed that students in Cluster 2 used more problem-focused coping strategies than students in Cluster 3 ($p < .05$), but the difference did not reach the significant level at 0.01. With respect to the other coping strategies, students in different clusters did not show any significant differences in the use of these coping strategies.

Summary and Discussion

To summarize, the results indicate that when students adopt medium to high performance-avoidance goals, those who have a relatively low mastery and a relatively low performance-approach goal are less likely to use problem-focused coping strategies, including the creation of a plan to improve their grade, than those who adopt a relatively high mastery and a relatively high performance-approach goal. The non-significant differences in the use of coping between cluster one, two, and four seem to suggest that when students are highly motivated by mastery goals, the intensity of performance-approach and performance-avoidance goals they pursue does not lead to different patterns of coping responses. The non-significant differences in the use of coping between clusters three and four seem to suggest that when students' performance-approach goals are not high, they tend to show the same patterns of coping regardless of how intensely they pursue mastery goals or performance-avoidance goals. However, based on goal orientation theories it is difficult to explain why students in Cluster 3 (medium high mastery/performance-avoidance and medium low performance-approach) did not show a significant difference in the use of coping strategies from those who are classified in Cluster 1 (high mastery, medium high performance-approach, and medium low performance-avoidance) and Cluster 4 (high mastery, low performance-approach, and medium low performance avoidance). These data may reveal that the role of multiple goals in coping is too complicated to be determined by this exploratory analysis. Also,

the small sample size may limit the power of this cluster analysis; that is, the characteristics of each cluster may be actually close to one another. Future studies are needed to provide more detailed information about this issue.

Chapter 6

General Discussion

Discussion and Implications

The objective of the research presented in this paper was to investigate the relationships among goal orientations, coping, and achievement motivation. Two primary conclusions can be drawn from these data; First, the results indicate that the goals that student adopt are associated with the ways they cope with academic failure. Second, the results also showed that the coping strategies that students use are associated with aspects of their achievement motivation, such as intrinsic interest and perceived competence.

As expected, high mastery goals seem linked to desirable coping patterns when dealing with academic failure. These patterns including making a plan, taking action in order to deal with the problem and improve their performance, seeing the experience of failure positively, and learning from the experience, instead of reducing efforts aimed at solving the problem or avoid thinking about it. These motivational patterns involve both cognitive and behavioral forms of approach coping (Holahan, Moos, & Holahan, 1996), which are generally associated with psychological adaptiveness (e.g., Billings & Moos, 1985). Student motivation may therefore not be easily impaired by academic failure.

Also as expected, performance-approach goals are associated with the use of both problem-focused and avoidance-oriented coping behaviors. High performance-approach goals are linked to a high tendency of students to concentrate on dealing with the problem and think about how to improve their grade and future studies. However, high performance-approach goals seem linked to a high tendency to engage in general

avoidance-oriented behaviors, even though the studies conducted for this paper were unable to identify which specific type of avoidance behaviors they display. A high performance-approach goal appears also to be linked with a low degree of acceptance by students of the reality that they received a poor grade. These tendencies may result in both positive and negative outcomes. On the one hand, students' performance may not be impaired by failure experience, because of their tendency to engage in task-oriented coping in order to improve their grade after failure. On the other hand, the tendency to avoid dealing with the stress caused by failure may lead students to a high level of anxiety or stress when they engage in future learning or prepare for their next exam.

Although performance-avoidance goals seem associated with desire to solve problems by using restraint coping and looking for advice from others, high performance-avoidance goals seem to reflect students' tendency to fixate on the negative feeling caused by academic failure. The coping strategies that are associated with performance-avoidance goals involve both behavioral approach (e.g., seeking for guidance and support) and behavioral avoidance coping (e.g., emotional discharge). The behavioral approach coping may be beneficial for students in reaction to failure. The tendency to engage in avoidance coping, which is linked to maladaptive motivational constructs, however, may increase distress (e.g., Carver et al., 1993). Even though the results of the study presented here do not reveal an immediately negative effect of performance-avoidance goal orientation on achievement motivation, being occupied by stress and negative feelings may distract students from concentrating on study such that their future learning, performance, and achievement motivation may be impaired.

Past research usually indicated a low tendency of highly performance-avoidance oriented students to seek help while confronting difficult tasks. The results from the study presented in this paper, however, indicate a strong relationship between performance-

avoidance goals and the search for instrumental help. In other words, results suggest that when students' performance-avoidance goals are high, they tend to look for advice from someone else in order to improve their performance after academic failure. This is most likely due to the fact that failure on a major exam causes more stress than does a difficult task, and such stress forces them to realize that they need help from others. One question arises here: will students who have high performance-avoidance goals make progress and improve their learning and motivation after receiving advice from others? Research has shown a fair amount of stability of performance-avoidance goals across an academic period where these goals could either increase or remain the same after a poor grade is received on a major examination (e.g., Senko & Harackiewicz, 2004; the present study). In addition, past research has also revealed a positive effect of performance-avoidance goals on maladaptive strategy use and graded performance on an exam (e.g., Harackiewicz et al., 2000; Elliot & McGregor, 1999). Accordingly, it seems reasonable to assume that students who are highly motivated by performance-avoidance goals may still show maladaptive patterns of learning and motivation - thus resulting in poor performance on a future exam - since their performance-avoidance goals are likely to remain high.

The next question is why, despite the quality of advice that these students may be given, do these students not benefit from the advice they receive? One possible explanation is that students who are highly motivated by performance-avoidance goals tend to desire success with little effort. Karabenick (2004) has found that students who perceived a class emphasis on performance-avoidance goals show avoidance patterns regarding the search for help, such as looking for help to reduce their workload. When students look for help because they want to succeed without having to work as hard, they may not be able to carefully examine the advice they receive and learn what they really

need to change. Accordingly, they may still use the same ineffective strategies that generally result in bad grades. Another possible explanation is that these students may lack the skills for properly executing their plans (i.e., poor time management skills and poor self-monitoring skills) and to change the ways they learn (i.e., limited knowledge about using effective and efficient strategies), even though they realize it must be changed. They may therefore still learn in an ineffective or inefficient way, which, in turn, is likely to result in them making the same mistakes and engaging in the same poor learning patterns. To support this proposition, future studies are needed.

Even though performance-avoidance goals seem linked to potentially maladaptive coping strategies, they may display adaptive coping responses, if students also pursue high mastery goals as well as high performance-avoidance goals. The findings from the cluster analysis suggested that students who are highly motivated by mastery, performance-approach, and performance-avoidance goals focused more on dealing with the problem and on making plans to improve future study than students who have relatively high performance-avoidance goals with relatively low mastery and performance-approach goals. The power of the cluster analysis in the present study might not be high due to the small sample size. However, the results seem to imply that when students are highly motivated by mastery goals, the intensity of performance-approach and performance-avoidance goals they pursue does not significantly affect patterns of coping responses.

Besides the relationships between goal orientations and coping, the results of the study presented here also reveal an association between coping and achievement motivation. It suggests a set of potential adaptive coping strategies that have a positive correlation with adaptive achievement motivational outcomes after failure, as well as with mastery goals. Positive reinterpretation/growth may be the most important and

effective strategy for students to deal with the experience of failure, because it is associated with students' intrinsic interest, perceived competence, and the degree that students attribute their failure to lack of effort. In contrast, behavioral disengagement may be a maladaptive strategy that may lower students' intrinsic interest immediately after failure and impair the relationship between mastery goals and intrinsic interest.

Taken together, the results suggest the importance of enhancing mastery goal orientation in the academic context. Students who are highly motivated by mastery goals appear to stay motivated after experiencing academic failure. The reason may be partially because of their tendency to use adaptive strategies, such as approach coping, rather than maladaptive ones. In contrast, even though performance-approach and performance-avoidance goals are also associated with the use of various approach strategies to deal with their academic failures, they are also associated with avoidance coping strategies that may not be able to strengthen their motivation and therefore have less immediate effect on maintaining their interest and self-perception of competence. The creation of a classroom that promotes mastery goal orientation may therefore be crucial to the encouragement of adaptive coping responses and the reduction of maladaptive ones, such as behavioral disengagement, that tend to reduce students' interest immediately after failure.

Results also indicate that high performance-avoidance goals do not orient students to give up immediately after they receive a poor grade. They seem to show a tendency to work on their problem by looking for advice. To help these students benefit from their coping tendency, it may be important for them to obtain useful and constructive advice that can help them evaluate the experience of failure accurately and direct their attention towards fixing their weaknesses when learning. If they have no idea how to make a change after receiving advice from others, they may be likely to repeat their mistakes,

and as they consider that nothing else they can do will improve their performance, decrease their motivation. Therefore, for students who are highly motivated by performance-avoidance goals, it may be helpful for them to regain control over their learning by receiving constructive feedback that provides them with both learning tips and the knowledge of how to execute these effective and efficient learning strategies to change the ways they learn.

It may be also important to encourage or teach students adaptive strategies to cope with academic failure, particularly cognitive approach coping, which includes planning and positive reinterpretation. The ways that students cope with academic failure not only have an association with achievement motivation, but also have a mediating effect on the relationship between goal orientations and achievement motivation. Even though neither the long term effect of coping on achievement motivation nor the ways that students engage in learning activities after failure were investigated in this study, it is believed that dealing with past failure adaptively may enhance student positive affect toward school and direct students' focus on learning (Kaplan & Midgley, 1999). Their motivation therefore may be enhanced accordingly, and future failure may be prevented.

Limitations of the Present Study

There are several limitations in the present study. First, the present study is unable to reveal how school environment and course structures may influence the ways that students cope with academic failure. Since coping is a context-dependent behavior, the structures and characteristics of one course may influence the ways that students choose to cope with failure. However, it is not clear which characteristics of school or course structure may cause an effect on coping based on the available data in the present study.

The lack of a clear picture of how schools or courses influence coping leads to the second limitation of the present study: the ability to generalize the results. The courses selected for this study are characterized as important, fundamental, and/or competitive courses for college students. Students who received a poor grade from an easy course may either give up because they don't care about the course, or feel really hurt because of the large discrepancy between their expected and actual performance. In this situation, it is unknown if the relationships between goal orientation, coping, and achievement motivation would be the same for students who experience academic failure in an easy course. In addition, the results may not apply to the situation when students face an objective failure, which refers to the situation when students actually fail to pass an exam and receive a grade of F. In this study, academic failure is defined as receiving a grade that students perceived as a failure, so that this study includes students who received various grades, not just those who really receive a grade of F. It is possible that a study that focuses on examining students' objective failure would show different patterns of relationships between goals, coping, and achievement motivation. Therefore, the generalizability of the results may not be high if the research focus is on objective failure.

The third limitation is that the present study is unable to determine the complete picture of the causal order among goal orientations, coping, and achievement motivation. The reasons are that this study only used cross-sectional data and the sample is not large enough to test the complicated model that embeds the possible causal relationships. Moreover, the causal relationships among these constructs may be too complicated to be captured by a single study. For example, one coping strategy may lead to another coping strategy. Besides, coping is viewed as a continuous process. It is possible that there are reciprocal relationships between goal orientations and coping and between coping and achievement motivations. Without a strong theory that documents these relationships and

a larger number of longitudinal studies, it is difficult to draw a complete picture of causal relationships among these constructs with a single study.

A fourth limitation is that all of the instruments are self-report measures. The responses that students given to each item may not always reflect what they actually think, feel or do, even though they are asked to do so. The results are easily biased for several reasons. First, individuals' memory does not perfectly record their thoughts and behaviors. Sometimes they think they take an action that they actually do not. Second, individuals may not be willing to describe their responses honestly for some reason, such as self-protection, social desirability, or unwillingness to disclose their thoughts and actions. The use of self-report measures may therefore limit the validity of the results. It may be particularly true for the measure of coping responses. First, the items of the coping scales do not mean the same thing for different type of people. Sometimes students may actually try to come up with strategies to solve their problem, but they may not be aware that they have had used "planning". Also, the items of the coping scales only reflect students' tendency toward coping, not the quality of the coping responses that students engage in. For examples, "looking for instrument help," indicates the extent to which students look for help, but it does not reflect "how" students ask for help and what kinds of help they search for.

Lastly, the reliability measures reported for all instruments used in the present study are Cronbach's alpha values. The alpha value of an instrument indicates the degree of internal consistency among the items of the instrument. It may not exactly reflect how reliable an individual's responses are across time. In addition, the Cronbach's alpha may not be appropriate to indicate reliability when an instrument covers a heterogeneous domain, such as coping scales. Even though it was not unexpected, some coping scales used in this study do not have high alpha values since they were designed to measure a

multiple-act coping tendency. Also, test-retest reliabilities of dispositional form of coping scales, which assess individuals' coping responses when they are under a lot of stress, reported in the past studies are also not high (Carver et al., 1989). That may reveal the context-dependent nature of coping as a process. However, it may also imply a possibility that when using coping scales to assess how students cope with academic failure, like what I did in this study, students might respond to coping scales differently if the coping scales were administrated in the different time.

Future Directions

To overcome the aforementioned limitations, future studies are needed. First, more studies are needed to examine the characteristics of a school or course to understand more about how school and course structures influence students' coping behaviors and their associations with goal orientations and achievement motivation. Second, to increase generalizability, the relationships between goals, coping, and achievement motivation should be examined in more diverse courses to check if the results are consistent with those in the present study. Third, to understand coping with objective failure, future research can address this issue and compare the strategies that students use to deal with an objective failure with the results reported in the present study. Fourth, to determine the causal order among goal orientations, coping, and achievement motivation, a series of experimental studies may be needed to determine how one construct causes another construct. With these accumulated results, researchers may be able to draw a clear and complete picture of the causal relationships among these constructs.

There are other issues that can be addressed in future studies. First, it is worthwhile to examine if goal orientations and coping have long-term effects on achievement motivation. Some coping strategies may not only prevent students from

losing interest or competence right after failure, but also enhance students' motivation through the entire academic period or even after students finish the course. It would also be interesting to test if coping strategies have an effect on the ways that students learn after failure in terms of cognitive strategy use when they engage in learning tasks.

Lastly, it is important to investigate how goals and coping influence emotional outcomes after failure, as well as how they influence motivational outcomes. Coping has been viewed as a mediator between stress and emotional outcomes. Examining both emotional and motivational outcomes would provide a full understanding how students react to academic failure, and how resilient they are motivationally and emotionally.

It should be noted that 30 of 226 students were excluded from the data set in the process of selecting final data set. These students were dropped because it seemed possible that they had not followed the instruction well. For example, there were two versions of coping scales used in the present study. One was designed to measure how students coped with the stress caused by their grade after they received an unsatisfactory grade. The other was designed to measure students' typical coping reactions by recalling any academic failure based on their previous experience. Students who received an unsatisfactory grade were instructed to report what they did to cope with the stress caused by their grade, but some of them chose to report their general coping responses based on their previous experience. A possible reason is that the oral instruction given in instrument administration might not have been clear and may have caused confusion for these students. To minimize this potential problem, researchers who will use the same approach as I did in the present study should provide clearer instructions in that instrument than were used in the present study.

Summary and Conclusions

It has been shown that goal orientation is important in academic contexts. The contribution of the current study is not only to provide a more detailed understanding of the association of goal orientations with what students actually think, feel, and do when they experience academic failure, but also to demonstrate how goals and coping relate to achievement motivation.

The results support past research that presumed the importance and the adaptiveness of mastery goals in the situation of failure. A high mastery goal was linked to a high tendency to put other competing activities aside, to take action, to come up with a plan to improve their performance, and to interpret an experience of failure in a positive way. Also, a high mastery goal was linked to a low tendency to reduce effort, give up, or engage in irrelevant activities to avoid the situation. Thus, it is suggested that a mastery goal will prevent impairment in motivation from academic failure. In contrast, even though performance-approach and performance-avoidance goals also were linked to various coping strategies, these were strategies that tend to be either negatively or not significantly associated with achievement motivation. Therefore, the use of these coping strategies may not strengthen student motivation and therefore may have no effect on maintaining their interest and self-perception of competence.

To conclude, students' motivation after failure appears to be influenced by the goals that they pursue and the coping strategies they use, not by the grade they have received. To help students stay motivated, it may be important to promote mastery goals in the classroom and teach the use of adaptive coping strategies.

Appendix A:

Measure of Graded Performance and Perceptual/Contextual Perception of Exam Feedback

Number Grade Received: _____

Letter Grade Received: **A** **B** **C** **D** **F**

Please rate the following statements according to how much you disagree or agree with each statement.

1 $\longleftrightarrow$ 2 $\longleftrightarrow$ 3 $\longleftrightarrow$ 4 $\longleftrightarrow$ 5 $\longleftrightarrow$ 6 $\longleftrightarrow$ 7
Strongly disagree **Strongly agree**

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. I received the grade I wanted. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. Receiving the grade I wanted is important to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I put forth a great deal of effort in studying for this exam | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I consider this grade to be a failure. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix B:

Measure of Goal Orientation

Please respond to each of the following items in terms of how true it is for you with respect to your learning in this course now. Use the scale:

1 $\longleftrightarrow$ 2 $\longleftrightarrow$ 3 $\longleftrightarrow$ 4 $\longleftrightarrow$ 5 $\longleftrightarrow$ 6 $\longleftrightarrow$ 7
Not at all **Very true**
true of me **of me**

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. It is important to me to do better than the other students. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I often think to myself, “what if I do badly in this class?” | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I want to learn as much as possible from this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. My goal in this class is to get a better grade than most of the other students. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. I worry about the possibility of getting a bad grade in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. It is important for me to understand the content of this course as thoroughly as possible. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. I am striving to demonstrate my ability relative to others in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. My fear of performing poorly in this class is often what motivates me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 9. I hope to have gained a broader and deeper knowledge in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 10. I am motivated by the thought of outperforming my peers. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 11. I just want to avoid doing poorly in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 12. I desire to completely master the materials presented in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 13. It is important to me to do well compared to others in this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

- | | | | | | | | | |
|-----|---|---|---|---|---|---|---|---|
| 14. | I am afraid that if I ask my TA or instructor a “dumb” question, they might not think I’m very smart. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 15. | In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 16. | I want to do well in this class to show my ability to my family, friends, advisors, or others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 17. | My goal for this class is to avoid performing poorly. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 18. | In a class like this, I prefer course material that really challenges me so I can learn new things. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Note. Items of Goal Orientation subscale:

- Mastery goals: 3, 6, 9, 12, 15, 18
- Performance-approach goals: 1, 4, 7, 10, 13, 16
- Performance-avoidance goals: 2, 5, 8, 11, 14, 17

Appendix C:

Measure of Coping Strategies

Please indicate the extent to which you have engaged in each coping response below when confronting the stress caused by receiving an unsatisfactory grade on this exam.

	1 ← → 2 ← → 3 ← → 4 1 I haven't done this at all. 2 I have done this a little bit. 3 I have done this a medium amount. 4 I have done this a lot.	
1.	I have taken additional action to try to get rid of the problem.	1 2 3 4
2.	I have tried to come up with a strategy about what to do about my grade.	1 2 3 4
3.	I have put aside other activities in order to concentrate on improving my future performance.	1 2 3 4
4.	I have forced myself to wait for the right time to do something about my grade.	1 2 3 4
5.	I have asked people who have had similar experiences what they did to improve their performance.	1 2 3 4
6.	I have talked to someone about how I felt about my grade.	1 2 3 4
7.	I have looked for something good to come out of my poor performance.	1 2 3 4
8.	I have learned to live with my bad grade.	1 2 3 4
9.	I have gotten upset about my bad grade and let my emotion out.	1 2 3 4
10.	I have refused to believe that I did get a bad grade.	1 2 3 4
11.	I have given up the attempt to get what I want about my grade.	1 2 3 4
12.	I have turned to work on other substitute activities to take my mind off my bad grade.	1 2 3 4
13.	I have concentrated my effort on doing something about my grade.	1 2 3 4

- | | | | | | |
|-----|--|---|---|---|---|
| 14. | I have made a plan of action to improve my future performance. | 1 | 2 | 3 | 4 |
| 15. | I have focused on dealing with the problem of my bad grade, and if necessary, let other things slide a little. | 1 | 2 | 3 | 4 |
| 16. | I have held off doing anything about my grade until the situation permits. | 1 | 2 | 3 | 4 |
| 17. | I have tried to get advice from someone about what to do to improve my future performance. | 1 | 2 | 3 | 4 |
| 18. | I have tried to get emotional support from friends or relatives. | 1 | 2 | 3 | 4 |
| 19. | I have tried to see my bad grade in a different light, to make it seem more positive. | 1 | 2 | 3 | 4 |
| 20. | I have accepted that this has happened and that it could not be changed. | 1 | 2 | 3 | 4 |
| 21. | I have let out my feelings about my bad grade. | 1 | 2 | 3 | 4 |
| 22. | I have pretended that my bad grade hasn't really happened. | 1 | 2 | 3 | 4 |
| 23. | I have just given up trying to reach my academic goal. | 1 | 2 | 3 | 4 |
| 24. | I have gone to movies or to watch TV, to think less about my bad grade. | 1 | 2 | 3 | 4 |
| 25. | I have done what has to be done about my grade, one step at a time. | 1 | 2 | 3 | 4 |
| 26. | I have thought hard about what steps to take to improve my future performance. | 1 | 2 | 3 | 4 |
| 27. | I have kept myself from being distracted by other thoughts or activities. | 1 | 2 | 3 | 4 |
| 28. | I have made sure not to make matters worse by acting on my grade too soon. | 1 | 2 | 3 | 4 |
| 29. | I have talked to someone to find out more about the situation. | 1 | 2 | 3 | 4 |
| 30. | I have discussed my feeling about my grade with someone. | 1 | 2 | 3 | 4 |
| 31. | I have learned something from the experience of my bad grade. | 1 | 2 | 3 | 4 |
| 32. | I have gotten used to the idea that I got the bad grade. | 1 | 2 | 3 | 4 |
| 33. | I have felt a lot of emotional distress about my grade and I found myself expressing those feelings a lot. | 1 | 2 | 3 | 4 |
| 34. | I have acted as though my bad grade hasn't even happened. | 1 | 2 | 3 | 4 |

35.	I have admitted to myself that I couldn't deal with my poor performance and quit trying.	1	2	3	4
36.	I have daydreamed about things other than my bad grade.	1	2	3	4
37.	I have taken direct action to get around the problem of my bad grade.	1	2	3	4
38.	I have thought about how I might best handle the problem of my grade.	1	2	3	4
39.	I have tried hard to prevent other things from interfering with my efforts toward dealing with my grade.	1	2	3	4
40.	I have restrained myself from doing anything about my future performance too quickly.	1	2	3	4
41.	I have talked to someone who could do something concrete about the problem of my bad grade.	1	2	3	4
42.	I have gotten sympathy and understanding from someone.	1	2	3	4
43.	I have tried to grow as a person as a result of my bad grade.	1	2	3	4
44.	I have accepted the reality of the fact that it happened.	1	2	3	4
45.	I have gotten upset about my grade, and I have been really aware of it.	1	2	3	4
46.	I have said to myself "this isn't real that I got a bad grade".	1	2	3	4
47.	I have reduced the amount of effort I would put into solving the problem of my bad grade.	1	2	3	4
48.	I have slept more than usual.	1	2	3	4

Note. Items of COPE subscales:

- Active coping: 1, 13, 25, 37
- Planning: 2, 14, 26, 38
- Suppression of competing activities: 3, 15, 27, 39
- Restraint coping: 4, 16, 28, 40
- Searching for social support for instrument reason: 5, 17, 29, 41

- Searching for social support for emotional reason: 6, 18, 30, 42
- Positive reinterpretation and growth: 7, 19, 31, 43
- Acceptance: 8, 20, 32, 44
- Focusing on/ venting of the emotion: 9, 21, 33, 45
- Denial: 10, 22, 34, 46
- Behavioral disengagement: 11, 23, 35, 47
- Mental disengagement: 12, 24, 36, 48
- Problem-focused: 1-5, 13-17, 25-29, 37-41
- Emotion-focused: 6-9, 18-21, 30-33, 42-45
- Avoidance-oriented: 10-12, 22-24, 34-36, 46-48

Appendix D:

Measure of Intrinsic Interest

Please respond to each of the following items in terms of how true it is for you with respect to your learning in this course now. Use the scale:

1 $\longleftrightarrow$ 2 $\longleftrightarrow$ 3 $\longleftrightarrow$ 4 $\longleftrightarrow$ 5 $\longleftrightarrow$ 6 $\longleftrightarrow$ 7
 Not at all Very true
 true of me of me

- | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|
| 1. | I think this class is interesting. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | I am enjoying this class very much. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I think this class is a waste of my time. (R) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I think this class is fun. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 5. | I think this class is boring. (R) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 6. | I am glad I took this class. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 7. | I don't like this class at all. (R) | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8. | I intend to recommend this class to others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix E:

Measure of Learning Climate Questionnaire

The following items are related to your experience with your instructor in this class. Instructors have different styles in dealing with students, and we would like to know more about how you have felt about your encounters with your instructor.

	1	2	3	4	5	6	7
	Strongly disagree						Strongly agree
1. I feel that my instructor provides me choices and options.	1	2	3	4	5	6	7
2. I feel understood by my instructor.	1	2	3	4	5	6	7
3. I am able to be open with my instructor during class.	1	2	3	4	5	6	7
4. My instructor conveyed confidence in my ability to do well in the course.	1	2	3	4	5	6	7
5. I feel that my instructor accepts me.	1	2	3	4	5	6	7
6. My instructor made sure I really understood the goals of the course and what I need to do.	1	2	3	4	5	6	7
7. My instructor encouraged me to ask questions.	1	2	3	4	5	6	7
8. I feel a lot of trust in my instructor.	1	2	3	4	5	6	7
9. My instructor answers my questions fully and carefully.	1	2	3	4	5	6	7
10. My instructor listens to how I would like to do things.	1	2	3	4	5	6	7
11. My instructor handles people's emotions very well.	1	2	3	4	5	6	7
12. I feel that my instructor cares about me as a person.	1	2	3	4	5	6	7
13. I don't feel very good about the way my instructor talks to me. (R)	1	2	3	4	5	6	7
14. My instructor tries to understand how I see things before suggesting a new way to do things.	1	2	3	4	5	6	7
15. I feel able to share my feelings with my instructor.	1	2	3	4	5	6	7

Appendix F:

Measure of Perceived Learning Competence

Please respond to each of the following items in terms of how true it is for you with respect to your learning in this course now. Use the scale:

1 $\longleftrightarrow$ 2 $\longleftrightarrow$ 3 $\longleftrightarrow$ 4 $\longleftrightarrow$ 5 $\longleftrightarrow$ 6 $\longleftrightarrow$ 7
Not at all **Very true**
true of me **of me**

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. I feel confident in my ability to learn this material. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. I am capable of learning the material in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. I am able to achieve my goals in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. I feel able to meet the challenge of performing well in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix G:

Measure of Willingness to Expend Effort: Change in Effort

Please make each rating below by circling a number from 1 to 7 for each rating scale

1 $\longleftrightarrow$ 2 $\longleftrightarrow$ 3 $\longleftrightarrow$ 4 $\longleftrightarrow$ 5 $\longleftrightarrow$ 6 $\longleftrightarrow$ 7
Not at all **Extremely**

1. How hard did you work on making a good grade on this 1 2 3 4 5 6 7 exam?

-- Please write in the **total number of hours** you have studied for this exam:

_____ **hours**

2. How hard do you expect to work on making a good 1 2 3 4 5 6 7 grade on your next exam?

-- Please write in the **total number of hours** you will study for the next exam:

_____ **hours**

Appendix H:

Measure of Attributions to Failure (Grade)

Please make each rating below by circling a number from 1 to 7 for each rating scale

1 $\longleftrightarrow$ 2 $\longleftrightarrow$ 3 $\longleftrightarrow$ 4 $\longleftrightarrow$ 5 $\longleftrightarrow$ 6 $\longleftrightarrow$ 7
Not at all Extremely

- | | | | | | | | |
|---|---|---|---|---|---|---|---|
| 1. How much do you think that your grade on this exam depends on your effort ? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. How much do you think that your grade on this exam depends on your ability ? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. How much do you think that your grade on this exam depends on the difficulty of this exam ? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. How much do you think that your grade on this exam depends on luck ? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

Appendix I:

Format of Questionnaires Used in First Data Collection

I. Please respond to each of the following items in terms of how true it is for you with respect to your learning in this course. Use the scale:

	1	2	3	4	5	6	7
	← ← ← ← ← ←						← ←
	Not at all true of me						Very true of me
1.	It is important to me to do better than the other students.						1 2 3 4 5 6 7
2.	I often think to myself, “what if I do badly in this class?”						1 2 3 4 5 6 7
3.	I want to learn as much as possible from this class.						1 2 3 4 5 6 7
4.	My goal in this class is to get a better grade than most of the other students.						1 2 3 4 5 6 7
5.	I worry about the possibility of getting a bad grade in this class.						1 2 3 4 5 6 7
6.	It is important for me to understand the content of this course as thoroughly as possible.						1 2 3 4 5 6 7
7.	I am striving to demonstrate my ability relative to others in this class.						1 2 3 4 5 6 7
8.	My fear of performing poorly in this class is often what motivates me.						1 2 3 4 5 6 7
9.	I hope to have gained a broader and deeper knowledge in this class.						1 2 3 4 5 6 7
10.	I am motivated by the thought of outperforming my peers.						1 2 3 4 5 6 7
11.	I just want to avoid doing poorly in this class.						1 2 3 4 5 6 7
12.	I desire to completely master the materials presented in this class.						1 2 3 4 5 6 7
13.	It is important to me to do well compared to others in this class.						1 2 3 4 5 6 7
14.	I am afraid that if I ask my TA or instructor a “dumb” question, they might not think I’m very smart.						1 2 3 4 5 6 7
15.	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.						1 2 3 4 5 6 7
16.	I want to do well in this class to show my ability to my family, friends, advisors, or others.						1 2 3 4 5 6 7
17.	My goal for this class is to avoid performing poorly.						1 2 3 4 5 6 7
18.	In a class like this, I prefer course material that really challenges me so I can learn new things.						1 2 3 4 5 6 7
19.	I think this class is interesting.						1 2 3 4 5 6 7

20.	I am enjoying this class very much.	1	2	3	4	5	6	7
21.	I think this class is a waste of my time.	1	2	3	4	5	6	7
22.	I think this class is fun.	1	2	3	4	5	6	7
23.	I think this class is boring.	1	2	3	4	5	6	7
24.	I am glad I took this class.	1	2	3	4	5	6	7
25.	I don't like this class at all.	1	2	3	4	5	6	7
26.	I intend to recommend this class to others.	1	2	3	4	5	6	7
27.	I feel confident in my ability to learn this material.	1	2	3	4	5	6	7
28.	I am capable of learning the material in this course.	1	2	3	4	5	6	7
29.	I am able to achieve my goals in this course.	1	2	3	4	5	6	7
30.	I feel able to meet the challenge of performing well in this course.	1	2	3	4	5	6	7

**II. The following items are related to your experience with your instructor in this class.
Instructors have different styles in dealing with students, and we would like to know more
about how you have felt about your encounters with your instructor.**

		1	↔	2	↔	3	↔	4	↔	5	↔	6	↔	7	
		Strongly disagree													Strongly agree
1.	I feel that my instructor provides me choices and options.	1	2	3	4	5	6	7							
2.	I feel understood by my instructor.	1	2	3	4	5	6	7							
3.	I am able to be open with my instructor during class.	1	2	3	4	5	6	7							
4.	My instructor conveyed confidence in my ability to do well in the course.	1	2	3	4	5	6	7							
5.	I feel that my instructor accepts me.	1	2	3	4	5	6	7							
6.	My instructor made sure I really understood the goals of the course and what I need to do.	1	2	3	4	5	6	7							
7.	My instructor encouraged me to ask questions.	1	2	3	4	5	6	7							
8.	I feel a lot of trust in my instructor.	1	2	3	4	5	6	7							
9.	My instructor answers my questions fully and carefully.	1	2	3	4	5	6	7							
10.	My instructor listens to how I would like to do things.	1	2	3	4	5	6	7							
11.	My instructor handles people's emotions very well.	1	2	3	4	5	6	7							
12.	I feel that my instructor cares about me as a person.	1	2	3	4	5	6	7							
13.	I don't feel very good about the way my instructor talks to me.	1	2	3	4	5	6	7							
14.	My instructor tries to understand how I see things before suggesting a new way to do things.	1	2	3	4	5	6	7							
15.	I feel able to share my feelings with my instructor.	1	2	3	4	5	6	7							

Appendix J:

Format of Questionnaires Used in Second Data Collection

Number Grade Received:

Letter Grade Received: **A** **B** **C** **D** **F**

I. Please rate the following statements according to how much you disagree or agree with each statement.

1 ↔ 2 ↔ 3 ↔ 4 ↔ 5 ↔ 6 ↔ 7

Strongly disagree **Strongly agree**

- | | | | | | | | | |
|----|--|---|---|---|---|---|---|---|
| 1. | I received the grade I wanted. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | Receiving the grade I wanted is important to me. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | I put forth a great deal of effort in studying for this exam | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | I consider this grade to be a failure. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

II. Please make each rating below by circling a number from 1 to 7 for each rating scale

1 ←→ 2 ←→ 3 ←→ 4 ←→ 5 ←→ 6 ←→ 7
Not at all **Extremely**

- | | | | | | | | | |
|----|---|---|---|---|---|---|---|---|
| 1. | How much do you think that your grade on this exam depends on your effort? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 2. | How much do you think that your grade on this exam depends on your ability? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 3. | How much do you think that your grade on this exam depends on the difficulty of this exam? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 4. | How much do you think that your grade on this exam depends on luck? | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

5. How hard did you work on making a good grade on this exam? 1 2 3 4 5 6 7

-- Please write in the **total number of hours** you have studied for this exam: **hours**

6. How hard do you expect to work on making a good grade on your next exam? 1 2 3 4 5 6 7

-- Please write in the **total number of hours** you will study for the next exam: **hours**

III. Please respond to each of the following items in terms of how true it is for you with respect to your learning in this course now. Use the scale:

	1	2	3	4	5	6	7
Not at all true of me							Very true of me
1.	It is important to me to do better than the other students.						1 2 3 4 5 6 7
2.	I often think to myself, “what if I do badly in this class?”						1 2 3 4 5 6 7
3.	I want to learn as much as possible from this class.						1 2 3 4 5 6 7
4.	My goal in this class is to get a better grade than most of the other students.						1 2 3 4 5 6 7
5.	I worry about the possibility of getting a bad grade in this class.						1 2 3 4 5 6 7
6.	It is important for me to understand the content of this course as thoroughly as possible.						1 2 3 4 5 6 7
7.	I am striving to demonstrate my ability relative to others in this class.						1 2 3 4 5 6 7
8.	My fear of performing poorly in this class is often what motivates me.						1 2 3 4 5 6 7
9.	I hope to have gained a broader and deeper knowledge in this class.						1 2 3 4 5 6 7
10.	I am motivated by the thought of outperforming my peers.						1 2 3 4 5 6 7
11.	I just want to avoid doing poorly in this class.						1 2 3 4 5 6 7
12.	I desire to completely master the materials presented in this class.						1 2 3 4 5 6 7
13.	It is important to me to do well compared to others in this class.						1 2 3 4 5 6 7
14.	I am afraid that if I ask my TA or instructor a “dumb” question, they might not think I’m very smart.						1 2 3 4 5 6 7
15.	In a class like this, I prefer course material that arouses my curiosity, even if it is difficult to learn.						1 2 3 4 5 6 7
16.	I want to do well in this class to show my ability to my family, friends, advisors, or others.						1 2 3 4 5 6 7
17.	My goal for this class is to avoid performing poorly.						1 2 3 4 5 6 7
18.	In a class like this, I prefer course material that really challenges me so I can learn new things.						1 2 3 4 5 6 7
19.	I think this class is interesting.						1 2 3 4 5 6 7
20.	I am enjoying this class very much.						1 2 3 4 5 6 7
21.	I think this class is a waste of my time.						1 2 3 4 5 6 7
22.	I think this class is fun.						1 2 3 4 5 6 7
23.	I think this class is boring.						1 2 3 4 5 6 7
24.	I am glad I took this class.						1 2 3 4 5 6 7

- | | | | | | | | | |
|-----|--|---|---|---|---|---|---|---|
| 25. | I don't like this class at all. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 26. | I intend to recommend this class to others. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 27. | I feel confident in my ability to learn this material. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 28. | I am capable of learning the material in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 29. | I am able to achieve my goals in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 30. | I feel able to meet the challenge of performing well in this course. | 1 | 2 | 3 | 4 | 5 | 6 | 7 |

If you receive an unsatisfactory grade from the exam, please continue on page 3.

If you are satisfied with your performance on the exam, please continue on page 5.

IV. Please indicate the extent to which you have engaged in each coping response below when confronting the stress caused by receiving an unsatisfactory grade on this exam.

	1 ←	→ 2 ←	→ 3 ←	→ 4
	I haven't done this at all.	I have done this a little bit.	I have done this a medium amount.	I have done this a lot.
1. I have taken additional action to try to get rid of the problem.	1	2	3	4
2. I have tried to come up with a strategy about what to do about my grade.	1	2	3	4
3. I have put aside other activities in order to concentrate on improving my future performance.	1	2	3	4
4. I have forced myself to wait for the right time to do something about my grade.	1	2	3	4
5. I have asked people who have had similar experiences what they did to improve their performance.	1	2	3	4
6. I have talked to someone about how I felt about my grade.	1	2	3	4
7. I have looked for something good to come out of my poor performance.	1	2	3	4
8. I have learned to live with my bad grade.	1	2	3	4
9. I have gotten upset about my bad grade and let my emotion out.	1	2	3	4
10. I have refused to believe that I did get a bad grade.	1	2	3	4
11. I have given up the attempt to get what I want about my grade.	1	2	3	4
12. I have turned to work on other substitute activities to take my mind off my bad grade.	1	2	3	4
13. I have concentrated my effort on doing something about my grade.	1	2	3	4
14. I have made a plan of action to improve my future performance.	1	2	3	4
15. I have focused on dealing with the problem of my bad grade, and if necessary, let other things slide a little.	1	2	3	4
16. I have held off doing anything about my grade until the situation permits.	1	2	3	4
17. I have tried to get advice from someone about what to do to improve my future performance.	1	2	3	4
18. I have tried to get emotional support from friends or relatives.	1	2	3	4
19. I have tried to see my bad grade in a different light, to make it seem more positive.	1	2	3	4
20. I have accepted that this has happened and that it could not be changed.	1	2	3	4
21. I have let out my feelings about my bad grade.	1	2	3	4
22. I have pretended that my bad grade hasn't really happened.	1	2	3	4

23.	I have just given up trying to reach my academic goal.	1	2	3	4
24.	I have gone to movies or to watch TV, to think less about my bad grade.	1	2	3	4
25.	I have done what has to be done about my grade, one step at a time.	1	2	3	4
26.	I have thought hard about what steps to take to improve my future performance.	1	2	3	4
27.	I have kept myself from being distracted by other thoughts or activities.	1	2	3	4
28.	I have made sure not to make matters worse by acting on my grade too soon.	1	2	3	4
29.	I have talked to someone to find out more about the situation.	1	2	3	4
30.	I have discussed my feeling about my grade with someone.	1	2	3	4
31.	I have learned something from the experience of my bad grade.	1	2	3	4
32.	I have gotten used to the idea that I got the bad grade.	1	2	3	4
33.	I have felt a lot of emotional distress about my grade and I found myself expressing those feelings a lot.	1	2	3	4
34.	I have acted as though my bad grade hasn't even happened.	1	2	3	4
35.	I have admitted to myself that I couldn't deal with my poor performance and quit trying.	1	2	3	4
36.	I have daydreamed about things other than my bad grade.	1	2	3	4
37.	I have taken direct action to get around the problem of my bad grade.	1	2	3	4
38.	I have thought about how I might best handle the problem of my grade.	1	2	3	4
39.	I have tried hard to prevent other things from interfering with my efforts toward dealing with my grade.	1	2	3	4
40.	I have restrained myself from doing anything about my future performance too quickly.	1	2	3	4
41.	I have talked to someone who could do something concrete about the problem of my bad grade.	1	2	3	4
42.	I have gotten sympathy and understanding from someone.	1	2	3	4
43.	I have tried to grow as a person as a result of my bad grade.	1	2	3	4
44.	I have accepted the reality of the fact that it happened.	1	2	3	4
45.	I have gotten upset about my grade, and I have been really aware of it.	1	2	3	4
46.	I have said to myself "this isn't real that I got a bad grade".	1	2	3	4
47.	I have reduced the amount of effort I would put into solving the problem of my bad grade.	1	2	3	4
48.	I have slept more than usual.	1	2	3	4

IV. Please indicate the extent to which you typically engage in each coping response below when confronting the stress caused by receiving an unsatisfactory grade.

	1 ←	→ 2 ←	→ 3 ←	→ 4
	I haven't done this at all.	I have done this a little bit.	I have done this a medium amount.	I have done this a lot.
1. I take additional action to try to get rid of the problem.	1	2	3	4
2. I try to come up with a strategy about what to do about my grade.	1	2	3	4
3. I put aside other activities in order to concentrate on improving my future performance.	1	2	3	4
4. I force myself to wait for the right time to do something about my grade.	1	2	3	4
5. I ask people who have had similar experiences what they did to improve their performance.	1	2	3	4
6. I talk to someone about how I felt about my grade.	1	2	3	4
7. I look for something good to come out of my poor performance.	1	2	3	4
8. I learn to live with my bad grade.	1	2	3	4
9. I have gotten upset about my bad grade and let my emotion out.	1	2	3	4
10. I refuse to believe that I did get a bad grade.	1	2	3	4
11. I give up the attempt to get what I want about my grade.	1	2	3	4
12. I turn to work on other substitute activities to take my mind off my bad grade.	1	2	3	4
13. I concentrate my effort on doing something about my grade.	1	2	3	4
14. I make a plan of action to improve my future performance.	1	2	3	4
15. I focus on dealing with the problem of my bad grade, and if necessary, let other things slide a little.	1	2	3	4
16. I hold off doing anything about my grade until the situation permits.	1	2	3	4
17. I try to get advice from someone about what to do to improve my future performance.	1	2	3	4
18. I try to get emotional support from friends or relatives.	1	2	3	4
19. I try to see my bad grade in a different light, to make it seem more positive.	1	2	3	4
20. I accept that this has happened and that it could not be changed.	1	2	3	4
21. I let out my feelings about my bad grade.	1	2	3	4
22. I pretend that my bad grade hasn't really happened.	1	2	3	4
23. I just give up trying to reach my academic goal.	1	2	3	4
24. I go to movies or to watch TV, to think less about my bad grade.	1	2	3	4

25.	I do what has to be done about my grade, one step at a time.	1	2	3	4
26.	I think hard about what steps to take to improve my future performance.	1	2	3	4
27.	I keep myself from being distracted by other thoughts or activities.	1	2	3	4
28.	I make sure not to make matters worse by acting on my grade too soon.	1	2	3	4
29.	I talk to someone to find out more about the situation.	1	2	3	4
30.	I discuss my feeling about my grade with someone.	1	2	3	4
31.	I learn something from the experience of my bad grade.	1	2	3	4
32.	I get used to the idea that I got the bad grade.	1	2	3	4
33.	I feel a lot of emotional distress about my grade and I found myself expressing those feelings a lot.	1	2	3	4
34.	I act as though my bad grade hasn't even happened.	1	2	3	4
35.	I admit to myself that I couldn't deal with my poor performance and quit trying.	1	2	3	4
36.	I daydream about things other than my bad grade.	1	2	3	4
37.	I take direct action to get around the problem of my bad grade.	1	2	3	4
38.	I think about how I might best handle the problem of my grade.	1	2	3	4
39.	I try hard to prevent other things from interfering with my efforts toward dealing with my grade.	1	2	3	4
40.	I restrain myself from doing anything about my future performance too quickly.	1	2	3	4
41.	I talk to someone who could do something concrete about the problem of my bad grade.	1	2	3	4
42.	I get sympathy and understanding from someone.	1	2	3	4
43.	I try to grow as a person as a result of my bad grade.	1	2	3	4
44.	I accept the reality of the fact that it happened.	1	2	3	4
45.	I get upset about my grade, and I have been really aware of it.	1	2	3	4
46.	I say to myself "this isn't real that I got a bad grade".	1	2	3	4
47.	I reduce the amount of effort I would put into solving the problem of my bad grade.	1	2	3	4
48.	I sleep more than usual.	1	2	3	4

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