

THE ROLES OF GOAL ORIENTATION, TASK-SPECIFIC SELF-EFFICACY AND
MOTIVATION / EMOTION CONTROL IN THE ACADEMIC PERFORMANCE OF
COLLEGE STUDENTS

by

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ABSTRACT

The purpose of this research was to examine the types of emotional and motivational difficulties experienced by college age students and the types of emotional and motivational control strategies that they report using. Further, the study examined how goal orientation and self-efficacy beliefs influence students' motivational and emotional response to a difficult task. Finally, the study explored the interrelationships between goal orientation, self-efficacy beliefs, motivational and emotional response, motivation and emotion control strategy use, task persistence and academic achievement, to try to explain how volition control strategy use influences task persistence and academic achievement. Participants in the study ($n = 186$) completed questionnaires that measured learning and performance goals, self-efficacy, emotional and motivational difficulties, use of motivation and emotion control strategies, task persistence, and reading comprehension (as a measure of achievement). Results suggested that college-age students experience a range of emotional and motivational problems and use a variety of strategies to overcome those difficulties. Students reported having emotional problems more frequently than motivational problems, but they reported using motivation control strategies more frequently than emotional control strategies. Analyses also revealed that students high in learning goals were less likely to report motivational problems, more likely to report using volition control strategies, and more likely to persist. Students high in performance goals were more likely to report both emotional and motivational problems. Students high in self-efficacy were less likely to report both types of problems. Self-efficacy was also highly correlated with use of motivation control strategies, persistence, and achievement. Finally, the strongest predictor of task persistence and achievement was a lack of motivational problems. This suggests that self-efficacy and learning goals not only exert a direct effect on persistence and achievement, but also that they may exert an indirect effect on task engagement by protecting students from experiencing motivational problems. Theoretical and practical implications of these findings are discussed.

TABLE OF CONTENTS

Abstract	ii
Table of Contents	iii
List of Tables	iv
List of Figures	v
Acknowledgment	vi
 CHAPTER 1	 INTRODUCTION
	1
A. Research on Volition Control	4
1. Strategies to Regulate Information Processing	4
2. Environmental Control Strategies	5
3. Motivation and Emotion Control Strategies	6
4. Issues in the Study of Volition Control	8
B. Goal Orientation and Volition Control	9
1. Issues in the Study of Goal Orientation	12
C. Rationale for the Study	14
D. Summary of Research Questions	16
 CHAPTER II	 REVIEW OF THE LITERATURE
	17
A. Research on Volition Control	18
1. Strategies to Regulate Information Processing	19
2. Environmental Control Strategies	24
3. Motivation and Emotion Control Strategies	25
B. Research on Goal Orientation	31
1. Defining Goal Orientation	31
2. Goal Orientation and Volitional Strategy Use	32
3. Goal Orientation and Persistence/Achievement	37
4. Learning Oriented Students who do not Persist	40
5. Methodological Issues in the Study of Goal Orientation	43
C. Rationale for the Study	44
1. Proposed Path Model	48
 CHAPTER III:	 METHODOLOGY
	56
A. Pilot Study	56
1. Participants	56
2. Procedure	57
3. Measures	58
B. Main Study	63
1. Participants	63
2. Procedure	64
C. Revised Measures	65
 CHAPTER IV	 RESULTS
	68
A. Motivational and Emotional Problems Experienced by Students	68

	B. Emotion and Motivation Control Strategies Used by Students	73
	C. Relationships Between Goal Orientation, Persistence, and Achievement	77
	D. Relationships Between Goal Orientation, Self-Efficacy, and Students' Motivational/Emotional Problems	80
	E. Relationships Between Goal Orientation, Self-Efficacy, Problems, Strategy Use, Persistence, and Achievement	84
	F. Path Analysis Results	87
	1. Predicting Emotional/Motivational Problems	90
	2. Predicting Emotion/Motivation Control Strategy Use	90
	3. Predicting Persistence	93
	4. Predicting Achievement	97
CHAPTER V	DISCUSSION	99
	A. Motivational and Emotional Problems Experienced by Students	101
	B. Emotion and Motivation Control Strategies Used by Students	101
	C. Relationships Between Goal Orientation, Persistence, and Achievement	102
	D. Relationships Between Goal Orientation, Self-Efficacy, and Students' Motivational/Emotional Problems	104
	E. Relationships Between Goal Orientation, Self-Efficacy, Problems, Strategy Use, Persistence, and Achievement	106
	F. Strengths and Limitations of the Study	112
	G. Implications for Future Research	115
References		117
Appendix A	Student Consent Form	122
Appendix B	Demographic Questionnaire	127
Appendix C	Task-Specific Self-Efficacy Questionnaire	129
Appendix D	The Goals Inventory	133
Appendix E	The Volitional Components Inventory	137
Appendix F	Academic Achievement Measure	142
Appendix G	Revised Task-Specific Self-Efficacy Measure	147
Appendix H	The Persistence Subscale	151
Appendix I	Revised Learning Goals Subscale	153
Appendix J	Revised Performance Goals Subscale	155
Appendix K	Revised Goals Inventory	157
Appendix L	Motivation / Emotion Control Strategies Subscale	159
Appendix M	Motivational / Emotional Problems Subscale	161
Appendix N	Revised Academic Achievement Measure	163

LIST OF TABLES

Table 1	Descriptive Statistics for Motivation/Emotion Problems Subscale of the VCI	70
Table 2	Descriptive Statistics for Motivation/Emotion Control Strategies Subscale of the VCI	75
Table 3	Correlations Among Learning Goals, Performance Goals, Persistence, and Achievement	79
Table 4	Summary of Stepwise Regression Analysis for Variables Predicting Persistence	80
Table 5	Correlations Among Learning Goals, Performance Goals, Self-Efficacy, and Reported Emotional and Motivational Problems	81
Table 6	Summary of Regression Analysis for Variables Predicting Reported Emotional Problems	83
Table 7	Summary of Regression Analysis for Variables Predicting Reported Motivational Problems	83
Table 8	Correlations Among Learning Goals, Performance Goals, Self-Efficacy, Reported Problems, Strategy Use, Persistence, and Achievement	86

LIST OF FIGURES

Figure 1	Proposed Interrelationships Between Goal Orientation, Self-Efficacy, Self-Regulation, Persistence, and Achievement	10
Figure 2	Proposed Path Model	48
Figure 2a	Results of Analyses for Paths Emanating from Learning Goals	88
Figure 2b	Results of Analyses for Paths Emanating from Performance Goals	89
Figure 2c	Results of Analyses for Paths Emanating from Self-Efficacy	89
Figure 3	Motivation/Emotion Control Problem Item Means	69
Figure 4	Items Rated Often or Always as Problems by Students	72
Figure 5	Items Rated Seldom or Never as Problems by Students	72
Figure 6	Emotion Control Strategy Item Means	73
Figure 7	Motivation Control Strategy Item Means	74
Figure 8	Items Used Often or Almost Always as Strategies by Students	76
Figure 9	Items Used Seldom or Never as Strategies by Students	77

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CHAPTER I

Introduction

Conscientious, self-directed, disciplined, resourceful. These are just some of the terms used to describe those students who are able to accomplish set goals in the face of competing intentions and distractions. In a school setting, students must meet certain goals in the completion of their academic tasks, whether it is the teachers, parents, or students themselves who establish these goals. Competing with these academic goals are the many distractions that students of all ages face. These distractions may arise from social pressures outside the classroom, or from the nature of the classroom situation or specific task (Corno, 1993). The motivational literature defines volition as the student's ability to accomplish set goals and tasks in the face of distractions and competing intentions. Under these conditions, students' volition directs their attention, emotions, and behaviours toward goals perceived as difficult to attain (Kuhl, 1986; Corno, 1993).

This study situates volition within the broader context of self-regulated learning (Butler & Winne, 1995; Corno, 1993). Self-regulated learning refers to a process wherein learners make use of knowledge and beliefs to manage their learning activities. Specifically, as part of self-regulation students set goals based on their understanding of task requirements. Further, they select strategies to obtain those goals. The use of these strategies produces both mental (cognitive and affective) and behavioural outcomes. Students then monitor their success, modifying their strategies and goals as needed, based on the internal feedback generated by the monitoring process (Butler & Winne, 1995). Pintrich and De Groot (1990) outline three components of self-regulated learning: (1) cognitive strategy use, (2) effort management, and (3) metacognitive strategy use. Cognitive strategies are those that students use to learn, recall, and comprehend material (Pintrich & DeGroot, 1990). Effort management strategies are analogous to volition control strategies and enable students to maintain their cognitive engagement in a task.

Metacognitive strategies allow students to plan, monitor, and modify their cognition (Pintrich & DeGroot, 1990, p. 33).

During self-regulation, students face a series of decision making points as they monitor their progress on a given task. For example, after interpreting a task, the student must decide what to do next. Later, once they have decided on a course of action, they may encounter problems. At that point they must decide how to proceed. The decision points students face throughout the self-regulatory process set the stage for volitional episodes (Kuhl & Goschke, 1994). It is when students actively decide to make use of strategies in the face of obstacles that they exercise volitional control.

Corno and Kanfer (1993) identify six volitional strategies that individuals employ to facilitate the enactment of intentions. The learning strategy research discusses the first three of these types because each is used to regulate information to accomplish goals (Kuhl, 1985). These three strategies are attentional selectivity, encoding control, and information processing control. Students use attentional selectivity strategies to discriminate relevant information from other potential distractions and to channel attention in the proper direction. Students employ encoding control strategies both to discriminate task-relevant information and to hold information in working memory long enough to influence action. Finally, students use information processing control strategies to recognize when they have processed enough information to begin working on the task (Corno, 1986). In sum, students use these strategies to regulate their engagement in a task, either by channeling attentional resources toward the task and away from tempting distractions, or by altering ineffective strategies so as to complete the task more efficiently.

Two additional volitional control strategy categories, motivation and emotion control strategies, regulate aspects of an individual's motivational and emotional states that may otherwise interfere with the attainment of her¹ goals. Students employ motivation control strategies to strengthen the "motivational basis of intentions" (Corno, 1993) and to

¹ To avoid gender bias, the pronouns "her" and "his" are used alternately.

remain sufficiently motivated so as to successfully reach their goals. Examples of motivation control strategies include goal prioritization, goal elaboration (making an assignment more complex and interesting), and visualizing the successful completion of one's goals. Students use emotion control strategies to regulate emotions that may interfere with their actions. Examples of emotion control strategies include slowing one's breathing and remembering one's strengths relevant to the task.

The final category of volitional strategies are environmental control strategies which students use to protect task engagement by manipulating aspects of their environment (Corno & Kanfer, 1993). For example, to minimize distractions while studying students may choose to study in a quiet room, turn off the television, or turn down a blaring radio.

Volitional control is evidenced when students activate, allocate and maintain psychological resources to bring the goal and the methods available for attaining that goal to the fore. As with other components of self-regulation, volitional control is most effective when applied after careful consideration of the particular situation. Students need to adaptively pursue goals when the situation warrants and to abandon set goals when no longer appropriate. It is this adaptive use of volition control processes that helps to differentiate between low ability learners and their higher ability counterparts (Kanfer & Ackerman, 1990).

This study investigates the volition control strategies students use to sustain motivation and to keep their distracting emotions in check. Little research exists on postsecondary students' use of these strategies, relative to the plethora of research on cognitive learning strategies. Understanding how students manage their motivation and emotions during learning may be important to explain why some students are more successful than others, not only at implementing task specific learning strategies, but also at persevering and successfully accomplishing tasks. Further, the study examines how goal orientation and self-efficacy beliefs influence students' emotional and motivational response

to a difficult task. Clarifying the interrelationships between goal orientation, self-efficacy, and motivation / emotion control strategy use may provide a more complete understanding of how volition control strategy use influences task persistence and academic achievement.

Research on Volition Control

Chapter Two provides a thorough review of research on the six volitional strategies that individuals employ to facilitate the enactment of intentions and examines the different methods researchers have used to measure them. In this section, the research examining each category of volition control will be summarized briefly, with specific attention to the variety of measurement techniques (questionnaires, interviews, direct observations, think-alouds, and performance tasks) that have been employed.

Strategies to Regulate Information Processing

Several research studies have examined the strategies students use to regulate information processing. For example, Pressley and Afflerbach (1995) analyzed more than forty studies which used a think-aloud methodology to identify strategies postsecondary students and professionals used as they read. Their comprehensive analysis uncovered a long list of conscious processes reported by students and professionals as they grappled with a reading task. Many of these could be classified as attention, encoding, or information processing control strategies, suggesting that individuals frequently use these strategies to manage task engagement. Similarly, Mischel, Shoda, and Rodriguez (1989) set up a variety of performance tasks for preschool children in order to investigate the strategies, such as attentional selectivity, that students use to regulate their information processing. The researchers directly observed the children's abilities to delay gratification and wait for a more desirable object instead of an immediately available less desirable one. They uncovered large individual differences in the amount of time children were able to delay and in the strategies used to delay contact with the objects. For example, some children directed their attention by avoiding looking at the immediate reward to facilitate

waiting, or even singing songs to deter any arousing thoughts. This study shows that researchers can observe even preschool children engaging in behaviour to regulate their information processing. In addition, much research exists examining the outcomes associated with the regulation of information processing (see Zimmerman & Martinez-Pons, 1990; Pintrich & DeGroot, 1990; Miller, Behrens, Greene & Newman, 1993). For example, Pintrich and DeGroot (1990) and Miller, Behrens, Greene, and Newman (1993) used self-report questionnaires and found a strong relationship between the strategies postsecondary students used to regulate their information processing and their persistence on a task and later academic achievement.

This set of studies illustrates that students of all ages use or report using strategies to regulate information processing. Further, this research has uncovered a link between students' use of strategies to regulate information processing and their later task persistence and academic achievement. Thus, research suggests that students' use of one type of volition control strategy is related to their continued task persistence and academic achievement. What remains unclear is the precise nature of this relationship, how other variables may influence the relationship, and what role other volition control strategies, such as motivation / emotion control strategies, might play in determining levels of task persistence and academic achievement.

Environmental Control Strategies

Additional studies have investigated the strategies students employ to control potential distractors in their environment at various decision points on the way to task completion (e.g., Kuhl & Kraska, 1989; McDonough, Meyer, Stone, & Hamman, 1991; Benson, 1988). For instance, in Benson's (1988) study, sixth grade students described strategies they use to control environmental distractions while studying, such as having parents monitor telephone calls, turning down the volume of the television or radio near study areas, and removing siblings or pets from study areas (Benson, 1988).

Students in Benson's study reported extensively on the aspects of their study environment that distracted them, but failed to mention any difficulties in sustaining task motivation or controlling intrusive emotions. While it could be simply that Benson did not ask his students about motivation and emotion control, it is also possible that sixth grade children were too young to report on their own cognitive and metacognitive difficulties (Brown, 1984; Garner, 1984). Further investigations should ask older students about their volition control strategy use, given that they may be cognitively more capable of reporting on all dimensions of volition control.

Motivation and Emotion Control Strategies

Research suggests that emotions disrupt performance. For example, Cleary (1991) provided a comprehensive examination of the ways that emotion disrupts cognition to undermine concentration and students' on-task motivation. Specifically, using in-depth interviews, direct observation, and think-alouds, Cleary uncovered the ways that high school students' emotions interfered with concentration and motivation for writing. Student motivation waned most often due to frustration caused by overburdened working memory, anxiety caused by threats in the writing environment, or emotions aroused by a distressing situation in the student's life (Cleary, 1991). Thus, future research must examine the strategies that successful students use to regulate emotions and maintain on-task motivation in the face of difficulty or boredom.

Research which has examined the strategies students use to manage motivational and emotional difficulties has looked largely at younger students. As noted above, Mischel et al. (1989) observed preschool children as they tried to wait for a more desirable object instead of an immediately available less desirable one. The researchers found that some children were able to control their motivation for the task by talking themselves into waiting for the better reward. Even at ten-year follow-up, those children who used motivational strategies at age four were rated by their parents as better able than their peers to cope with frustration and temptation as adolescents (Mischel et al., 1989). Rohrkemper and Bershon

(1984) provide insight into the motivation and emotion control strategies older elementary students use. The authors interviewed elementary students about their knowledge of the nature and causes of difficulties that arose when solving math problems and how those difficulties affected their feelings, thoughts, and motivation to learn. While the authors did not conceptualize them as motivation control strategies, students reported using 'escape strategies', for example, deciding to take a break when feeling overloaded or when becoming bored. Other students mentioned emotions that intruded when they worked on math problems (Rohrkemper & Bershon, 1984).

Few studies have attempted to train students to use volition control strategies. One exception is Lavergne Trawick's (1991) doctoral dissertation, where Trawick investigated the effects of training college students to use volition control strategies on measures of motivation, volition, and academic achievement. Results of the intervention indicated that the training did not significantly improve academic motivation, volition, or reading achievement, but did increase students' awareness of the importance of using strategies for handling potential distractions. Trawick argues that further investigations should study the strategies successful students use to regulate emotions and on-task motivation, in part because the struggling students in her study found these two types of strategies particularly difficult to internalize (Trawick, 1991).

The above results illustrate clearly the importance of emotion and motivation control when students are confronted with a difficult or boring task. Research suggests that disruptive emotions affect the task performance of elementary, high school, and college students, and that training even the oldest students to control their emotions is difficult. Further study is needed to determine the degree to which students' successful management of emotions and motivation contributes to their levels of academic achievement.

Issues in the Study of Volition Control

In sum, research on volition control suggests that students use strategies to regulate information processing while working on a task (Pressley & Afflerbach, 1995; Mischel et al., 1989). Further, there appears to be a strong relationship between students' use of strategies to regulate information processing and behavioural outcomes such as task persistence and achievement (Pintrich & DeGroot, 1990; Miller et al., 1993). Research has shown that elementary students report using strategies to control environmental distractions. Finally, many students report feeling distracting emotions while working on difficult tasks (Rohrkemper & Bershon, 1984; Cleary, 1991), and there is some evidence that students use strategies to keep these distracting emotions in check and protect their motivation for the task.

At the same time, while we know a great deal about older students' use of strategies to regulate information processing, we know little about their use of other volition control strategies. Most research done on motivation and emotion control has examined the strategy use of children. Therefore, the important topics discussed in this research were mined for possible ideas regarding the kinds of emotion / motivation control strategies that older (secondary or postsecondary) students might report using. Information from postsecondary students is particularly informative because they are cognitively and metacognitively more capable of providing details of their strategy use, while younger children's reporting of strategic activity may be limited by their verbal abilities, their cognitive abilities, and their suggestibility to cues by the experimenter (Garner, 1984). Therefore, because there are developmental differences between children and adults, it is important to explore how volitional processes work for older students. Thus, the aim of this research was to build theoretical understanding of the volition control processes of postsecondary students.

In addition, researchers still know very little about the relationship between students' use of emotion/motivation control strategies, task persistence, and academic

achievement. Further, when examining the link between subtypes of volition control strategies and task persistence, researchers have operationalized task persistence in different ways. Some have defined persistence as the amount of time students spend on a task (Pintrich & DeGroot, 1990), while other studies define persistence in terms of the amount of effort students expend in the face of a difficult task (Miller, Behrens, & Greene, 1993). Students can spend a great deal of time at a task with little or no idea of how to complete it. They can even spend a lot of time on a task precisely because they are distracted. Therefore, when examining the relationship between emotion / motivation control strategies and persistence, the amount of time students spend on a task is not necessarily a valid indicator of volition.

Finally, the methodologies used to study volition control illustrate the variety of ways in which one can study this complex process. Think-aloud procedures and direct observations have provided rich data on the disruptive emotions students can experience while working on a task (Cleary, 1991; Mischel et al., 1989). Interviews have allowed students to reflect on the emotional and motivational difficulties they have experienced in the past when working on a challenging task (Rohrkemper & Bershon, 1984). Further, questionnaires are a relatively quick and simple assessment tool. They provide students with a description of behaviours they may report using to regulate their engagement on a task. Thus, a self-report questionnaire is a quick and easy way to address older students' use of motivation / emotion control strategies.

Goal Orientation and Volition Control

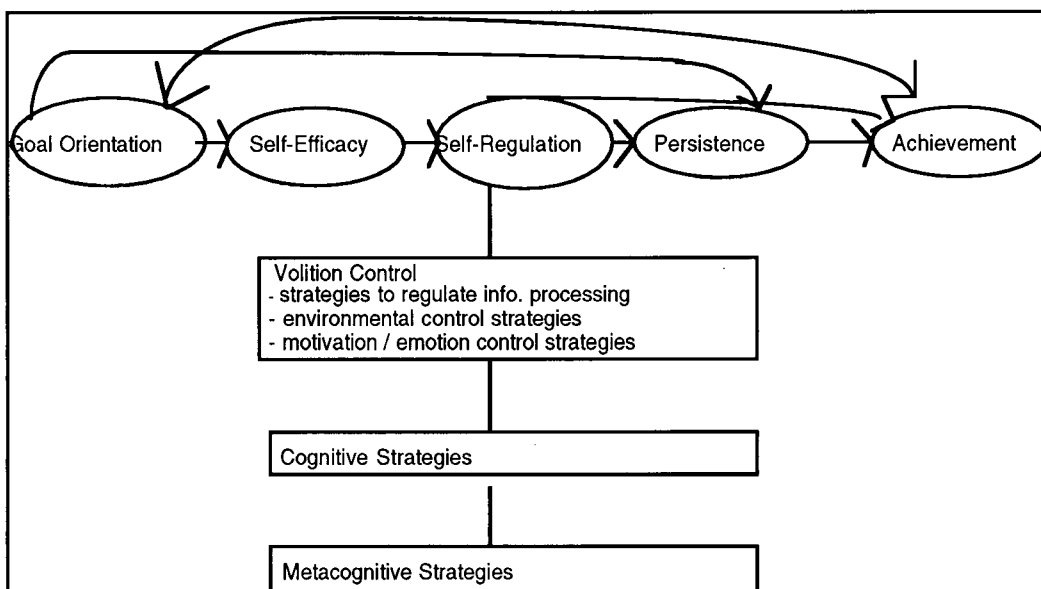
Volition control is defined as the actions a student uses to accomplish set goals in the face of distractions and competing intentions. In turn, the goals that students set are cognitive representations of the intentions they adopt under various achievement conditions (Pintrich & Schrauben, 1992). Under some conditions students adopt intentions that focus on external objectives like grades, positive self-presentation, and others' approval; this is

labeled a performance goal orientation (Dweck, 1986). Under other conditions, students' intentions are internally focused on such goals as learning, mastering a task, or simply satisfying a curiosity. These various goals are reflective of a learning goal orientation (Dweck, 1986).

Researchers have tried to uncover the interrelationships between students' goal orientation, perceptions of task specific self-efficacy, volitional strategy use, task persistence, and academic performance (Miller et al., 1993; Schraw, Horn, Thorndike-Christ, & Bruning, 1995). Some of these proposed relationships are depicted in Figure 1. In general, researchers have proposed that different goal orientations are associated with different patterns of volition control strategy use. For example, studies have shown that those students who adopt a learning goal orientation are more likely to use some types of volition control strategies (i.e., strategies to regulate information processing, such as selective attention, encoding control, and information processing control), and are more likely to persist at a task (e.g., Schraw et al., 1995; Pintrich & DeGroot, 1990).

Figure 1.

Proposed Interrelationships Between Goal Orientation, Self-Efficacy, Self-Regulation, Persistence, and Achievement.



However, while most research on goal orientation has shown that students with a learning goal orientation are more likely to persist on tasks (Dweck, 1986; Dweck & Leggett, 1988), Pintrich and DeGroot (1990) discovered that a learning goal orientation was only indirectly related to academic performance. In their study, students' use of strategies to regulate information processing proved to be a better predictor of performance than was goal orientation (see Figure 1).

Further, investigation of the relationship between learning goals, persistence, and achievement shows that even those students who want to learn for learning's sake and work hard in school may still perform poorly (Corno, 1992). Pintrich, Anderman, and Klobucar (1994) found that while some students with learning disabilities had a learning goal orientation and believed in a mastery approach to learning, they still performed poorly on measures of reading comprehension. Thus, having a learning goal, in and of itself, is not sufficient to guarantee successful task performance. While setting a learning goal demonstrates the *intention* to master the task, successful *performance* requires managing learning activities to successfully enact those intentions (e.g., using cognitive, metacognitive, and volition control strategies). Research also suggests that students can hold learning and performance goals simultaneously, so that they have to successfully juggle competing intentions. Corno (1992) has suggested that one aspect of volition control involves elevating one's intellectual (learning) goals over one's emotional (performance) goals in cases where one holds such competing intentions.

Additional research suggests that other variables also influence the relationship between goal orientation and persistence. For example, research by Seegers and Boekaerts (1993) and Elliott and Dweck (1988) suggests that goal orientation is directly related to self-efficacy beliefs (see Figure 1). Students with learning goals are more likely to persist on tasks regardless of their task-specific ability beliefs (self-efficacy), whereas students with performance goals are likely to persist only when their self-efficacy beliefs are high (Elliott & Dweck, 1988). Self-efficacy beliefs also influence students' emotional

and motivational response to a difficult task and their desire to invest effort to ensure task completion. Elliott and Dweck (1988) found that only students who adopted performance goals and had low self-efficacy beliefs expressed negative emotions and aborted attempts to uncover effective strategies to deal with difficulties. However, other research found that low self-efficacy beliefs were related to the production of negative emotions and continued task persistence, regardless of goal orientation (Miller et al., 1993).

Managing emotions and directing effort are central components of volition control, and as Miller et al. (1993) and Pintrich and DeGroot (1990) have suggested, volition control strategy use is an important predictor of task persistence and academic performance (see Figure 1). Thus, further research is necessary to clarify the roles of goal orientation, self-efficacy, and volitional strategies in successful task performance. It is particularly important to investigate the possible mediating influence of motivation and emotion control strategies between goal orientation, self-efficacy beliefs, and academic achievement. When confronted with difficulties while pursuing a task, how the student responds emotionally and manages motivation are likely to have a significant impact on how he approaches the task and whether or not he successfully completes it (Dweck, 1986).

In sum, research has shown that having learning goals as intentions is not enough to guarantee successful performance (Schraw et al., 1995; Pintrich et al., 1994; Pintrich & DeGroot, 1990). As Figure 1 illustrates, success is mediated by the successful enactment of intentions, facilitated through the use of cognitive, metacognitive, and volition control strategies, particularly for students who hold performance goals (Elliott & Dweck, 1988; Pintrich & DeGroot, 1990; Miller et al., 1993). Academic achievement suffers if any component is missing (Pintrich et al., 1994).

Issues in the Study of Goal Orientation

The research examining goal orientation supports three general conclusions. First, students exhibiting a learning goal orientation do not always succeed on a task (Pintrich et al., 1994). Second, self-efficacy beliefs help to determine the student's emotional and

motivational response to the task, although how these beliefs relate to goal orientation is unclear (Seegers & Boekaerts, 1993; Elliott & Dweck, 1988). Finally, students' use of strategies to regulate information processing (one type of volition control strategy) mediates the relationship between goal orientation, persistence and academic performance (Pintrich & DeGroot, 1990). However, research has yet to link goal orientation, self-efficacy beliefs, and the student's emotional / motivational response to a task to motivation / emotion control strategy use. Further, research is required to identify the interrelationships between goal orientation, self-efficacy, motivation / emotion control strategy use, task persistence, and academic achievement. If goal orientation influences the impact of self-efficacy beliefs on students' emotional and motivational responses to a task, students holding performance goals and low self-efficacy beliefs are most likely to benefit from implementing motivation and emotion control strategies. For these students, using strategies to manage intrusive emotions and waning motivation may lead to greater persistence and consequently achievement.

In early approaches to studying goal orientation, researchers often assumed that students adopted either a learning or a performance orientation (Dweck, 1986; Elliott & Dweck, 1988). Recent research has challenged this notion. Investigators have begun to measure goal orientation by calculating the levels of performance and learning goals that students hold simultaneously (Schraw et al., 1995). Thus, students who hold strong learning and performance goals and hold low self-efficacy beliefs may respond negatively to the task. Those students who are able to manage their negative emotions and waning motivation may use volition control strategies to elevate the intellectual (learning) goal over the emotional (performance) goal (Corno, 1992). Research is needed to measure levels of both learning and performance goals to determine how they interact with self-efficacy beliefs, and how they relate to volition control strategy use, task persistence, and academic achievement.

Rationale for the Study

This study investigated the kinds of emotional and motivational difficulties reported by older students, specifically postsecondary students, and examined the kinds of strategies they report using to control emotions and task motivation. The study also investigated the relationship between students' levels of learning and performance goals, their reported task persistence, and their academic achievement (defined narrowly here as scores on a measure of reading comprehension). Further, the study examined the relationship between goal orientation and perceptions of self-efficacy on students' emotional / motivational response to a difficult task. Finally, the study examined the interrelationships between goal orientation, self-efficacy beliefs, reported motivation / emotion control strategy use, reported task persistence and academic achievement. These relationships were explored to determine whether volition control strategy use is directly related to persistence and achievement. The relationships also were examined to determine if goal orientation interacts with self-efficacy and volition control to indirectly influence persistence and achievement.

The present study will contribute to the existing literature in a number of ways. First, by asking older, postsecondary students about the motivational and emotional problems they experience, this study extends what is known to date about the volition control difficulties for students of all ages. Second, in specifically addressing their motivation and emotion control strategy use, the present study adds to what is already understood about postsecondary students' volitional strategy use. Third, although existing research has examined the interrelationships between goal orientation, persistence, and achievement, only recently has research considered that students can hold both learning and performance goals simultaneously. By revising existing scales and creating conceptually clearer new ones, the present study clarifies the relationship between learning and performance goals, and expands upon previous research by examining the individual effects of learning goals and performance goals on persistence and achievement. Fourth,

perceptions of self-efficacy on students' emotional and motivational response to a difficult task. Also, the present study extends previous findings dealing with the relationships between performance goals, self-efficacy, and emotional/motivational response by testing whether performance goals and self-efficacy interact to influence emotional/motivational response. Finally, with all of the variables under examination, this study takes two views to understanding the interrelationships between them. First, the study examines all intercorrelations between variables. Then, all the interrelationships are examined in the context of a path model to study the hypothesized causal links between goal orientation, self-efficacy, reported motivational/emotional difficulties, strategy use, persistence, and achievement. As a final contribution to the existing literature, the present study redresses methodological issues related to clearly measuring different constructs associated with goal orientation.

Summary of Research Questions

1. What kinds of emotional and motivational difficulties do postsecondary students report experiencing?
2. What kinds of emotion and motivation control strategies do postsecondary students report using?
3. What is the relationship between goal orientation, persistence, and achievement?
Is goal orientation predictive of persistence and achievement?
4. What is the relationship between goal orientation, perceptions of self-efficacy, and emotional/motivational response to a difficult task? Do goal orientation and perceptions of self-efficacy interact to influence students' reporting of motivational and emotional difficulties?
5. What is the relationship between goal orientation, emotional/motivational response to a task, use of emotion / motivation control strategies, persistence, and achievement?
Does use of volition control strategies mediate the relationships between goal orientation, negative emotions and waning motivation, persistence, and achievement?

CHAPTER II

Review of the Literature

This study investigated the volition control strategies postsecondary students use to protect their task motivation and to regulate potentially intrusive emotions and waning motivation in the face of competing intentions and distractions. Further, the study explored the interrelationships between students' goal orientation, self-efficacy, reported emotional / motivational challenges, reported volitional strategy use, task persistence and academic achievement.

While existing research has investigated students' use of volition control strategies to varying degrees, some gaps in the literature remain. Researchers know very little about the kinds of emotion / motivation control strategies that older (secondary or postsecondary) students use, or the conditions under which they use them. In addition, the literature reveals very little about the relationship between students' use of emotion/motivation control strategies and outcomes like task persistence and academic achievement.

The research examining goal orientation has already established a link between goal orientation, self-efficacy, task persistence, and academic performance. Recent research suggests that students high in performance goals with low self-efficacy beliefs experience greater negative emotions when confronted with a difficult task, and are less likely to persist than all other students (Elliott & Dweck, 1988; Seegers & Boekaerts, 1993). In addition, researchers have discovered that students' use of some types of volition control strategies better predicts their persistence and academic performance than does goal orientation (Pintrich & DeGroot, 1990), and that some students high in learning goals still do not succeed (Pintrich, Anderman, & Klobucar, 1994). Finally, recent research suggests that students can hold learning and performance goals simultaneously, and that the ability to follow through and pursue the learning goal (when the performance goal might be emotionally preferable) indicates volition control (Corno, 1992). This study tried to

increase understanding of the interrelationships between students' goal orientation, self-efficacy, motivation / emotion control strategy use, task persistence, and academic performance.

This chapter is divided into two major sections. The first section reviews research on students' use of volition control strategies with an emphasis on what research suggests about motivation/emotion control strategy use. The second section describes research on goal orientation as it relates to volition control. I close with a discussion of the limitations of the existing research, the rationale for the present study, and the questions the study investigated.

Research on Volition Control Strategy Use

As discussed in Chapter 1, researchers have identified six types of volition control strategies that students use to protect their engagement in tasks. Three of these, attentional selectivity, encoding control, and information processing control, can be described as information processing control strategies. Students use these strategies to channel attentional resources toward the task and away from tempting distractions, to discriminate information relevant to the task, and to recognize when they have processed enough information to begin work on the task. Students use a fourth type of volition control strategy, environmental control, to protect task engagement by manipulating aspects of their environment (e.g., turning off the television). Finally, students use two additional types of volitional strategies, motivation and emotion control strategies, to regulate emotions and protect task motivation which, if unprotected, could interfere with the attainment of their goals.

Considerable research exists which has examined the three types of strategies students use to regulate information processing (e.g., Pressley & Afflerbach, 1995; Pintrich & DeGroot, 1990; Schraw, Horn, Thorndike-Christ, & Bruning, 1995; Miller, Behrens, Greene, & Newman, 1993). Researchers have also reported extensively on

students' efforts to control environmental distractions (e.g., Kuhl & Kraska, 1989; McDonough, Meyer, Stone, & Hamman, 1991; Benson, 1988). However, fewer studies have examined how students regulate their emotions and on-task motivation. This chapter will review literature examining how students employ all types of volition control strategies, with a particular focus on students' use of emotion/motivation control strategies. This review also will devote specific attention to the various measurement methods researchers have used to examine volition control strategy use (e.g., questionnaires, interviews, direct observations, think-alouds, and performance tasks).

Strategies to Regulate Information Processing

A great deal of research exists examining the strategies students use to control information processing. For example, Pressley and Afflerbach (1995) analyzed more than forty studies that employed a think-aloud methodology to identify the types of strategies, including those used to regulate information processing, that postsecondary students and professionals employed as they read. Think-alouds prompt individuals to verbalize their thoughts as they work through a task, thereby providing an indicator of on-line decision making processes. After analyzing the results of these studies, Pressley and Afflerbach uncovered three broad categories of activities used by readers throughout their reading: identifying and learning text content, monitoring, and evaluating. The information gained about readers' monitoring and evaluating is central to the present investigation. Pressley and Afflerbach found that, when monitoring their progress while reading, readers often became aware of comprehension difficulties and reported using strategies to manage the problems. Many of the strategies readers described could be classified as attention, encoding, or information processing control strategies, suggesting that individuals frequently use these types of volition control strategies to regulate their processing of information on a reading task. For example, readers reported deciding to skip material because an excerpt did not contain enough goal-related information to make the effort worth it (Pressley & Afflerbach, 1995). This example illustrates readers' use of strategies to

control how much information they process during reading, and to attend selectively to information relevant to goal completion.

Pressley and Afflerbach (1995) conclude that think-alouds reveal a multitude of cognitive processes that individuals employ while reading, including strategies to control information processing. Across the studies Pressley and Afflerbach summarized, postsecondary students and professionals reported a wide variety of ways they were able to direct their attention toward the chosen goal. At the same time, readers did not spontaneously describe using volition control strategies when confronted with potentially debilitating emotions. It is possible that readers did use such strategies but used them too infrequently to be reported by the various researchers. Further study is required to determine whether emotion / motivation control strategy use is in fact rarely reported.

The ability to selectively attend to the task at hand in the face of competing distractions is an example of a strategy to regulate information processing that successful students use. In a classic study, Mischel, Shoda, and Rodriguez (1989) examined the cognitive and attentional processes that four year-old children employed to delay immediate gratification in favour of long term goal-related gratification, even in the face of competing distractions and frustrations. The experimenters initially operationalized self-control as the decision to wait for delayed, more valuable rewards rather than obtain immediate, but less valuable ones. They set up a variety of performance tasks for children to complete individually. The researchers began by showing the children a set of toys and explaining that there would be time to play with them later, setting up a delay situation for all children. Then the researchers taught a game where they left the room, returning when one of the children rang a bell to call them. This activity taught the children how to summon the researchers for the next delay of gratification task. Next, researchers showed the children a pair of treats differing in value (one marshmallow versus two; two cookies versus five pretzels). The researchers told the children that in order to obtain their preferred treat they must wait until the researchers returned. The children were told that they could call the

researchers back at any time, but if they did they would receive the less preferred object and relinquish the preferred one. According to the authors, the pair of items were sufficiently close in value to cause the child conflict when deciding between stopping the delay, or persisting through the delay and waiting for the preferred outcome (Mischel et al., 1989). Once the researcher explained these instructions to each child, she left the child alone and recorded the amount of time the child was able to delay. All researchers were able to monitor each child's behaviour through a one-way mirror and record any self-talk in which the child engaged.

Results indicated that the frequency with which the children in the study chose to delay gratification increased with the value of the delayed reward when compared with that of the immediate reward, and also increased with age. Observations of the children through the one-way mirror also showed that many students used strategies to try to prolong the delay period and obtain the preferred reward. For example, some preschoolers successfully delayed gratification by avoiding looking at the immediate reward or creating diversions (e.g., singing songs) to avoid arousing thoughts. Researchers also found that the way that a child represented the reward cognitively had an impact on the amount of time he could delay before receiving the reward. Specifically, children who focused on the abstract, nonarousing qualities of the reward (e.g., thinking of pretzels as brown logs), rather than its consummatory, arousing qualities (e.g., focusing on a pretzel's crunchiness or salty taste), could extend the time of the self-imposed delay of gratification (Mischel et al., 1989). Thus, this study suggests that even preschool children use attention control strategies to attain desired goals.

In addition, the authors examined aspects of the preschool delay situations that served as predictors of cognitive and social competence in adolescence ten years later. At ten year follow-up, parents' ratings indicated that the children in the study who had been better able to delay gratification at four years were significantly better able to concentrate,

"...to plan, and to think ahead, and were competent and skillful" as adolescents (Mischel et al., 1989, p. 934).

Mischel et al.'s (1989) findings present interesting implications for students at risk. Their results suggest that preschool children's use of attentional selectivity strategies (e.g., avoiding eye contact with the immediate reward, singing songs to avoid arousing thoughts) is related to later academic success. Nonetheless, these conclusions should be interpreted with caution. While children's ability to delay gratification at four years of age might predict later self-regulatory competence, there are many other variables that could mediate this relationship. Variables pertaining particularly to the child's home environment in the intervening years could have much to do with their later social and cognitive competencies. Perhaps by studying the volitional strategies that successful adolescents or young adults use, researchers could more reliably measure the relationship between volitional strategy use and outcomes like task persistence and academic performance. This approach may be more profitable than trying to account for all intervening variables that may impact a child's use of volition control strategies at age four and their subsequent performance as adolescents.

Additional research examining strategies to regulate information processing has focused on the relationship between strategy use and academic outcomes like task persistence and achievement. Pintrich and DeGroot (1990) proposed that there are three components of student motivation that may influence academic performance: (1) an expectancy component, including students' beliefs about their abilities to perform a task (e.g., self-efficacy), (2) a value component, including students' goals and thoughts about the importance and interest of the task (of which goal orientation is one component), and (3) an affective component, including students' emotional responses to the task. The authors also outline three components of self-regulated learning: (1) cognitive strategy use, (2) effort management, and (3) metacognitive strategy use. Cognitive strategies are those that students use to learn, recall, and comprehend material. Effort management strategies

are analogous to volition control strategies and enable students to maintain their cognitive engagement in a task by blocking out distractions. Metacognitive strategies allow students to plan, monitor, and modify their cognition. The authors investigated how the three motivational components were related to the components of self-regulated learning, and how the motivational and self-regulated learning components were related to academic performance. Participants were 173 grade seven students from English and Science classes who completed the Motivated Strategies for Learning Questionnaire. This self-report instrument, developed by the researchers, contains items on student motivation and the three components of self-regulated learning. Pintrich and DeGroot also measured academic performance in three ways: (1) in-class work and homework, (2) quizzes and tests, and (3) essays and reports.

The researchers obtained several interesting findings. First, prior achievement was a significant predictor of self-regulation. High achieving students were more likely to report using self-regulatory strategies than were low achieving students, although the two groups of students did not differ in their cognitive strategy use. Also, higher levels of cognitive and self-regulatory strategy use were associated with higher levels of achievement on all three performance measures. Specifically, students' self-regulatory strategy use was positively related to performance on seatwork, exams and quizzes, and essays. Cognitive strategy use was negatively related to seatwork and essay performance when the other components of self-regulation were included in the regression equation, suggesting, according to the authors, that cognitive strategy use was a negative suppressor variable. Self-regulation and cognitive strategy use were highly correlated ($r = .83$), with self-regulation being the better predictor of academic performance. The negative suppressor effect of cognitive strategy use on academic performance suggests that cognitive strategy use, without joint use of self-regulatory strategies does not facilitate successful academic performance.

Of interest here is the fact that of all the variables included in the analysis, self-regulation (including metacognitive strategy use and effort management) was the best predictor of task performance (Pintrich & DeGroot, 1990). These findings point to the impact that students' use of strategies to regulate information processing has on task performance. Note, however, that Pintrich and DeGroot (1990) did not examine the relationship between each of the six types of volition control strategies and academic performance. For example, the questionnaire used in their study did not address students' use of motivation and emotion control strategies. It is important, therefore, to determine whether strategies students use to regulate their emotions and motivation also directly influence successful task performance.

Taken together, the results of these studies suggest that students do report using strategies to control information processing and that researchers can observe even very young children engaging in specific strategies to channel their attention appropriately. Further, the research suggests that there is a link between students' use of information processing control strategies and academic achievement. Whether the link is a direct one, and whether it holds for motivation/emotion control strategy use, requires further study.

Environmental Control Strategies

In addition to the extensive literature on information processing control strategies, many researchers have examined the methods students use to manage potential disruptions in their studying environment (e.g., Kuhl & Kraska, 1989; McDonough, Meyer, Stone, & Hamman, 1991; Benson, 1988). For example, classroom teacher Ron Benson (1988) investigated the role of environmental control strategies in academic task persistence. Benson interviewed his sixth-grade students about what they thought of as disruptive when doing homework and why these interruptions happened. Benson wished to guide these children to develop solutions for coping with the types of distractions they described. When asked to list the five primary disturbances they encounter when doing homework, the students most often listed the telephone, the television, and interruptions from family

members. The students also mentioned disturbances from general background sources, such as doorbells, music, or loud conversations (Benson, 1988). Based on these results, the class came up with various options for dealing with distractions. Of note is the fact that students most often listed aspects of the external environment as distracting rather than potentially defeating cognitions, a lack of motivation, or a lack of self-discipline (Benson, 1988). This is not surprising, considering the age and developmental level of the participants. Research has shown that it is difficult for children to report on their cognitive and metacognitive activities (see Brown, 1984).

Benson's article provides a good cursory look at students' self-reported distractions. The author states that his students did not report using any strategies requiring metacognitive awareness. This suggests perhaps that future research investigating motivation /emotion control should target older students, and ask them explicitly about this type of strategy use, rather than hoping for students to spontaneously report it.

Motivation and Emotion Control Strategies

Considerable research has demonstrated the disruptive and negative impact that emotions and waning motivation can have on academic performance (e.g., Rohrkemper & Bershon, 1984; Dweck, 1986; Mischel et al., 1989; Cleary, 1991). For example, Cleary (1991) researched the circumstances that affected forty 11th graders' concentration and limited their motivation while writing. Cleary used three methods to examine the disruptive impact of emotions: in-depth interviews, classroom observations, and records of students' composing aloud. Each student participated in three in-depth interviews, during which the researcher asked a variety of questions about their perceptions of their writing experiences. The first interview focused on previous writing experiences and the different attitudes and emotions students had experienced. The second interview focused on current writing experiences and corresponding affective responses. The third and final interview asked students to construct meaning out of their past and present writing experiences and when and why they might write in the future. Classroom observations permitted the researcher to

observe students' writing behaviour, their interactions with peers and the teacher, and the physical environment of the classroom. Lastly, Cleary asked students to verbalize anything that came into their heads as they wrote. The students first practiced on a writing assignment assigned by the researcher, then completed the think-aloud procedure while working on a teacher-assigned writing task.

Analysis of the interview transcripts revealed four ways that students' emotions interacted with concentration and motivation for writing. First, Cleary found that, by the time many of the students had reached Grade 11, they had lost the intrinsic motivation to write (i.e., writing for the satisfaction of creating meaning or for their own feelings of competence). Instead, they were driven by extrinsic motivation (i.e., for grades and praise). Many of both the poor and talented writers reported a general lack of motivation for writing and that they often procrastinated on writing assignments. Cleary interpreted that these students used procrastination to produce sufficient anxiety to overcome their unwillingness to write. The second manner in which emotions influenced concentration occurred when students became frustrated due to what Cleary calls "overburdened conscious attention" (Cleary, 1991, p. 486). Frustration occurred when students were consciously aware of the many things they needed to do to complete the assignment, leaving little room in conscious attention for writing. Third, a distressing life situation sometimes provoked an emotional interruption to concentration by leaving little room in conscious attention for the writer to think of anything else. Finally, emotions were also aroused by elements external to the individual (e.g., a critical audience), which redirected conscious attention from the task to the external threat. Cleary labeled this distraction a "threat in the writing environment" (Cleary, 1991, p. 493). Classroom observations served as a check on the information students provided in their interviews. Cleary analyzed the think-aloud sessions, looking for instances of interruption in students' attention to the task.

Cleary concluded that when students were able to concentrate fully on their writing task, they felt competent and satisfied. More often than not, however, students in her

study reported difficulties in maintaining their concentration while writing. The author noted that usually students reported more than one type of distraction simultaneously (Cleary, 1991). Further, Cleary found that, as the study progressed, the eleventh graders reported an increasing dislike for writing. Unsuccessful writers became increasingly less interested in doing something that produced feelings of incompetence. For them, even the extrinsic reward of obtaining a good grade was not a sufficient motivator. Even for successful writers, the writing process became progressively less interesting as the classroom placed greater emphasis on obtaining good grades, thereby decreasing students' intrinsic motivation for writing. Cleary concluded that the emphasis in the classroom on extrinsic motivators (grades, praise) contributed to patterns of overarousal (anxiety) and underarousal (boredom) that negatively impacted students' task performance (Cleary, 1991).

The results of this study point to the need for further research that examines the strategies that successful secondary and postsecondary students use to regulate emotions and maintain on-task motivation. Instruction of the strategies uncovered might help both students who are repeatedly unsuccessful with a task and those students who are usually successful, but who have lost interest or become bored.

Researchers have looked extensively at the effects of intrusive emotions on the academic performance of students of all ages (e.g. Cleary, 1991; Rohrkemper & Bershon, 1984; Meece, Wigfield, & Eccles, 1990). However, examinations of strategies students use to control task motivation and regulate intrusive emotions have focused largely on younger students. For example, one of a very few studies that explore students' use of motivation and emotion control strategies looked at those used by preschool children. As described earlier, Mischel et al., (1989) used a one-way mirror to observe children's behaviour as they tried to wait for a more desirable object instead of an immediately available but less desirable one. The researchers discovered that some children employed motivation control strategies, such as talking themselves into waiting. At ten-year follow-

up, parents described the adolescents who had used these strategies as better able than their peers to cope with frustration and resist temptation. Parents also described these adolescents as more academically and socially competent and able to deal with stress “more maturely” (Mischel et al., 1989).

The results of this study illustrate the importance of motivation and emotion control strategy use, not only to enable four year olds to complete a task successfully, but also as an important predictor of later adolescent adjustment and success. It would be interesting to directly study whether students studied at age four continue to use motivation and emotion control strategies through adolescence. If researchers can identify the motivation and emotion control strategies students use, the information obtained could provide guidance to at-risk students regarding how to regulate their emotions and on-task motivation.

To investigate how students regulate their emotions while engaged in a task, Rohrkemper and Bershon (1984) recorded students’ thoughts while solving a math problem. Participants were 66 elementary students from grades 3 to 6 participating in an evaluation study of a teaching program which provided individualized math instruction within the context of cooperative teams. Teachers taught math to children in the experimental condition for 12 weeks while they taught math to control group students using more traditional, whole-class instruction. Based on a pretest measure of math skills, the researchers clustered participants into high, moderate, and low ability groups. Then, following instruction, the researchers randomly selected students within each of these levels for interviewing. They interviewed students individually about their knowledge of the nature and causes of problem difficulty and how that difficulty affected their feelings, thoughts, and motivation to learn. Students were interviewed about their thoughts during both easy and difficult tasks (Rohrkemper & Bershon, 1984).

Rohrkemper and Bershon’s (1984) analysis indicated that 58 of the 66 participants reported “saying things to themselves” or using “inner speech” when trying to complete a

difficult task (Rohrkemper & Bershon, 1984). The experimenters developed four categories to describe this inner speech: cognitive strategies, task-specific self-efficacy remarks, emotional reactions, and attributional statements. Forty-eight students reported using what Rohrkemper and Bershon termed cognitive strategies. These appeared to serve a self-regulatory function, protecting students' concentration and focus in the face of difficulty. While not labeled specifically as a motivation control strategy, the authors also reported that some students used 'escape strategies' (e.g., deciding to take a break when they felt their brain has been overworked or they were becoming bored). The authors reported that only 11 students mentioned emotions as part of their inner speech, but that all 11 reports were negative. These findings differ markedly from those obtained when researchers studied the inner speech of the same students when engaged in easy tasks. Under these conditions, students' emotional reactions were predominantly positive.

The authors conclude that students reported mainly cognitive strategies and negative emotions while working on difficult tasks, but reported positive emotions and little to no strategy use when engaged in easy tasks. Rohrkemper and Bershon (1984) argue that teachers must assist students to build problem solving strategies and coping techniques to alter intrusive emotions during completion of a difficult task. By assisting students, rather than explicitly teaching them which strategies to use, the authors argue that students will eventually employ these strategies independently. While this suggestion requires further investigation, the findings of this study do provide excellent information regarding the motivation control strategies younger students use. However because there are developmental differences between children and adults, it is important to explore how motivation / emotion control processes work for older students.

Teaching at-risk students how to use volition control strategies is a relatively new research endeavor. Laverne Trawick's (1991) doctoral dissertation investigated the effects of training college students to use six types of volition control strategies on measures of motivation, volition, and academic achievement. Participants were 79

community college students in a remedial reading class randomly assigned to either an experimental or control group. The experimental group received four, 70-minute group training sessions in volition control strategies. Control subjects received the regular course content of the remedial reading program. Students completed pre- and posttest self-report measures of volition, motivation, and academic achievement. The researcher also interviewed the students at the end of the study to uncover what they learned about using volition control strategies. Results of the intervention indicated that the training did not significantly improve academic motivation, volition, or reading achievement, but did increase students' awareness of the importance of using strategies for handling potential distractions. Students became particularly aware of the utility of environmental control strategies.

Part of Trawick's difficulty in obtaining significant improvements in students' use of volition control strategies may have been related to the short duration of the intervention. Students participated in four training sessions, which may have been insufficient not only for students to start using the strategies, but also for them to continue using them independently once the intervention was complete. Trawick suggests that further research should investigate how students acquire volition control strategies, and that researchers should pay more attention to how they measure strategy use. She also argues for study of the strategies successful students use to regulate emotions and on-task motivation, given that the struggling students in her study found motivation and emotion control strategies particularly difficult to internalize (Trawick, 1991).

Taken together, this set of studies illustrates that intrusive emotions and a lack of motivation can negatively impact task performance. Additionally, research shows that some young students use strategies to try to manage their emotions and task motivation, and there is some evidence that using these strategies at a young age is related to later academic success. Further, preliminary findings indicate that students performing poorly do not use motivation and emotion control strategies (or at least academically effective

ones) and that attempts to train students to use these strategies have been unsuccessful. What is not yet known is the extent to which older students use strategies to regulate task motivation and emotion and how this strategy use relates to their academic performance.

While defining effective strategies for intervention is certainly important if at-risk students are to succeed despite distractions and task difficulty, additional research needs to explore more comprehensively the strategies that older (particularly postsecondary), successful students use to regulate emotions and on-task motivation. Further, research should investigate how students' use of volition control strategies to successfully reach goals relates to the motivational factors that influenced the goals that they set.

Research On Goal Orientation

In this second section the research literature on goal orientation is reviewed in four parts. First, goal orientation is defined. Second, the relationship between goal orientation and volitional strategy use is explored. Third, the literature on the relationship between goal orientation and outcomes like persistence and achievement is reviewed. The fourth subsection summarizes research that shows that sometimes learning oriented students do not persist on tasks, and examines the implications of this research for understanding volition control. Finally, limitations of the existing literature and the rationale for the present study are discussed.

Defining Goal Orientation

Much research has pointed to the relationship between students' motivational beliefs and their use of various types of volition control strategies. At the very least, research indicates that strategy use does not occur independently of students' beliefs about themselves and the task (Pintrich & Schrauben, 1992). The goals that students set while engaged in a task depend on how personally important the task is to them as well as their beliefs in their abilities to complete the task. Further, the goals students set reflect the different intentions they adopt in various academic situations (Pintrich & Schrauben,

1992). In some situations, students are more concerned with grades, with others' approval, and with presenting themselves in a positive light. In the motivational literature these goals constitute a performance goal orientation (Dweck, 1986). When students adopt a learning goal orientation they are curious and challenge-seeking, keen to learn and master the task (Dweck, 1986). While goal orientation reflects students' intentions in various academic situations, volition protects the enactment of those intentions.

Goal Orientation and Volitional Strategy Use

Research indicates that learning and performance goals lead to different patterns of task engagement and strategy use (Dweck, 1986; Miller, Behrens, Greene, & Newman, 1993; Schraw, Horn, Thorndike-Christ, & Bruning, 1995). Of interest to the present investigation are the differing conceptions of the relationship between goal orientation and volitional strategy use. Some researchers maintain that adopting a learning goal orientation leads to greater self-regulatory strategy use and subsequently to higher achievement (Schraw et al., 1995). Others studying the same variables assert that, while there is a positive relationship between the adoption of a learning orientation and self-regulatory strategy use, it is strategy use that is most predictive of successful performance (Pintrich & DeGroot, 1990).

For example, Schraw et al. (1995) examined the academic goal orientations of college students to determine the relationships between goal orientation, strategy use, metacognition, and academic achievement. The authors predicted that those students with high learning orientations would report greater strategy use, higher academic achievement, and more metacognitive awareness than those who exhibited little learning orientation. Further, they predicted that only a learning orientation, and not a performance orientation, would be associated with metacognitive awareness, strategy use, and academic achievement. Schraw and his colleagues based these predictions on the theories of Dweck and Leggett (1988), who state that a strong learning orientation leads individuals to engage

in greater strategy use and to be more effortful and persistent in their learning - all variables shown to relate positively to achievement (Schraw et al., 1995).

Schraw and his colleagues gave introductory Biology undergraduate students three self-report inventories: one to measure learning and performance goals, one to measure strategy use, and one to assess metacognitive knowledge (knowledge about cognition and regulation of cognition). The investigators also obtained measures of pre-university academic achievement (used as an indicator of ability), as well as students' final course grades. When variance accounted for by ability was partialled out, the researchers found positive relationships between learning orientation, achievement, and strategy use. Specifically, students high in learning orientation were higher achievers and reported using more strategies than did students low in learning orientation.

The authors conclude that a strong learning orientation makes it more likely for students to adopt the adaptive cognitive and motivational skills which are necessary for their continued task persistence and engagement (Schraw et al., 1995). While this explanation is a plausible one, the results of other studies offer a different interpretation. A learning orientation is positively *related* to volition control strategy use (Schraw et al., 1995; Pintrich & DeGroot, 1990), and in some cases to task persistence (Miller et al., 1993). However, additional research has demonstrated that some students who have strong learning goals do not persist and do not succeed academically (Pintrich et al., 1994; Corno, 1992). Thus, the results do not necessarily suggest that adopting a learning orientation is sufficient to ensure greater self-regulatory or volition control strategy use. Rather, the findings of Schraw and his colleagues illustrate the existence of a positive relationship between the adoption of a learning orientation and use of self-regulatory strategies. The nature of the relationship requires further study.

Miller, Behrens, Greene, and Newman (1993) agree that the relationship between goal orientation and volition control (as a subtype of self-regulated learning) remains ambiguous. They examined the motivational orientations and self-regulatory activities of

119 introductory statistics students. The experimenters gave participants questionnaires to assess their perceived ability in the course, their goal orientation (learning versus performance), and their use of self-regulatory strategies such as goal setting and self-monitoring (Miller et al., 1993). Following Dweck (1986), the authors hypothesized that students reporting high perceived ability and possessing learning goal orientations would be more likely to remain persistent and to make use of cognitive and self-regulatory strategies than would students who set performance goals and thought they had less ability.

Based on instruments developed by Ames and Archer (1988) and Pintrich and DeGroot (1990), the researchers developed the Attitude Toward Statistics instrument, comprising 35 items intended to measure motivational orientation and self-regulatory strategy use. Results indicated that those students with an established learning goal orientation were more likely to report persisting on difficult tasks. The authors also found that participants who mainly set learning goals and who perceived themselves high in ability reported the highest levels of monitoring. Participants who set learning goals but perceived themselves low in ability did not differ significantly from those who set performance goals and perceived themselves low in ability. In contrast, those with primarily performance orientations and high perceived ability were least likely to self-monitor (Miller et al., 1993).

The authors conclude that it is those students who are highly learning-oriented who are most likely to self-regulate and therefore most likely to persist. However, the results of the Miller et al. (1993) study indicate that possessing a learning goal orientation alone does not guarantee that students use volitional strategies (like self-regulation), nor that they are more likely to persist. In their study, students' perceived levels of ability (self-efficacy) were necessary to fully explain the relationship between goal orientation and self-regulatory strategy use (Miller et al., 1993). However the finding that students with low self-efficacy beliefs did similar amounts of monitoring, regardless of goal orientation, contradicts much

of the existing research on goal orientation. Evidence from the majority of studies on goal orientation (e.g., Dweck, 1986; Elliott & Dweck, 1988) supports the conclusion that self-efficacy beliefs influence strategy use differently depending on goal orientation. For example, Elliott and Dweck (1988) found that only students with performance goals and low self-efficacy beliefs expressed negative emotions and aborted attempts to uncover effective strategies to deal with a difficult task. Future research must try to clarify the nature of the relationship between goal orientation, self-efficacy, and volitional strategy use, to determine if goal orientation and self-efficacy interact to influence volition control strategy use, which in turn directly affects academic achievement, (see Figure 1).

Pintrich and DeGroot (1990) also examined the relationship between motivational orientation, strategies to regulate information processing, and academic achievement. Using a multiple regression analysis to analyze students' responses to the MSLQ, the researchers discovered that student self-regulation was directly related to academic performance, while learning orientation was only indirectly related to performance. Thus, they found that it was students' use of one type of volitional strategy, regulation of information processing, that was directly related to successful performance, not whether students were learning or performance oriented. Thus, the findings of this study support the notion that use of information processing control strategies directly influences academic achievement, while the effect of goal orientation on achievement is indirect (see Figure 1). Whether these relationships between goal orientation, strategy use, and achievement hold for motivation / emotion control strategy use has yet to be investigated.

One study that investigated the relationship between goal orientation and students' task-specific emotions and motivation during math problem solving was conducted by Seegers and Boekaerts (1993). The authors developed measures to assess the emotions and cognitions of 162 eighth graders as well as their desire to invest effort (which they label learning intention) and their task performance (Seegers & Boekaerts, 1993). Specifically, the researchers used the Goal-Orientation Questionnaire to measure learning

and performance orientation and the On-Line Motivation Questionnaire (OMQ) to measure students' task-specific motivations. The researchers administered sections of the questionnaires in two parts. The first set of questions, given prior to the math tasks, measured students' evaluations of the task situation (including the personal relevance of the task for them and its attractiveness), emotions, and learning intention. Researchers administered the second set of questions once students had completed the tasks, to examine students' emotions, amount of invested effort, and feelings of self-efficacy.

Results revealed that goal orientation was positively correlated with self-efficacy beliefs; the greater students' levels of learning goals the higher their task-specific feelings of competence. Students' emotions were also strongly correlated with their task-specific feelings of competence (i.e., self-efficacy). Specifically, those students who perceived themselves as highly competent reported more positive emotions. In a multiple regression analysis predicting the emotions students experienced when confronted with math tasks, Seegers and Boekaerts found that variables such as goal orientation did not significantly increase the amount of explained variance in emotions above self-efficacy beliefs.

Based on their research hypotheses and the results of the hierarchical multiple regression analysis, the authors developed a path analysis model. The results of the path analysis revealed that task-specific self-efficacy beliefs mediated the influence of goal orientation on students' emotional response to a task and their subsequent achievement. The authors conclude that students' goal orientation was directly related to their task-specific self-efficacy beliefs. These beliefs, in turn, determined the degree to which students were willing to invest effort to pursue the task, as well as their emotional response to the task (Seegers & Boekaerts, 1993).

The results of this study suggest an indirect relationship between goal orientation and students' emotional response to the task. Referring again to the model presented in Figure 1, goal orientation may influence the impact of self-efficacy beliefs on the student's emotional response to the task (and her subsequent management of the task). However,

Seegers and Boekaerts did not specifically determine whether math problem solving was difficult for all students in the class. If the researchers had inquired about students' emotions and cognitions while engaged in a *difficult* task, it is possible that students with learning and/or performance goals would have reported negative emotions. Therefore, the kinds of strategies students used to regulate emotions and task motivation to complete difficult tasks, and how this strategy use relates to goal orientation remains unclear.

In sum, the results from this set of studies suggest there is a positive relationship between goal orientation and volition control. Beyond this, the precise nature of the relationship (i.e., whether one variable influences the other) is uncertain. Recent research suggests that goal orientation is positively related to task persistence and achievement. However, other variables, such as self-efficacy beliefs and volition control, may interact with goal orientation directly, suggesting an indirect relationship between goal orientation and academic achievement (see Figure 1).

Goal orientation and persistence/achievement

What leads students with different orientations to either persist with or abandon a task? One possibility is that, for students with a performance orientation, experiencing difficulty or failure can pose a threat to self-esteem, leading to anxiety and perhaps even depression. Students seeking to avoid these negative emotional states may adopt a protective stance, choosing to devalue the task, declaring it as boring or unimportant (Dweck & Leggett, 1988). While this approach may allow the student to control potentially intrusive emotions, it does not permit her to reach the intended goal and undermines use of volition control strategies.

For those students who adopt learning goals and face task difficulties, the picture may be quite different. Difficulties, or the possibility of failure, may signal to a student that she needs to invest more effort and to devise new and imaginative ways to solve the problems in the task. Indeed, the opportunity for task mastery through increased effort

leads learning oriented students to experience greater positive affect and heightened task engagement as they attempt to overcome task difficulties (Dweck & Leggett, 1988).

In an investigation into the effects of goal orientation on task persistence and student achievement, Elliott and Dweck (1988) attempted to experimentally induce students' goal orientation and perceptions of ability (high or low). The authors hypothesized that those students prompted to adopt performance goals and high perceptions of ability would attempt to master a difficult task, while those students with performance goals but low perceptions of ability would respond in a task-avoidant, helpless fashion. In contrast, they expected that those students with a learning orientation would try to master a difficult task, regardless of perceived ability (Elliott & Dweck, 1988).

Elliott and Dweck (1988) manipulated the ability beliefs of 101 fifth grade students by means of feedback they gave on a pattern recognition task. The researchers told half of the participants they had high ability for the task, while they told the other half of participants that their abilities were low. An experimenter unaware of this previous feedback then gave students instructions highlighting either a learning or performance goal. To highlight a learning goal, the experimenters told the children that the learning task might help them in school because it 'sharpens the mind' and that learning to do it well could help them with their schoolwork (Elliott & Dweck, 1988). To highlight a performance goal, the researchers told the children that they would be filming their performance and that experts would be evaluating it. The experimenters assumed that mentioning the filming component would increase the value children ascribed to *displaying* their competence. Under the learning condition, the instructions would augment children's value of trying to *increase* their competence. The researchers also offered children a choice between two types of tasks (although the tasks presented in the end were actually the same for all participants). First, the investigators described performance tasks as containing problems of various levels of difficulty, designed not to teach the children new things, but to show the researcher what the children could do. They described learning tasks as ones on which the children might

make mistakes, but that would help them to learn useful things. Children who chose a performance task were also to select one of three levels of task difficulty (high, moderate, low), although in reality all performed the task of 'moderate' difficulty. The dependent variables measured were choice of task, students' performance when experiencing difficulty (this included their degree of persistence and strategy use when faced with problems), and attributions and expressions of affect verbalized by the student while completing the task. All children then completed the same task where they were shown a deck of cards. Each card of this deck contained two figures that varied along three dimensions -- shape (square or triangle), colour (red or blue), and symbol in the centre of the shape (dot or star). At the start the experimenters listed each of the six stimulus values and told each child that only one value was the right one for the entire deck. Each child then pointed to either the left or the right figure and the researcher said "correct" if the figure contained the stimulus value selected for the deck. In addition, they asked students to verbalize their thoughts. The experimenters always gave students feedback about the accuracy of their hypotheses. To test the degree to which students' strategy use changed following failure feedback, experimenters always included feedback telling students that some of their hypotheses were wrong.

Results indicated that when the researchers highlighted performance goals and children thought themselves to have low ability, they were more likely to make attributions to a lack of ability when given feedback about their mistakes. In addition, they expressed negative emotions and aborted attempts to uncover effective strategies to deal with their difficulties. When performance-oriented children believed their abilities were high, they showed greater persistence in finding effective problem-solving strategies. In addition, they did not make any attributions or express any negative emotions. All performance-oriented children avoided opportunities that could have increased their skills but that would have involved public observation of their mistakes. Conversely, when children held a learning orientation, their ability beliefs did not influence their behaviour. They chose

challenging tasks that would increase their skills, even though any errors they made would be public ones. Further, the problem-solving strategies of learning-oriented children became more sophisticated when they were confronted with potential failure.

This study provided the theoretical framework for many others that followed to investigate the links between academic goal orientation and achievement (see Pintrich & DeGroot, 1990; Miller et al., 1993; Schraw et al., 1995). By presenting goal orientation as a potential mediator of achievement behaviour, the research raised interesting questions about how a student's goal orientation relates to achievement (see Figure 1), and what role self-efficacy, negative emotions and anxiety may play in that relationship. For example, the results suggest that perhaps goal orientation interacts with self-efficacy beliefs to influence the emotional response to the task, subsequent strategy use, and persistence for students with performance goals. However, other research has suggested that low self-efficacy beliefs alone make it more likely for students to experience negative emotions, regardless of goal orientation (Miller et al., 1993). Further research is required, therefore, to investigate how students' use of strategies to regulate their emotions and motivation for a task relates to their task persistence and achievement and how this strategy use is related to goal orientation.

Learning Oriented Students who do not Persist

While most research suggests that students with learning goals are more likely to persist, there are some students who do want to learn for learning's sake, but who still abandon work on difficult tasks and perform poorly (Corno, 1992). Thus, simply having learning goals is insufficient to account for better performance. This lack of persistence when confronted with difficulty may have to do in part with how students manage their resources and time, their ability to cope with failure, and their ability to control their emotions (Ornstein, 1995). Corno (1992) has suggested that students who do not persist, but who do possess learning goals may lack volition control. Further, Corno argues that goal orientation is not a dichotomous variable, where students hold either learning or

performance goals. Instead, students can hold learning and performance goals simultaneously, to varying degrees. This implies that students can fall anywhere on the two continua: from being high in both kinds of goals, high in learning goals and low in performance goals, low in learning goals and high in performance goals, or low in both kinds of goals. When students hold both learning and performance goals, achieving the performance goal might be emotionally preferable, while the learning goal may be preferable intellectually. In these cases volition is required to follow through and achieve the learning goal and to redirect attention away from performance concerns (Corno, 1992). This conceptualization of goal orientation may help to explain why some learning oriented students persist and are successful, while other students with learning goals abandon the task when it becomes difficult. Perhaps successful students with learning goals use volition control strategies to keep learning goals in focus and to protect task engagement, while learning-oriented students who struggle do not use the same strategies. Testing this hypothesis would help to clarify the relationships between goal orientation, volition, and academic achievement.

One study that investigated the goal orientations and self-regulatory strategy use of struggling students examined the motivational and metacognitive variables that distinguish students with learning disabilities (LDs) from those without disabilities. Further, to determine how these variables relate to academic achievement, Pintrich, Anderman, and Klobucar (1994) examined the intraindividual differences in motivation and cognition for fifth-graders with and without LDs. The authors hypothesized that different patterns of motivation and cognition would emerge within both the LD group and the non-LD group. Further, they predicted that these different intraindividual patterns would lead to the same achievement outcomes. That is, some students (both LD and non-LD) would achieve by using self-regulatory strategies, even if they were low in learning orientation, while others (LD and non-LD) might be motivated by a learning orientation even if they rarely used self-regulatory strategies, and were less academically successful.

Participants in this study were thirty-nine fifth grade students, nineteen of whom were diagnosed as having learning disabilities by the school system. The other 20 students had no achievement problems. Students completed two self-report questionnaires. The first, a modified version of the MSLQ, assessed goal orientation, self-efficacy, anxiety, and attributions for reading success and failure. The second measure, the Index of Reading Awareness (Jacobs & Paris, 1987), examined students' metacognitive knowledge about reading strategies, particularly comprehension strategies. Pintrich et al. (1994) also assessed reading performance by having students read a short story and respond to five multiple choice comprehension questions.

Results indicated that students with learning disabilities demonstrated less metacognitive knowledge and reading comprehension than students without learning disabilities. However, students with learning disabilities did not differ from other students on self-efficacy, intrinsic orientation, or anxiety. In order to examine intraindividual differences, the authors identified three clusters that cut across those students with learning disabilities and those without, based on differences in cognition and motivation. In the first cluster were those students with high levels of reading comprehension, who were high in intrinsic motivation and metacognition. The majority of students in this cluster were without learning disabilities. The second cluster consisted of those students who were not intrinsically motivated, but who demonstrated average reading comprehension and average levels of metacognitive awareness. This group contained an equal number of students with and without learning disabilities. In the final cluster were students low in reading comprehension, low in metacognition, but high in the degree to which they were intrinsically motivated. All students in this group were diagnosed with learning disabilities.

Based on these findings, the authors conclude that having a learning orientation alone is not sufficient to guarantee successful performance. Cluster 3 clearly included students who were intrinsically motivated but who still scored low in measures of metacognition and reading comprehension. Further, there were also students who had an

average amount of metacognitive knowledge, performed adequately on measures of reading comprehension, but professed little intrinsic motivation for the task (cluster 2). Thus, it may be that multiple factors contribute to successful performance, and that students, regardless of their 'labels,' have different strengths and weaknesses. Interestingly, unlike the pattern observed with goal orientation, all students who had at least average amounts of metacognitive knowledge performed adequately on tests of reading comprehension. This result suggests that metacognition, as one component of self-regulation is at least a necessary condition for successful academic performance.

Methodological Issues in the Study of Goal Orientation

The research which has examined goal orientation and its relationship to elements of volition control, task persistence, and academic achievement has used inventories intended to measure the learning and performance dimensions of goal orientation (see Pintrich & DeGroot, 1990; Schraw et al., 1995). Some of the inventories have included a small number of items on goal orientation as part of a larger questionnaire measuring constructs such as motivation and self-regulated learning (Pintrich & DeGroot, 1990). Pintrich and DeGroot's (1990) questionnaire also dichotomizes goal orientation, maintaining that people hold *either* learning *or* performance goals, not both. Other inventories, developed to measure only goal orientation (for which students can hold various levels of learning and performance goals), have included items which confound many of the other variables under investigation. For example, the Goals Inventory (Roedel, Schraw, & Plake, 1994) lists the item "I give up too easily when faced with a difficult task" as belonging to the learning goals subscale, when it more accurately reflects task persistence. Further, it lists "I persevere even when I am frustrated by a task" as a learning goal, when it belongs more appropriately under the rubric of emotion control. Thus, the interrelationships between the variables under investigation may have been obscured by using an invalid measure. In order to be able to use this more comprehensive measure, this study assigned the

confounding items to more appropriate “persistence” and “volition control” subscales. The pilot study was then used to test the newly constructed, more conceptually sound measures so that all variables could be studied more clearly in the main study.

Rationale for the Study

The present study will make some important contributions to the existing research literature. First, a pilot study is used to create conceptually consistent new scales measuring learning goals, performance goals, motivational/emotional problems, motivation/emotion control strategy use, persistence, and achievement. The pilot study is also used to field test all measurement instruments (e.g., Self-Efficacy Questionnaire) used in the main study.

In addition, the present study adds to what is known about the motivational and emotional difficulties of older students. A great deal of research has demonstrated the disruptive impact that emotions and waning motivation can have on academic performance (e.g., Rohrkemper & Bershon, 1984; Mischel et al., 1989; Cleary, 1991). Researchers have noted that elementary and high school students report feeling frustrated, bored, and anxious when engaged in a difficult task. However, most of these studies examined the motivational and emotional difficulties of young students, whose reporting of their emotional and motivational difficulties is potentially limited by their cognitive abilities, their verbal abilities, and their suggestibility to experimenter cues (Garner, 1984). These studies have pointed to some important topics for future research into motivation / emotion control. However, because there are developmental differences between children and adults, it is important to explore how volitional processes work for older students. Thus, this study used a questionnaire listing the emotional and motivational difficulties reported by students throughout the research literature (see Kuhl, 1984; Corno & Kanfer, 1993), to explore the difficulties of students at the postsecondary level.

Similarly, although research has examined the motivation / emotion control strategy use of preschoolers and young elementary students, their reporting of strategic activity is limited by their cognitive and / or verbal abilities and their suggestibility to experimenter cues (Garner, 1984). At the same time, self-report measures used with older students have focused on only a subset of volition control strategies (i.e., environmental control strategies and strategies to regulate information processing) (see Pintrich & DeGroot, 1990).

Therefore, the present study extended previous research by administering self-report questionnaires on volition control to postsecondary students, and by asking them specifically about their use of motivation / emotion control strategies. The motivation / emotion control strategies listed on the questionnaire were chosen based on their prevalence in the research literature. For example, in their 1993 review of volition control research, Corno and Kanfer list several emotion and motivation control strategies mentioned by students of various ages. These strategies, which include: taking a deep breath and counting to 10, visualizing doing the task successfully, and promising oneself a reward upon task completion, were all included in the motivation / emotion control questionnaire. The use of this questionnaire in the present study represents an important contribution to the self-regulated learning literature. This study fills a gap where previously little was understood about the strategies postsecondary students use to sustain motivation and control intrusive emotions.

Research has consistently found a positive relationship between a learning orientation, persistence, and achievement (Elliott & Dweck, 1988; Schraw et al., 1995). However, the methods used to examine the relationships between goal orientation, persistence, and achievement have been inconsistent. Some research has treated goal orientation as a stable characteristic of the individual, while other research has hinted that students may adopt either a learning or performance orientation depending on the context. Further, Corno (1992) has suggested that learners can hold learning and performance goals simultaneously. The present study attempted to expand upon past research to determine

whether goal orientation, specifically learning goals, are predictive of persistence and achievement, using a questionnaire which measures students' levels of learning and performance goals. Further, using a questionnaire such as the Goals Inventory permitted the researcher to (a) measure learning goals and performance goals separately, (b) determine if learning goals and performance goals are independent, and (c) tease apart the relationships between learning and performance goals and other variables.

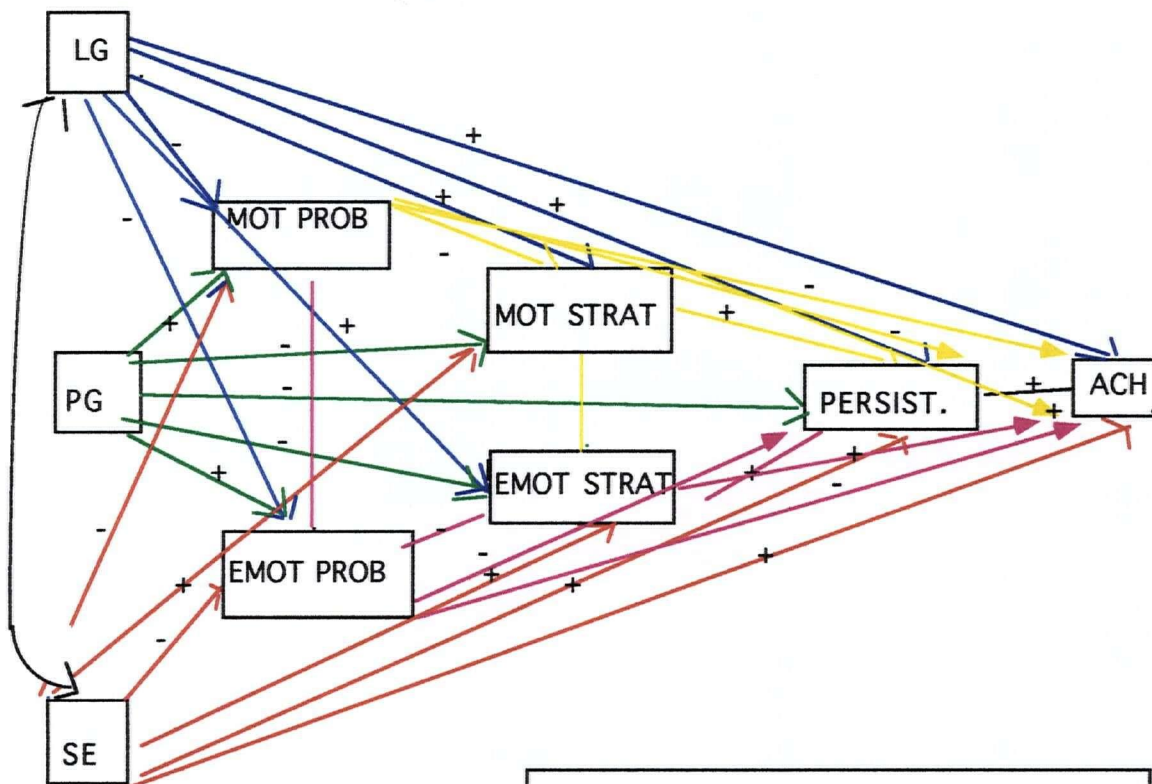
Existing research debates the relationships between goal orientation, self-efficacy, and emotional/motivational response. While Elliott and Dweck (1988) contend that students high in performance goals with low perceptions of self-efficacy are most likely to experience negative emotions and waning motivation while working on a difficult task, other research suggests that self-efficacy influences emotional response regardless of goal orientation (Miller et al., 1993). This study expands upon previous research by teasing apart the effects of learning goals, performance goals, and self-efficacy on students' emotional and motivational response to a difficult task. Another purpose of the study was to determine if goal orientation interacts with self-efficacy to influence students' motivational / emotional response to a difficult task. Specifically, this study examined whether students with high performance goals and low self-efficacy beliefs report greater motivational and emotional difficulties than other students.

Finally, the present study extends previous research by examining the interrelationships between goal orientation, self-efficacy beliefs, motivational/emotional response, motivation/emotion control strategy use, task persistence, and academic achievement. Research by Elliott and Dweck (1988) indicates that students' levels of learning and performance goals influence the impact of task-specific self-efficacy beliefs on their emotional response to a task. While students experiencing greater negative reactions to a task would likely achieve the greatest benefit from the use of strategies to control intrusive emotions and maintain motivation, little research has investigated this hypothesis, and how it relates to persistence and academic achievement. Some of the literature (see

Pintrich et al., 1994; Pintrich & DeGroot, 1990) has suggested that students' use of volition control strategies directly influences persistence and academic performance, while goal orientation and self-efficacy interact to more indirectly affect achievement. Indeed, the results of some studies indicate that possessing a learning goal orientation does not ensure that students will even use volition control strategies (Miller et al., 1993). To determine if Pintrich and DeGroot's findings can be replicated, and volitional strategy use is an important predictor of successful task performance, this study investigates other types of volition control (such as emotion and motivation control), to determine their relative importance in this relationship. To understand the relationships between all of these variables this study first examines all intercorrelations between variables. Then, all the interrelationships are examined in the context of a path model to study the predicted links between goal orientation, self-efficacy, motivational/emotional problems, motivation/emotion control strategy use, persistence, and achievement (see Figure 2). For clarity, the central paths predicted in this study are given in a bulleted list.

Proposed Path Model

Figure 2.

Proposed Path ModelLegend

LG = Learning Goals

PG = Performance Goals

SE = Self-Efficacy

MOT PROB = Motivational Problems

EMOT PROB = Emotional Problems

MOT STRAT = Motivation Control Strategies

EMOT STRAT = Emotion Control Strategies

PERSIST = Persistence

ACH = Achievement

Paths Predicting Reported Emotional/Motivational Problems

Existing research suggests that learning goals are highly correlated with self-efficacy beliefs. Students with learning goals are more likely to report higher task-specific feelings of competence (Elliott & Dweck, 1988; Seegers & Boekaerts, 1993; Schunk, 1996). The path analysis model proposed here suggests that learning goals and self-efficacy are highly correlated (and their mutual influence is bidirectional). By contrast, most researchers contend that students high in performance goals can hold either high or low self-efficacy beliefs (Elliott & Dweck, 1988; Seegers & Boekaerts, 1993; Miller et al., 1993). This suggests that there is no direct relationship between performance goals and self-efficacy. The independence of performance goals and self-efficacy is also indicated in the model.

Research suggests that when working on a difficult task, students high in learning goals are protected from emotional problems. So, the model proposes a direct negative effect of learning goals on emotional problems. Research also suggests that students who adopt performance goals and hold low self-efficacy beliefs are most likely to express emotional difficulties (Elliott & Dweck, 1988; Dweck, 1986). This suggests that there is a direct effect of performance goals on emotional problems. However, the impact of self-efficacy beliefs on the reporting of emotional problems must also be considered.

Some research has suggested that low self-efficacy beliefs make it more likely for students to experience negative emotions, regardless of goal orientation (Miller et al., 1993; Seegers & Boekaerts, 1993). This suggests that there is a direct negative effect of self-efficacy on reported emotional problems. However, the results of other research suggests that performance goals interact with self-efficacy to influence the emotional response to a task (Elliott & Dweck, 1988). This research has shown that performance goals and low self-efficacy have an additive positive effect on reported problems. So in this model, this relationship is represented by a direct effect of performance goals on reported problems and a direct negative effect of self-efficacy on reported problems.

Predicted Paths

- learning goals and self-efficacy are highly correlated (and exogenous)
- performance goals and self-efficacy are unrelated
- direct negative effect of learning goals on emotional and motivational problems
- direct effect of performance goals on emotional and motivational problems
- direct negative effect of self-efficacy on emotional and motivational problems

Paths Predicting Strategy Use

Elliott and Dweck (1988) found that students who expressed negative emotions aborted attempts to uncover effective strategies to deal with difficulties. In the proposed path model this finding is represented by a direct negative effect of reported problems on strategy use.

The results from a number of studies suggest a high correlation between learning goals and strategy use. Some of these (Dweck, 1986; Elliott & Dweck, 1988; Schraw et al., 1995) propose a direction to this relationship, suggesting that adopting a learning goal orientation leads to greater self-regulatory strategy use. This suggests that there is a direct effect of learning goals on strategy use. Recall that reported emotional and motivational problems are hypothesized to have a direct negative effect on strategy use, and learning goals are hypothesized to be associated with fewer reported problems. Thus, this model also proposes an indirect effect of learning goals on strategy use through self-efficacy and reported problems.

Research also suggests that students high in performance goals are less likely to use self-regulatory strategies than are students high in learning goals. The proposed path model depicts performance goals as having a direct negative effect on strategy use. Recall that students high in performance goals can be more likely to express emotional difficulties than students high in learning goals. Also, recall that students who express negative

emotions can abort attempts to uncover effective strategies. Thus, the path model displays an indirect effect of performance goals on strategy use through the reporting of problems.

Some studies reveal that low self-efficacy, regardless of goal orientation is the greatest predictor of students' reporting of emotional difficulties and subsequent strategy use (Seegers & Boekaerts, 1993; Miller et al., 1993). In the current path model I propose a direct positive effect of self-efficacy on strategy use. Because self-efficacy is expected to have a direct effect negative effect on the reporting of problems, and the reporting of problems is expected to have a direct negative effect on strategy use, I propose an indirect positive effect of self-efficacy on strategy use, through reporting of problems.

Predicted Paths

- direct negative effect of motivational and emotional problems on strategy use
- direct effect of learning goals on strategy use
- direct negative effect of performance goals on strategy use
- indirect effect of performance goals through reported problems on strategy use
- direct positive effect of self-efficacy on strategy use

Paths Predicting Persistence

Miller and his colleagues (1993) suggest that volition control use is an important predictor of task persistence. In the proposed path model, there is a direct positive effect of emotion and motivation control strategy use on persistence.

One of the main hypotheses of the current study is that for students who experience problems, strategy use influences the impact of these problems on students' persistence and achievement. Thus, while students who report emotional difficulties may be more likely than other students to abandon the task, a subset of these students who use emotion and motivation control strategies will persist. The proposed path model supposes a direct negative effect of reported problems on persistence, and an indirect effect of problems on

persistence, through strategy use, which is expected to exert a positive, mediating influence on persistence.

Some research indicates that self-efficacy is positively correlated with persistence (Miller et al., 1993, Seegers & Boekaerts, 1993). However, other research suggests that the effect of self-efficacy on persistence is dependent on volition control strategy use (Pintrich et al., 1990). In the proposed path model I depict a direct effect of self-efficacy on persistence. Because self-efficacy is hypothesized to exert a negative influence on reported problems, and reported problems are expected to have a direct negative effect on strategy use, and strategy use is hypothesized to have a direct positive effect on persistence, the current model also depicts an indirect effect of self-efficacy, through reported problems and strategy use, on persistence.

Research on goal orientation suggests that students with high levels of learning goals persist longer than those holding high levels of performance goals (Elliott & Dweck, 1988). The path model shows the direct effect of learning goals on persistence. However, additional research indicates that possessing learning goals is not sufficient to predict academic success. If students who want to master a task can still fail to persist and fall short of achieving their goal (Pintrich et al., 1994), other variables are necessary to explain the relationship between goal orientation and academic success. Recall that learning goals are hypothesized to have a direct negative effect on reported problems, reported problems are expected to have a direct negative effect on strategy use, and strategy use is proposed to have a positive direct effect on persistence. Therefore, the path model also depicts the indirect effects of learning goals, through reported problems and strategy use, on persistence (with strategy use being the strongest mediator). Conversely, performance goals have a direct negative effect on persistence. Further, recall that possessing performance goals and being low in self-efficacy is expected to have an additive effect on reported problems, while reported problems are expected to have a negative effect on the use of volition control strategies. I hypothesize that it is the use of volition control

strategies that positively mediates persistence. Again, the path model indicates a direct negative effect of performance goals on persistence, and an indirect positive effect of performance goals, through reported problems and strategy use, on persistence.

Predicted Paths

- direct effect of motivation and emotion control strategy use on persistence
- direct negative effect of reported problems on persistence
- indirect effect of reported problems on persistence, through strategy use (a + mediator)
- direct effect of self-efficacy on persistence
- indirect effect of self-efficacy on persistence, primarily through strategy use
- direct effect of learning goals on persistence
- indirect effect of learning goals on persistence, primarily through strategy use
- direct negative effect of performance goals on persistence
- indirect effect of performance goals, through strategy use (primarily) on persistence

Paths Predicting Achievement

Consistent with previous literature (Pintrich & DeGroot, 1990; Schraw et al., 1995; Miller et al., 1993; Pintrich et al., 1994), the proposed path model shows a direct effect of persistence on achievement.

Pintrich and DeGroot (1990) suggest that strategy use is a strong predictor of achievement. The path model proposes a direct effect of strategy use on achievement. Because strategy use is expected to have a direct effect on persistence and persistence has a direct effect on achievement, the model also indicates an indirect effect of strategy use, through persistence, on achievement.

Recall that a main hypothesis of the current study is that strategy use influences the impact of emotional problems on students' achievement. While students who report emotional difficulties may be more likely than other students to abandon the task, a subset

of these students who use emotion and motivation control strategies will achieve (Elliott & Dweck, 1988; Pintrich & DeGroot, 1990; Miller et al., 1993). The proposed path model supposes a direct negative effect of reported problems on achievement, and an indirect effect of problems, through strategy use, and persistence, on achievement.

While some research indicates that self-efficacy is positively related to achievement (Miller et al., 1993, Seegers & Boekaerts, 1993), other research suggests that the effect of self-efficacy on achievement is dependent on volition control strategy use (Pintrich et al., 1990). The path model depicts a direct effect of self-efficacy on achievement. Again, recall that self-efficacy is expected to exert a negative influence on reported problems, reported problems are expected to have a direct negative effect on strategy use, strategy use is expected to have a direct positive effect on persistence, and persistence is expected to have a direct effect on achievement. Thus, the current model also indicates an indirect effect of self-efficacy, through reported problems, strategy use, and persistence, on achievement.

Research on goal orientation suggests that students with high learning goals generally perform better academically than those high in performance goals (Elliott & Dweck, 1988). The path model shows the direct effect of learning goals on achievement. However, additional research indicates that possessing learning goals is not sufficient to predict academic success. Recall that learning goals have a direct negative effect on reported problems, reported problems have a direct negative effect on strategy use, strategy use has a positive direct effect on persistence, and persistence has a direct effect on achievement. Therefore, the path model also illustrates the indirect effects of learning goals, through reported problems, strategy use, and persistence, on achievement.

While research points to a direct effect of learning goals on achievement, most researchers contend that students high in performance goals can either achieve or fail to achieve academic success (Elliott & Dweck, 1988; Seegers & Boekaerts, 1993; Miller et al., 1993). This suggests that there is no direct relationship between performance goals

and achievement. The independence of performance goals and achievement is indicated in the model.

Predicted Paths

- direct effect of persistence on achievement
- direct effect of strategy use on achievement
- direct negative effect of reported problems on achievement
- indirect effect of reported problems, through strategy use, on achievement
- direct effect of self-efficacy on achievement
- indirect effect of self-efficacy, primarily through strategy use, on achievement
- direct effect of learning goals on achievement
- indirect effect of learning goals, primarily through strategy use, on achievement
- performance goals and achievement are unrelated

It is hoped that the information gained from this study can shed light on why it is that some students have difficulty finishing tasks. Answering these questions is important if we are to understand fully what contributes to continued adaptive task persistence and effort in school. It is all the more important if we are to identify early those students at risk and design appropriate interventions.

CHAPTER III

Methods

This study examined the volition control strategies postsecondary students use to regulate potentially intrusive emotions and to protect their motivation for a difficult task. A pilot study was conducted to create conceptually consistent new scales and to field test all measurement instruments. Then, in the main study revised inventories examined the interrelationships between students' reported goal orientation, task-specific self-efficacy beliefs, negative emotions, volitional strategy use, task persistence, and academic achievement.

Pilot Study

Participants

The pilot study included 66 postsecondary students attending classes at the University of British Columbia, Langara College and the University of Victoria. The pilot study participants were recruited from their classrooms on a voluntary basis to test the suitability of the instruments. Participants were given a brief description of the study and the procedures to be used, they were reassured that the information they provided would be kept confidential and that participation was entirely voluntary. Students were told that the names of those students who agreed to participate and returned their questionnaires would be entered in a draw to win either one \$100 gift certificate or one of eight \$25 gift certificates. All participants gave their written consent prior to taking part in the pilot study.

Participants ranged in age from 18 to 42 years, with a mean of 21.38 years ($SD = 4.71$). In an effort to select students in their first and second years of postsecondary study, participants were those attending first and second year university and college courses. In the pilot study 62% of students had completed two years or less of postsecondary school. At the time pilot study data were collected, 23% of students had completed 1/2 year of

school, 21% had completed a full year, 6% had completed a year and a half, and 12% had completed two full years of postsecondary schooling. The remainder of the students (38%) had completed between 2.5 and 9 years of postsecondary school, with those having completed 5 or more years of school attending part time. Twenty-two males (33%) and 44 females (67%) participated in the pilot study. With regard to the ethnicity of the sample, 41 participants (62%) were Caucasian, 1 (2%) was Black, 13 (20%) were Asian, 5 (8%) were Indo Canadian, 1 (2%) was Latin, and 5 (8%) defined themselves in terms of mixed heritage (e.g., Caucasian/Black).

Procedure

After providing a description of the research project, students interested in participating were given a consent form and a questionnaire packet. They were asked to fill in the materials on their own time and to return them to their professor when finished. The researcher collected all completed questionnaire packets from each classroom instructor. The questionnaire packet consisted of four questionnaires. First, all students completed a questionnaire to obtain demographic information, including age, race, gender, and previous grades obtained (see Appendix B). The second questionnaire was a self-efficacy questionnaire adapted from Butler (1995) designed to assess students' perceptions of competence and expectations for success in reading and studying difficult material for their courses (see Appendix C). The third questionnaire was adapted from the Goals Inventory (Roedel, Schraw, & Plake, 1994), which was designed to assess students' goal orientations (see Appendix D). The fourth questionnaire was adapted from the Volitional Components Inventory (Kuhl & Fuhrmann, 1996), which was formulated to measure the functional components of volition (including motivation and emotion control) (see Appendix E). Finally, all students in the pilot test completed an objective measure of academic achievement, testing their comprehension of two challenging reading passages (see Appendix F).

The pilot study was conducted both to determine the time needed to complete the procedures and to determine the suitability of items on the questionnaires. As outlined earlier, the scales used frequently to measure the constructs of goal orientation, persistence, and emotion/motivation control have included items which are conceptually different from the construct the scale purports to measure. For example, the Volitional Components Inventory (Kuhl & Fuhrmann, 1996) measures subsets of volitional control (such as emotion and motivation control), but also includes items which more directly address task persistence. Thus, one task of the pilot study was to recombine items from existing scales to create scales that were more conceptually warranted, based on conceptual criteria, and to ensure that these new scales were reliable.

Measures

Demographic Information. (Appendix B) A questionnaire designed to obtain information regarding gender, age, grade point average, number of years in school completed, and ethnicity was administered to all participants. In addition to providing background information on the participants, the demographic questionnaire indicated whether participants had English language difficulties that could have impacted their performance on the questionnaires. The demographic questionnaire also provided information on students' academic histories, including prior academic success which could be compared to students' current academic performance. No revisions were made to this questionnaire for the main study.

Self-Efficacy Measure. (Appendix C) The Task-Specific Self-Efficacy Measure is a 17-item self-report questionnaire adapted from Butler (1995), that is designed to assess students' perceptions of competence and expectations for success in reading and studying for courses (Butler, 1995). The measure was modified for the present study to assess students' perceptions of competence in reading and studying for *difficult* courses. The questionnaire is comprised of two parts. In the first part, students are asked to rate their

confidence in their ability to accomplish a number of tasks associated with reading and studying materials for a difficult course (e.g., “summarizing ideas in my own words”). For each of these items students rate their confidence on a scale from 1 (not at all confident) to 5 (very confident). The second part is designed to assess students’ perceptions of competence and expectations for success when reading and studying difficult course material (e.g., “when reading my course textbooks, it is easy to understand the concepts presented”). Students rate how much they agree with each of the statements on a scale from 1 (strongly disagree) to 5 (strongly agree). All items are counterbalanced to equally represent positive and negative feelings of self-efficacy at each end of the scale. All replies were rescaled during scoring so that ratings of 5 corresponded to positive feelings of self-efficacy. Scores were obtained by averaging across the first 7 confidence items, across the 10 questions on students’ perceived competence, and across all 17 questions. All items on this measure were conceptually consistent, so no items were reclustered during pilot study analyses. Pilot study estimates of reliability for the Task-Specific Self-Efficacy Questionnaire showed good internal consistency among all items ($\alpha = .89$). The Confidence subscale showed good internal consistency ($\alpha = .90$), as did the Ease subscale ($\alpha = .77$). Minor formatting changes were made to this questionnaire for the main study (see Appendix G).

Goals Inventory. (Appendix D) The Goals Inventory (Roedel, Schraw, & Plake, 1994), is an 25-item self-report questionnaire designed to measure the attitudes and behaviours of postsecondary students associated with learning and performance goals. Each item on the Goals Inventory is scored on a 5-point Likert scale, from 1 (not at all true of me) to 5 (very true of me). Students’ scores on all of these scales are computed separately by calculating the item total for each scale. While Roedel and her colleagues have assigned all 25 items to either the learning or performance subscale, some of the items appear to address related constructs such as persistence (e.g., “I give up too easily when

faced with a difficult task”) or emotional difficulties (e.g., “It bothers me the whole day when I make a mistake”). Further, the Goals Inventory scored students’ learning goals and performance goals along a single dimension - not accounting for the possibility that students can possess both learning goals and performance goals simultaneously. Thus, the scales of this questionnaire were revised. During piloting all items (measuring learning and performance goals, motivation / emotion control problems, motivation / emotion control strategies, and persistence) were left in their initial format, mixed up as they were on their original scales. These items were then re-grouped according to conceptual criteria to form new scales and subscales during data analysis. In this manner I created one new scale, the persistence scale (Appendix H), from items on the Goals Inventory and VCI.

Cronbach’s alpha was satisfactory for the new persistence scale ($\alpha = .78$). In addition, satisfactory internal consistency reliabilities were found for items on the revised learning goals subscale ($\alpha = .81$, Appendix I), performance goal subscale ($\alpha = .71$, Appendix J), and revised overall Goals Inventory ($\alpha = .79$, Appendix K).

The Volitional Components Inventory (Appendix E) (VCI; Kuhl & Fuhrmann, 1996) is a 263 item self-report measure designed to assess 30 functional components of volition, including emotion control and motivation control. The questionnaire contains eight different sections. Each of these sections lists different thoughts and behaviours that might arise when the student is dealing with a difficult or unpleasant task. At the beginning of each section there is a brief statement to help the student recall their own experiences with difficult or unpleasant tasks. However, the VCI asks participants very general questions about difficulties they experience when working on either academic or non-academic tasks. To target students’ task-specific emotional and motivational difficulties, the VCI was modified to ask students about the emotional and motivational difficulties they experience and strategies they use when working on tasks specifically for an academic class they find difficult. For example, section 6 of the original VCI read as follows:

“When you are doing something hard or unpleasant, it sometimes happens that your feelings and moods turn mostly negative or that you simply feel inclined to do other things. Sometimes you may apply strategies from the outset that help you to stick it out. But on other occasions you perhaps do or imagine things that make it even harder to stay with what you are doing.”

To specifically target students’ motivational and emotional struggles with academic tasks, section 6 was modified to read as follows:

“When you are trying to read and study difficult material for a class that is difficult or challenging, it sometimes happens that your feelings and moods turn mostly negative or that you simply feel inclined to do other things. Sometimes you may apply strategies from the outset that help you to stick it out. But on other occasions you perhaps do or imagine things that make it even harder to stay with what you are doing.”

Students are then asked how they feel when involved in a difficult project, and how they handle their moods. Listed are 16 different thoughts and behaviours, such as: “Imagining how awful a failure will be”, or “Thinking about the positive aspects of a goal when my determination to persevere weakens”. Students are asked to rate, on a 7-point Likert scale (1 = almost never to 7 = almost always) how often in the last six weeks they have been like that. Due to the length of the inventory, in this study only sections dealing specifically with motivation and emotion control (sections 6 and 8) were administered. As with the Goals Inventory, some items on the VCI deal with task persistence and were included as part of a separate Persistence subscale. For example, “I give up too easily when faced with a difficult task” is an item on the VCI that was scored as part of the Persistence subscale (Appendix H). Similarly, I needed to create separate subscales to distinguish between

motivational and emotional difficulties students experienced (Appendix M) and the strategies they used to deal with those problems (Appendix L).

Limited information is available on the psychometric properties of the VCI. The original version was normed on a European population and its (modified) use in this study would represent the first time it has been employed on a North American sample. Thus, one purpose of the pilot study was to determine the internal consistency of the questionnaire items for a North American sample, with some of the original items removed. While no tests of validity have been conducted on the English version of this measure, the items on the motivation and emotion control subscales are consistent with examples from the research literature. For example, Corno and Kanfer (1993) list several strategies that researchers and students alike have reported: imagining doing the work well, thinking about ways to make the task more fun, imagining being good at the task. This overlap with strategies described in the research literature on emotion / motivation control, supports the content validity for the items on the VCI (see Corno, 1994; Corno & Kanfer, 1993). To measure internal consistency, Cronbach's alphas were calculated for the Motivation / Emotion Control Strategies subscale (Appendix L) and the Motivational / Emotional Problems subscale (Appendix M). Pilot study results revealed that all subscales proved highly reliable, as indicated by Cronbach's alphas of .94 for each subscale.

Academic Achievement. (Appendix F) Finally, as a measure of academic task performance three reading passages of approximately the same length, with parallel levels of readability (Grade 12 level) were selected, and together with two of my colleagues I developed tests to tap four main areas of reading comprehension (main idea comprehension, literal fact comprehension, inferential comprehension, and vocabulary). Each of the three tests contained ten questions (a combination of multiple choice and short answer). Together with the same two colleagues I developed scoring criteria for each of the test questions. All students received scores averaged according to each type of question, and a total score based on answers to all questions.

In the main study, task performance was measured with one long test comprising 20 questions and two passages. Therefore, the three parallel reading comprehension probes were piloted in two sets to assess which passages were most equivalent and reliable when combined. Thirty-seven students completed the first set of probes (passages 1 and 2), and 27 students completed the second set of probes (passages 2 and 3). A split-half coefficient expressed as a Spearman-Brown corrected correlation was calculated to determine the internal consistency of items across passages 1 and 2, and again for items across passages 2 and 3. For the first Spearman-Brown calculation, the first half included items 1-10 from passage 1, while the other half included items 1-10 from passage 2. The Spearman-Brown corrected correlation for passages 1 and 2 was .75. For the second Spearman-Brown calculation, the first half included items 1-10 from passage 2, while the other half included items 1-10 from passage 3. The Spearman-Brown corrected correlation for passages 2 and 3 was .89. Thus, in the main study, passages 2 and 3 were combined. As noted earlier, course grades were obtained by asking students to report the previous year's GPA on the demographic questionnaire.

Students reported that the completion of all questionnaires took between 1/2 hour and one hour.

Main Study

Participants

The sample in the main study included 186 postsecondary students selected from undergraduate university and community college classes in British Columbia (Vancouver or Victoria) and Ontario (Ottawa). Participants were recruited from their classrooms on a voluntary basis. The researcher or one of her research assistants described the study to each class and invited students to participate. Students were told that the names of those who completed and returned their questionnaires would be entered in a draw to win either a \$100 grand prize or one of eight \$25 gift certificates. Students were reassured that the

information they provided would be kept confidential, and that participation was entirely voluntary. Students who agreed to participate were asked to complete the consent form and questionnaires on their own time and return them when finished to the course instructor.

Participants in the main study ranged in age from 18 to 53 years, with a mean of 24.73 years ($SD = 7.08$). In an effort to select students in their first and second years of postsecondary study, the majority of participants were those attending first and second year university and college courses. In the main study 67% of students had completed two years or less of postsecondary school. At the time main study data was collected, 8% of students had completed 1/2 year of school, 28% had completed a full year, 8% had completed a year and a half, and 18% had completed two full years of postsecondary schooling. The remainder of the students (33%) had completed between 2.5 and 16 years of postsecondary school, (with 96% of these students having completed 5 or more years of school attending full time). Seventy-four males (40%) and 110 females (60%) participated in the main study (2 participants did not provide gender information). With regard to the ethnicity of the sample, 65 participants (35%) were Caucasian, 3 (2%) were Black, 1 (0.5%) was Native Indian, 85 (46%) were Asian, 14 (8%) were Indo Canadian, 2 (1%) were Latin, and 14 (8%) defined themselves in terms of mixed heritage (e.g., Caucasian/Black). Two participants failed to provide information regarding ethnicity.

Procedure

Participants in the main study were provided with a description of the research project and given the study's objectives. As with pilot study procedures, interested students were given a consent form to sign and a questionnaire packet during class time. They were asked to fill in the materials on their own time and to return them to their professor when finished. The researcher collected all completed questionnaire packets from each classroom instructor. The questionnaire packet consisted again of four questionnaires. First, students completed the unrevised Demographic Questionnaire

(Appendix B). Second, they completed the revised Task Specific Self-Efficacy Questionnaire (Appendix G), which contained formatting revisions only. Third, students completed the Goals Inventory (Appendix D) in its original format. Items reclustered during pilot data analysis were left mixed up on the original scales during main study data collection, but were again reclustered on their new scales for main study data analysis (Appendices G-J). Fourth, students completed sections 6 and 8 of the VCI (Appendix E) in its original format. Again, conceptually distinct items were reclustered on their new scales during main study data analysis (Appendices G, K, L). Finally, all students in the main study completed the revised measure of academic achievement, testing their comprehension of two challenging reading passages (Appendix N).

Revised Measures

Demographic Information. (Appendix B) This questionnaire was not revised following the pilot test.

Self-Efficacy Measure. (Appendix G) Only minor formatting changes were made to this questionnaire following piloting. Main study estimates of reliability for the Task-Specific Self-Efficacy Questionnaire showed good internal consistency among all items ($\alpha = .91$). The Confidence subscale showed good internal consistency ($\alpha = .90$), as did the Ease subscale ($\alpha = .82$).

Goals Inventory. (Appendix D) The Goals Inventory was administered in its original format in the main study, with all items mixed up on their original scales. During data analysis items were then grouped into their new scales: the Persistence subscale (Appendix H), the revised Learning Goals subscale (Appendix I), and the revised Performance Goals subscale (Appendix J). Main study internal consistency reliability estimates show satisfactory reliability for the new persistence scale ($\alpha = .83$). In addition, satisfactory internal consistency reliabilities were found for items on the revised learning

goals subscale ($\alpha = .78$), performance goal subscale ($\alpha = .60$), and revised overall Goals Inventory ($\alpha = .71$, Appendix K).

The Volitional Components Inventory (Appendix E) was also administered in its original format in the main study, with all items mixed up on their original scales. During data analysis items were then grouped into their new scales: the Persistence subscale (Appendix H), the Motivation/Emotion Control Strategies subscale (Appendix L), and the Motivational/Emotional Problems subscale (Appendix M). To measure internal consistency, Cronbach's alphas were calculated for each of the revised subscales. In addition to the satisfactory reliability achieved for the new persistence subscale (see above), the revised Motivation/Emotion Control Strategies subscale and the revised Motivational/Emotional Problems subscale proved highly reliable, as indicated by Cronbach's alphas of .94 for each subscale.

Academic Achievement. (Appendix N) Finally, all students in the main study completed the revised measure of task performance: one test comprising 20 questions and two passages. Recall from the results of the pilot test that passages 2 and 3 were most equivalent and reliable when combined, and thus were selected as the two passages comprising the measure of academic achievement. Based on pilot study results, items with limited variance were revised prior to the main study (see Appendix N). For example, pilot test results revealed that Question 2 of Reading Passage 1 and Question 7 of Reading Passage 2 had zero variance. For the main study, then, one distractor item for multiple choice Question 2 was changed for Passage 1. Similarly with Question 7 from Passage 2, one of the distractor items was changed, and an existing item was shortened. A split-half coefficient expressed as a Spearman-Brown corrected correlation was calculated to determine the internal consistency of items across both passages. For the Spearman-Brown calculation, the first half included items 1-10 from passage 2, while the other half included items 1-10 from passage 3. The Spearman-Brown corrected correlation for passages 2 and

3 was .75. As noted earlier, course grades were obtained by asking students to report the previous year's GPA on the demographic questionnaire.

CHAPTER IV

Results

One of the purposes of this study was to investigate the volition control strategies postsecondary students use to protect their task motivation and to regulate potentially intrusive emotions in the face of competing intentions and distractions. Further, the present study investigated the interrelationships between students' goal orientation, self-efficacy, reported emotional / motivational challenges, reported volitional strategy use, task persistence and academic achievement. Given the research questions guiding this study as outlined in Chapter 1, the results will be divided into five sections, (a) the types of motivational and emotional difficulties students report experiencing, (b) the kinds of emotion and motivation control strategies students report using, (c) the relationships between goal orientation, reported persistence, and achievement for postsecondary students, (d) the relationships between goal orientation, perceptions of self-efficacy, and students' motivational/emotional problems, and (e) the relationships between goal orientation, motivational/emotional difficulties, use of emotion/motivation control strategies, persistence, and achievement. Please note I will be conducting a number of hypothesis tests and that there is a possibility of Type 1 error. As a result, readers should interpret my results with caution. I include all statistically reliable results for descriptive purposes. This chapter concludes with an overall summary of the findings².

Types of Motivational and Emotional Difficulties Experienced by Students

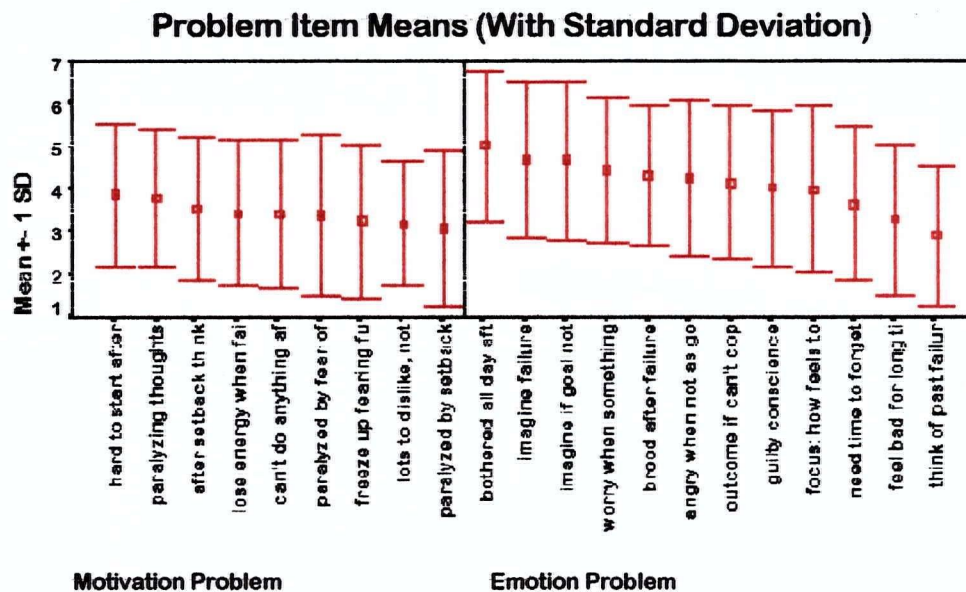
Recall from Chapter 3 that the VCI asks students to rate how often in the last six weeks they have experienced 21 different emotional and motivational difficulties while working on a task. Students rate the frequency of these difficulties on a 7-point Likert

² Please note that not all participants completed every section of the questionnaire packet. The number of participants included in each analysis is indicated where applicable.

scale, ranging from 1 (almost never) to 7 (almost always). Table 1 reports the percentage of students who gave each rating for each of the items. Table 1 also summarizes item means and standard deviations across students. These data indicate which items were most highly rated as problems, which items were seen as least problematic, and the variability in the distribution of problem item ratings. Item means and standard deviations are also presented graphically in Figure 3.

Figure 3.

Motivation/Emotion Control Problem Item Means (With Standard Deviations)



These data indicate that, in general, problems of emotion control were most highly rated. In particular, being bothered all day by a mistake, imagining how awful a failure would be, and imagining how awful they would feel if they could not accomplish their goal were the most highly rated problems (average ratings of 5.01, 4.68, and 4.66 respectively). In contrast, students reported constantly thinking of a previous failure and

feeling paralyzed by a setback as the least problematic when working on a difficult task (average ratings of 2.92 and 3.07 respectively).

Figure 4 indicates the percentage of students who rated each item as “often” or “almost always” a problem (ratings of 6 or 7). Consistent with the average ratings for items, these data indicate that the majority of students (55%) reported that being bothered all day after a mistake was often or almost always a problem. Further, a large percentage of students reported that imagining how awful a failure would be, and imagining how awful they would feel if they could not accomplish their goal were often or almost always problems (41% and 42% of students, respectively).

Conversely, Figure 5 illustrates the percentage of students rating each item as “seldom” or “almost never” a problem (ratings of 1 or 2). These data show that a large percentage of students reported that they seldom or never felt paralyzed by a setback (49%), nor did they constantly think of previous failures (49%) when working on a difficult academic task.

In sum, these results suggest that postsecondary students experience a range of motivation and emotion control problems. Emotional problems were given the highest ratings. Six of the emotional difficulties were highly rated by over 30% of students. In contrast, motivational problems were less frequently reported. Between 30 and 50 percent of students reported little difficulty with the majority of the motivational problems listed on the questionnaire. In sum, students reported a range of emotional difficulties, and to a lesser extent, motivational difficulties, in the face of a difficult task.

Table 1.

Descriptive Statistics for Motivation / Emotion Problems Subscales of the VCI (n = 181)

	Problem	ITEM RATING							MEAN	SD
		1	2	3	4	5	6	7		
		%	%	%	%	%	%	%		
Motivation Control Problems	hard to start after failure	10	15	12	30	17	9	7	3.85	1.67
	paralyzing thoughts when prob hits	10	13	16	29	14	12	5	3.78	1.63
	after setback think of other failures	12	19	16	25	14	9	4	3.54	1.65
	lose energy when failure possible	13	23	19	20	12	8	6	3.42	1.70
	can't do anything after setback	13	25	17	15	15	9	5	3.41	1.74
	paralyzed by fear of failure	21	18	13	21	9	10	7	3.37	1.87
	freeze up fearing future failures	23	18	10	23	13	8	4	3.25	1.79
	lots to dislike, nothing to gain	13	26	16	28	11	4	2	3.20	1.47
	paralyzed by setback	24	25	13	13	12	8	5	3.07	1.82
	bothered all day after mistake	4	n/a ³	19	22	n/a	23	32	5.01	1.73
Emotion Control Problems	imagine failure	7	9	9	20	14	24	17	4.68	1.81
	imagine if goal not reached	5	13	9	13	16	25	17	4.66	1.85
	worry when something not right	3	13	15	17	19	21	12	4.46	1.70
	brood after failure	7	8	13	29	18	18	9	4.31	1.62
	angry when not as good as others	15	n/a	20	26	n/a	24	16	4.28	1.80
	outcome if can't cope	13	10	9	24	16	23	5	4.13	1.79
	guilty conscience	11	13	14	21	17	14	10	4.02	1.83
	focus: how feels to fail	14	15	12	14	19	15	12	4.00	1.96
	need time to forget setback	9	24	20	14	13	12	8	3.65	1.77
	feel bad for long time after setback	18	23	14	19	11	8	6	3.29	1.78
	think of past failure	25	24	13	16	15	4	2	2.92	1.65

³ Items were originally part of the Goals Inventory (scored on a 5-point scale) and were rescored (on a 7-point scale) for comparison with the rest of the problem items.

Figure 4.

Items Rated Often or Almost Always as Problems by Students

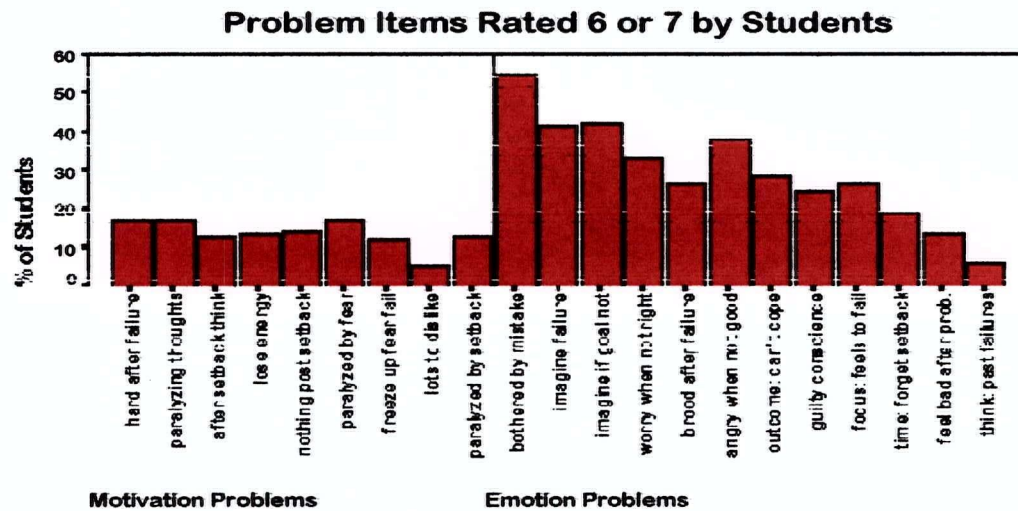
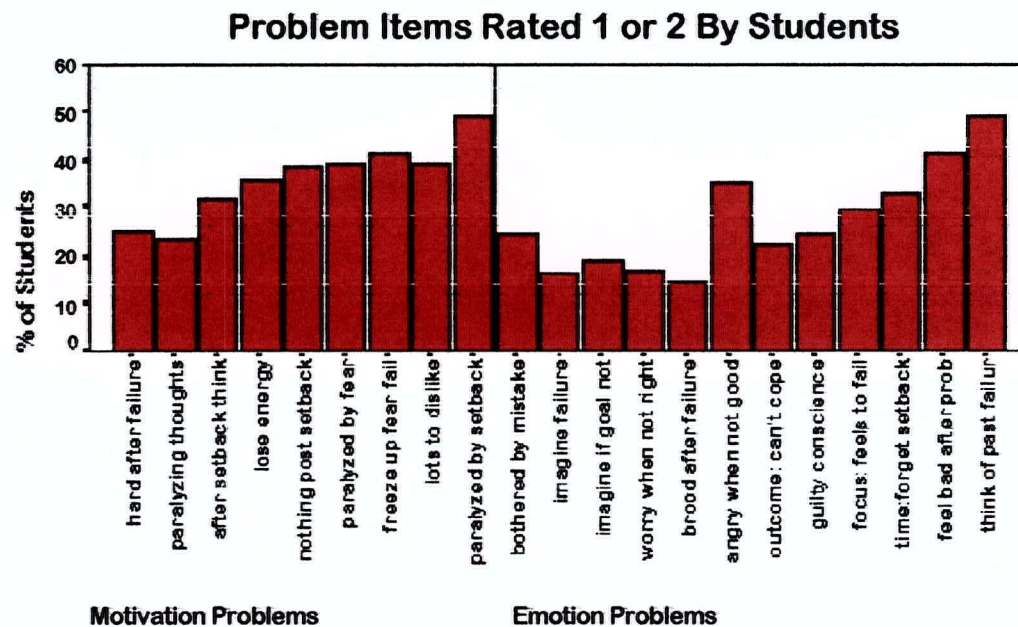


Figure 5.

Items Rated Seldom or Never as Problems by Students



Emotion and Motivation Control Strategies Used By Students

The VCI asks students to rate on a scale from 1 to 7 their use of 38 different motivation / emotion control strategies. Table 2 reports the percentage of students who gave each rating for each of the strategy items. Table 2 also presents item means and standard deviations across students. These data reveal which items were most highly rated as strategies, which items were seen as the least useful strategies, and the variability in the distribution of strategy item ratings. Emotion control strategy item means and standard deviations are presented graphically in Figure 6, and motivation control strategy item means and standard deviations are presented graphically in Figure 7.

Figure 6.

Emotion Control Strategy Item Means (With Standard Deviations)

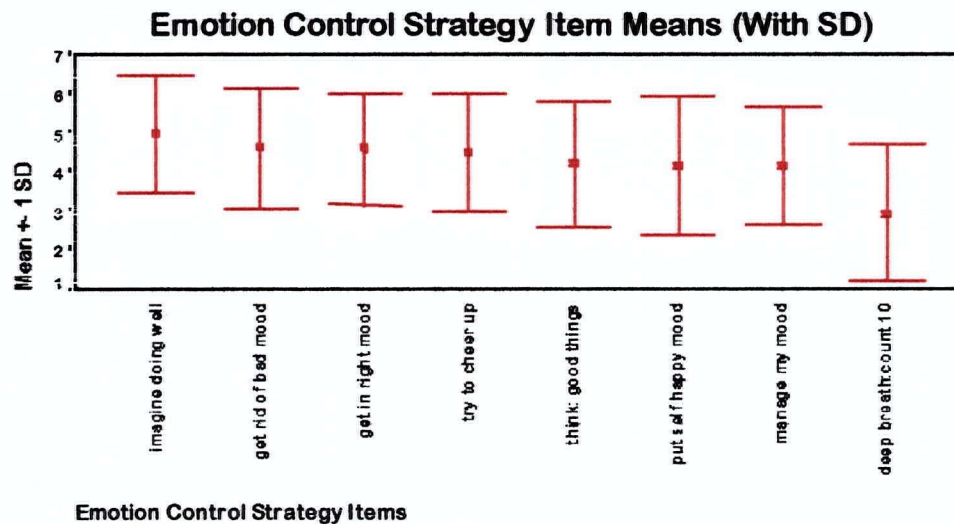
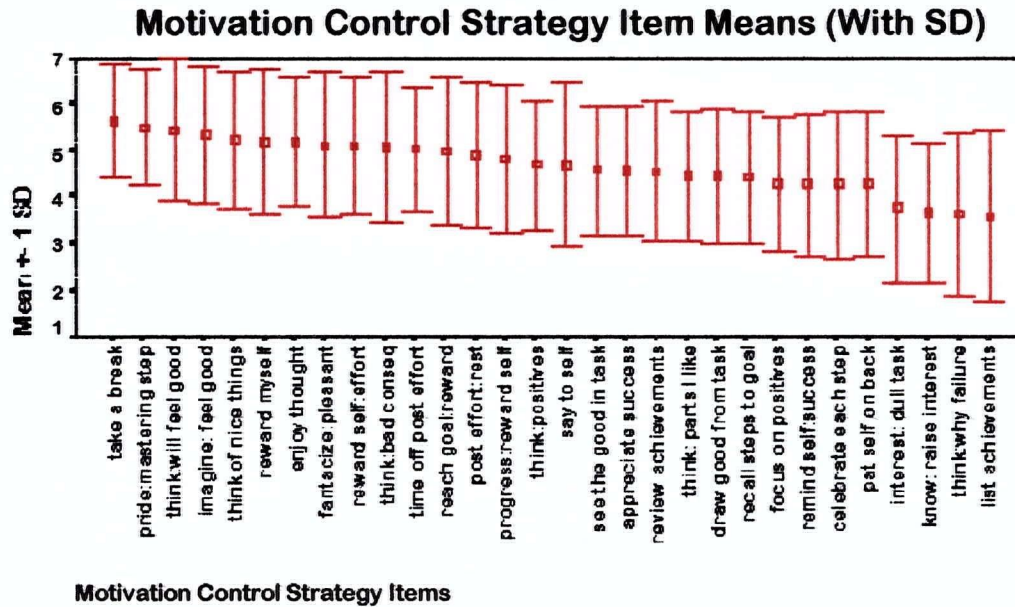


Figure 7.

Motivation Control Strategy Item Means (With Standard Deviations)

These data indicate that motivation control strategies were some of the most frequently used strategies. For example, taking a break after having finished all or part of a difficult task, feeling proud after mastering a difficult step towards the goal, and thinking about how good it would feel to achieve the goal were all highly reported strategies (average ratings of 5.63, 5.50, and 5.42 respectively). In contrast, taking a deep breath and counting to ten before returning to the task was the strategy least used by students (average rating 2.94).

Table 2.

Descriptive Statistics for Motivation / Emotion Control Strategies Subscale of the VCI (n = 181)

	ITEM	RATING							MEAN	SD
		1	2	3	4	5	6	7		
		%	%	%	%	%	%	%		
Emotion Control Strategies	imagine doing the task well	2	7	6	16	24	32	12	4.98	1.49
	get rid of bad mood blocking my goal	4	5	10	27	20	22	10	4.63	1.52
	put self in right mood so can keep on track	2	7	10	31	18	25	7	4.59	1.40
	try to cheer up so things will work out better	2	8	14	23	28	15	10	4.51	1.48
	think of pleasant things to relax	4	13	12	32	16	13	10	4.21	1.60
	put self in happy mood: makes for better progress	8	11	15	25	15	16	10	4.17	1.74
	manage my mood so work flows more easily	5	9	15	30	19	15	5	4.17	1.51
	deep breath & count to 10 before return to task	31	17	11	20	13	6	2	2.94	1.73
	take break after have finished all/part of hard task	1	2	3	10	26	31	28	5.63	1.23
	pride having mastered a difficult step to goal	1	1	4	15	28	25	26	5.50	1.23
Motivation Control Strategies	think of how good will feel to achieve goal	3	2	8	10	18	31	28	5.42	1.54
	imagine how good will feel after finishing	2	3	5	16	19	30	24	5.34	1.47
	think of nice things to happen once goal reached	1	6	6	15	23	28	22	5.24	1.46
	reward myself when I have completed a hard task	3	2	10	16	18	26	24	5.19	1.55
	enjoy thought of reaching goal soon	1	2	10	19	21	27	20	5.19	1.40
	fantasize re: pleasant things can do once finished	3	5	6	18	18	30	20	5.12	1.58
	reward self for putting in the effort	2	5	4	21	21	27	19	5.10	1.49
	think of bad consequences of not doing task	2	8	7	16	16	29	21	5.08	1.64
	allow self time off after having put out effort	1	6	4	23	26	27	14	5.04	1.35
	having reached goal, reward self for efforts	3	5	7	22	21	21	22	5.01	1.60
	follow big effort with rest and relaxation	2	8	7	22	22	20	19	4.90	1.59
	do something nice for self when make progress	4	6	9	16	24	29	12	4.81	1.58
	think about positives when determination weakens	2	5	9	30	23	21	10	4.70	1.40
	say to self: when done, can reward self	6	8	10	18	20	19	18	4.69	1.77
	see the good in a difficult task I'm doing	1	8	11	27	23	24	7	4.59	1.40
	take time to appreciate success in hard activity	2	7	13	22	28	23	6	4.58	1.41
	look back on things have already accomplished	3	9	12	25	23	21	8	4.53	1.51
	think of aspects of the task that I like	2	8	15	25	25	20	6	4.47	1.41
	draw something good from unpleasant task	2	10	9	31	20	21	7	4.45	1.46
	recall steps taken that moved me closer to goal	2	10	12	29	24	16	7	4.42	1.43
	focus on positives of a difficult activity	1	10	19	30	16	18	7	4.28	1.45
	remind self of little successes already achieved	5	10	9	34	18	18	6	4.28	1.52
	celebrate each successful step to the goal	4	13	14	19	26	16	8	4.28	1.61
	pat self on back for even small accomplishments	4	12	11	29	20	18	7	4.26	1.56
	know how to increase interest in a dull activity	8	15	23	22	16	12	4	3.75	1.59
	know exactly how to increase interest in task	8	16	21	26	16	9	3	3.66	1.51
	spend time thinking of possible reasons for failure	13	18	18	20	14	10	7	3.62	1.76
	list all the things I achieved en route to goal	21	9	14	21	19	10	5	3.60	1.83

Figure 8 depicts the percentage of students rating each item as “often” or “almost always” used strategies (ratings of 6 or 7). Consistent with the data on average ratings, these data indicate that the majority of students (59%) reported often or almost always thinking about how good it felt to have achieved a goal, and taking a break after they finished all or part of a difficult task, as strategies they used in the face of distractions. A large percentage of students (54%) also reported imagining how good they would feel after having finished the task as a strategy they used often or almost always.

Figure 8.

Items Used Often or Almost Always as Strategies by Students

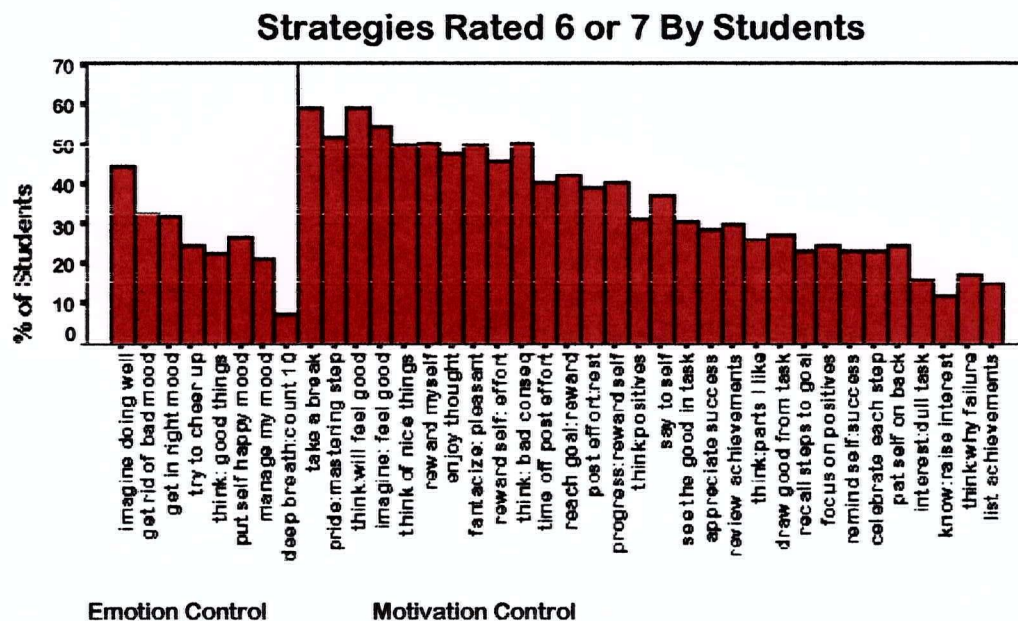
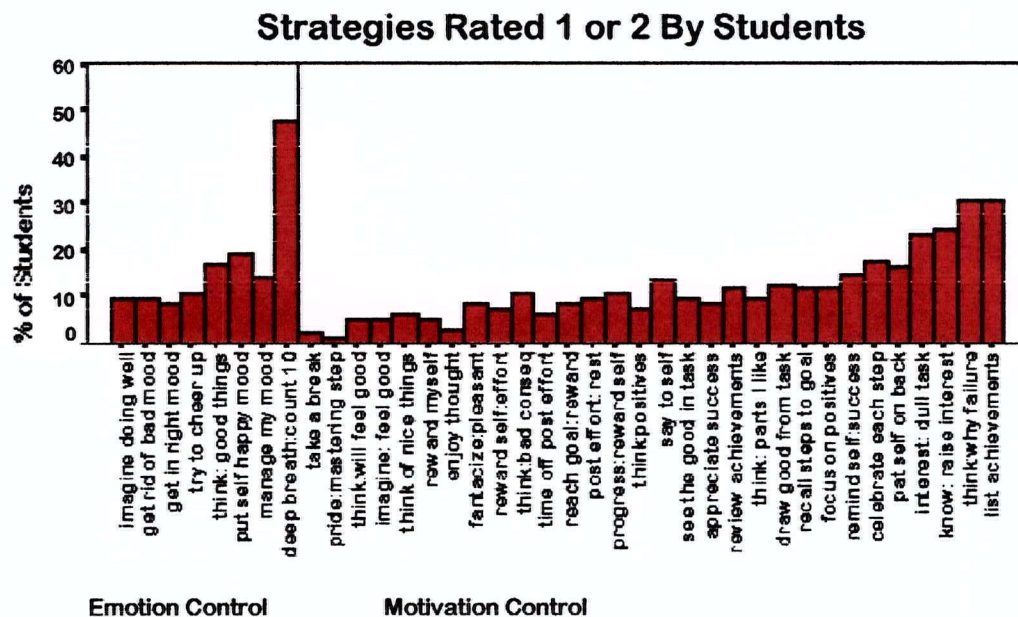


Figure 9 depicts the percentage of students who reported using each strategy “seldom” or “almost never” (ratings of 1 or 2). These data show that a large percentage of students reported that they seldom or never take a deep breath and count to ten before returning to a task (48%), nor do they spend a long time thinking of possible reasons for a failure (31%), nor do they list all the things they achieved en route towards the goal (30%).

Most of the other strategies appeared to be used at least sometimes by the majority of students.

Figure 9.

Items Used Seldom or Never as Strategies by Students



In sum, in an effort to remediate, or perhaps prevent, potential emotional and motivational difficulties, students reported frequently using a range of motivation control (and to a lesser extent, emotion control) strategies. Note that, while students employed all strategies at least sometimes, some strategies (e.g., taking breaks, taking pride in mastering a difficult step toward the goal) were more consistently used than others (e.g., listing all the achievements reached en route to the goal, taking a deep breath and counting to ten). However, even for the most highly rated (most frequently used) strategies, there was variability. Specifically, while some strategies were highly rated and frequently used by some students, those same strategies were less frequently and even infrequently used by others. Further, the results of these first two sections suggest that while students are more

likely to report emotional versus motivational problems, they are more likely to report using motivation versus emotion control strategies.

Relationships Between Goal Orientation, Persistence, and Achievement

The Goals Inventory includes 13 items designed to measure students' learning goals and 6 items that measure performance goals. For each item students use a 5-point Likert scale to indicate how true each item is of themselves. Total scores were calculated for each student by summing ratings across items, for the learning goal and performance goal items separately. A Persistence Scale was constructed by combining 4 items from the Goals Inventory and 7 items from the VCI (see Appendix H). A total persistence score for each student was calculated by summing ratings to the 11 items on this new scale.

Achievement was operationalized as the total number of correct responses (out of 20) on the multiple choice quiz. Recall that students' GPA scores were also obtained, but were only reported by 108 students. Given that the quiz demonstrated good internal consistency (Spearman-Brown corrected $r = .75$), and 160 students completed it, only quiz data was used for all achievement analyses. Note, however, that GPA and quiz data were significantly positively correlated ($r = .50$, $p < .001$).

In a first analysis, I calculated the intercorrelations between goal orientation, persistence, and achievement to determine 1) whether learning goals are positively related, and performance goals negatively related, to persistence and achievement and 2) whether learning goals and performance goals are independent. The results from this correlational analysis is presented in Table 3. As can be seen, the data show that learning goals were significantly positively related to persistence ($r = .56$, $p < .001$). No other significant relationships were found.

Table 3.

Correlations Among Learning Goals, Performance Goals, Persistence, and Achievement

	Goal Orientation		Persistence	Achievement
	Learning Goals	Performance Goals		
Learning Goals	-	.06	.56*	.11
Performance Goals		-	-.05	-.15
Persistence			-	.14

* $p < .001$, $n = 160$

In a second set of analyses, two stepwise multiple regression analyses were conducted to test whether goal orientation predicts academic persistence and achievement, respectively. Students' total scores on the learning and performance subscales of the Goals Inventory were entered as independent variables. The independent variable with the highest zero-order correlation with the criterion was entered first. The two criterion variables in the respective analyses were persistence, as measured by students' total scores on the items of the Persistence subscale, and academic achievement, operationalized as the total number of correct responses on the multiple choice quiz.

The first stepwise regression analysis with persistence as the criterion variable used an alpha of .05 to enter a variable, and an alpha of .10 to remove it. Table 4 displays the unstandardized regression coefficients (B), the standardized regression coefficients (β), and the semipartial correlations (sr^2) after entry of both independent variables. R was significantly different from zero at the end of the first step ($R = .56$, $F(1, 178) = 80.69$, $p < .001$). Of the two variables to be entered in the stepwise analysis, only learning goals contributed significantly to prediction of persistence levels, accounting for 31% of the variance ($R^2 = .31$). This suggests that students higher in learning goals reported greater levels of persistence.

Table 4.

Summary of Stepwise Regression Analysis for Variables Predicting Persistence (n = 181)

Step	Variable	B	β	sr^2 Incremental
1	Learning Goals	.80	.56	.31
2	Performance Goals	n.s.	n.s.	n.s.

Note: R Square = .31, Adjusted R Square = .31, Multiple R = .56

The second stepwise regression analysis with achievement as the criterion variable ($n = 160$) again used an alpha of .05 to enter a variable, and an alpha of .10 to remove it. Based on those criteria, neither learning goals or performance goals were significantly correlated with achievement, so neither variable could be entered in the stepwise regression analysis.

In sum, the results presented in this section suggest that students can hold both learning goals and performance goals simultaneously. Specifically, students' levels of learning goals were found to be unrelated to their levels of performance goals. Further, the findings indicate that holding learning goals, not performance goals, is the best predictor of student persistence in the face of a difficult task, and that neither learning goals or performance goals alone predict achievement.

Relationships Between Goal Orientation, Perceptions of Self-Efficacy, and Students' Motivational / Emotional Problems

Perceptions of self-efficacy were measured on the Self-Efficacy Questionnaire by 17 items on a 5-point Likert scale. Students' ratings across items were totaled to provide a total self-efficacy score for each student. In a first analysis, I calculated the intercorrelations between goal orientation, self-efficacy, and reported motivational / emotional problems to determine (a) whether learning goals were related to self-efficacy, (b) whether learning goals and self-efficacy were negatively related to reported

emotional/motivational problems, and c) whether performance goals were positively related to reported emotional/motivational problems. Using the Bonferroni approach to control for Type 1 error across the 10 correlations, a p -value of less than .005 ($.05/10 = .005$) was required for significance. The data in Table 5 show that 7 of the 10 correlations were statistically significant. In general, the results suggested that students holding learning goals tended also to be high in self-efficacy. Results also revealed that students holding learning goals reported fewer motivational difficulties, and students high in self-efficacy reported emotional and motivational difficulties less often when working on academic tasks. Finally, students holding performance goals also reported frequent emotional and motivational problems.

Table 5.

Correlations Among Learning Goals, Performance Goals, Self-Efficacy, and Reported Emotional and Motivational Problems

	Goal Orientation		Self-Efficacy	Reported Problems	
	Learning Goals	Performance Goals		Motivation	Emotion
Learning Goals	-	.05	.38*	-.27*	-.14
Performance Goals		-	.04	.29*	.40*
Self-Efficacy			-	-.35*	-.22*
Motiv. Problems				-	.76*

* $p < .005$, $n = 181$

In a second set of analyses, two simultaneous multiple regression analyses were conducted to examine the extent to which learning goals, performance goals, and self-efficacy were predictive of students' reporting of emotional and motivational difficulties, respectively. The dependent variables were students' reported emotional and motivational difficulties as measured on the Problems Subscale of the VCI. To test for an interaction

between performance goals and self-efficacy when predicting emotional and motivational problems, an interaction term also was included in each analysis. This interaction term was calculated first by reverse scoring students' responses to items on the Self-Efficacy Questionnaire (reverse scoring ensured that self-efficacy and performance goal scales were scaled in a similar direction). This new self-efficacy score was then multiplied with each student's Performance Subscale total score to produce the interaction term from the composite data. Including the interaction term allowed me to assess whether the only students who reported emotional and motivational difficulties were those with low self-efficacy and high performance goals, when compared to other combinations (i.e., low self-efficacy / high learning goals, high self-efficacy / high learning goals, high self-efficacy / high performance goals).

As can be seen in Table 6, of the three variables entered in the regression analysis predicting reported emotional problems, two significant predictors were found. Performance goals were a significant predictor of reported emotional problems ($t(4,175) = 2.46, p < .02$), as was self-efficacy ($t(4,175) = -1.99, p < .05$). These results suggest that students higher in performance goals, and those students low in self-efficacy reported greater levels of emotional problems. However, no interaction between these variables was evident.

Table 7 indicates that, when the same three variables were entered into a regression analysis predicting motivational problems, two significant predictors were also found. Learning goals were a significant predictor of reported motivational problems ($t(4,175) = -2.28, p < .03$), as was self-efficacy ($t(4,175) = -2.10, p < .05$), with the predictive value of performance goals approaching significance ($t(4,175) = 1.89, p < .07$). The results of this second regression analysis suggest that students higher in learning goals and with greater perceptions of self-efficacy reported lower levels of motivational problems. Again, the effect on reported motivational problems of the interaction between self-efficacy and performance goals was not significant.

Table 6.

Summary of Regression Analysis for Variables Predicting Reported Emotional Problems (n = 180)

Variable	<u>B</u>	<u>β</u>	<u>SE B</u>	<u>t</u>	<u>t sig.</u>
Learning Goals	-.12	-.06	.15	-.83	.41
Performance Goals	2.26	.70	.92	2.46	.01
Self-Efficacy	-.64	-.48	.32	-1.99	.05
Perf. Goals x Self-Efficacy	-.02	-.38	.02	-1.05	.30

Note: $F(4, 175) = 13.59, p < .001$, Multiple $R = .49$

R Square = .24, Adjusted R Square = .22

Table 7.

Summary of Regression Analysis for Variables Predicting Reported Motivational Problems (n = 180)

Variable	<u>B</u>	<u>β</u>	<u>SE B</u>	<u>t</u>	<u>t sig.</u>
Learning Goals	-.28	-.16	.12	-2.28	.02
Performance Goals	1.45	.53	.77	1.89	.06
Self-Efficacy	-.57	-.50	.27	-2.10	.04
Perf.Goals x Self-Efficacy	-.01	-.28	.02	-.80	.43

Note: $F(4, 175) = 15.26, p < .001$, Multiple $R = .51$

R Square = .26, Adjusted R Square = .24

Taken together, the analyses reported in this section revealed several relationships between learning goals, performance goals, self-efficacy, and reported emotional and motivational problems. In general, higher levels of learning goals and higher levels of self-efficacy were associated with lower levels of reported motivational problems. Higher levels of self-efficacy also were associated with fewer reported emotional problems. Finally, higher levels of performance goals were related to a greater incidence of reported emotional, and to a lesser degree motivational, problems.

Relationships Between Goal Orientation, Self-Efficacy, Emotional/Motivational Problems,

Emotion/Motivation Control Strategy Use, Persistence, and Achievement

In a first analysis, I calculated the intercorrelations between goal orientation, self-efficacy, reported emotional/motivational problems, use of motivation/emotion control strategies, persistence, and achievement to determine 1) whether learning goals, performance goals, self-efficacy, and reported emotional/motivational difficulties were related to reported motivation/emotion control strategy use, 2) whether self-efficacy and emotional/motivational difficulties were related to persistence and achievement, and 3) whether motivation/emotion control strategy use was related to persistence and achievement. The results of these correlational analyses are presented in Table 8. Using the Bonferroni approach to control for Type 1 error across the 18 correlations, a p -value of less than .003 ($.05/18 = .003$) was required for significance. Correlations not previously presented are given in bold.

As Table 8 indicates, emotion control strategy use was significantly positively related to learning goals ($r = .43$, $p < .003$), and motivation control strategy use ($r = .69$, $p < .003$). Reported motivation control strategy use also was positively related to learning goals ($r = .51$, $p < .003$) and self-efficacy ($r = .26$, $p < .003$).

Correlational analyses also showed that self-efficacy was significantly positively related to persistence ($r = .37$, $p < .003$), and achievement ($r = .29$, $p < .003$). Reported

emotional problems were significantly negatively related to persistence ($r = -.23$, $p < .003$), and achievement ($r = -.23$, $p < .003$), as were reported motivational problems ($r = -.51$, $p < .003$ and $r = -.34$, $p < .003$, for persistence and achievement, respectively).

Finally, both emotion control strategy use and motivation control strategy use were significantly positively related to persistence ($r = .38$, $p < .003$, and $r = .46$, $p < .003$, for emotion and motivation control strategies, respectively).

In sum, the analyses presented so far suggest that higher levels of learning goals can be associated with higher levels of self-efficacy, higher levels of motivation/emotion control strategy use, lower levels of reported motivational problems, and greater persistence. Higher levels of performance goals can be associated with higher levels of reported emotional and motivational problems. Higher self-efficacy beliefs can be associated with lower levels of emotional and motivational problems, higher levels of motivation control strategy use, greater persistence, and higher levels of achievement. In contrast, higher levels of reported motivational and emotional problems can be associated with lower levels of persistence and lower levels of achievement. Finally, the results reported here suggest that higher levels of motivation and emotion control strategy use can be associated with higher levels of persistence.

Table 8.
Correlations Among Goal Orientation, Self-Efficacy, Emotional Problems, Strategy Use, Persistence, and Achievement

	Learning Goals	Performance Goals	Self- Efficacy	Reported Problems Motiv.	Reported Problems Emotn.	Reported Strategies Motiv.	Reported Strategies Emotn.	Persistence	Ach.
Learning Goals	-	.06	.38*	-.27*	-.14	.51*	.43*	.56*	.11
Performance Goals		-	.02	.29*	.40*	.17	.14	-.05	-.15
Self-Efficacy			-	-.35*	-.22*	.26*	.09	.37*	.29*
Motivation Problems				-	.76*	-.06	.02	-.51*	-.34*
Emotion Problems					-	.09	.11	-.23*	-.23*
Motivation Strategies						-	.69*	.46*	-.03
Emotion Strategies							-	.39*	-.21
Persistence								-	.14
Achievement									-

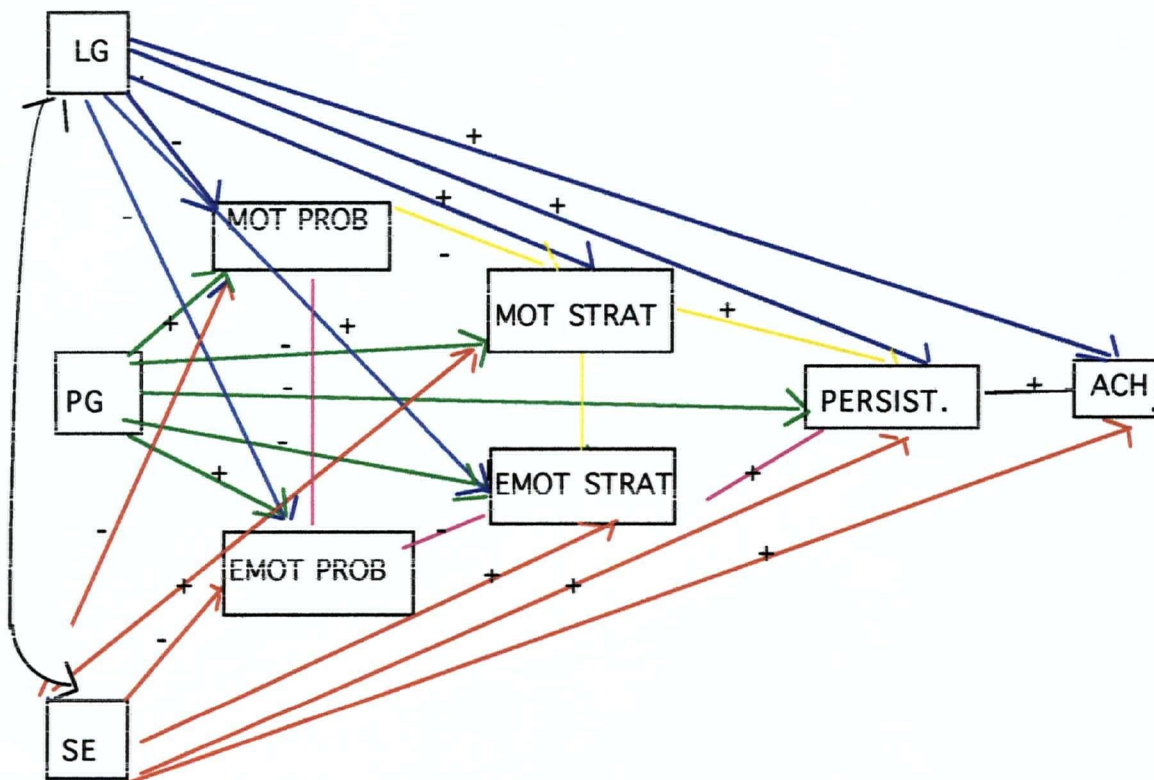
* $p < .003$

Path Analysis Results

To clarify these relationships, all variables were combined in a single model describing the influences of goal orientation, self-efficacy, reported problems, and strategy use on postsecondary students' persistence and achievement. Figure 2 depicts the hypothesized direct and indirect effects first outlined in Chapter 2.

Figure 2.

Proposed Path Model



To determine the direct and indirect effects of goal orientation and self-efficacy on students' reporting of emotional and motivational problems, students' reported emotional and motivational problems were regressed on self-efficacy, learning goals, and performance goals, and effect coefficients for each of these paths were calculated. Similarly, motivation and emotion control strategy use were each regressed on learning

goals, performance goals, self-efficacy, and reported motivational/emotional problems to calculate the effect coefficients for paths leading to those variables. In addition, to explain the direct and indirect effects on persistence and achievement, persistence was regressed on learning goals, performance goals, self-efficacy, emotional/motivational problems, and motivation/emotion control strategy use, and an effect coefficient for each of these paths was calculated. Finally, achievement was regressed on learning goals, self-efficacy, motivational/emotional problems, motivation/emotion control strategy use, and persistence to calculate the effect coefficients for each of these paths. For purposes of clarity only, Figures 2a, 2b, and 2c depict the results of path analyses stemming from each of the three exogenous variables (learning goals, performance goals, and self-efficacy). Significant results are indicated with an asterisk (*).

Figure 2a.

Results of Analyses for Paths Emanating from Learning Goals

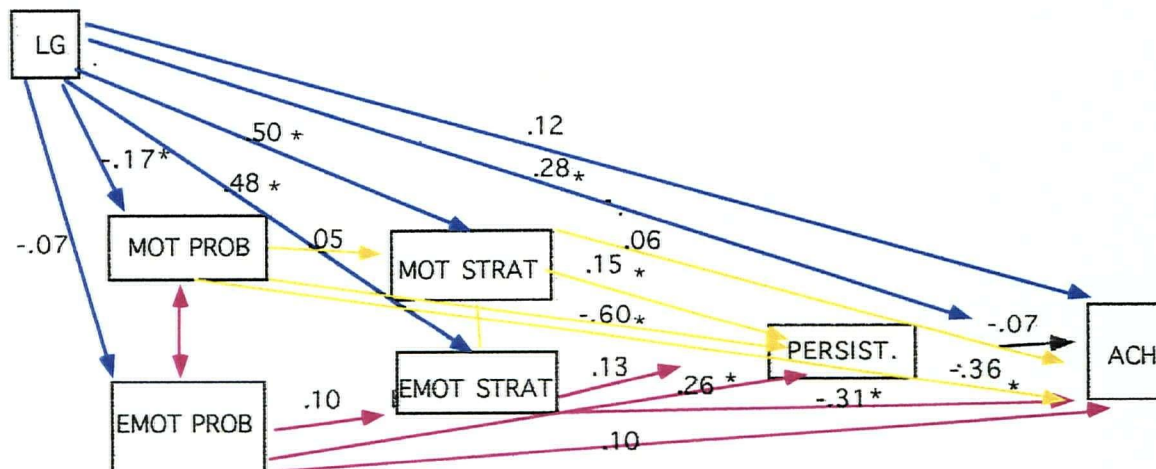
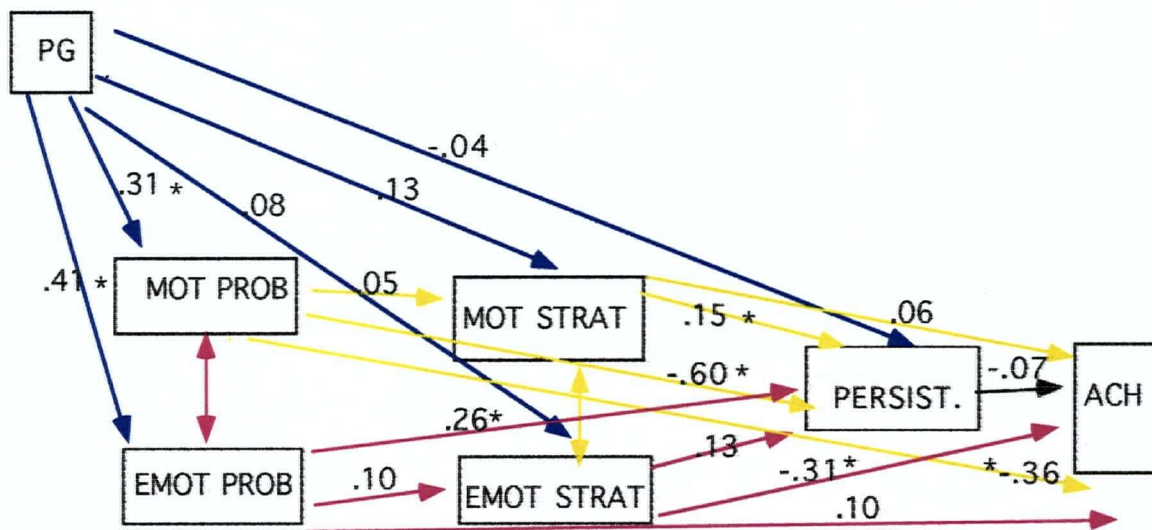
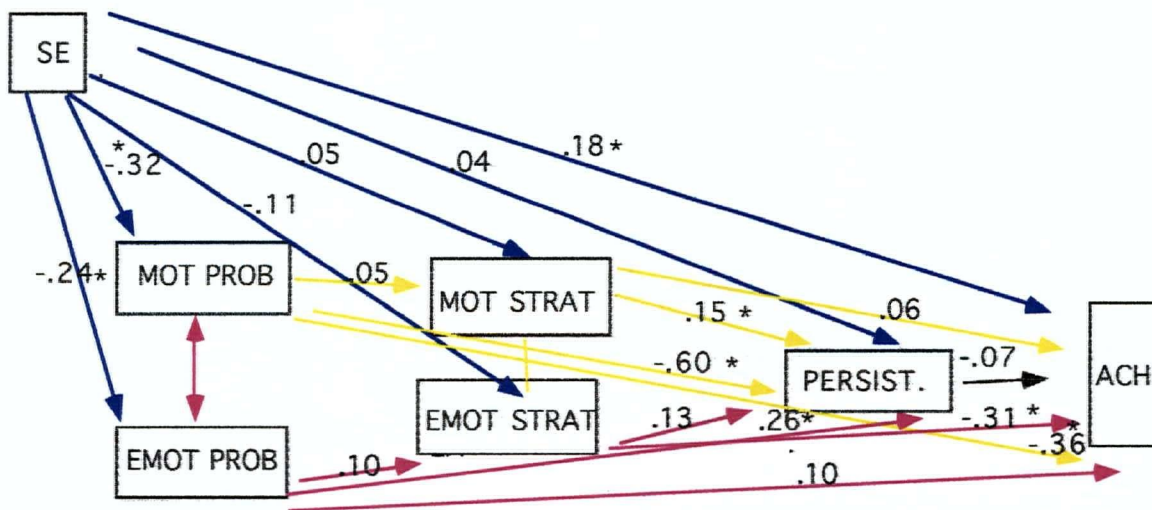


Figure 2b.

Results of Analyses for Paths Emanating from Performance Goals



Results of Analyses for Paths Emanating from Self-Efficacy



Predicting Reported Emotional and Motivational Problems

Consistent (in part) with the hypothesis that students with high levels of learning goals are protected from emotional and motivational problems, results revealed a relatively small but significant negative direct effect (-.17) of learning goals on reported motivational problems. Also, there was a significant direct effect (.31) of performance goals on reported motivational problems, and an even larger direct effect (.41) of performance goals on reported emotional problems. This latter finding lends support to the hypothesis that students with high levels of performance goals experience greater motivational and emotional difficulties when working on a difficult task. Finally, consistent with expectations, results indicated a direct negative effect of self-efficacy on both reported motivational problems (-.32), and reported emotional problems (-.24).

These findings, taken together with the results from correlational and regression analyses presented earlier, support the hypothesis that learning goals and self-efficacy together exert an additive negative influence on the reporting of motivational problems. Students high in learning goals and high in self-efficacy are best protected from motivational difficulties. Similarly, high levels of performance goals and low perceptions of self-efficacy have an additive positive influence on the reporting of motivational and emotional problems. Students high in performance goals and low in self-efficacy beliefs are most susceptible to emotional and motivational difficulties.

Predicting Strategy Use

In the proposed path model, I hypothesized a direct negative effect of reported motivational and emotional problems on motivation and emotion control strategy use. Analyses of relationships within the proposed path model uncovered a negligible direct effect (.05) of reported motivational problems on motivation control strategy use, though not in the expected negative direction. Also, results indicate a small direct effect (.10) of

emotional problems on emotion control strategy use, though again not in the expected negative direction and not significant.

Further, I hypothesized a direct effect of learning goals on emotion and motivation control strategy use, as well as a positive indirect effect of learning goals on emotion/motivation control strategy use through reported emotional and motivational problems, respectively. Specifically, I hypothesized that, because emotional/motivational problems would have a direct negative effect on strategy use, and because learning goals would have a direct negative effect on reported emotional/motivational problems, students high in learning goals should experience fewer problems, and therefore be more likely to use strategies. Results indicated that learning goals did have a significant direct effect on both motivation control (.50) and emotion control (.48) strategy use. In the present study learning goals were the greatest predictor of emotion and motivation control strategy use.

Based on previous research (Schraw et al., 1995; Elliott & Dweck, 1988), the proposed path model hypothesized that performance goals would have a direct negative effect on motivation/emotion control strategy use. In addition, recall that research suggested that students high in performance goals would be more likely to express emotional and motivational difficulties than students high in learning goals, and that students who express negative emotions and waning motivation often abort attempts to uncover effective strategies (Elliott & Dweck, 1988). Thus, it was expected that performance goals would have a negative indirect effect on strategy use by increasing students' experience of motivational and emotional problems. Contrary to predictions, results of the path analysis indicated that, rather than a negative effect, performance goals had small, positive direct effects (.13) on both motivation control strategy use, and emotion control strategy use (.08), though not significant. The indirect effect of performance goals on motivation control strategy use (through reported motivational problems) was also small (.02), for a total effect of performance goals on motivation control strategy use of .15. Similarly, the indirect effect of performance goals on emotion control strategy use (through

reported emotional problems) was also small (.04), for a total effect of performance goals on emotion control strategy use of .12. These results suggest that holding performance goals has a small, and positive, impact on students' use of motivation and emotion control strategies.

Some research suggests that self-efficacy, regardless of goal orientation is the greatest predictor of students' reporting of motivational and emotional difficulties and subsequent strategy use (Miller et al., 1993; Seegers & Boekaerts, 1993). Thus, in the current path model, I proposed a direct positive effect of self-efficacy on motivation and emotion control strategy use. Contrary to expectations, the direct effect of self-efficacy on motivation control strategy use was small (.05), and the direct effect of self-efficacy on emotion control strategy use was small and negative (-.11). These results suggest that self-efficacy is not a significant predictor of motivation control strategy use. However, recall that self-efficacy and learning goals are highly correlated ($r = .38$), and that self-efficacy was clearly positively correlated with motivation control strategy use ($r = .26$). When learning goals and self-efficacy were entered simultaneously in a multiple regression analysis predicting strategy use, learning goals emerged as the stronger predictor. However, these results should be interpreted cautiously given the problems of multicollinearity that can surface when variables as highly related as self-efficacy and learning goals are entered simultaneously in a regression analysis (Pedhazur, 1982).

Taken together, these results suggest that holding learning goals exerts the strongest influence on students' use of motivation and emotion control strategies. Students' reporting of emotional/motivational problems contributed little to strategy use. These results also suggest that holding performance goals positively influences motivation and emotion control strategy use. Further, while holding high perceptions of self-efficacy is related to greater motivation control strategy use, results of the path analysis indicate that holding learning goals exerts a greater influence on motivation control strategy use than does self-efficacy, though these results should be interpreted cautiously. Finally, some students

reporting motivational and emotional difficulties do report using strategies to overcome these difficulties.

Predicting Persistence

Miller and his colleagues (1993) suggest that volition control strategy use is an important predictor of task persistence. Thus, in the proposed path model, I hypothesized a significant direct positive effect of both motivation and emotion control strategy use on persistence. Consistent with this prediction, I found a small direct effect (.15) of motivation control strategy use, and a small direct effect (.13) of emotion control strategy use, on persistence.

Recall that one of the main hypotheses of the current study was that, for students who experience motivational or emotional problems, strategy use should influence the impact of those problems on students' persistence and achievement. Thus the proposed path model supposed a direct negative effect of reported motivational and emotional problems on persistence, but that persistence would be best predicted by strategy use. Results indicate that, as expected, there was a significant direct negative effect (-.60) of reported motivational problems on persistence. However, contrary to predictions there was also a significant direct positive effect (.26) of reported emotional problems on persistence. Further, also contrary to predictions, strategy use did little to influence the effects of reported motivational problems on persistence. Results showed a negligible indirect effect (.01) of reported motivational problems on persistence through motivation control strategy use, for a total effect of motivational problems on persistence of -.59. Reported emotional problems had a negligible indirect effect (.01) on persistence through emotion control strategy use, for a total effect of emotional problems on persistence of .27. Thus, in the current study reported motivational problems were the greatest (negative) predictor of reported task persistence.

Consistent with previous research (Miller et al., 1993; Seegers & Boekaerts, 1993), in the current path model I hypothesized a direct effect of self-efficacy on persistence. Also, because self-efficacy was expected to be related to greater strategy use, and strategy use was expected to directly positively impact on persistence, the current model also depicts an indirect positive effect of self-efficacy, through reported motivation and emotion control strategy use, on persistence. Results revealed a negligible direct effect of self-efficacy on persistence (.04), with no indirect effect of self-efficacy, through reported motivation or emotion control strategy use, on persistence, for a total effect of .04. Recall though, that self-efficacy and learning goals are highly correlated ($r = .38$), and that self-efficacy was clearly positively correlated with persistence ($r = .37$). When learning goals and self-efficacy were entered simultaneously in a multiple regression analysis predicting persistence, learning goals emerged as the stronger predictor, as it did with strategy use. As noted above, these results should be interpreted with caution given that problems of multicollinearity are likely with two such highly related variables entered simultaneously in a regression analysis (Pedhazur, 1982).

Consistent with previous literature (Schraw et al., 1995; Elliott & Dweck, 1988), the current path model depicted a direct effect of learning goals on persistence. However, additional research suggests that possessing learning goals is not sufficient to predict academic success; taking into account students' self-regulatory strategy use is necessary to fully explain the relationship between learning goals and persistence (Miller et al., 1993; Pintrich & De Groot, 1990). Thus, in the path model I predicted that learning goals would have a direct effect on reported motivation and emotion control strategy use, and that strategy use would in turn have a positive direct effect on persistence. Therefore, the path model also depicted an indirect positive effect of learning goals, through reported strategy use, on persistence. Results of the path analysis show that as expected, there was a significant direct effect of learning goals on persistence ($DE = .28$). Further, if you consider that learning goals impacted on motivation control strategy use ($DE = .50$) and that

motivation control strategy use influenced persistence ($DE = .15$), then it appears that learning goals also had a small indirect effect (.08) on persistence through motivation control strategy use. Taken together, the total effect of learning goals on persistence (through motivation control) was .36. Similarly, learning goals impacted on emotion control strategy use ($DE = .48$), and emotion control strategy use also influenced persistence ($DE = .13$), suggesting an indirect effect (.06) of learning goals through emotion control strategy use on persistence. Thus, the total effect of learning goals (through emotion control) on persistence was .34. Therefore, while the greatest predictor of persistence was low levels of motivational problems, holding learning goals contributes to the likelihood that students will persist.

Conversely, the literature suggests that performance goals should have a direct negative effect on persistence (Elliott & Dweck, 1988; Schraw et al., 1995). Moreover, research suggests that reported problems should have a negative effect on the use of motivation and control strategies (Elliott & Dweck, 1988). It is the use of volition control strategies that should have a direct positive effect on persistence (Pintrich & DeGroot, 1990). Therefore, in the current model I predicted that performance goals would have a direct negative effect on persistence. Further, because less strategy use was expected to be related to less persistence, and because having more problems was expected to be related to less frequent strategy use, and because higher levels of performance goals were expected to be related to experiencing more problems, I proposed an indirect negative effect of performance goals on persistence, through reporting of problems and strategy use. Results indicated that there was a negligible direct negative effect of performance goals on persistence (-.04), with no indirect effects through motivational problems and motivation control strategy use. Thus, there was a total effect of performance goals on persistence (through motivation control) of -.04. Also, it appears there was a negligible indirect effect (.01) of performance goals, through emotional problems and emotion control strategy use, on persistence. Thus there was a total effect of performance goals (through emotion

control) of .03. These results indicate that holding performance goals does not predict whether or not students will persist. These results are consistent with results obtained from correlational analyses. Although high levels of performance goals were associated with higher levels of motivational and emotional problems, and even with higher levels of motivation control strategy use, performance goals were unrelated to persistence.

Taken together, these results suggest that the greatest influence on persistence was the reporting of motivational problems. Students reporting motivational problems were least likely to persist. Interestingly, reporting emotional problems contributed significantly to students' levels of persistence. Further, both motivation and emotion control strategy use exerted a positive influence on persistence. However, strategy use did not mediate the effects of motivational and emotional problems on persistence. Similarly, although self-efficacy was clearly correlated with persistence, when entered as a predictor with learning goals, self-efficacy exerted little direct influence on students' reported persistence. Holding learning goals, however, did contribute to students' reported persistence. Again, given potential multicollinearity problems, these results should be interpreted cautiously.

Learning goals also contributed by increasing the likelihood of students' using motivation and emotion control strategies, which in turn promoted persistence. This suggests that students holding learning goals who used motivation and emotion control strategies were slightly more likely to persist than students holding learning goals alone. This finding suggests that learning goals and strategy use have an additive effect on persistence, rather than strategy use necessarily mediating the relationship between learning goals and persistence. Finally, contrary to expectations, holding performance goals exerted little influence on students' reported persistence. This suggests that some students holding high levels of performance goals persisted, while others did not.

Predicting Achievement

Consistent with previous literature (Pintrich & DeGroot, 1990; Schraw et al., 1995; Miller et al., 1993; Pintrich et al., 1994), the proposed path model depicted a direct effect of persistence on achievement. Results from this study indicated a small direct effect (-.07) of persistence on achievement, though not in the expected direction and not significant.

Based on previous research (Pintrich & DeGroot, 1990) the path model proposed a direct effect of strategy use on achievement. Results indicate that reported motivation control strategy use had a negligible direct effect (.06) on achievement. And, quite unexpectedly, reported emotion control strategy use had a significant direct negative effect (-.31) on achievement. These results suggest that motivation control strategy use does not predict achievement, while frequent use of emotion control strategies makes it likely that students will not achieve.

Recall that a main hypothesis of the current study was that strategy use mediates the impact of emotional and motivational problems on students' persistence and achievement. It was also proposed that, while students who report emotional difficulties might be more likely than other students to abandon a difficult task, a subset of those students who used emotion and motivation control strategies would persist and achieve (Elliott & Dweck, 1988; Pintrich & DeGroot, 1990; Miller et al., 1993). Thus, the proposed path model supposed a direct negative effect of reported problems on achievement, but that achievement would be best predicted by strategy use. Results indicated a significant direct negative effect (-.36) of reported motivational problems on achievement, and a small direct effect (.10) of reported emotional problems on achievement. No mediating effects of strategy use were found. These results suggest that students reporting frequent motivational problems are less likely to achieve, while reporting emotional problems makes it slightly more likely that students will achieve.

Consistent with previous research, the current path model hypothesized direct effects of both learning goals (Elliott & Dweck, 1988), and self-efficacy (Miller et al.,

1993; Seegers & Boekaerts, 1993), on achievement. Results revealed a significant direct effect of self-efficacy on achievement (.18), with no evident indirect effects, for a total effect of .18. Results indicate a small direct effect of learning goals on achievement (.12), again with no indirect effects, for a total effect of .12.

While research points to a direct effect of learning goals on achievement, most researchers contend that students high in performance goals can either achieve or fail to achieve academic success (Elliott & Dweck, 1988; Seegers & Boekaerts, 1993; Miller et al., 1993). This suggests that there is no direct relationship between performance goals and achievement. The independence of performance goals and achievement was also indicated in the model.

In sum, these results suggest that the greatest predictor of achievement was the reporting of motivational problems; students reporting frequent motivational problems were least likely to achieve academic success. Further, while reported motivational problems had the expected negative impact on achievement, reported emotional problems made a slight positive contribution to achievement. Emotion control strategy use was another strong predictor of achievement, although contrary to expectations, it exerted a negative influence on achievement. Motivation control strategy use, meanwhile, had little impact on achievement. Another unexpected finding was that persistence had a minor negative influence on achievement. Finally, results indicated that both learning goals and self-efficacy contributed positively to achievement, while performance goals were unrelated to achievement. Taken together, these results suggest that strategy use was not the important mediator between learning goals and self-efficacy and persistence and achievement, as hypothesized in this study. Rather, learning goals, self-efficacy, and even reported emotional problems were the variables contributing positively to achievement, while reported motivational problems and emotion control strategy use contributed negatively to achievement. Further discussion of these findings and their implications are presented in the next chapter.

CHAPTER V

Discussion

In postsecondary settings, students must meet certain goals in the completion of their academic tasks. Competing with these goals are the many distractions that students face. These distractions can arise from social pressures, or from the nature of the specific task (Corno, 1993). The motivational literature defines volition as the student's ability to accomplish set goals and tasks in the face of distractions and competing intentions. Under these conditions, students' volition directs their attention, emotions, and behaviours toward goals perceived as difficult to attain (Kuhl, 1986; Corno, 1993). The result is a conscientious, self-directed, resourceful, disciplined student, able to accomplish set goals in the face of competing intentions and distractions.

The present study investigated the volition control strategies students use to sustain motivation and to keep distracting emotions in check. Understanding how students manage their motivation and emotions during learning is important to explain why some students are more successful than others at persevering and successfully accomplishing tasks. Further, the study examined how goal orientation and self-efficacy beliefs influence students' motivational and emotional response to a difficult task. Finally, the study explored the interrelationships between goal orientation, self-efficacy beliefs, motivational and emotional response, motivation and emotion control strategy use, task persistence and academic achievement, to provide a more complete understanding of how volition control strategy use influences task persistence and academic achievement.

Participants in the study were 186 adults enrolled in post-secondary education programs. All students completed (or partially completed) four questionnaires designed to (a) tap their levels of learning and performance goals, (b) gauge their perceptions of self-efficacy, (c) assess their emotional and motivational response to a difficult task, (d) determine the strategies they use to sustain motivation and regulate emotion, (e) measure

their levels of task persistence, and (f) assess task performance using a measure of reading comprehension. Data from participants' questionnaires were then analyzed to gain information on the kinds of emotional and motivational difficulties students reported and the types of strategies they used to deal with these difficulties. The data also were analyzed to elucidate the relationships between learning goals, performance goals, persistence, and achievement. Further analyses examined the interrelationships between learning goals, performance goals, self-efficacy, and reported emotional and motivational problems. Finally, a path model was constructed to study the hypothesized causal links between goal orientation, self-efficacy, reported emotional and motivational problems, strategy use, persistence, and achievement.

It was expected that, in addition to reporting a wide variety of emotional and motivational problems, students would also report using a variety of strategies to either remediate or prevent those problems. In terms of the relationships between learning goals, performance goals, persistence, and achievement, it was predicted (1) that learning goals and performance goals would be independent (i.e., that students could hold both), and (2) that students high in learning goals would report greater persistence, and would have higher task performance scores than would students high in performance goals. It was also expected that students high in performance goals with low self-efficacy would report greater motivational and emotional difficulties than all other students. Finally, it was expected that motivation/emotion control strategy use would make the greatest positive contribution to students' persistence and achievement, above and beyond the contributions of learning goals and self-efficacy.

In the remainder of this chapter, findings related to each of the above predictions are discussed. This chapter concludes with an analysis of the strengths and limitations of the study and presents implications for future research.

Types of Motivational and Emotional Difficulties Experienced by Students

A great deal of research has demonstrated the disruptive impact that intrusive emotions and waning motivation can have on academic performance (e.g., Rohrkemper & Bershon, 1984; Cleary, 1991). Cleary (1991) reported that many writers in her study reported a general lack of motivation for writing, coupled with feelings of anxiety and frustration when working on writing tasks. Further, Rohrkemper and Bershon (1984) found that young students reported mainly negative emotions when working on difficult tasks. Consistent with previous research, students in the present study reported experiencing quite a few motivational, and particularly, emotional problems when working on a difficult task. Many students were made anxious imagining how awful a failure might feel, or were bothered by a mistake they had made. Students were less frequently troubled by more debilitating emotions, like feeling paralyzed by a setback or dwelling on a previous failure. Thus, the findings of the present study elaborate the work of Cleary (1991) and Rohrkemper and Bershon (1984), by uncovering the types of emotional and motivational difficulties students report experiencing most often. The current findings also provide additional information regarding the emotional and motivational difficulties experienced specifically by postsecondary students.

Emotion and Motivation Control Strategies Used By Students

Studies examining the strategies students use to control task motivation and regulate intrusive emotions have focused largely on younger students. Mischel et al., (1989) observed that some preschool children were able to control their motivation and talk themselves into waiting for a better reward, instead of immediately available less desirable ones. When working on a difficult math problem, older elementary students also report using motivation control strategies, for example, deciding to take a break when feeling overloaded or becoming bored (Rohrkemper & Bershon, 1984). The results of the present study extend these findings, providing information on the emotion and motivation control

strategy use of postsecondary students. The results indicate that postsecondary students generally used motivation control strategies more frequently than emotion control strategies. Consistent with research by Rohrkemper & Bershon (1984) and Kuhl (1984), students reported taking a break after having finished all or part of a difficult task as a strategy that they used frequently. However, while previous researchers have listed "taking a deep breath and counting to ten" as an emotion control strategy mentioned often by students, in this study this strategy was used least often by postsecondary students. Finally, it is interesting to note that, although students reported experiencing emotional difficulties more frequently than motivational difficulties, they reported using motivation control strategies more frequently than emotion control strategies. This finding could be interpreted in a number of ways. First, it may be that students are using these strategies preventatively (i.e., before they experience motivational difficulties) so that a greater use of motivation control strategies is reflected in fewer reported problems. Second, it may be that students reported more emotional difficulties than motivational difficulties because the emotional problems listed on the questionnaire were generally less debilitating in nature than were the described motivational problems. For example, although imagining how it would feel to fail is a negative emotional experience, it could be argued that feeling paralyzed by a setback (a motivational problem) is a far more intrusive experience. Thus, students may simply have experienced mild emotional challenges more frequently than the comparatively more intrusive and severe motivational difficulties listed on the questionnaire.

Relationships Between Goal Orientation, Persistence, and Achievement

Consistent with previous literature (Pintrich & DeGroot, 1990; Schraw et al., 1995; Miller et al., 1993; Pintrich et al., 1994), I hypothesized a direct positive relationship between persistence and achievement. However, the results of my investigation indicate that, contrary to expectations, persistence had little influence on achievement.

In addition, results of the present study suggest that learning goals and performance goals are independent, and that postsecondary students can hold both learning goals and performance goals simultaneously. This finding is consistent with Corno's (1992) hypothesis that goal orientation is not a single dichotomous variable, where students hold either learning or performance goals. Rather, students' pattern of goals can be described on two continua: from being high in both kinds of goals, high in learning goals and low in performance goals, low in learning goals and high in performance goals, or low in both kinds of goals (Corno, 1992).

Elliott and Dweck (1988) suggest that students high in learning goals persist longer than those high in performance goals. Consistent with that research, results from correlational, regression, and path analyses in the present study suggest that holding learning goals is a strong predictor of student persistence in the face of a difficult task. However, contrary to expectations, performance goals were unrelated to persistence. Path results also suggest that holding performance goals exerts little influence on students' reported persistence. This suggests that some students holding high levels of performance goals persist, while others do not.

The findings of Pintrich and DeGroot (1990) and Pintrich et al. (1994) suggest that possessing learning goals is not sufficient to predict achievement. In those studies, self-regulatory strategy use and metacognitive awareness, respectively, were better predictors of achievement than were learning goals. The lack of relationship uncovered in this study between learning goals and achievement supports Pintrich's position and underlines the necessity of including other variables in the analysis to more fully explain the relationship between these two variables.

Strategy Use as a Mediator Between Goal Orientation, Persistence, and Achievement

In this study, motivation and emotion control strategies were included in the analyses to further explain the relationships between goal orientation, persistence, and achievement. Results indicated that higher levels of motivation and emotion control

strategy use were associated with higher levels of persistence. Indeed, the relationship between learning goals and persistence was influenced by students' use of motivation and emotion control strategies. This suggests that students who hold learning goals and use motivation/emotion control strategies are most likely to persist. This finding supports a central hypothesis of this and previous research (Miller et al., 1993), namely that there is a strong positive relationship between volition control strategy use and task persistence.

Unexpectedly, however, the predicted positive relationship between strategy use and achievement was not found. Correlational results indicated that motivation control strategy use was unrelated to achievement, and emotion control strategy use was *negatively* related to achievement (though not significantly at the .003 level of alpha). Path results suggest that motivation control strategy use has little impact on achievement, while emotion control strategy use appears to exert a significant *negative* influence on achievement.

In sum, these results suggest that motivation and emotion control strategy use directly influences students' persistence, and mediates the influence of learning goals on persistence. However, contrary to my hypothesis, and unlike Pintrich and DeGroot's (1990) findings, it appears that in this study strategy use was not an important mediator of achievement. Use of motivation control strategies does not appear to affect achievement, while use of emotion control strategies actually hinders achievement. The negative effect of emotion control strategy use on achievement suggests that perhaps successful students do not experience emotions debilitating enough to warrant using the emotion control strategies listed on the VCI.

Relationships Between Goal Orientation, Perceptions of Self-Efficacy, and Students'

Reported Emotional and Motivational Problems

Elliott and Dweck (1988) suggested that students who hold greater levels of performance goals and have low self-efficacy beliefs are the most likely to experience negative emotions when working on a difficult task. However, other researchers have

suggested that self-efficacy directly affects emotional response regardless of goal orientation (Seegers & Boekaerts, 1993; Miller et al., 1993). Thus, one of the aims of the present investigation was to determine whether students high in performance goals with low self-efficacy beliefs were more likely to report intrusive emotions than other students.

First, as expected, path results suggest that holding high levels of learning goals exerts a negative influence on the reporting of motivational problems, whereas holding high levels of performance goals contributes to the reporting of both emotional and motivational problems. This indicates that learning goals protect students from motivational, not necessarily emotional, problems, while holding performance goals makes students susceptible to both motivational and emotional difficulties.

Second, consistent with previous research (Seegers & Boekaerts, 1993; Elliott & Dweck, 1988) the present study found that self-efficacy exerts a negative influence on the reporting of both motivational and emotional problems. However, when predicting emotional or motivational problems, an interaction between performance goals and low self-efficacy was not found. Thus, it does not appear that only students high in performance goals and low in self-efficacy experience problems. Rather, this finding lends support to the hypothesis that students high in performance goals *or* low in self-efficacy are at risk for emotional and motivational difficulties, and that together, performance goals *and* low self-efficacy beliefs have an additive effect on students' reporting of emotional difficulties when working on a task. Thus, students high in performance goals and low in self-efficacy appear *most* susceptible to emotional and motivational difficulties.

Learning goals and self-efficacy also appear to exert an additive influence on the reporting of motivational problems. The results of this study suggest that learning goals and perceptions of self-efficacy are highly correlated. Further, students high in confidence may be least likely to report both emotional and motivational problems, while students high in learning goals may be least likely to report motivational problems. Again, this supports the hypothesis that students high in learning goals *or* high in self-efficacy are protected

from motivational difficulties, and that together, learning goals *and* high self-efficacy beliefs have an additive preventative effect on students' reporting of motivational difficulties. Therefore, students high in learning goals and self-efficacy appear best protected from motivational problems.

Taken together, these results suggest that students' reporting of emotional and motivational difficulties is influenced by their levels of learning goals, performance goals, and their self-efficacy beliefs. Holding high perceptions of self-efficacy protects students from both emotional and motivational problems, with learning goals and self-efficacy working together to exert an additive negative influence on students' reporting of motivational problems. Similarly, holding high levels of performance goals and low perceptions of self-efficacy has an additive influence on students' reporting of motivational and emotional problems. Students high in performance goals and low in self-efficacy beliefs are most at risk for emotional and motivational difficulties.

Relationships Between Goal Orientation, Self-Efficacy, Emotional Response to a Difficult Task, Emotion/Motivation Control Strategy Use, Persistence, and Achievement Predicting Strategy Use

In this study higher levels of learning goals were associated with higher levels of self-efficacy, higher levels of motivation/emotion control strategy use, and lower levels of reported motivational problems. These findings are consistent with previous research which has found that students with high levels of learning goals generally hold higher self-efficacy beliefs (Schunk, 1996; Dweck, 1986) and report fewer problems while working on tasks (Elliott & Dweck, 1988; although this latter study found relationships between learning goals and reported emotional, rather than motivational, problems). Further, these findings are consistent with previous research suggesting a positive relationship between learning goals and self-regulatory strategy use (Dweck, 1986; Elliott & Dweck, 1988; Schraw et al., 1995). One interpretation of the path results of the present study is that

holding learning goals exerts a strong influence on students' preventative use of motivation and emotion control strategies. Students with learning goals used strategies more frequently, and reported fewer motivational and emotional problems. Also, reporting emotional/motivational problems for these students did not lead to strategy use. These findings suggest that strategy use served a preventative function for students with learning goals.

Results from this study also reveal a complex relationship between performance goals, reported problems, and strategy use. The observed correlation between performance goals and reported emotional and motivational problems was consistent with previous literature (Elliott & Dweck, 1988; Dweck, 1986). Also in previous research, students with high levels of performance goals were found to use fewer self-regulatory strategies (Dweck, 1986; Elliott & Dweck, 1988; Schraw et al., 1995). But in this study, path results suggest that students holding performance goals do report using motivation control, and to a lesser extent emotion control strategies. These results suggest that students with performance goals may be more likely to experience emotional and motivational problems, but they also appear to use strategies to remediate these difficulties.

Also, in this study positive perceptions of self-efficacy were found to be correlated with fewer emotional and motivational problems and greater motivation control strategy use, supporting previous findings by Miller and his colleagues (1993) and Seegers and Boekaerts (1993). However, when learning goals and self-efficacy were included simultaneously in a multiple regression analysis to construct the path model, self-efficacy appeared to exert a negligible influence on motivation control strategy use and contribute negatively to emotion control strategy use. The negative suppressor effect of self-efficacy on strategy use suggests that self-efficacy, without learning goals, does not promote strategy use.

Finally, in this study reported problems were unrelated to both types of strategy use, contrary to the findings of Dweck (1986) and Elliott and Dweck (1988). This

suggests that some students reporting problems use strategies to deal with them, while other students experiencing emotional and motivational problems may not. Given that students high in performance goals were more likely to experience problems, that some students who experienced problems used strategies, and that performance goals were associated with some strategy use, it may be that some students with performance goals use strategies to remediate problems they experience.

Taken together, these results suggest that holding learning goals promotes motivation and emotion control strategy use, without any mediating influence from the types of motivational or emotional problems that students report. However, for students holding performance goals, strategy use is influenced in small part by the motivational and emotional problems they experience. While students high in learning goals appear to use strategies to prevent motivational and emotional problems, students high in performance goals may use strategies to remediate the problems they experience. Finally, students holding high self-efficacy beliefs also appear to be protected from motivational and emotional difficulties, and report little strategy use if not also high in learning goals.

Predicting Persistence

In addition to exploring the relationships between goal orientation, motivation and emotion control strategy use, and persistence, researchers have also debated the role of self-efficacy in predicting persistence. Some research indicates that self-efficacy is positively correlated with persistence (Miller et al., 1993, Seegers & Boekaerts, 1993). However, other research suggests that the effect of self-efficacy on persistence is influenced by volition control strategy use (Pintrich et al., 1990). In this study perceptions of self-efficacy were positively correlated with higher levels of persistence. However, when learning goals, strategy use, and self-efficacy were entered simultaneously as predictors, path results suggested that self-efficacy exerts the least direct influence on students' reported persistence. This suggests that self-efficacy and persistence are related,

but that when compared with learning goals and strategy use, learning goals and strategy use are better facilitators of persistence.

Further, in this study higher levels of reported motivational and emotional problems were correlated with lower levels of persistence. This finding lends support to the hypothesis (put forward by Dweck (1986), Rohrkemper and Bershon (1984), and Cleary (1991)), that students who report emotional and motivational difficulties may be more likely than other students to abandon a difficult task. Similarly, when learning goals, performance goals, self-efficacy, motivational and emotional problems, and motivation and emotion control strategy use were entered in a regression equation predicting persistence, the strongest predictor was the reporting of motivational problems. Thus, students reporting frequent motivational problems appear least likely to persist. Interestingly, in the path analyses, reporting emotional problems appeared to contribute *positively* to students' levels of persistence. Thus, when controlling for learning goals, performance goals, self-efficacy, strategy use, and motivational problems, experiencing mild emotional problems may actually facilitate persistence.

Recall that one of the main hypotheses of the current study was that for students who experience problems, strategy use influences the impact of these problems on students' persistence. Thus, while students who report emotional difficulties may be more likely than other students to abandon the task, a subset of students who use emotion and motivation control strategies will persist. Contrary to expectations, path results suggest that strategy use did not influence the effects of motivational/emotional problems on persistence. This finding may be partially explained by the fact that reporting of motivational and emotional difficulties was uncorrelated with reported strategy use. Further, it has been suggested that students high in learning goals use motivation control strategies preventatively, and thus do not experience motivational problems interfering with persistence. As well, as suggested below, it may be that students are experiencing mild emotional difficulties, and therefore are still motivated to persist.

In sum, these results suggest that experiencing motivational difficulties seems most detrimental to persistence, and using strategies to remediate difficulties does little to influence the impact. In contrast, experiencing emotional difficulties appears to promote task persistence. While this finding does seem at odds with much of the literature, it may be that because students are reporting mild, not overly debilitating emotional difficulties, and in some cases using strategies to control these difficulties, they are still motivated to finish the task, and therefore they persist. Finally, it appears that students' levels of performance goals and their perceptions of self-efficacy have little impact on persistence when compared with the strong positive influences that learning goals and strategy use exert on persistence.

Predicting Achievement

Previous research on self-efficacy indicates both that it is positively related to achievement (Miller et al., 1993, Seegers & Boekaerts, 1993), and that the effect of self-efficacy on achievement is influenced by volition control strategy use (Pintrich et al., 1994; Pintrich & DeGroot, 1990). In this study, correlational analyses revealed that positive perceptions of self-efficacy were associated with higher levels of achievement. Results of the path analysis suggest that self-efficacy positively influences achievement, with no mediating effects of strategy use. This suggests that self-efficacy contributes directly to achievement such that, when compared with all other students, students high in self-efficacy appear protected from motivational/emotional difficulties, and may not need to use strategies and be persistent in order to achieve.

Further, consistent with previous research (e.g., Dweck, 1986; Rohrkemper & Bershon, 1984), higher levels of reported motivational and emotional problems were correlated with lower levels of achievement in this study. However, when learning goals, self-efficacy, reported problems, strategy use, and persistence were entered simultaneously into a regression equation, results suggested that although reported motivational problems appear to have the expected negative impact on achievement, reported emotional problems

make a slight positive contribution to achievement. This suggests that emotional problems and achievement are related, but that without joint reporting of motivational problems (with which emotional problems are highly correlated), emotional problems appear to exert a positive influence on achievement.

Taken together, these results suggest that reported motivational problems provide the greatest obstacle to achievement, and learning goals and self-efficacy are the variables with the greatest positive influences on achievement. Interestingly, task persistence was not found to influence achievement in either correlational or regression analyses. In the path model, when compared with learning goals and strategy use, self-efficacy did not influence persistence, but here directly influences academic achievement. Further, results indicate that task persistence was heavily influenced by emotion control strategy use, but in this analysis, using emotion control strategies seems to hinder, even prevent, achievement. Thus, it may be that persistence here is not adaptive. Rather, students may be perseverating on a difficult task, trying hard to complete it, without success. Further, the negative effect of emotion control strategy use on achievement suggests that successful students may not experience emotions debilitating enough to warrant using the emotion control strategies listed on the VCI. Use of the emotion control strategies listed on the VCI could signal that the student is experiencing more significant emotional difficulties than the majority of the emotional problems listed on the questionnaire. Whether this finding can be replicated, particularly using a revised version of the questionnaire in which problems and strategies are more evenly matched, requires further study.

It also appears that students high in learning goals are protected from motivational problems, use motivation control strategies, persist, and that they are more likely to achieve. Similarly, students with high perceptions of self-efficacy are protected from both motivational and emotional problems, use motivation control strategies, persist, and are more likely to achieve. Thus, it appears that holding high learning goals and / or high perceptions of self-efficacy protects students from experiencing motivational problems,

which in turn promotes achievement. A more difficult finding to reconcile is that in correlational analyses reported emotional problems were negatively related to achievement, but according to path results, emotional problems have a slight positive influence on achievement. Perhaps some students experiencing mild emotional difficulties (e.g. fear of failure) use this anxiety to push themselves to achieve. However, this finding is unique, and inconsistent with much of the previous research, so whether it can be replicated, and whether this hypothesis holds true for all students or just some subgroups (e.g. perhaps those high in performance goals and high in self-efficacy) requires further study.

Strengths and Limitations of the Study

The current study contributes to the research literature in several ways. First, the study extends the research on children's use of volition control strategies by examining the motivation and emotion control strategy use of older, postsecondary students. In addition, the study extends the findings of previous research by examining simultaneously the interrelationships between multiple key variables including goal orientation, self-efficacy, emotional / motivational response, motivation and emotion control strategy use, persistence, and achievement. I improved on methodological approaches by modifying existing measurement tools to create reliable subscales that more clearly tap the constructs of learning goals, performance goals, persistence, motivation control and emotion control. Finally, I not only examined the intercorrelations among a set of variables rarely studied together, but I also conducted a path analysis to examine the direct and indirect effects among this same complex set of variables. The use of path analysis allowed me to test and visually demonstrate hypothesized causal links between variables that to date had only been tested in piecemeal fashion in previous studies (Seegers & Boekaerts, 1993).

However, there are some limitations to the present study. First, one should use caution when interpreting findings from self-report questionnaires. Students' responses to the Goals Inventory, Self-Efficacy Questionnaire, and VCI may not accurately reflect what

they *actually* do. Students may have been influenced by socially desirable responding: reporting how they wish to be viewed by others, or how they wish to view themselves, rather than how they would actually respond in real-life situations. Also, students may simply not be cognitively or metacognitively aware of the discrepancy between what they do and what they say they do. Although these potential problems with self-report should not be discounted, previous research suggests that self-report is a useful method for measuring students' insights about motivation and cognitive strategy use (Pintrich & DeGroot, 1990; Meece et al., 1988). Further, participants did report low perceptions of self-efficacy and motivational and emotional problems, even when it might not have been socially desirable to do so.

Second, students were recruited for participation in this study on a voluntary basis. Students were required to complete questionnaires on their own time and return them to class instructors when finished. As expected with this type of design, the return rate was quite low (27%). Thus, it could be that those students who took, completed, and returned the questionnaires were not representative of a college population, which potentially limits the generalizability of the findings. Further, the valid interpretation of students' scores on the achievement measure (in fact on all measures in the questionnaire packet) is limited given that students completed the questionnaires on their own time. All forms were completed by the student with no supervision from the researcher, and thus there was no way to ensure that students answered the items honestly and independently. However, although the students taking part in the study were perhaps more willing to be "studied" than their classmates, demographic and questionnaire information indicates that participants represented a wide range of ages, ethnicities, and academic success. Further, although students had the opportunity to 'put their best face forward', results suggest that they reported a wide range of emotional and motivational problems, varying levels of self-efficacy and persistence, with reading comprehension scores indicating a wide range of achievement levels among all participants.

Additionally, students were recruited from British Columbia and Ontario, and there may be differences in the demographic and academic backgrounds of these two groups of students. Although there may be some variability in the characteristics of both groups of students, an effort was made to recruit students in their first year of study, attending similar classes (Arts and Social Sciences), at similar institutions (community colleges and universities). Further, no obvious age, gender, or ethnic background differences were uncovered between samples.

An additional concern involves how achievement was measured in this study. Students completed a test of reading comprehension as an indicator of academic achievement. This gives the construct of achievement a narrow focus, and doesn't account for other dimensions of achievement that could be differentially impacted by goal orientation, self-efficacy, reported problems, strategy use, and persistence. Further, participant characteristics may have influenced the interpretation of persistence items on the questionnaires. For instance, students at the postsecondary level are generally there because they are more successful students. Therefore, they may have a different definition of what constitutes effortful persistence than would students at the secondary school level. This potential limitation could be investigated by replicating this study, using the same persistence measure, with a group of secondary students.

Recall that some of the constructs studied here (in particular self-efficacy and learning goals) were highly correlated. Given the problems of multicollinearity that can surface when highly related variables are entered simultaneously in a regression analysis (Pedhazur, 1982), path results for highly correlated variables should be interpreted cautiously. Further, given that all measures (including achievement) were administered at once, caution should be taken in interpreting causality for variables related to achievement. Finally, given that I made multiple comparisons, there is a possibility that Type 1 error may have occurred. I did use the Bonferroni approach with a more conservative level of alpha to help control for Type 1 error, but given the number of direct and indirect relationships I

examined in the path model, the possibility that some significant results occurred by chance cannot be discounted.

Implications for Future Research

The results of the present study indicate that postsecondary students' achievement is influenced most by their reporting of motivational difficulties. Further, students with high perceptions of self-efficacy, and to a lesser extent high levels of learning goals, appear to be protected against motivational problems and experience greater academic success than other students. Given that learning goals, and in particular, high self-efficacy beliefs protect students from motivational difficulties and promote achievement, interventions aimed at enhancing students' self-efficacy beliefs and bringing their learning goals to the fore would be advantageous.

One possibility for future study would be to involve students struggling academically in a group-based program, such as the Strategic Content Learning program developed by Butler (1998). This program provides on-line support to students as they work through their academic tasks, encouraging self-regulation so that they learn to manage their cognitive, motivational, and volitional processes during learning (Butler, 1995). This program also supports students to construct a range of knowledge and beliefs that support, rather than undermine further self-regulation. In fact, results from a number of studies have shown that by taking part in this program for one school term, students perceptions of perceived competence (self-efficacy) increase significantly (Butler, in press).

However, given the possibility that Type 1 error may have produced some spuriously significant results, further research is needed to replicate these findings. Additional research is needed as well to clarify the factors contributing to achievement, and to investigate more thoroughly the link between emotional difficulties and achievement. Specifically, future research could utilize both self-report and think-aloud (or other on-line observation) techniques to minimize potential social desirability effects in student

responses, and to provide two complimentary windows looking at what students *think* they do and what they *actually* do. These techniques could be used in tandem to measure students' motivational and emotional difficulties, motivation and emotion control strategies, and persistence levels to determine if students' levels of motivational difficulties truly do have the greatest influence on their achievement, regardless of any strategies they might use to keep these motivational difficulties in check.

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Appendix A
Student Consent Form

(Please Detach and Sign this Consent Form in the Space Below and return it to the researcher, Shannon Poole)

I acknowledge that participation in the research about "The Roles of Goal Orientation, Task-Specific Self-Efficacy, and Motivation and Emotion Control in the Academic Achievement of College Students" is completely voluntary, and I may withdraw from the research study at any time without consequence. I acknowledge that I have been given a copy of this consent form for my own records.

Signature _____

If you would like to receive a report of this study after data have been analyzed, please fill in an address below your signature to which we can mail it.

Address _____

_____ postal code

(Please keep the attached copy of this consent form for your records)

(Please Keep This Copy for Your Records)

I acknowledge that participation in the research about "The Roles of Goal Orientation, Task-Specific Self-Efficacy, and Motivation and Emotion Control in the Academic Achievement of College Students" is completely voluntary, and I may withdraw from the research study at any time without consequence. I acknowledge that I have been given a copy of this consent form for my own records.

Signature _____

If you would like to receive a report of this study after data have been analyzed, please fill in an address below your signature to which we can mail it.

Address _____

_____ postal code

Appendix B
Demographic Questionnaire

Background Information

1. Sex: _____ Male _____ Female
2. Age: _____ Years
3. Date of Birth: _____
(Month) (Day) (Year)
4. Number of Years of Postsecondary School Completed: _____
Part-Time _____ Full-Time _____
5. Degree / Diploma Sought: _____
Major Area of Study: _____
Minor Area of Study: _____
6. Grade Point Average Achieved Last Year (also list maximum score possible; e.g., 3.00 out of 4.00): _____ or Letter Grade (e.g., B-): _____

Where?

- _____ High School
 _____ Vocational or Technical School
 _____ College
 _____ Other (Please Specify)

Cumulative GPA: **Please note it as many places as applicable.**

- _____ High School
 _____ Vocational or Technical School
 _____ College
 _____ Other (Please Specify)

7. How do you describe yourself in terms of cultural or ethnic heritage? **(Check One).**
If you are of mixed heritage, check "other" and explain in the space provided.

- _____ White
 _____ Black
 _____ Native Indian
 _____ Asian
 _____ Indo Canadian
 _____ Latin
 _____ Other (please describe in the space provided): _____

8. What language(s) do you speak at home? _____

9. Were you born in Canada? _____ Yes _____ No

If not, how long have you lived in Canada? _____

Appendix C

Task-Specific Self-Efficacy Measure

Task Specific Self-Efficacy Measure
(Adapted from Butler, 1993)

Rate your confidence in your ability to do each of the following:

	Not at all confident	Somewhat confident	Very confident
<u>Reading Challenging Course Materials</u>			
(1) Understanding information in course materials when I read (books, handouts)	1_____	2_____	3_____4_____5
(2) Recognizing the overall theme of a chapter	1_____	2_____	3_____4_____5
(3) Understanding the meaning of each sentence I read	1_____	2_____	3_____4_____5
(4) Picking out the most important ideas	1_____	2_____	3_____4_____5
(5) Summarizing ideas in my own words	1_____	2_____	3_____4_____5
(6) Understanding the relationship between ideas	1_____	2_____	3_____4_____5
(7) Remembering what I have read	1_____	2_____	3_____4_____5

Rate how much you agree with each of the following statements. Notice that some statements read “it is *hard*”, while others read “it is *easy*”. Read each statement carefully.

Reading Challenging Course Materials

- | | | | | | |
|-----|---|---|---|---|----------|
| (1) | When reading my course textbooks, it is <i>easy</i> to understand the concepts presented. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |
| (2) | When reading a chapter in a textbook, it is <i>hard</i> for me to get started. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |
| (3) | When reading course materials, it is <i>hard</i> to identify the overall theme or topic. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |
| (4) | When reading paragraphs in my course materials, it is <i>hard</i> to pick out the important ideas. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |
| (5) | When reading course materials, it is <i>easy</i> to summarize the information in my own words. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |
| (6) | When reading course materials, it is <i>easy</i> to see the connections between ideas. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |
| (7) | When studying from my course materials, it is <i>hard</i> to learn the specialized terms or vocabulary. | | | | |
| | 1 | 2 | 3 | 4 | 5 |
| | strongly | | | | strongly |
| | disagree | | | | agree |

- (8) After reading my course materials, it is *easy* to remember what I have read.
- | | | | | |
|----------|---|---|---|----------|
| 1 | 2 | 3 | 4 | 5 |
| strongly | | | | strongly |
| disagree | | | | agree |
- (9) When my class is asked to read course materials, I do better than most people would.
- | | | | | |
|----------|---|---|---|----------|
| 1 | 2 | 3 | 4 | 5 |
| strongly | | | | strongly |
| disagree | | | | agree |
- (10) When my class is asked to remember information from course textbooks, I do better than most people would.
- | | | | | |
|----------|---|---|---|----------|
| 1 | 2 | 3 | 4 | 5 |
| strongly | | | | strongly |
| disagree | | | | agree |

Appendix D
The Goals Inventory

Appendix D

The Goals Inventory

The Goals Inventory
(Roedel, Schraw, & Plake, 1994)

The following sentences ask about your feelings and thoughts when working on tasks for one of your more difficult classes. For each sentence, **INDICATE HOW WELL IT DESCRIBES YOU BY CIRCLING THE NUMBER THAT DESCRIBES HOW TRUE IT IS FOR YOU. READ EACH SENTENCE CAREFULLY. Answer honestly. Thank you.**

	Not At All True	A Little True	Somewhat True	Pretty True	Really True
1. I enjoy challenging school assignments.	1	2	3	4	5
2. It is important for me to get better grades than my classmates.	1	2	3	4	5
3. I persevere even when I am frustrated by a task.	1	2	3	4	5
4. Academic success is largely due to effort.	1	2	3	4	5
5. Sticking with a challenging task is rewarding.	1	2	3	4	5
6. I try even harder after I fail at something.	1	2	3	4	5
7. I adapt well to challenging circumstances.	1	2	3	4	5
8. I am willing to cheat to get a good grade.	1	2	3	4	5
9. I work hard even when I don't like a class.	1	2	3	4	5
10. I am very determined to reach my goals.	1	2	3	4	5

	Not At All True	A Little True	Somewhat True	Pretty True	Really True
11. Personal mastery of a subject is important to me.	1	2	3	4	5
12. I work very hard to improve myself.	1	2	3	4	5
13. I like others to think I know a lot.	1	2	3	4	5
14. It bothers me the whole day when I make a big mistake.	1	2	3	4	5
15. I feel angry when I do not do as well as others.	1	2	3	4	5
16. I am naturally motivated to learn.	1	2	3	4	5
17. I prefer challenging tasks even if I don't do as well at them.	1	2	3	4	5
18. Every student can be a successful learner.	1	2	3	4	5
19. Learning can be judged best by the grade one gets.	1	2	3	4	5
20. My grades do not necessarily reflect how much I learn.	1	2	3	4	5
21. Mistakes are a healthy part of learning.	1	2	3	4	5
22. I feel most satisfied when I work hard to achieve something.	1	2	3	4	5

	Not At All True	A Little True	Somewhat True	Pretty True	Really True
23. I would rather have people think I am lazy than stupid.	1	2	3	4	5
24. It is important to me to always do better than others.	1	2	3	4	5
25. I give up too easily when faced with a difficult task.	1	2	3	4	5

Appendix E
The Volitional Components Inventory
(Sections 6 and 8 only)

When you are trying to read and study material for a difficult or challenging class, it sometimes happens that your feelings and moods turn mostly negative or that you simply feel inclined to do other things. Sometimes you may apply strategies from the outset that help you to stick it out. But on other occasions you perhaps do or imagine things that make it even harder to stay with your task.

①	②	③	④	⑤	⑥	⑦
almost never	seldom	somewhat seldom	sometimes	somewhat often	often	almost always

How do I feel when involved in a task for a difficult class and how do I handle my moods?		These days, this is how often I am like that:								
1	I put myself into the mood I need in order to keep on track.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
2	I persevere even when I am frustrated by a task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
3	I am able to draw something positive from a task that originally was unpleasant.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
4	I continue with the task though I feel the urge to stop.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
5	I imagine how awful a failure will be.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
6	I put myself into a happy mood because that will help me to make much better progress.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
7	I work hard even when I don't like a class.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
8	In spite of the difficulties, I think of those aspects of the task that I like.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
9	I give up too easily when faced with a difficult task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
10	I think of the unpleasant consequences of not having done the task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
11	I do something that helps me to get rid of an unpleasant mood that is blocking me from progressing towards the goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
12	I think about the positive aspects of the goal when my determination to persevere weakens.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
13	I feel as if there's a lot to dislike about the project and nothing to gain from it.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
14	I let myself be haunted by a guilty conscience.	almost never	①	②	③	④	⑤	⑥	⑦	almost always

①	②	③	④	⑤	⑥	⑦
almost never	seldom	somewhat seldom	sometimes	somewhat often	often	almost always

How do I feel when involved in a task for a difficult class and how do I handle my moods?		These days, this is how often I am like that:								
15	I deliberately think of pleasant things in order to become more relaxed.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
16	I deliberately focus on the positive aspects of a difficult activity.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
17	When work is hard I either give up or study only the easy parts.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
18	I think about what would happen if I cannot cope.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
19	I manage my mood so that my work flows more easily.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
20	Even when study materials are dull and uninteresting, I keep working until I finish.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
21	I know how to increase my interest in a dull activity.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
22	I imagine how awful I would feel if I cannot accomplish my goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
23	I make an effort to cheer up so that things will work out better.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
24	I know exactly how to increase my interest in a task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
25	I feel compelled to go on in order to avoid unpleasant consequences.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
26	I focus on how it would feel to fail.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
27	I imagine doing the task well.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
28	I see the good in a difficult task that I am doing.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
29	I feel committed to staying on track with a task even though it does not give me positive feelings.	almost never	①	②	③	④	⑤	⑥	⑦	almost always

If you suffer setbacks when working on a task for a challenging class, or if the whole thing goes wrong, this will have various consequences: Sometimes you are completely stalled and have to keep thinking about your mistake. However, in other situations you might even feel spurred on by your mistakes and be more successful...

①	②	③	④	⑤	⑥	⑦
almost never	seldom	somewhat seldom	sometimes	somewhat often	often	almost always

While pursuing a goal, how do I handle successes and setbacks?		These days, this is how often I am like that:								
30	I imagine how good I will feel after having finished the task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
31	I have "paralyzing" thoughts as soon as something goes wrong.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
32	I list for myself all the things I achieved en route towards my goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
33	I find myself brooding after a failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
34	I reward myself when I have successfully completed a difficult task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
35	I think about how good it will feel to have achieved the goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
36	I find it hard to start all over again after a failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
37	I look back at all the things I have already accomplished.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
38	I immediately think of past failures after a setback.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
39	I take a break after I have finished all or part of a difficult task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
40	I reward myself for putting in the effort.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
41	I lose all of my energy when threatened by a failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
42	I pat myself on the back for even small accomplishments.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
43	I am plagued by worry when something doesn't turn out right.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
44	I do something nice for myself when I have made progress on a difficult project.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
45	I enjoy the pleasant thought of reaching the goal soon.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
46	I feel paralyzed by a fear of failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always

①	②	③	④	⑤	⑥	⑦
almost never	seldom	somewhat seldom	sometimes	somewhat often	often	almost always

While pursuing a goal, how do I handle successes and setbacks?		These days, this is how often I am like that:								
47	I recall the steps I have already taken that have moved me closer toward my goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
48	I need a long time to forget a setback.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
49	I take the time to appreciate my success in a difficult activity.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
50	I fantasize about pleasant things to do once I have reached a goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
51	I lose my drive after a failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
52	I feel proud of myself after having mastered a difficult step towards my goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
53	I spend a long time thinking of possible reasons for a failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
54	After having reached a goal, I reward myself for my efforts.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
55	I say to myself: When you are done with it, you can reward yourself.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
56	I feel unable to do anything at all for a while after having suffered a setback.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
57	Once in a while I remind myself of the little successes I have already achieved.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
58	I feel bad for a long time after a setback.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
59	When I have trouble with a task I keep working at it until I figure out what to do.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
60	I allow myself time off after having put out effort.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
61	I think of the nice things that will happen once I reach my goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
62	I mentally freeze up out of fear of further failures.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
63	I feel paralyzed by a setback.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
64	I celebrate each successful step to the goal.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
65	I take a deep breath and count to ten before returning to the task.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
66	I constantly think of a previous failure.	almost never	①	②	③	④	⑤	⑥	⑦	almost always
67	I follow a big effort with rest and relaxation.	almost never	①	②	③	④	⑤	⑥	⑦	almost always

Appendix F

Academic Achievement Measure

PASSAGE NUMBER 1

The railroads introduced new hordes of land-crazy people, and the new Americans migrated like locusts across the continent until the western sea created a boundary to their movements. Coal and copper and gold enticed them further; they savaged the land, gold-dredged the rivers to skeletons of pebbles and debris. An aroused and fearful government manufactured laws for the distribution of public lands—a quarter section, one hundred and sixty acres, per person—and a claim had to be proved and improved; but there were ways of getting around this, and legally. My own grandfather proved out a quarter section for himself, proved out one for his wife, proved out one for each of his children, and, I suspect, proved out acreage for children he desired and expected to have. Marginal lands, of course, suitable only for grazing, went in larger pieces; one of the largest land-holding families in California took its richest holdings by a trick—by law a man could take up all the swamp or water covered land he wanted. The founder of this great holding mounted a scow on wheels and drove his horses over thousands of acres of the best bottom land, then reported that he had explored it in a boat, which is true, and confirmed his title—I need not mention his name: his descendants will remember.

1. Write a sentence that expresses the main idea of this passage. _____

2. In this passage the author is describing
 - (a) how to cheat the government of land taxes;
 - (b) the accumulation of his family fortune;
 - (c) the settlement of Western lands;
 - (d) the efficiency of rail travel

3. Describe how the large land owner, mentioned in the passage, obtained his land. ____

4. The “scow” that the author refers to in the passage was
 - (a) a covered wagon;
 - (b) a mobile home;
 - (c) a railway car;
 - (d) a small boat.

5. In the first sentence of the passage, the author refers to the new Americans as moving across the country like “locusts.” What image does this comparison convey about their behaviour? _____

6. Based on the author's description of the large landholder's plan for acquiring land, the author probably thinks that the large landholder was actually

- (a) vicious;
- (b) honest;
- (c) untrustworthy;
- (d) clever.

Explain your reasoning. _____

7. In making laws governing the distribution of public lands, the government was attempting to

- (a) stop people from ruining the land, by regulating its use;
- (b) deny the new settlers the right to settle on public lands;
- (c) encourage farmers to raise crops for the new Western populations;
- (d) discourage other hopeful settlers from coming West and settling on public land.

For each italicized word from the passage, choose the best definition according to the context in which it appears.

8. *hordes*

- (a) castes;
- (b) communities;
- (c) kinds;
- (d) throngs

9. *dredged*

- (a) filled;
- (b) stirred;
- (c) drained;
- (d) condensed.

10. *savaged*

- (a) attacked violently;
- (b) made angry or fierce;
- (c) trampled ferociously;
- (d) left untouched or wild.

PASSAGE NUMBER 2

The history of the word “creole” itself dates back to the slave trade. After slaves had been gathered from many parts of Africa, they were imprisoned in West African camps, euphemistically called “factories,” for “processing” before being shipped out to “markets”. The managers of the factories took great care to separate slaves who spoke the same tribal language, thereby lessening the danger of revolt because the slaves were prevented from communicating with one another. And further separation on the basis of language was made by the purchasers in the New World. As a result, the only tongue the slaves had in common was a pidgin that originated in West Africa and developed in the colonies to which they were sent. These pidgins became entrenched, and after a generation or two they began to expand to meet the needs of the slaves’ way of life. The slaves’ new language became known as “creole,” a French word meaning “native” which in turn was derived from Portuguese.

Nowadays “creole” refers to any language that developed from a pidgin by expansion of vocabulary and grammar and became the mother tongue for many speakers in a community. The largest center of creole languages today is undoubtedly the Caribbean area, with more than six million speakers. Several million additional people speak creoles in West Africa, South Africa, and Southeast Asia, and probably another three million people around the world use various pidgin languages. Clearly, pidgin and creole are not rare or isolated phenomena; they number more speakers today than do such languages as Dutch, Swedish, or Greek.

1. Write a sentence that expresses the main idea of this passage. _____

2. The author’s primary purpose in this passage is to
 - (a) account for the variety in slave languages;
 - (b) explain how the slaves were treated in the New World;
 - (c) trace the history of the word “creole”;
 - (d) list the various pidgin languages in the world

3. What is the main reason a pidgin language emerged among New World slaves? ____

4. In the present time, the term “creole” refers to
 - (a) any language originating in the Caribbean;
 - (b) the “native” language of the New World;
 - (c) a pidgin language from Portugal;
 - (d) an expanded pidgin language

5. On the basis of the evidence in the passage, is the following phrase true or false. "When slaves arrived in the New World they spoke creole".

True _____ False _____

Explain your reasoning _____

6. Which of the following statements is an accurate inference
- (a) pidgin is a language with a simplified grammar and vocabulary;
 - (b) a creole language cannot be a speaker's mother tongue
 - (c) creole has a simplified grammar and vocabulary;
 - (d) the pidgin language came from Portugal

Explain your reasoning. _____

7. In describing the West African camps, the author uses the words "factories", "processing", and "markets" to indicate that
- (a) the camps were situated in industrialized communities;
 - (b) slaves were treated like merchandise;
 - (c) camp managers were rich industrialists;
 - (d) slave merchants were unionized and organized

For each italicized word from the passage, choose the best definition according to the context in which it appears.

8. *euphemistically*
- (a) pragmatically worded;
 - (b) functionally worded;
 - (c) realistically worded;
 - (d) tastefully worded

9. *entrenched*
- (a) ingrained;
 - (b) widespread;
 - (c) complex;
 - (d) varied

10. *thereby*
- (a) afterward;
 - (b) preliminarily;
 - (c) consequently;
 - (d) further

Appendix G

Revised Task-Specific Self-Efficacy Measure

Task Specific Self-Efficacy Measure
(Adapted from Butler, 1993)

Rate your confidence in your ability to do each of the following:

Reading Materials for a Difficult Course

	Not at all confident	Somewhat confident	Very confident
(1) Understanding information in course materials when I read (books, handouts)	1	2	3
(2) Recognizing the overall theme of a chapter	1	2	3
(3) Understanding the meaning of each sentence I read	1	2	3
(4) Picking out the most important ideas	1	2	3
(5) Summarizing ideas in my own words	1	2	3
(6) Understanding the relationship between ideas	1	2	3
(7) Remembering what I have read	1	2	3

Rate how much you agree with each of the following statements. Notice that some statements read “it is *hard*”, while others read “it is *easy*”. Read each statement carefully.

Reading Materials for a Difficult Course

- | | |
|-----|---|
| (1) | When reading my course textbooks, it is <i>easy</i> to understand the concepts presented. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |
| (2) | When reading a chapter in a textbook, it is <i>hard</i> for me to get started. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |
| (3) | When reading course materials, it is <i>hard</i> to identify the overall theme or topic. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |
| (4) | When reading paragraphs in my course materials, it is <i>hard</i> to pick out the important ideas. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |
| (5) | When reading course materials, it is <i>easy</i> to summarize the information in my own words. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |
| (6) | When reading course materials, it is <i>easy</i> to see the connections between ideas. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |
| (7) | When studying from my course materials, it is <i>hard</i> to learn the specialized terms or vocabulary. |
| | <div style="display: flex; justify-content: space-between; width: 100%;"> 1 2 3 4 5 </div> <div style="display: flex; justify-content: space-between; width: 100%;"> strongly disagree strongly agree </div> |

- (8) After reading my course materials, it is *easy* to remember what I have read.
- | | | | | |
|----------|---|---|---|----------|
| 1 | 2 | 3 | 4 | 5 |
| strongly | | | | strongly |
| disagree | | | | agree |
- (9) When my class is asked to read course materials, I do better than most people would.
- | | | | | |
|----------|---|---|---|----------|
| 1 | 2 | 3 | 4 | 5 |
| strongly | | | | strongly |
| disagree | | | | agree |
- (10) When my class is asked to remember information from course textbooks, I do better than most people would.
- | | | | | |
|----------|---|---|---|----------|
| 1 | 2 | 3 | 4 | 5 |
| strongly | | | | strongly |
| disagree | | | | agree |

Appendix H
The Persistence Subscale

Persistence Scale

(With items from the Goals Inventory and Volitional Components Inventory)

Item Description	Previous Item Label	Coeff. Alpha
I give up too easily when faced with a difficult task	GI #25 / VCI #9	.7782
I persevere even when I am frustrated by a task	GI #3 / VCI #2	
I try even harder after I fail at something	GI #6	
I continue with the task though I feel the urge to stop	VCI #4	
I work hard even when I don't like a class	GI #9 / VCI #7	
Even when study materials are dull and uninteresting, I keep working until I finish	VCI #20	
I feel committed to staying on track with a task even though it does not give me positive feelings	VCI #29	
I lose my drive after a failure	VCI #51	
When I have trouble with a task I keep working at it until I figure out what to do	VCI #59	
When work is hard I either give up or study only the easy parts	VCI #17	
I feel compelled to go on in order to avoid unpleasant consequences	VCI #25	

Appendix I

Revised Learning Goals Subscale

Learning Goals Subscale

Item Description	Previous Item Label	Coeff. Alpha
I enjoy challenging school assignments	GI #1	.8134
Academic success is largely due to effort	GI #4	
Sticking with a challenging task is rewarding	GI #5	
I adapt well to challenging circumstances	GI #7	
I am very determined to reach my goals	GI #10	
Personal mastery of a subject is important to me	GI #11	
I work very hard to improve myself	GI #12	
I am naturally motivated to learn	GI #16	
I prefer challenging tasks even if I don't do as well at them	GI #17	
Every student can be a successful learner	GI #18	
My grades do not necessarily reflect how much I learn	GI #20	
Mistakes are a healthy part of learning	GI #21	
I feel most satisfied when I work hard to achieve something	GI #22	

Appendix J

Revised Performance Goals Subscale

Performance Goals Subscale

Item Description	Previous Item Label	Coeff. Alpha
It is important for me to get better grades than my classmates	GI #2	.7052
I am willing to cheat to get a good grade	GI #8	
I like others to think I know a lot	GI #13	
Learning can best be judged by the grade one gets	GI #19	
I would rather have people think I am lazy than stupid	GI #23	
It is important to me to always do better than others	GI #24	

Appendix K
Revised Goals Inventory

•

Goals Inventory (with persistence and motivation / emotion control items removed)

Item Description	Previous Item Label	Coeff. Alpha
I enjoy challenging school assignments	GI #1	.7901
It is important for me to get better grades than my classmates	GI #2	
Academic success is largely due to effort	GI #4	
Sticking with a challenging task is rewarding	GI #5	
I adapt well to challenging circumstances	GI #7	
I am willing to cheat to get a good grade	GI #8	
I work hard even when I don't like a class	GI #9	
I am very determined to reach my goals	GI #10	
Personal mastery of a subject is important to me	GI #11	
I work very hard to improve myself	GI #12	
I like others to think I know a lot	GI #13	
I am naturally motivated to learn	GI #16	
I prefer challenging tasks even if I don't do as well at them	GI #17	
Every student can be a successful learner	GI #18	
Learning can best be judged by the grade one gets	GI #19	
My grades do not necessarily reflect how much I learn	GI #20	
Mistakes are a healthy part of learning	GI #21	
I feel most satisfied when I work hard to achieve something	GI #22	
I would rather have people think I am lazy than stupid	GI #23	
It is important to me to always do better than others	GI #24	

Appendix L

Motivation / Emotion Control Strategies Subscale

Motivation / Emotion Control Strategies Subscale

Item Description	Previous Item Label	Coeff Alpha
I put myself in the mood I need in order to keep on track	VCI 1	.9445
I am able to draw something positive from a task that was originally unpleasant	VCI 3	
I put myself in a happy mood because that will help me to make much better progress	VCI 6	
In spite of the difficulties, I think of those aspects of the task that I like	VCI 8	
I think of the unpleasant consequences of not having done the task	VCI 10	
I do something that helps me to get rid of an unpleasant mood that is blocking me from progressing towards the goal	VCI 11	
I think about the positive aspects of the goal when my determination to persevere weakens	VCI 12	
I deliberately think of pleasant things in order to become more relaxed	VCI 15	
I deliberately focus on the positive aspects of a difficult activity	VCI 16	
I manage my mood so that my work flows more easily	VCI 19	
I know how to increase my interest in a dull activity	VCI 21	
I make an effort to cheer up so that things will work out better	VCI 23	
I know exactly how to increase my interest in a task	VCI 24	
I imagine doing the task well	VCI 27	
I see the good in a difficult task that I'm doing	VCI 28	
I imagine how good I will feel after having finished the task	VCI 30	
I list for myself all the things I achieved en route towards my goal	VCI 32	
I reward myself when I have successfully completed a difficult task	VCI 34	
I think about how good it will feel to have achieved the goal	VCI 35	
I look back at all the things I have already accomplished	VCI 37	
I take a break after I have finished all or part of a difficult task	VCI 39	
I reward myself for putting in the effort	VCI 40	
I pat myself on the back for even small accomplishments	VCI 42	
I do something nice for myself when I have made progress on a difficult project	VCI 44	
I enjoy the pleasant thought of reaching the goal soon	VCI 45	
I recall the steps I have already taken that have moved me closer toward my goal	VCI 47	
I take the time to appreciate my success in a difficult activity	VCI 49	
I fantasize about pleasant things to do once I have reached a goal	VCI 50	
I feel proud of myself after having mastered a difficult step towards my goal	VCI 52	
I spend a long time thinking of possible reasons for a failure	VCI 53	
After having reached a goal, I reward myself for my efforts	VCI 54	
I say to myself: When you are done with it, you can reward yourself	VCI 55	
Once in a while I remind myself of the little successes I have already achieved	VCI 57	
I allow myself time off after having put out effort	VCI 60	
I think of the nice things that will happen once I reach my goal	VCI 61	
I celebrate each successful step to the goal	VCI 64	
I take a deep breath and count to ten before returning to the task	VCI 65	
I follow a big effort with rest and relaxation	VCI 67	

Appendix M

Motivational / Emotional Problems Subscale

Motivation / Emotion Problems Subscale

Item Description	Previous Item Label	Coeff. Alpha
I imagine how awful a failure will be	VCI 5	.9407
I feel as if there's a lot to dislike about the project and nothing to gain from it	VCI 13	
I let myself be haunted by a guilty conscience	VCI 14	
I think about what would happen if I cannot cope	VCI 18	
I imagine how awful I would feel if I cannot accomplish my goal	VCI 22	
I focus on how it would feel to fail	VCI 26	
I have "paralyzing" thoughts as soon as something goes wrong	VCI 31	
I find myself brooding after a failure	VCI 33	
I find it hard to start all over again after a failure	VCI 36	
I immediately think of past failures after a setback	VCI 38	
I lose all of my energy when threatened by a failure	VCI 41	
I am plagued by worry when something doesn't turn out right	VCI 43	
I feel paralyzed by a fear of failure	VCI 46	
I need a long time to forget a setback	VCI 48	
I feel unable to do anything at all for a while after having suffered a setback	VCI 56	
I feel bad for a long time after a setback	VCI 58	
I mentally freeze up out of fear of further failures	VCI 62	
I feel paralyzed by a setback	VCI 63	
I constantly think of a previous failure	VCI 66	
It bothers me the whole day when I make a big mistake	GI 14	
I feel angry when I do not do as well as others	GI 15	

Appendix N

Revised Academic Achievement Measure

Please read passages 1 and 2 below and answer the questions that follow.

PASSAGE NUMBER 1

The railroads introduced new hordes of land-crazy people, and the new Americans migrated like locusts across the continent until the western sea created a boundary to their movements. Coal and copper and gold enticed them further; they savaged the land, gold-dredged the rivers to skeletons of pebbles and debris. An aroused and fearful government manufactured laws for the distribution of public lands—a quarter section, one hundred and sixty acres, per person—and a claim had to be proved and improved; but there were ways of getting around this, and legally. My own grandfather proved out a quarter section for himself, proved out one for his wife, proved out one for each of his children, and, I suspect, proved out acreage for children he desired and expected to have. Marginal lands, of course, suitable only for grazing, went in larger pieces; one of the largest land-holding families in California took its richest holdings by a trick—by law a man could take up all the swamp or water covered land he wanted. The founder of this great holding mounted a scow on wheels and drove his horses over thousands of acres of the best bottom land, then reported that he had explored it in a boat, which is true, and confirmed his title—I need not mention his name: his descendants will remember.

1. Write a sentence that expresses the main idea of this passage. _____

2. In this passage the author is describing
 - (a) how to cheat the government of land taxes;
 - (b) the accumulation of his family fortune;
 - (c) the settlement of Western lands;
 - (d) how new settlers crowded the railways
3. Describe how the large land owner, mentioned in the passage, obtained his land. ____

4. The “scow” that the author refers to in the passage was
 - (a) a covered wagon;
 - (b) a trolley;
 - (c) a plough;
 - (d) a small boat.

5. In the first sentence of the passage, the author refers to the new Americans as moving across the country like "locusts." What image does this comparison convey about their behaviour? _____

6. Based on the author's description of the large landholder's plan for acquiring land, the author probably thinks that the large landholder was actually

- (a) malicious;
- (b) baleful;
- (c) untrustworthy;
- (d) clever.

Explain your reasoning. _____

7. In making laws governing the distribution of public lands, the government was attempting to

- (a) stop people from ruining the land, by regulating its use;
- (b) deny the new settlers the right to settle on public lands;
- (c) encourage farmers to raise crops for the new Western populations;
- (d) discourage other hopeful settlers from coming West and settling on public land.

For each italicized word from the passage, choose the best definition according to the context in which it appears.

8. *hordes*

- (a) castes;
- (b) communities;
- (c) kinds;
- (d) throngs

9. *dredged*

- (a) filled;
- (b) stirred;
- (c) drained;
- (d) searched

10. *savaged*

- (a) attacked violently;
- (b) badly farmed;
- (c) trampled ferociously;
- (d) deceitfully stole

PASSAGE NUMBER 2

The history of the word “creole” itself dates back to the slave trade. After slaves had been gathered from many parts of Africa, they were imprisoned in West African camps, euphemistically called “factories,” for “processing” before being shipped out to “markets”. The managers of the factories took great care to separate slaves who spoke the same tribal language, thereby lessening the danger of revolt because the slaves were prevented from communicating with one another. And further separation on the basis of language was made by the purchasers in the New World. As a result, the only tongue the slaves had in common was a pidgin that originated in West Africa and developed in the colonies to which they were sent. These pidgins became entrenched, and after a generation or two they began to expand to meet the needs of the slaves’ way of life. The slaves’ new language became known as “creole,” a French word meaning “native” which in turn was derived from Portuguese.

Nowadays “creole” refers to any language that developed from a pidgin by expansion of vocabulary and grammar and became the mother tongue for many speakers in a community. The largest center of creole languages today is undoubtedly the Caribbean area, with more than six million speakers. Several million additional people speak creoles in West Africa, South Africa, and Southeast Asia, and probably another three million people around the world use various pidgin languages. Clearly, pidgin and creole are not rare or isolated phenomena; they number more speakers today than do such languages as Dutch, Swedish, or Greek.

1. Write a sentence that expresses the main idea of this passage. _____

2. The author’s primary purpose in this passage is to
 - (a) account for the variety in slave languages;
 - (b) explain how the slaves were treated in the New World;
 - (c) trace the history of the word “creole”;
 - (d) list the various pidgin languages in the world

3. What is the main reason a pidgin language emerged among New World slaves? ____

4. In the present time, the term “creole” refers to
 - (a) any language originating in the Caribbean;
 - (b) the “native” language of the New World;
 - (c) a pidgin language from Portugal;
 - (d) an expanded pidgin language

5. On the basis of the evidence in the passage, is the following phrase true or false.
 "When slaves arrived in the New World they spoke creole".

True _____ False _____

Explain your reasoning _____

6. Which of the following statements is an accurate inference
- (a) pidgin is a language with a simplified grammar and vocabulary;
 - (b) a creole language cannot be a speaker's mother tongue
 - (c) creole has a simplified grammar and vocabulary;
 - (d) the pidgin language came from Portugal

Explain your reasoning. _____

7. In describing the West African camps, the author uses the words "factories", "processing", and "markets" to indicate that
- (a) the camps were industrialized;
 - (b) slaves were treated like merchandise;
 - (c) camp managers were rich industrialists;
 - (d) slave merchants were unionized

For each italicized word from the passage, choose the best definition according to the context in which it appears.

8. *euphemistically*
- (a) pragmatically worded;
 - (b) functionally worded;
 - (c) realistically worded;
 - (d) tastefully worded

9. *entrenched*
- (a) ingrained;
 - (b) widespread;
 - (c) complex;
 - (d) varied

10. *thereby*
- (a) afterward;
 - (b) preliminarily;
 - (c) consequently;
 - (d) further.