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THE ROLE OF TASK- AND EGO-INVOLVING GOALS AND PERCEIVED ABILITY OF SELF-REGULATORY FACTORS DURING A SIMPLE MOTOR TASK

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THE ROLE OF TASK- AND EGO-INVOLVING GOALS AND PERCEIVED ABILITY ON SELF-REGULATORY FACTORS DURING A SIMPLE MOTOR TASK

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ABSTRACT

THE ROLE OF TASK- AND EGO-INVOLVING GOALS AND PERCEIVED ABILITY ON SELF-REGULATORY FACTORS DURING A SIMPLE MOTOR TASK

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Lori A. Gano-Overway

Athletes engage in a variety of self-regulatory actions, however, upon observation of any sport practice, one will notice that individual athletes differ in their use of self-regulatory processes. In the face of failure, these self-regulation differences can become even more pronounced. There are many reasons that can account for differentiation in self-regulatory behavior among athletes; however, one important reason is the motivational goals adopted by the individual (Covington, 1998; Duda & Hall, 2001; Garcia & Pintrich, 1994). Therefore, this study set out to examine experimentally the influence of ego- and task-involving goals on athletes' self-regulation when experiencing failure at a motor task. Additionally, it was of interest to examine how perceived ability may interact with achievement goals to influence self-regulation failure. Individuals in the task-involving condition, regardless of perceived ability, were hypothesized to engage in more effective self-regulatory responses than ego-involved participants. Differences, however, were expected among high and low ability individuals in the ego-involving condition. The participants in this study were 95 male and 76 female high school age athletes (M age = 15.79, SD = 1.44) enrolled in physical education classes from several Midwest schools. The student-athletes were asked to complete a short questionnaire and participate in a computer task under either task- or ego-involving conditions. The task outcome was manipulated to elicit a failure response. The participants then completed a set of self-

regulation measures and were debriefed. The failure manipulation was successful; however, the goal involvement manipulation was not as effective as anticipated. The manipulation check items revealed that the two achievement goal conditions only differed on their level of ego involvement with those in the ego-involving condition having higher levels of ego involvement. This was further supported by those in the ego-involving condition having a greater frequency of normatively based sources of self-efficacy. However, examination of these two achievement goal conditions revealed no support for the hypotheses. However, partial support was achieved for excuse making, in that task-involved males were found to make fewer excuses than ego-involved males. Given the ineffectiveness of the achievement goal manipulation, alternative analyses were also conducted examining whether the likelihood of adopting the task- or ego-involving goal influenced self-regulatory outcomes. These results revealed that athletes who were more likely to adopt the task-involving goal had higher levels of enjoyment during the task and made fewer self-defeating thoughts. Additionally, athletes who were more likely to endorse the ego-involving goal were more likely to set unrealistic goals. Further, exploratory analyses involving the athletes' goal orientation revealed that a task orientation positively predicted strategy use and enjoyment. This research provides some initial tentative support that emphasizing a task-involving goal may help athletes effectively self-regulate following failure.

"A refined ability to learn from failure and to grow through losses is necessary to achieve excellence in any human endeavor."

from Terry Orlick's "In Pursuit of Excellence"

Dedicated to my father who for many years has instilled in me this lesson.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

Nature of the Problem

In the sport domain, athletes spend a great deal of time expending effort toward training, improving skills, and refining strategies in preparation for competitive events. Although directed by a coach, many activities in which the athlete engages are self-directed. For example, when given a training schedule for the day, athletes decide how much effort to exert, what to focus on during practice, what strategies to employ, and how to evaluate their performance. These activities are considered to be a part of the self-regulation process. Self-regulation is a self-directed process in which a set of learned cognitions, behaviors, and emotional responses is utilized to achieve a valued and accurate goal in an environment under the individual's control (Heatherton & Ambady, 1993; Schunk, 1994; Zimmerman, 1989, 1994). The general self-regulatory process involves the individual possessing a goal, employing action toward achieving that goal, monitoring, evaluating, and reacting to those actions and then adjusting the actions through learning or practice strategies to help one come closer to the achievement of the goal (Schunk, 1996a). In general, athletes spend a great deal of time engaged in such self-regulatory activities to help them achieve greater performance levels.

Upon observation of any sport practice one will notice that individual athletes engage in varying degrees of self-regulation and use an array of self-regulatory practice strategies. One athlete may stay after practice and work on a weakness while another athlete may

have to be told several times in practice to focus on correcting her technique with no notable improvement. In the face of failure or adversity, these self-regulation differences can become even more pronounced. Some athletes evaluate their failure, decide what needs to be altered in the future, and focus their effort on improving their weak area. Other athletes may seek to blame others or make excuses for their failure, place less importance on sport and, therefore, try less or withdraw altogether. Given that failure is inevitable in sport, it is important to help athletes deal with failure more appropriately. Therefore, we must understand what accounts for differences in individuals' abilities to deal with failure, particularly from a self-regulation standpoint. Although, what accounts for these differences is a complex process of personal and social factors, the purpose of this research is to look at one piece of the puzzle, namely, the motivational processes within the individual. Therefore, this research examined the influence of achievement goal theory and self-perceptions on self-regulatory processes under failure conditions.

Achievement Goal Theory

Achievement goal theory is a social cognitive model in which conceptions of ability, represented as achievement goals, are used to define success and failure or judge competence in achievement settings (Ames, 1992a; Duda, 1993; Dweck, 1999; Nicholls, 1984, 1989). Within this conceptual framework, the individual interprets competence in two main ways representing task- or ego-involving goals (Nicholls, 1984, 1989). Task-involved goals are based on skill mastery and self-referenced ability. Therefore, feelings of competence coming from personal accomplishments and applying effort to a task is seen as leading to more learning and greater competence. Ego-involved goals are grounded in

a normative comparison of ability. The ego-involved individual strives to demonstrate higher ability relative to others and, therefore, learning and mastery become a means to the end goal of demonstrating normatively high ability. Achievement goal theorists have contended that these goals or conceptions of ability will influence individuals' thoughts, feelings, and behaviors in achievement settings, including self-regulatory activities.

How Achievement Goal Theory can Influence Self-Regulatory Processes

Social cognitive theorists (Bandura, 1986; Schunk, 1996a; Schunk & Zimmerman, 1996; Zimmerman, 1989) suggest that self-regulation should be seen as a triadic reciprocality between the person, her/his behavior, and the environment. Each of these three may have differing levels of influence depending on the nature of the situation and are classified into three general classes of influences (i.e., behavioral, personal, environmental). Of interest here, is how the behavioral influences, which represent the core of the self-regulation process, is influenced by environment and personal factors. These personal and environmental factors can make the difference between effective and ineffective self-regulation. As Bandura (1987) observes, "When people fail to fulfill a challenging standard, some become less sure of their efficacy, others lose faith in their capabilities, but many remain unshaken in their belief that they can attain the standard (p. 48)." The choice that is made depends on several personal and environmental factors. The focus here is to highlight how achievement goals adopted by the individual (a personal factor) or emphasized in the situational context may influence the self-regulation process.

The basis of the achievement goal theory is that individuals define their success and failure experiences in conceptually different ways. Additionally, achievement goal

theorists suggest that the way individuals choose to judge their competence creates a meaningful framework under which they interpret their world (Duda, 1993; Dweck, 1991; Nicholls, 1989). Therefore, how individuals approach and engage in the process of self-regulation should be directly related to their goal perspectives. From a theoretical and empirical standpoint, researchers suggest that one's goal perspective can influence the type of goal standard used in the self-regulatory process, lead to distinct responses to failure, and determine the quality of self-regulatory strategies.

First, the type of goal standard used in the self-evaluation process is predicted to be influenced by one's goal perspective and therefore influence the self-regulatory response. Given that ego-oriented individuals focus on achieving normatively high ability, these individuals will have a goal standard of being one of the most able athletes and will monitor their level of ability in comparison to others. Therefore, when comparing their current performance to the goal standard, these individuals may not recognize a situation that requires a self-regulatory response because their goal standard is based on achieving normatively high ability rather than their own peak performance (Kirschenbaum, 1987).

Second, given the different meanings of effort and ability within the two goal perspectives, each goal perspective is hypothesized to have a distinct response to failure (Ames, 1984; Diener & Dweck, 1978; Dweck, 1999; Dweck & Leggett, 1988; Elliott & Dweck, 1988; Miller & Hom, 1990; Miller & Klein, 1989). For task-oriented individuals, failure is attributed to lack of effort which engenders a dissatisfaction with their current performance. However, their attention turns toward controlling their effort and trying alternative effort based strategies. Overall, regardless of the level of ability at the task, the

focus during performance is on making a personal improvement to reduce the discrepancy between actual performance and the set standard by systematically altering one's use of strategies. A very different response is observed with ego-oriented individuals. The ego-oriented individuals interpret failure as implicating them as low ability. This leads to negative affective responses and self-defeating thoughts which limit the attentional resources that can be utilized for the task at hand. Additionally, failure will negatively influence the use of effort and strategy use since the person will perceive that low ability, which is stable and uncontrollable, cannot be changed by engaging in self-regulatory strategies (Cury, Biddle, Sarrazin, & Famose, 1997).

A prime example of these contentions is the work on learned helplessness patterns among children conducted by Diener and Dweck (1978). These researchers observed mastery and helpless children engaging in a difficult task. They found that helpless oriented individuals (similar in ways to an ego orientation) were more likely to experience a reduction of effort at a task and use more unreasonable strategies such as using task-irrelevant talk (e.g., talking about success in another domain) to bolster their image in another way, statements of negative affect (e.g., stating that they did not like the task) or not using any effective problem solving strategies (e.g., always choosing the answer on the right hand side) under failure conditions. In contrast, mastery-oriented children (similar in ways to a task orientation) viewed failure as a challenge to overcome by using self-regulatory strategies (i.e., self-instruction or self-monitoring), offering positive statements to themselves (e.g., believing that they could overcome the obstacle), sustaining problem solving strategies or coming up with new ones, and sustaining positive affect.

Research in the sport domain has found that a task orientation is associated with the belief that success is the result of hard work and putting forth effort, attributions to effort following a performance outcome, and satisfaction with sport performance; whereas, an ego orientation is correlated with work avoidance, greater boredom in sport, and the belief that success in sport occurs by possessing high ability and using deceptive tactics (Duda, Fox, Biddle, & Armstrong, 1992; Duda & White, 1992; Newton & Duda, 1993; Newton & Duda, 1994). Additionally, Cury and his colleagues (Cury, Biddle, Sarrazin, & Famose, 1997; Cury, Famose, & Sarrazin, 1997; Cury & Sarrazin, 1998) have found that task-oriented students who are engaged in a sport task exhibit more adaptive self-regulatory responses than ego-oriented students with low ability. Specifically, ego-oriented individuals with low ability persisted less following failure and obtained feedback that provided normative information rather than information that could help them enhance their future performance.

Finally, one's goal perspective is also postulated to influence the quality of self-regulatory strategies with task-involving goals being associated with more deep processing strategies (Ames & Archer, 1988; Dweck & Leggett, 1988; Meece, 1994; Nicholls, 1984; Nicholls, Patashnick, Cheung, Thorkildsen, & Lauer, 1989; Pintrich & Garcia, 1991). For the person adopting an ego-involving goal, the concern is with demonstrating normatively high ability; therefore, learning and improving are only important as a means to achieve the end goal of exhibiting superior performance. Additionally, in relation to effort and ability, an ego-oriented person believes that when effort has to be increased then one is not able. Therefore, an ego orientation is predicted to be associated with strategies that require less

effort but will help achieve their end goal. On the other hand, a task-involving goal has effort and ability positively related. Further, the end goal for a task-oriented person is to master skills and develop competencies. Therefore, self-regulatory processes are believed to focus on learning as an end goal and utilizing effort based strategies to achieve goals (Nicholls, 1984).

Based on self-report data, a task orientation has been positively associated with effective learning strategies in the educational setting including deep processing strategies, elaboration/organization strategies, critical thinking strategies, resource management strategies, help-seeking, effort attributions, and a preference for challenging activities. In contrast, an ego orientation was either not related to the use of cognitive strategies or positively associated with rehearsal strategies (Ames & Archer, 1988; Meece, Blumenfeld, & Hoyle, 1988; Miller, Behrens, Greene, & Newman, 1993; Nicholls, et al., 1989; Pintrich & Garcia, 1991; Wolters, 1998; Wolters, Yu, & Pintrich, 1996). The use of self-regulatory strategies is also apparent in sport. Lochbaum and Roberts (1993) have found a task orientation to be positively related to adaptive practice strategies, and Newton and Duda (1994) found that task-oriented bowlers reported using considerably more strategies to help them practice than ego-oriented bowlers. Ommundsen and Roberts (1996) found that a strong task orientation was positively associated with understanding that practice was important to learning, listening to the coach, and persisting in practice situations. Finally, Thill and Brunel (1995) also examined the effect of goal orientations on the use of deep versus surface level processing strategies among soccer players under positive, negative, or no feedback conditions. When positive or negative feedback was introduced

during the second week, Thill and Brunel (1995) found that task-oriented players used more monitoring strategies.

The adoption of a particular achievement goal creates a meaningful interconnection between the individual's cognitions, feelings, and behavioral responses in achievement settings (Duda, 1993; Dweck & Leggett, 1988; Nicholls, 1984). The research noted above suggests that this interconnectedness between one's goal and other processes impacts the self-regulatory process at several levels. However, more work needs to be done to corroborate and extend the current findings by examining the self-regulation process in a more comprehensive way (Crews, Lochbaum, & Karoly, 2001). Further, it is particularly important to examine this process when the individual experiences a failure in performance. Research examining the self-regulation process under failure conditions has begun to show differential effects between task- and ego-oriented individuals in the physical activity context. However, little work has examined how athletes' self-regulation process may be influenced when placed in either an ego- or task-involving condition and experiencing a failure. Therefore, this study set out to examine experimentally the influence of ego- and task-involving goals on athletes' self-regulation when engaged in a simple motor task. Self-regulation was broadly defined to incorporate the use of self-monitoring and self-evaluation of the execution of a skill, cognitive, affective, and behavioral self-reactions as well as the use of deep processing strategies that are under the individual's control. Specifically, it was hypothesized that athletes, when faced with failure within a task-involving situation, would use more effort based attributions, experience greater enjoyment in the task although they may be dissatisfied with their failure, use more

deep processing strategies, engage in greater use of positive statements and on-task thoughts, and have fewer off-task thoughts and negative statements than those in the ego-involving condition.

The Role of Self-Perceptions

Achievement goals do not operate in isolation to influence the self-regulatory process, rather the level of perceived ability interacts with achievement goals to influence the self-regulatory response. Identifying how individuals perceive their efficacy, ability, or competence in an achievement situation or general levels of self-esteem can determine whether the individual will choose the activity, persist at the activity, and enjoy their participation (Bandura, 1990; Harter, 1978; Weinberg, Gould, & Jackon, 1979; Weinberg, Gould, Yukelson, & Jackson, 1981; Weiss, 1987; Weiss & Ebbeck, 1996). High levels of self-esteem, perceived competence or ability, and self-efficacy have lead to adaptive motivational responses such as persistence, intrinsic motivation, and greater use of cognitive strategies. However, for low self-esteem individuals, the motive for self-protection may cause them to fail to self-regulate appropriately. Self-protection motives occur when the individual is faced with a perceived threat to the self and rather than expose inadequacy, the individual seeks to protect her/his self-worth through a variety of strategies including self-handicapping, setting inaccurate goals, choking under pressure, or developing a learned helpless pattern (Baumeister, 1997; Covington, 1998; Heatherton & Ambady, 1993; Tice, 1993).

Although it is true that individuals with higher levels of self-efficacy, competence, or self-esteem may engage in adaptive self-regulatory processes, they may fail to self-regulate

(Baumeister, 1997). This self-regulation failure may be the result of using inappropriate strategies such as self-handicapping, misguided persistence, and improper goal setting. In relation to self-handicapping, Tice (1993) has found that both high and low self-esteem individuals utilize self-handicapping but for differing reasons. She found that high self-esteem individuals used self-handicapping (decreased effort) to increase their credit for success (making them look extremely talented) while low self-esteem individuals used self-handicapping to protect the self from what to them seemed like an inevitable failure. Therefore, both high and low self-esteem individuals forgo the use of effort strategies which can be detrimental to performance. High self-esteem people are also more likely to engage in misguided persistence which involves persisting in the face of inevitable failure. Although persisting after initial failure at a valued task is adaptive, when the task is not solvable the more effort expended is just a greater cost to the individual. Closely related to overpersistence is research which suggests that those high in self-esteem set overly high goals after initial failure. Individuals, who set overly high goals, may be overcompensating for the loss and potential threat to self by setting unrealistic and over-challenging goals that in the end cannot be achieved (Baumeister, 1997; Baumeister, Heatherton, & Tice, 1993). Heatherton and Ambady (1993) also suggest that individuals who have self-esteem which is too high may fail to self-regulate properly because of positive illusions (unrealistic positive view of self). Therefore, they set inaccurate goals based on their overconfidence which can lead to failure. So it seems that high self-esteem individuals are also vulnerable to self-regulation failure. Given that both high and low self-esteem individuals are at risk

for self-regulation failure (even if it is for different reasons), researchers sought a better explanation to help students and athletes avoid self-regulation failure.

Baumeister (1997) contended that threats to the self or as he terms "threaten egoism" can result in emotional distress due to an impending loss of self-esteem, which in turn negatively influences self-regulation. Covington (1998) also suggested that some individuals would compromise their achievement motive to protect or defend their self-worth when faced with an environment (or perception of the environment) which is competitive or threatening to the self. If this is the case, when the threat is removed, high and low self-esteem individuals should pursue effective self-regulation. Research has shown such a pattern. For example, Spencer, Josephs, and Steele (1993) found that when the threat was removed, by providing anonymous feedback or suggesting that the characteristic was stable, low and high self-esteem individuals both pursue self-enhancement. Baumeister, Heatherton, and Tice (1993) also found that high and low self-esteem individuals did not differ in their goal setting when there was no threat to ego. Therefore, the contention could be made that task-involved individuals, who perceive no threat to the self, would be more effective at self-regulating than ego-involved individuals regardless of esteem or competence levels.

Achievement goal theorists (Duda, 1993; Dweck, 1999; Jagacinski & Nicholls, 1987, 1990) also suggest that perceived ability will have differential predictions based on the achievement goal that is adopted by the individual. Specifically, Dweck and her colleagues (Dweck, 1999; Dweck & Leggett, 1988; Elliott & Dweck, 1988) state that individuals who adopt a learning (task-involving) goal will have positive motivational

experiences regardless of ability level. However, students who emphasize a performance (ego-involving) goal will experience detrimental effects (e.g., persist less, experience negative affect) when they possess low ability. Performance-oriented (ego-oriented) individuals with high ability are less likely to experience difficulties in the short term but over the long term, problems may occur. In support, Elliott and Dweck (1988) found that performance-oriented students with low perceived ability were less interested in challenging tasks, persisted less, and were more likely to have negative affective responses than performance-oriented students with high perceived ability or than in subjects with learning goal orientations regardless of ability. Yet, when examined over a longer period of time, involving a transition from sixth to seventh grade, Henderson and Dweck (1990) found that entity theorists (or children who believed that ability was stable over time, similar in some ways to a performance or ego orientation) with high ability were more likely to show a decline in achievement and to doubt their intelligence if they received bad grades.

Expanding into sport and exercise psychology, Hall (1989 as cited in Duda, 1993) in an experimental design manipulated an individual's perceived competence in a task- and ego-involving condition on a stabilometer task. The results revealed that low perceived competent individuals in the ego-involving group were more likely to have maladaptive achievement cognitions. A study conducted by Cury, Biddle, Sarrazin, and Famose (1997) examined how task or ego involvement among individuals with differing levels of perceived ability would influence the investment of learning on a basketball dribbling task. Investment of learning was found to be the lowest among ego-involved students with low

perceived ability. Additionally, an examination of effort attributions revealed that task-involved students made more ascriptions to effort than ego-involved students. When placed in a regression analysis, effort attributions did not predict observed effort on the part of ego-involved students, regardless of ability level, suggesting that these students engaged in self-protection. Therefore, these students may have tried hard but when questioned, downplayed their use of effort in order to protect themselves in the midst of a threat apparent in the ego-involving condition. Finally, Cury and Sarrazin (1998) examined the influence of goal orientations and perceived ability in choosing a difficult task (in this case obstacle courses of varying difficulty), perseverance at a basketball test following failure, and use of task relevant information when engaging in the tasks. The results revealed that ego-oriented individuals with low perceived ability were more likely to choose very easy or very difficult tasks, less likely to persevere after a failure, and less likely to utilize task relevant information than task-oriented persons.

In conclusion, it seems that task-involving goals encourage individuals to utilize effective self-regulation strategies and reduce the chance of misregulation or underregulation regardless of one's level of perceived ability. However, perceived ability seems to be a mediating factor when one focuses on normative demonstration of ability. Within most of these studies, however, the ineffective use of self-regulatory strategies was found only among ego-involved individuals, particularly among those who possessed low ability. However, achievement goal theorists (Duda, 2001; Dweck, 1999; Nicholls, 1989) do suggest that ego-involved individuals even if they are high in perceived ability are more susceptible to motivational problems over time. Additionally, theoretical and some

empirical research, noted above, suggests that high self-esteem individuals can engage in self-regulation failure when their ego is threatened. Yet, current studies within the sport domain have not attempted to study variables that may reveal the self-regulation failure among high ability, ego-involved individuals. In an attempt to fill this gap in the research, the second purpose of this study was to examine the interaction effects of perceived ability and achievement goals on the self-regulation process. Because the purpose was to examine self-regulation failure among high and low ability, ego-involved individuals, the variables of goal setting, excuse making, persistence, and effort ascriptions following failure were examined. It was contended that individuals placed in an ego-involved condition would utilize ineffective strategies that were in line with their level of ability. Specifically, ego-involved individuals with low ability are expected to withdraw their effort at the task, persist less at the task, and try to hide their true ability by engaging in excuse making. On the other hand, ego-involved persons with high ability would set more discrepant goals (setting a goal unrealistically low for their reaction time performance). In contrast to the ego-involved individuals, task-involved participants, regardless of ability level, would put forth effort at the task, set less discrepant goals, and use fewer excuses when faced with failure.

Statement of the Problem

Failure is inevitable in sport. How young people deal with failure in sport in many ways will determine their motivation within sport, their enjoyment of the activity, their learning experiences, and their continued participation in the activity. The ability to deal with failure is directly linked to the self-regulatory processes employed by the athlete.

Given that researchers are still left with the question as to why some individuals do not engage in the general self-regulatory process and, more importantly, when individuals do engage, choose different self-regulatory strategies, the goal of this study was to examine how achievement goals and perceived ability may explain differences in self-regulatory processes and self-regulation failure.

Achievement goal theory suggests that an achievement goal, task- or ego-involving, can influence the individual's cognitions, feelings, and behavioral responses in achievement settings (Duda, 1993, 1996; Dweck & Leggett, 1988; Nicholls, 1984, 1989). Given this interconnectedness between one's goal and other processes, it was contended that achievement goals would influence the self-regulation process at several levels. Therefore, this study set out to experimentally examine the influence of ego and task-involving goals on athletes' self-regulation when experiencing failure on a simple motor task (see Table 1). Goal involvement was manipulated by encouraging the participant to adopt a particular goal while engaging in the task. This manipulation was emphasized by providing feedback to the participants that was in line with the particular goal. Although it is important to understand self-regulation under both success and failure conditions, a failure condition was chosen for this study given the intent to help individuals deal with failure more appropriately. Additionally, much research in this area has shown pronounced differences in self-regulation between the two achievement goals under failure or task difficulty, therefore, it was believed appropriate to use a failure condition only. The failure condition was represented as an inability to meet one's goal at a reaction time task. The specific hypotheses were as follows:

Table 1

Hypothesized Relationships between Achievement Goals, Ability and Self-Regulation

Achievement Goal	*Perceived Ability*	*Self-Regulatory Response Under Failure*
Task Involvement	High & Low Ability	More effort attributions and fewer ability attributions Higher enjoyment Stable self-efficacy Greater use of self-monitoring, organizational and elaboration strategies, and on-task and positive thoughts Less use of off-task and negative thoughts Greater effort Less excuse making Less goal discrepancy
Ego Involvement	High & Low Ability	More ability attributions and fewer effort attributions Lower enjoyment Decreased self-efficacy Lower use of self-monitoring, organizational and elaboration strategies, and on-task and positive thoughts. More off-task and negative thoughts
Ego Involvement	High Ability	Greater goal discrepancy
Ego Involvement	Low Ability	Reduce effort and persistence More excuse making

1. Participants in the task-involving condition would use more effort-based attributions than those in the ego-involving condition while those in the ego-involving condition would use more ability-based attributions.
2. Participants in the task-involving condition would use more self-monitoring, self-judgement, organizational and elaboration strategies, on-task thoughts, and positive statements than those in the ego-involving condition.
3. Participants in the task-involving condition would have less off-task and negative thoughts than those in the ego-involving condition.
4. Participants in the task-involving condition would experience greater enjoyment at the task than those in the ego-involving condition.
5. Participants in the ego-involving condition would experience a larger decrease in self-efficacy at the task following failure than those in the task-involving condition.

Additionally, contentions can be made that task-involving goals seem to reduce the chance of misregulation or underregulation, regardless of one's level of perceived ability. However, perceived ability may be a mediating factor when one focuses on normative demonstration of ability. Yet, within most of research the ineffective use of self-regulatory strategies was found only among ego-involved individuals who possessed low ability. Current studies within the sport domain, however, have not attempted to study variables that may reveal the ineffective strategy use among high ability, ego-involved individuals. Given that previous research has suggested that these individuals may be at risk, the second purpose of this study was to examine the interaction effects of perceived ability and achievement goals on the self-regulation process paying particular attention to

whether high ability, ego-involved individuals experience ineffective self-regulation (see Table 1). Perceptions of ability were based on the individual's perception of their ability to react quickly in situations. High and low ability groups were then formed based on these responses. The specific hypotheses for this research question were as follows:

6. Athletes in the task-involving condition with both high and low ability along with athletes in the ego-involving conditions with high ability would make fewer excuses than the athletes in the ego-involving condition with low ability.
7. Athletes in the ego-involving condition with low ability would begin to withhold effort under failure conditions more so than the other groups.
8. Athletes in the ego-involving condition with low ability would persist less at a task under failure conditions than those in the other groups.
9. High ability ego-involved athletes would set goals that are more discrepant under the failure condition than all other groups.

Basic Assumptions

Three assumptions were made within this study. The first was that the participants in this experimental study would respond honestly to the survey instruments prior to and following the task. Second, that participants in this investigation would adopt the goal, believe the failure feedback, and believe that the consequences of the task were important enough to warrant an appropriate reaction to failure. If participants did not adopt these notions, the results could be flawed. Finally, it was assumed that levels of perceived ability would be varied enough within the sample under investigation to allow for high and low perceived ability groupings to be created.

Delimitations

Although this study attempted to broaden the understanding of self-regulation in relation to achievement goal theory, it was not without delimitations. The most severe limitation of this work was its' generalizability to true performance in the classroom or the athletic arena. Performance on a simple motor task under laboratory conditions may not allow the results of this study to generalize to a field setting. However, given the need to control achievement goals and the failure condition to understand the causal relationship between the variables under investigation, it is an important first step. Secondly, this study examined only two achievement goals noted in the literature. Although these goals tend to be the most dominant goals noted by individuals, it is important to realize that other goals may operate in achievement settings and are also in need of investigation.

Chapter 2

REVIEW OF LITERATURE

Introduction

There are many reasons that can account for differentiation in self-regulatory behavior among individuals; however, one very important reason is the motivational processes at work. This review will examine how achievement goal theory can differentially influence the process of self-regulation. It will begin by providing an overview of self-regulation and achievement goal theory followed by examining how self-regulatory processes can be influenced by achievement goals. Finally, the role of self-perceptions of ability on self-regulation will be discussed ending with the necessity to examine the interaction of achievement goals with perceived ability when examining aspects of self-regulation failure.

Self-Regulation

Self-regulation is a self-directed process in which a set of learned cognitions, behaviors, and emotional responses are utilized to achieve a valued and accurate goal in an environment under the individual's control (Heatherton & Ambady, 1993; Schunk, 1994; Zimmerman, 1989, 1994). The general self-regulatory process involves the individual possessing a goal, employing action toward achieving that goal, monitoring, evaluating, and reacting to those actions and then adjusting the actions to help one come closer to the achievement of the goal (Schunk, 1996a). For example, a swimmer may set a goal of swimming 23.3 seconds in the 50-yard freestyle. In her next meet, she will monitor her performance in the 50-yard freestyle (i.e., 23.74) and compare it to her goal standard.

Noting the discrepancy, she will engage in several self-reactions (e.g., dissatisfaction with performance, a decrease in confidence, or a realization that she needs to adjust some aspect of her performance). Although she may be dissatisfied with her performance, she may perceive that she is still capable of meeting her goal and focus on adjusting her current actions, potentially working on getting off the start quicker, to come closer to the goal standard. This will create an additional self-regulatory action of monitoring, evaluating, and responding to her performance on her starts during practice. Therefore, self-regulation examines how people manage their thoughts, feelings, and behaviors in order move from their current state to a more desired future state (Crews, Lochbaum, & Karoly, 2001).

The core of self-regulation is highlighted in Carver and Scheier's (1981, 1998) model of self-regulation which is based on self-focused attention and control theory (see Figure 1). Their cybernetic model suggests that an individual engages in a negative feedback loop in which the person becomes aware of their current situation (self-focused attention) and compares their current performance level to the desired standard. If the comparison suggests that the goal standard has not been met, there is a self-reaction to either do something or not do something to impact the environment in an attempt to bring the current state closer to the standard. If the goal is met, the negative feedback loop desists until another discrepancy is noted. Although this is the basic model of self-regulation, it has been expanded and interpreted in other theoretical frameworks as well. Two of these theoretical frameworks, social cognitive theory and information processing theory, will be discussed.

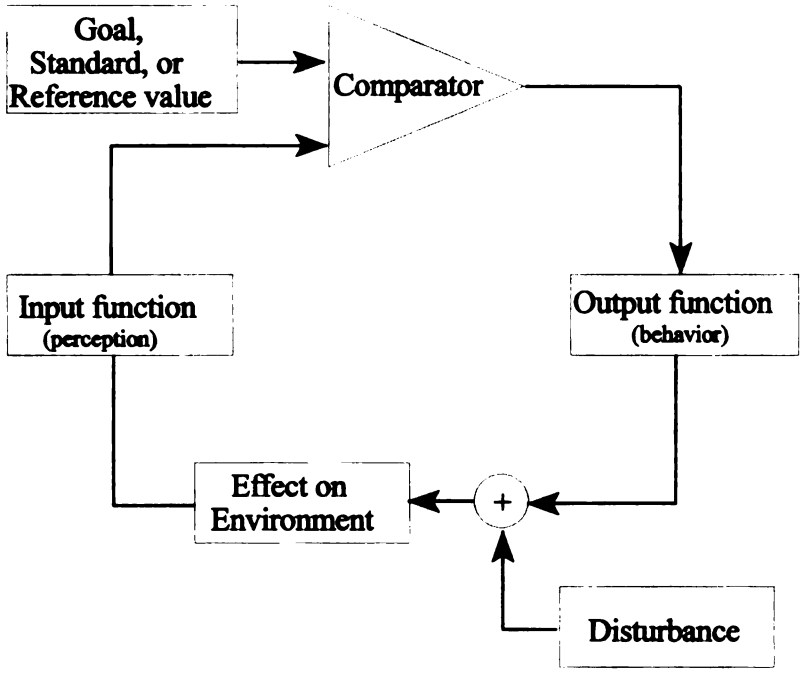


Figure 1: Carver & Scheier's (1998) Negative Feedback Loop of the Cybernetic Model of Self-Regulation.

Social Cognitive View of Self-Regulation

The social cognitive view of self-regulation based on Bandura's (1986, 1990, 1997) social cognitive theory broadens Carver and Scheier (1981, 1998) model by suggesting that self-regulation is not just a closed negative feedback loop. Thus, an individual is not perceived to shut down their self-regulation system once a goal is achieved. Further, individuals are not believed to be driven only by negative feedback or a negative discrepancy between the current goal and the goal standard. Rather, social cognitive theorists believe that the system is open in the since that individuals can impact the process and set new more challenging goals when they have achieved their goal standard thereby starting the self-regulation process by engaging in goal setting. Therefore, as Bandura (1987, 1997) suggests the self-regulation system can not only be a negative feedback loop but also a feedforward loop where people create goals to initiate motivated behavior.

Social cognitive theorists (Bandura, 1986, 1997; Schunk, 1996a; Schunk, & Zimmerman, 1996; Zimmerman, 1989) also suggest that self-regulation should be seen as a triadic reciprocality between the person, his/her behavior, and the environment. Each of these three may have differing levels of influence depending on the nature of the situation and are classified into three general classes of influences (see Figure 2).

The behavioral influences involve three subprocesses of self-regulation, that is, self-observation, self-judgment, and self-reaction (Bandura, 1990; Kanfer, 1990; Schunk, 1994; Zimmerman, 1989). Self-observation involves monitoring performance through a reporting or recording procedure which is conducted close in time to when the behavior occurred. In essence it involves paying "deliberate attention to aspects of one's behavior"

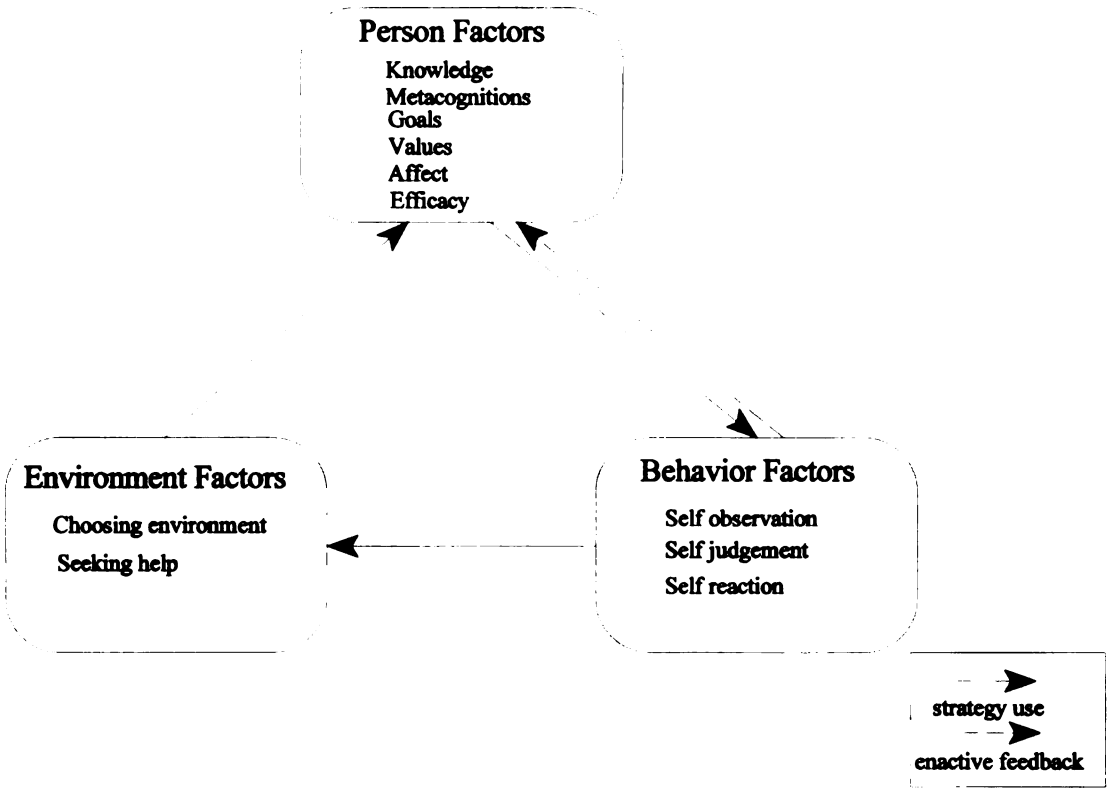


Figure 2: A Social Cognitive View of Self-Regulated Learning from Zimmerman (1989)

(Schunk, 1994, p. 76). However, self-monitoring is not only focused on behavioral outcomes associated with whether the goal is being achieved but also the cognitive or physical strategies that are in use to help bring one closer to their performance standard. Self-judgment consists of taking the observed data, in the form of the outcome and strategy use, and evaluating it against a valued absolute or subjective standard. The individual will make some judgment about their performance, positive or negative, and an attributional response. The above two processes then require that some action be taken. Therefore, self-reaction entails reacting to the evaluation of self through cognitions (e.g., acceptability of performance, efficacy thoughts, beyond or below expectations), behaviors (e.g., engaging in goal resetting, changing strategies, or altering the environment), and affect (e.g., satisfaction about progress). These three processes are believed to interact with one another as the individual engages in self-regulation.

Research does suggest that these behavioral self-regulatory processes have an impact on other motivational processes and skill performance. In relation to self-observation, Schunk (1983a) found that children who self-recorded their completion of math workbook pages or had an adult record their completion of pages while they observed, had higher levels of self-efficacy, greater mathematical skill, and increased task persistence over those who did not engage in any self-observation. Self-judgments based on set goals and social comparative information for judging success on division problems was also found to result in higher self-efficacy and greater mathematical skill than a control group (Schunk, 1983b). Combining self-observation and self-judgment, Mace and Kratochwill (1985)

found that college students decreased the number of speech nonfluencies (uhs, ers) during a nine minute speech.

In a test of the effectiveness of the self-regulation process on a motor learning task, Bandura and Cervone (1983) found that aspects of self-regulation positively influenced performance and effort expenditure. Specifically, these researchers investigated the impact goals and performance feedback (a form of self-judgment) had on effort expenditure for a cycling task. Participants who received a preset goal of increasing baseline performance by 40% and received positive feedback on their subsequent performance were found to have greater increases in their effortful performance than those in the control group or those who received goals or feedback only. Additionally, it was noted that individuals who demonstrated high dissatisfaction with high self-efficacy had greater effort expenditure than other groups. In an examination of the effects of self-recording on a dart throwing task, Zimmerman and Kitsantas (1996) found that the use of a self-recording strategy resulted in enhanced self-efficacy, greater self-satisfaction, and increased dart throwing scores. Therefore, noting the errors in one's performance was effective in bringing about positive changes in performance. Additionally, Kitsantas and Zimmerman (1998) manipulated the use of self-observation and self-evaluation among 90 female novice dart throwers. The researchers found that those who observed their performance for deficiencies had higher levels of self-efficacy, greater interest in the task, and higher dart throwing scores than those who did not use self-observation but rather imagined perfect execution of the skill. Additionally, those who engaged in self-evaluation had the same pattern of self-reactions and performance outcome as noted above compared

to dart throwers who did not utilize self-evaluation. Therefore, it seems that the process of observing and evaluating one's performance is effective at enhancing motor performance.

In the realm of sport, Kirschenbaum and colleagues have conducted several studies to test aspects of self-regulation. Kirschenbaum, Ordman, Tomarken, and Holtzbauer (1982 cited in Kirschenbaum, 1984) found that unskilled bowlers who used positive self-monitoring improved their bowling performance more so than those who utilized negative self-monitoring, received just information on effective bowling components, or were placed in a control group. Additionally, Johnston-O'Connor and Kirschenbaum (1986) using a similar research design found that unskilled golfers who used positive self-monitoring improved their golf swings more so than neutrally monitoring golfers or golfers who did not engage in any self-monitoring.

Social cognitive theory not only includes the behavioral influences of self-observation, self-judgement, and self-reactions but also personal and environmental influences. Personal influences relate to aspects of the individual which may influence the self-regulatory process and include such items as preexisting knowledge, metacognitive decision making processes, aspirations in the form of long and short term goals, personal values, current affective state, and level of self-efficacy (Zimmerman, 1989). Social cognitive theorists believe that self-efficacy is the key to effective self-regulation. Researchers have found that high self-efficacy is associated with persistence in the face of failure, choice of challenging tasks, effective study activity, task focus, and effort expenditure (Bandura & Cervone, 1983; Bandura, 1986; Schunk, 1996a, 1996b;

Zimmerman & Ringle, 1981). Environmental influences include enactive outcomes, the situational context, and arranging or seeking help from within one's context. Therefore, individuals can be influenced by their environment (e.g., the classroom or teacher) or can use the environment to aid their own self-regulatory processes. For example, students may have a teacher who places several restrictions on their learning process by providing exact instructions about how a task should be conducted. This does not allow students to engage in much self-regulation because they lack control over their own learning. However, if they have trouble figuring out a problem, they have the choice to seek out help from the teacher who can help resolve their problem.

Overall, social cognitive theory contends that self-regulation is a combination of personal, behavioral, and environmental influences. In general, the behavioral influences represent the core of the self-regulation process which influences and, in turn, is influenced by the environment and personal factors. These personal and environmental factors can make the difference between effective and ineffective self-regulation. As Bandura (1987) observes, "When people fail to fulfill a challenging standard, some become less sure of their efficacy, others lose faith in their capabilities, but many remain unshaken in their belief that they can attain the standard (p. 48)." The choice that is made depends on several personal and environmental factors. The focus of this review is to highlight how achievement goals adopted by the individual (a personal factor) or emphasized in the situational context (an environmental factor) may influence the self-regulation process.

Information Processing Theory of Self-Regulation

In the information processing approach, the system of self-regulation is based on problem solving production "where the problem is to reach the goal and the monitoring function is to check each step to ascertain whether the learner is making progress" (Schunk, 1996a, p. 362). In order to make progress, the learner needs to encode information into long-term memory by attending to and transferring new information from working memory to long-term memory and creating meaningful connections between new and old information in long-term memory. This encoding is done through the use of learning strategies. Therefore, researchers adopting this approach examine the various planned methods of learning and strategies for learning that help the individual in the pursuit of a goal. In relation to Carver and Scheier's (1981, 1998) model, these researchers examine the output function, that is, what self-regulatory behaviors in the form of cognitions, behaviors, and emotions are used. The questions to be answered are: 1) what methods do students use to monitor and evaluate their performance? and, 2) what methods can be effectively used to enhance their performance level when a discrepancy (such as failure) occurs?

Zimmerman and Martinez-Pons (1986) interviewed high and low achieving high school students and found 14 self-regulatory strategies which correlated with student "achievement indices and with teachers' ratings of their degree of self-regulation in class" (in Zimmerman, 1989, p. 336). These strategies included self-evaluating, organizing and transforming, goal setting and planning, seeking information, keeping records (i.e., self-monitoring), altering the environment, self-reinforcing, rehearsing and memorizing,

seeking assistance, and reviewing. Weinstein and her colleagues (Weinstein, Zimmerman, & Palmer, 1988) also developed a diagnostic measure to examine the effective study strategies used for classroom learning. After extensively reviewing previous measures and books on the topic and gathering comments from students, they developed a measure of learning strategies which included 10 thematic categories (i.e., anxiety, attitude, concentration, information processing, motivation, scheduling, selecting main ideas, self-testing, study aids, and test strategies).

In a similar fashion, Pintrich and his colleagues (Pintrich, Smith, Garcia, & McKeachie, 1993) also developed a measure of motivated strategies for learning based on general cognitive and metacognitive strategies used for learning known as rehearsal, elaboration, organization, critical thinking, self-regulation, and resource management. Resource management strategies involve changing the environment (e.g., finding a quiet place to study or using better time management skills), controlling one's own effort and attention, working with others in peer collaboration, or using outside resources (e.g., seeking help from the teacher or another student). Rehearsal strategies such as memory tasks and mnemonic devices are considered surface processing strategies, which are not very effective in learning given that they do not process the information into long-term memory or connect it with other ideas. However, these strategies may be useful under certain circumstances. Elaboration (e.g., paraphrasing, summarizing, creating analogies), organizational (e.g., organizing notes), critical thinking (e.g., thinking of alternative solutions), and self-regulation (e.g., planning, monitoring, reacting) strategies are labeled deep processing strategies since they help the student truly comprehend the material. In

accordance with these labels of surface and deep processing, it has been found that deeper processing strategies are significantly correlated (although only slightly) with academic performance (final course grade) whereas surface processing strategies are not.

Therefore, what is clear is that self-regulation not only includes the general process of recognizing and responding to a discrepancy but also the deliberate planning and selecting of strategies as well as controlling and evaluating effectiveness of the chosen strategies (Bouffard, Boisvert, Vezeau, & Larouche, 1995). In sport, the use of self-regulation is apparent. Athletes must monitor and evaluate their performance to determine what aspects of their performance are in need of improvement. Once weaknesses are noted, coaches and athletes work together and devise strategies to improve performance over time. The strategies employed represent cognitive, affective, and behavioral aspects of performance. However, researchers are still left with the question as to why some students and athletes do not engage in the general self-regulatory process and more importantly when individuals do engage, how they choose among available self-regulatory strategies to reduce a discrepancy. Clearly, it could be (and has been found to be) that students may not have the strategies they need to learn effectively or may not transfer them to other contexts where they would be beneficial (Garcia & Pintrich, 1994). Yet research also suggests that students may know about a strategy but still not use it for self-worth or motivational reasons (Covington, 1998; Garcia & Pintrich, 1994). It is for this reason that achievement goal theory may provide insight into why students and athletes may or may not engage in effective self-regulation.

Achievement Goal Theory

Achievement goal theory suggests that individuals define success and failure and construe competence in different ways based on an underlying goal that individuals use to view their world as well as respond to it. Achievement goal theorists (Ames, 1992a; Duda, 1993; Dweck, 1999; Nicholls, 1989) have contended that these goals or conceptions of ability will influence individuals' thoughts, feelings and behaviors in achievement settings, including self-regulatory activities. Although the nomenclature among achievement goal theorists varies, the concepts and ideas are the same. However, for consistency, throughout this section, the theoretical framework and language identified and utilized by Nicholls (1984, 1989) will be used.

Achievement goal theory has extended models of achievement motivation in which individuals were believed to strive to demonstrate competence and avoid demonstrating low ability. Although, achievement goal theory still corresponds to the ideal that individuals will be motivated to appear competent and avoid demonstrating low competence, it contrasts with earlier models by suggesting that the individual also makes a value judgement concerning what success or failure represents. Therefore, achievement goal theory represents a social cognitive affective model which not only focuses on striving to be competent but also on judging one's level of competence (Nicholls, 1984, 1989, 1990; Nicholls, et al., 1989). Within Nicholls' conceptual framework, the individual interprets competence in two main ways, representing either a task or ego-involving goal (Nicholls, 1984, 1989, 1990). These goals or conceptions of ability may represent a dispositional tendency (i.e., task or ego orientation), a state of goal involvement for the

individual (i.e., task or ego involvement), or be fostered within the situational context creating a perceived motivational climate (i.e., ego-involving or task-involving climate) (Ames, 1992a; Nicholls, 1984, 1989).

A task orientation is associated with the sense of competence achieved by just doing the task. Under a task orientation the concern is not with judging one's ability separate from the task but rather using effort to help achieve the task, in a sense, to gain ability. Consequently, the task-oriented individual strives for mastery of the task and learning becomes the end goal. Therefore, applying effort to a task is seen to lead to more learning and greater competence even if it may lead to failure at more challenging tasks. In contrast, an ego orientation is associated with the view that effort and ability do not correspond with one another. In essence, ego-oriented individuals focus on demonstrating their ability separate from task accomplishment. Ego-oriented individuals judge their competence in comparison to others or standardized norms; therefore, learning and mastery become a means to the end goal of demonstrating normatively high ability. These individuals, therefore, will only apply effort in situations in which they are sure that it will pay off in the demonstration of normatively high ability.

Achievement goal theory also suggests that the goals adopted should rationally coincide with thoughts, feelings, and behaviors. As Nicholls (1989) states "the worlds student see are, to a significant degree, the worlds they want; their views about the way things are, relate meaningfully to their personal goals" (p. 100). In fact, research has found that beliefs about the causes of success, the purpose of school, sport, and physical education, and levels of intrinsic motivation are rationally consistent with one's goal

perspective (for a review see Duda, 1993, 1996, 2001; Nicholls, 1989). For example, survey research has indicated that task-involved goals are associated with more adaptive motivational patterns such as persistence at a task, engagement in challenging tasks, exerting effort at the task, and experiencing greater enjoyment and intrinsic interest in achievement activities. Additionally, a task-oriented individual tends to believe that success stems from working hard and cooperating with others. On the other hand, an ego-oriented individual is more likely to believe that success in sport occurs by possessing high ability and engaging in deceptive tactics. It has also been found that ego-involved goals are correlated with work avoidance, boredom in sport, and anxiety (Duda, Fox, Biddle & Armstrong, 1992; Duda & Hall, 2001; Duda & Nicholls, 1992; Duda & White, 1992; Newton & Duda, 1993; Nicholls, Patashnick & Nolen, 1985). Although both goals are important and necessary components to achievement processes, it seems clear that a task orientation tends to provide more adaptive forms of motivation.

The Relationship between Achievement Goal Theory and Self-Regulation

The basis of achievement goal theory is that individuals define their success and failure experiences in conceptually different ways. Additionally, the way individuals choose to judge their competence creates a meaningful framework under which they interpret their world (Duda, 1993; Dweck, 1990; Nicholls, 1989). Therefore, how individuals approach and engage in the process of self-regulation will be directly related to their goal perspectives. Throughout this section, several theoretical predictions regarding the impact of achievement goals on self-regulation will be examined.

Goal perspectives influence the self-monitoring and self-judgment aspects of self-regulation by impacting the standard of reference - whether the focus is on the self or others (Kanfer, 1990). Given that ego-oriented individuals focus on achieving normatively high ability, these individuals will have a goal standard of being the most able athlete and will monitor their level of ability in comparison to others. Their question becomes "is my ability adequate or inadequate" (p. 260, Dweck & Leggett, 1988). Therefore, when comparing their current performance to the goal standard, these individuals may not recognize a situation that requires a self-regulatory response because their goal standard is based on achieving normatively high ability rather than their own peak performance (Kirschenbaum, 1987). In expanding on this explanation, Cury, Biddle, Sarrazin, and Famose (1997) incorporate attributional responses. They suggest that ego-oriented individuals with high ability will explain success based on possessing high ability which does not render the need for self-regulation. Ego-oriented persons with low ability will explain success based on external factors (i.e., luck) and not engage in self-regulation. Because failure is related to low ability, which is stable and uncontrollable, it leaves the person not trying to change the result by engaging in self-regulation strategies. On the other hand, a task-involved individual, regardless of ability level, should explain success and failure related to exerted effort. Because this is a controllable cause, the individual should be focused on finding strategies that will help them continue to utilize the effort or find new strategies to help them achieve (ability to modify the result). For example, an ego-oriented athlete, who is superior to the other tennis players in her league, may not see a need to exert additional effort to improve her game even though she has a very weak

backhand. In her mind, a discrepancy does not exist between her goal standard (demonstrating normatively high ability) and her current level of performance (e.g., I am the most able person in this league) which leads to no self-regulatory response. In contrast, task-oriented individuals will seek to approach a goal standard that is focused on task mastery. The question they seek to answer is - "What is the best way to increase my ability or achieve mastery?" (p. 260, Dweck & Leggett, 1988). Consequently, these individuals will be more likely to recognize a situation which requires a self-regulatory response. So if the young tennis player is task-oriented, the meaning of ability in comparison to others does not influence whether self-regulatory action will occur. Rather seeking improvement, the task-oriented player will pursue self-regulatory strategies to improve her weak backhand.

In addition to the goal itself, the thoughts, feelings, and behaviors that coincide with each conception of ability can influence the self-regulatory process. In Dweck's work (Diener & Dweck, 1978; Dweck, 1999; Dweck & Leggett, 1988; Elliott & Dweck, 1988), conceptions of ability influence attributions, persistence, the availability of attentional resources, and behavioral responses. Specifically, when a task-oriented (or learning oriented) individual experiences failure (or rather a discrepancy between the goal standard and personal performance because they may not view it as failure), it is attributed to lack of effort. Under this condition, people focus on altering their level of effort in order to reduce the discrepancy. Their attention is not diverted but rather is intensified toward achieving the goal. Individuals do not suffer from decreased levels of self-efficacy but rather searches for alternative strategies and maintains their goal difficulty to direct their

efforts toward reducing the discrepancy. Further, dissatisfaction, although apparent, is a catalyst for increasing one's efforts to reach the performance standard. Overall, regardless of how good they are at the task, the focus during performance is on making a personal improvement to reduce the discrepancy between actual performance and the set standard. For ego-oriented persons a failure is attributed to low ability which leads to negative self-reactions in terms of affect and efficacy expectations. The negative affect and self-defeating thoughts divert the persons' attention away from the task at hand. The drop in efficacy beliefs will reduce the likelihood of setting more difficult or challenging goals even though they may be realistic. All of which will negatively impact the direction of effort used during the task. For individuals with high ability there is a decreased likelihood that negative reactions will result; however, these individuals may set overly difficult goals and may continue to persist to avoid the implication of low ability. Further, over time these individuals may be at risk given that their judgements of competence involve social comparisons which at some point in time will lead them to conclude that they are not as able as once believed (Duda & Hall, 2001). For low ability individuals, reduced efficacy beliefs and negative affect can result in the withdrawal of effort or self-handicapping strategies in order to have an excuse readily available after a failure occurs.

In work on learned helplessness patterns among children, Diener and Dweck (1978) observed mastery and helpless children engaged in completing a difficult task. They found that helpless oriented individuals (similar to an ego orientation) were more likely to engage in a learned helpless pattern under failure situations. This pattern was associated with the reduction of effort at a task and using unreasonable strategies such as using task-

irrelevant talk (e.g., talking about success in another domain) to bolster their image in another way, statements of negative affect (e.g., stating that they did not like the task) or not using any effective problem solving strategies (e.g., always choosing the answer on the right hand side). In contrast, mastery-oriented children (similar to a task orientation) viewed failure as a challenge to overcome by using self-regulatory strategies (i.e., self-instruction or self-monitoring), offering positive statements to themselves (e.g., believing that they could overcome the obstacle), maintaining effective problem solving strategies or coming up with new ones, and sustaining positive affect. Elliott and Dweck (1988) provided a goal inducement and manipulated ability level and then examined the children's achievement behaviors during a difficult task. Children who were asked to focus on learning goals concentrated on increasing competence, using problem solving strategies, displaying more positive affect, and choosing challenging tasks that would increase ability. However, children who were directed toward performance goals and were manipulated into a low ability group responded to failure by making low ability attributions, having negative affect, demonstrating a deterioration in problem solving strategies, and showing reductions in performance. Children who were placed in the group emphasizing high ability and performance goals demonstrated the same achievement behaviors as mastery-oriented children with the exception of a willingness to demonstrate their task in public.

Building on Dweck's framework which found that mastery children used strategies that mobilized effort in more appropriate ways than helpless children, Ames (1984) was interested in how an individualistic and competitive environment may influence attributional and affective responses, and, in turn, strategy use. These environmental

structures are, in some ways, very similar to the task (individualistic) and ego (competitive) goals. Goal structure (individualistic or competitive) and outcome (success or failure) were manipulated and then attributions, self-instructions, and affective responses were measured after two rounds of doing puzzles. The results revealed that effort attributions were used most often in the individualistic conditions following high performance. In regard to ability attributions, those children in a competitive setting focused more on ability than those in individualistic settings. Affective responses coincided with the outcome on the task with more positive affect being associated with higher levels of performance. For self-instruction, children in the individualistic structure used more self-instructional statements than those students in the competitive setting regardless of outcome.

Persistence following failure has also been examined by Miller and Hom (1990). These researchers found that when individuals are placed in an ego-involving condition (i.e., being videotaped), they are less likely to persist when faced with failure at a moderately difficult anagram or matching task compared to the easy or hard matching or anagram tasks. Additionally, during the task, ego-involved individuals spent less time working on the moderately difficult task compared to the easy or hard task although this did not reach significance.

Most of the studies to date have focused on students in academic settings; however, it is contended that the same relationship should exist when one examines students in the athletic arena. Athletes are equally likely to engage in the same self-regulatory processes of monitoring and evaluating their performance and responding to discrepancies in

meeting their goals (i.e., in setbacks or failures). How they will respond depends on their achievement goals. Initial research does seem to support this contention. First, research in the sport domain has found that a task orientation is associated with the belief that success is the result of hard work and putting forth effort, attributions to effort following a performance outcome, and satisfaction with sport performance; whereas, an ego orientation is correlated with work avoidance, greater boredom in sport, and the belief that success in sport occurs by possessing high ability and using deceptive tactics (Duda, Fox, Biddle, & Armstrong, 1992; Duda & White, 1992; Newton & Duda, 1993; Newton & Duda, 1994). Additionally, Cury and his colleagues (Cury, Biddle, Sarrazin, & Famose, 1997; Cury, Famose, & Sarrazin, 1997; Cury & Sarrazin, 1998) have found that task-oriented students who are engaged in a sport task exhibit more adaptive self-regulatory responses than ego-oriented students with low ability. Specifically, ego-oriented individuals with low ability persisted less following failure and obtained feedback that provided normative information rather than information that could help them enhance their future performance. Solmon (1996) examined how the manipulated classroom climate impacted middle school children's behaviors and cognitions on a physical education unit of juggling. Children in the task-involving climate showed more persistence on difficult tasks; whereas an ego-involving climate was associated with less persistence and the belief that success was derived from one's ability. However, more work needs to be done in the athletic arena to examine the influence of achievement goals on the self-regulatory process, including recognition of a discrepancy, monitoring and evaluating the execution of a skill, and cognitive, affective, and behavioral reactions to the discrepancy. Further, it

is particularly important to examine this process when the individual experiences a failure in performance.

"Goal theory emphasizes the active role of learners in choosing, structuring, modifying, and interpreting their achievement experiences" (Schunk, 1996a, p. 378). As Schunk (1996a) suggests when ego-involved persons do self-regulate, their strategy use will be qualitatively different from the type of self-regulated strategies utilized by task-involved individuals (Ames & Archer, 1988; Dweck & Leggett, 1988; Meece, 1994; Nicholls, 1984; Nicholls, et al., 1989; Pintrich & Garcia, 1991). For the person adopting an ego-involving goal, the concern is with demonstrating normatively high ability; therefore, learning and improving are only important as a means to achieve the end goal of exhibiting superior performance. Additionally, in relation to effort and ability, an ego-oriented person believes that when effort has to be increased, then one is not able. Therefore, an ego orientation is predicted to be associated with strategies that require less effort but will help achieve their end goal. On the other hand, those adopting a task-involving goal believe effort and ability are positively related. Consequently, as one puts forth effort, one's level of ability increases. Further, the end goal for a task-oriented person is to master skills and develop competencies. Therefore, self-regulatory processes are believed to focus on learning as an end goal and utilizing effort based strategies to achieve goals (Nicholls, 1984). These strategy differences are clearly noted in Dweck's earlier work as mastery-oriented children were found to focus on self-monitoring, self-instructions, and positive prognosis statements while helpless children emphasized ineffectual strategies and solution irrelevant statements (Diener & Dweck, 1978).

Based on self-report data, a task orientation is positively associated with effective learning strategies in the educational setting including deep processing strategies, elaboration/organization strategies, critical thinking strategies, resource management strategies, helpseeking, effort attributions, and a preference for challenging activities. In contrast, an ego orientation was either not related to the use of cognitive strategies or positively associated with rehearsal strategies (Ames & Archer, 1988; Meece, Blumenfeld, & Hoyle, 1988; Miller, Behrens, Greene, & Newman, 1993; Nicholls, et al., 1989; Pintrich & Garcia, 1991; Stipek & Gralinski, 1996; Wolters, 1998; Wolters, Yu, & Pintrich, 1996). The use of self-regulatory strategies is also apparent in sport. Lochbaum and Roberts (1993) found that a task orientation was positively related to adaptive practice strategies, and Newton and Duda (1994) found that task-oriented bowlers reported using considerably more strategies to help them practice than ego-oriented bowlers. Ommundsen and Roberts (1996) found that a strong task orientation was positively associated with understanding that practice was important to learning, listening to the coach, and persisting in practice situations.

In addition to self-reporting of goal perspectives, researchers have also induced goals to examine the causal impact on motivation-related variables, including self-regulatory processes. Nolen (1988) found that goal orientations were differentially related to self-regulatory processes. Prior to reading a science article, students' goal orientations were measured. Following their review of the article, the students filled out a strategy use and strategy value questionnaire. A task orientation was positively related to deeper processing strategies more often than ego orientation. Additionally, a task orientation was

moderately correlated with the value of using study strategies. Wood and Bandura (1989) found that when conceptions of ability were induced at the onset of a complex decision making task, participants in the incremental (or task-involving) condition were more likely to systematically use analytic strategies to determine the influence of their managerial decisions than individuals in the entity (or ego-involving) condition. Additionally, individuals in the incremental condition had a more stable sense of self-efficacy and set more challenging goals than participants in the entity condition. Graham and Golan (1991) examined the interaction of goal involvement and levels of processing on the recall of words among fifth and sixth grade students. The students were initially given a puzzle to work on followed by the manipulation of goal involvement. Then students were presented words in the context of surface level processing (e.g., Does the word rhyme with make?) or deep level processing (e.g., Is the word a kind of animal?). Overall, ego-involved children recalled fewer words than task-involved students on a cued recall test. More importantly, ego- and task-involved students did not differ in their recollection of surface processing words; however, task-involved individuals recalled more deep processing words than ego-involved children. In the realm of sport, Thill and Brunel (1995) also examined the effect of goal orientations on the use of deep versus surface level processing strategies among soccer players under positive, negative, or no feedback conditions. Their results revealed that regardless of orientation, those individuals who received negative feedback used more deep processing strategies. However, when the strategy scale was divided into subscales, a significant finding was revealed for the monitoring strategy scale. Specifically, it was revealed that when no feedback was given

(during the first week), ego-oriented individuals had deeper processing. When feedback was introduced during the second week, regardless of the positive or negative feedback, task-oriented players used more monitoring strategies. Although these results are not conclusive they do provide some initial support for the contention that task-oriented individuals are more likely to use self-regulatory strategies. Additionally, it should be noted that the researchers inability to find conclusive results across all subscales or within feedback conditions may be the result of the experimental condition. Participants' goal orientations were measured prior to their engagement in the task. However, the task was focused on performance shooting which is an individual skill that emphasizes trying to improve one's score. This task may have placed the soccer athletes in a state of task involvement that could account for the inconclusive results from the study.

The adoption of a particular goal creates a meaningful interconnection between the individual's cognitions, feelings, and behavioral responses in achievement settings (Duda, 1993; Duda & Hall, 2001; Dweck & Leggett, 1988; Nicholls, 1984). The interconnectedness between one's goal and other processes impacts the self-regulatory process at several levels. First, the type of goal standard that is utilized in the self-evaluation process is predicted to be influenced by one's goal perspective suggesting that recognition of a self-regulatory response may differ between the two goal perspectives. Second, given the different meanings of effort and ability within the two goal perspectives, failure is interpreted differently. Therefore, each goal perspective is hypothesized to have a distinct response to failure. For task-oriented individuals, failure is attributed to lack of effort which engenders a dissatisfaction with their current performance. However, their

attention turns toward controlling their effort and trying alternative effort based strategies. A very different response is observed with ego-oriented individuals. The ego-oriented individuals interpret failure as implicating them as having low ability. This leads to negative affective responses which limit the attentional resources that can be utilized for the task at hand and negatively influences the use of effort. Finally, one's goal perspective is also postulated to influence the quality of self-regulatory strategies with task-involving goals being associated with more deep processing strategies. Although these conclusions are substantiated by the research noted above, more research is needed to corroborate and extend the findings. Specifically, research needs to examine the broad array of self-regulatory responses, including self-monitoring, self-judgment, self-reaction and strategy use, in conjunction (Crews, Lochbaum, & Karoly, 2001). Additionally, more research needs to be conducted that shows how goal perspectives influence all aspects of the self-regulatory process when an athlete is faced with failure or task difficulty. Therefore, this study set out to examine experimentally the influence of ego- and task-involving goals on athlete's self-regulation when engaged in a simple motor task. Specifically, it was hypothesized that athletes, when faced with failure, within a task-involving situation would use more effort-based attributions, experience greater enjoyment in the task, although they may be dissatisfied with their failure, experience more stable self-efficacy thoughts, use more deep processing strategies, engage in greater use of on-task thoughts and positive statements, and have fewer off-task and negative thoughts than those in the ego-involving condition.

The Role of Self-Perceptions in Self-Regulation

Achievement goals do not operate in isolation to influence the self-regulatory process. Researchers have found that self-perceptions can also influence self-regulatory processes (Bandura, 1986; Fox, 1997; Harter, 1999; Weiss, 1987). These self-perceptions focus on more general feelings about the self, such as self-esteem, to perceptions of ability that represent a particular domain, such as competence, to more skill specific, such as ability, to situation specific indices of ability, such as self-efficacy. Regardless of the level of generality of self-perceptions, identifying how the individual perceives their efficacy, ability, or competence in an achievement situation or general levels of self-esteem can determine whether the individual will choose the activity, persist at the activity, and enjoy their participation (Bandura, 1990, 1997; Harter, 1999; Weinberg, Gould, & Jackon, 1979; Weinberg, Gould, Yukelson, & Jackson, 1981; Weiss, 1987; Weiss & Ebbeck, 1996). In relation to physical activity, it has been found that increased levels of perceived competence and self-esteem are associated with more internal, stable, and controllable attributions for success, persistence, performance satisfaction, and increased intrinsic motivation, particularly for engaging in challenging tasks (Kimiecik, Allison, & Duda, 1986; Weiss, 1987; Weiss & Ebbeck, 1996). Additionally, strong beliefs in one's capabilities (i.e., self-efficacy) will lead to a more positive motivational response (Bandura, 1997). Weinberg and his colleagues have shown that manipulated levels of self-efficacy for a physical strength task revealed that participants in the high self-efficacy group persisted longer at the leg lifting task than low self-efficacy individuals. This effect was even more pronounced after each group experienced an initial failure at the task

(Weinberg, Gould, & Jackon, 1979; Weinberg, Gould, Yukelson, & Jackson, 1981). Further, high levels of self-efficacy have been associated with better quality learning strategies, greater use of cognitive strategies, better time management, and better monitoring and regulation of learning (Kurtz & Borkowski, 1984; Pintrich & Schrauben, 1992; Zimmerman & Martinez-Pons, 1990).

Although, it is true that individuals with higher levels of self-efficacy, competence, or self-esteem may engage in adaptive self-regulatory processes, they may also experience some detrimental effects. The next few paragraphs will examine how high and low perceptions of self-esteem may result in ineffective self-regulation or otherwise termed self-regulation failure. It is with this understanding that we will move to the final section which examines how the role between self-perceptions and self-regulation may be best explained within the framework of achievement goal theory.

Low Self-Perceptions and Its' Relationship to Self-Regulation Failure

For low self-esteem individuals the motive for self-protection may cause them to experience self-regulation failure. Self-protection motives occur when the individual is faced with a perceived threat to the self and rather than expose inadequacy, the individual seeks to protect her/his self-worth through a variety of strategies. In fact, research does suggest that low self-esteem persons may inadvertently reduce their chances of success by engaging in such self-protective tactics as exhibiting self-handicapping, setting inaccurate goals, choking under pressure, or developing a learned helpless pattern (Baumeister, 1997; Covington, 1998; Heatherton & Ambady, 1993; Tice, 1993). In relation to self-handicapping, a person protects their true ability but the cost is failure at the task.

Therefore, the individual forgoes a valued goal in order to preserve self-worth. Additionally, Heatherton and Ambady (1993) suggest that low self-esteem people fail to regulate appropriately because they set goals that are too modest - in a sense underestimating their abilities. The rationale relates to the fact that low self-esteem individuals inaccurately estimate what they can do, since they have less confidence in their ability to accomplish anything and/or they may be attempting to protect themselves against a potential threat to self-esteem (e.g., a failure). Low self-esteem individuals may also choke under pressure when faced with a task that has the potential for them to lose or gain esteem as one performs (Baumeister, 1997). Therefore, given the anxiety that is associated with the threat of failure the individual may alter their attentional style to exert "conscious control over processes of skilled performance that are overlearned or automatic" (Baumeister, 1997, p. 161) which results in reduced performance. Finally, low self-esteem individuals, who may perceive that they are more likely to experience failure in achievement domains, may be more likely to revert to a helplessness pattern, which focuses on reducing one's effort at a task or withdrawing from the activity.

High Self-Perceptions and Its' Relationship to Self-Regulation Failure

It has been suggested that individuals with high self-esteem may also not be free from experiencing self-regulation failure. As Heatherton and Ambady (1993) state, ". . . there is a pervasive tendency for North American society to value and promote self-confidence. When this confidence is unfounded . . . then high self-esteem may be counterproductive and may interfere with the ability to make and live up to commitments" (p. 142). Bandura (1990, 1997) also supports the fact that having too high a level of self-efficacy can be

detrimental. He states, "it is widely believed that misjudgments breed dysfunction. Certainly, gross misjudgments can get one into trouble. But optimistic self-appraisals of capability that are not unduly disparate from what is possible can be advantageous, whereas veridical judgments can be self-limiting" (Bandura, 1990, p. 146). Therefore, although optimistically high self-efficacy may be appropriate, blatant overrepresentations of what one can accomplish may result in self-regulation failure. Further, Schunk and Zimmerman (1996) note that self-efficacy does not have to be high for effective self-regulation. Rather, having some doubt may be necessary instead of feeling overconfident, particularly when learning a skill.

In line with these contentions, Baumeister (1997) suggests that individuals with high self-esteem may experience ineffective self-regulation. This self-regulation failure occurs through the use of self-handicapping strategies, engaging in misguided persistence, and setting improper goals. In relation to self-handicapping, Tice (1993) has found that both high and low self-esteem individuals utilize self-handicapping but for differing reasons. She found that high self-esteem individuals used self-handicapping (decreased effort) to increase their credit for success (making them look extremely talented) while low self-esteem individuals used self-handicapping to protect the self from what to them seems like an inevitable failure. Therefore, both high and low self-esteem individuals forgo the use of effort strategies which can be detrimental to performance.

High self-esteem people are also more likely to engage in misguided persistence which involves persisting in the face of inevitable failure. Although persisting after initial failure at a valued task is adaptive, when the task is not solvable the more effort expended is just

a greater cost to the individual. However, high self-esteem individuals may continue to persist due to the threat to the self. As stated by Baumeister (1997), ". . . people are reluctant to abandon an endeavor after they have invested time, effort, money, or other resources in it. To do so would mean giving up on what they have invested, whereas persisting seems to hold at least the faint promise that the investment will eventually pay off . . . " (p. 160). Additionally, Dweck (1999) suggests "some may refuse to give up because an admission of defeat is too great a blow to their ego" (p. 13). Further, the "very high" self-esteem individual may not change a maladaptive behavior, which has resulted in their failure, because they have focused effort on self-enhancing rather than fixing the problem. Therefore, even though they persist it may be for naught because they truly cannot achieve the task given their current strategy.

Closely related to overpersistence is research which suggests that those high in self-esteem set overly high goals after initial failure (Baumeister, 1997; Baumeister, Heatherton, & Tice, 1993; Smith, Norrell, & Saint, 1996). In one study, high and low self-esteem participants played a computer game under the presence or absence of an ego threat. High self-esteem individuals under an ego threat (i.e., making them self-conscious about choking under pressure) set higher more risky goals than low self-esteem individuals which resulted in loss of cash outcomes (Baumeister, Heatherton, & Tice, 1993). It seems that these individuals were overcompensating for the loss and potential threat to self by setting unrealistic and over challenging goals that in the end could not be achieved. Heatherton and Ambady (1993) also suggest that individuals who have self-esteem which is too high may fail to self-regulate properly because of positive illusions (unrealistic

positive view of self). Therefore, they set inaccurate goals based on their overconfidence which can lead to failure.

So it seems that high self-esteem individuals are also vulnerable to self-regulation failure. Given that both high and low self-esteem individuals are at risk for self-regulation failure (even it is for different reasons), researchers need a better explanation in order to help students and athletes avoid self-regulation failure. This is where achievement goal theory can provide a clearer understanding about the relationship between self-perceptions and self-regulation.

The Interaction of Perceived Ability with Achievement Goals: The Risk of Being Ego-Involved

As Baumeister (1997) contends, threats to the self or as he terms "threaten egoism" can result in emotional distress due to an impending loss of self-esteem, which in turn negatively influences self-regulation. Covington (1998) also suggests that some individuals will compromise their achievement motive in order to protect or defend their self-worth when faced with an environment (or perception of the environment) which is competitive or threatening to the self. If this is the case, when the threat is removed, high and low self-esteem individuals should pursue effective self-regulation. Research has shown such a pattern. For example, Spencer, Josephs, and Steele (1993) found that when the threat was removed, by providing anonymous feedback or suggesting that the characteristic is stable, low and high self-esteem individuals both pursue self-enhancement. Baumeister, Heatherton, and Tice (1993) found that high and low self-esteem individuals did not differ in their goal setting when there was no threat to ego. Therefore, the

contention could be made that task-involved individuals, who perceive no threat to the self, will be less likely to experience self-regulation failure than ego-involved individuals regardless of esteem or competence levels. As Nicholls (1989) contends the question of competence (how competent am I?) does not arise for task-involved individuals.

Given the reduction of threat, self-regulation failure is predicted to occur less often when an individual adopts a task orientation or is placed in a task-involving climate. Whereas, ego-involved persons may experience self-regulation failure given the threat to the self (i.e., the potential to demonstrate that one lacks ability) (Nicholls, 1989). In partial support of this contention, Jagacinski and Nicholls (1987) found that when individuals were placed in an ego-involving situation, judgements of competence were influenced. Specifically, ego-involved individuals were found to be more publicly self-conscious and concerned with social comparison information. The extension would be that ego-involved individuals would be expected to utilize less effort within a task in order to either self-enhance or self-protect depending on the level of perceived ability. Therefore, an ego-involved person who is low in perceived ability will be more likely to seek to escape by engaging in self-protection strategies such as devaluing the activity, not trying at the task, self-handicapping, or setting low and therefore easily achievable goals. On the other hand, ego-involved individuals with high self-esteem may engage in either self-enhancing or self-protecting strategies to minimize the threat to the self. These strategies include self-handicapping, persisting at unsolvable tasks, setting inaccurately high goals, discounting negative feedback, or taking less responsibility for failures. In fact, Jagacinski and Nicholls (1990) found that college students who were asked to focus on

social comparison information (i.e., looking intelligent compared to their classmates) in mock scenarios were less likely to endorse an effort reduction strategy for themselves. Rather these students emphasized the need to continue to work hard at the task even though there would be no possibility of improving one's ability level. Although this is not direct support, one could assume that if the college students believed that they were highly able at an intellectual task, the social comparison information could lead them to protect their level of ability by not admitting that they could not do better on the task. In so doing, the students may have been advocating persistence at an unsolvable task which would be an ineffective strategy.

Dweck (1990) also suggests that perceived ability will have differential predictions based on the achievement goal that is adopted by the individual. Specifically, she and her colleagues (Dweck, 1999; Dweck & Leggett, 1988; Elliott & Dweck, 1988) state that individuals who adopt a learning (task-involving) goal will have positive motivational experiences regardless of ability level. However, students who emphasize a performance (ego-involving) goal will experience detrimental effects when they possess low ability. Performance (ego) oriented individuals with high ability are less likely to experience difficulties in the short term but over the long term, problems may occur. In support, Elliott and Dweck (1988) found that performance-oriented students with low perceived ability were less interested in challenging tasks, persisted less, and were more likely to have negative affective responses than performance-oriented students with high perceived ability or participants with learning goal orientations regardless of ability. Yet, when examined over a longer period of time, involving a transition from sixth to seventh grade,

Henderson and Dweck (1990) found that entity theorists (or children who believed that ability was stable over time, similar in some ways to a performance or ego orientation) with high ability were more likely to show a decline in achievement and to doubt their intelligence if they received bad grades.

Expanding into sport and exercise psychology, Hall (1989 as cited in Duda, 1993) in an experimental design manipulated an individual's perceived competence in a task- and ego-involving condition on a stabilometer task. Low perceived competent individuals in the ego-involving group were more likely to have maladaptive achievement cognitions. Specifically, this group "did not try hard, expected to do less well before, during and following the performance trials and felt that they demonstrated less competence throughout the experimental protocol" (reported in Duda, 1993, pg. 426). Thill and Brunel (1995) also examined how much effort task- and ego-involved soccer players used under positive and negative feedback conditions. Individuals in the ego-involved situation under positive feedback indicated that they used less effort than ego-involved athletes in the negative feedback condition. On the other hand, task-involved individuals in the positive feedback condition used more effort than when under negative feedback condition. These results suggest that ego-involved athletes engage in self-enhancement to take credit for success suggesting a potential for self-regulation failure. In a self-report of goal orientations, perceived competence, and effort perceptions, Williams and Gill (1995) found that a task orientation, regardless of perceived competence, was the best predictor of self-reported effort. No relationship was found between effort and ego orientation even among individuals who perceived themselves to be highly competent.

A study conducted by Cury, Biddle, Sarrazin, and Famose (1997) examined how the investment of learning a basketball dribbling task was influenced by task- or ego-involvement among individuals with differing levels of perceived ability. High school students were placed in an experimental condition that matched their goal orientation which was measured prior to the study. Once the goal involvement was induced, high and low ability students were given time to practice a basketball dribbling task prior to a test on the task. During this time, an observer recorded the amount of time the student practiced. Following the test, effort attributions were also measured. The investment of learning was lowest among ego-involved students with low perceived ability. Additionally, an examination of effort attributions revealed that task-involved students made more ascriptions to effort than ego-involved students. When placed in a regression analysis, effort attributions did not predict observed effort on the part of ego-involved students, regardless of ability level, suggesting that these students engaged in self-protection. These students may have tried hard, but when questioned, downplayed their use of effort in order to protect themselves in the midst of a threat apparent in the ego-involving condition. In a second study, these researchers examined the use of effort, effort attributions, and expectations of success following negative feedback on performance. These results corresponded to the previous study and revealed that ego-involving students with low perceived ability had the lowest expectation of success than all other groups. Vlachopoulus, Biddle, and Fox (1997) also examined the relationship between goal orientations and perceived competence to retrospective attributions and success expectations among physical education students. A task orientation was found to be

associated with more positive self-judgements. Specifically, a task orientation had a positive relationship with success expectation regardless of ability while ego orientation individuals had no relationship to success expectations. The relationship between ego orientation and attributional responses was positive for controllable attributions (e.g., effort) when ability was high; however, when ability was low, a negative relationship between the two variables emerged. For task orientation, regardless of perceived competence, controllable attributions were positively associated with task orientation. Finally, Cury and Sarrazin (1998) examined the influence of goal orientations and perceived ability in choosing a difficult task (in this case obstacle courses of varying difficulty), perseverance at a basketball test following failure, and use of task relevant information when engaging in the tasks. Ego-oriented individuals with low perceived ability were more likely to choose very easy or very difficult tasks, less likely to persevere after a failure, and less likely to utilize task relevant information than task-oriented persons.

In conclusion, it seems that task-involving goals encourage individuals to utilize effective self-regulation strategies and reduce the chance of misregulation or underregulation regardless of one's level of perceived ability. However, perceived ability seems to be a mediating factor when one focuses on a normative demonstration of ability. Within most of these studies, however, the ineffective use of self-regulatory strategies was found only among ego-involved individuals who possessed low ability or ego-involved individuals regardless of ability level. However, achievement goal theorists (Duda, 2001; Dweck, 1999; Nicholls, 1989) do suggest that ego-involved individuals even if they are

high in perceived ability are more susceptible to motivational problems over time. Additionally, theoretical and some empirical research, noted above, does suggests that high self-esteem individuals can engage in self-regulation failure when their ego is threatened. Yet, current studies within the sport domain have not attempted to study variables that may reveal the ineffective strategy use among high ability, ego-involved individuals. In an attempt to fill this gap in the research, the second purpose of this study was to examine the interaction effects of perceived ability and achievement goals on the self-regulation process. Since the purpose was to examine self-regulation failure among high and low ability, ego-involved individuals, the variables of goal setting, excuse making, persistence, and effort ascriptions following failure were examined. It was contended that individuals placed in an ego-involved condition would utilize ineffective strategies that were in line with their level of ability. Specifically, ego-involved individuals with low ability were expected to withdraw their effort at the task, persist less, and engage in self protective tactics to hide their true ability by making excuses. On the other hand, ego-involved persons with high ability would set overly high goals (therefore have greater discrepancy). In contrast to the ego-involved individuals, task-involved participants, regardless of ability level, would signify a greater use of effort, set less discrepant goals, and use few excuses when faced with failure.

Summary

Given that researchers are still left with the question as to why some students and athletes do not engage in the general self-regulatory process and, more importantly, when individuals do engage, choose different self-regulatory strategies the goal of this study was

to examine how achievement goals and perceived ability may influence self-regulatory processes and self-regulation failure. Achievement goal theory suggests that an achievement goal, task- or ego-involving, can influence the individual's cognitions, feelings, and behavioral responses in achievement settings (Duda, 1993; Dweck & Leggett, 1988; Nicholls, 1984, 1989). Given this interconnectedness between one's goal and other processes, it was contended that achievement goals would influence the self-regulation process at several levels. Although research has examined the role of achievement goals on pieces of the self-regulatory processes, it has not been looked at comprehensively. Additionally, research examining the self-regulation process under failure conditions has begun to show differential effects among task- and ego-oriented individuals in the physical activity context. However, little work has examined how athletes placed in ego- or task-involving conditions would influence the self-regulation process under failure conditions. Therefore, this study set out to experimentally examine what influence ego and task-involving goals may have on athlete's self-regulation when experiencing failure on a simple motor task. Additionally, it was of interest to this researcher to examine whether task-involving goals may also reduce the chance of self-regulation failure because the threat to the self is reduced while focusing on a normative demonstration of ability, which potentially increases a threat to the self, may result in self-regulation failure. Current research has only found that ego-involved individuals, in general, and those that possess low ability and are ego-involved individuals used ineffective self-regulatory strategies. However, current studies within the sport domain have not attempted to study variables that may reveal the ineffective strategy use among

high ability, ego-involved individuals. Therefore, the second purpose of this study was to examine the interaction effects of perceived ability and achievement goals on self-regulation failure to determine whether high ability ego-involved individuals may also be at risk.

Chapter 3

PILOT STUDY

The purpose of this pilot study was twofold. First, this study was used to test the effectiveness of the manipulation of the goal involvement condition and the presentation of the false failure feedback as well as to check whether the task was perceived to be involving, interesting, and challenging to the athletes. Second, this study set out to identify whether items used to tap varied aspects of self-regulation were understandable to the participants and were interpreted as the researcher intended.

Method

Participants

The participants recruited for the pilot study were 23 male and 9 female high school students (M age = 16.31, SD = 1.28) enrolled in physical education classes. The high school students represented diverse ethnic/racial groups (14 European Americans, 9 African Americans, 5 Mexican Americans, 3 Multiracial Americans, and 1 Native American). All but four of the students had athletic experience at the high school level. Given that the study focused on athletes' experiences, these four participants were dropped from the study (2 males and 2 females).

Task

Athletes tested their discriminant reaction time (DRT) on a computer task. The computer task presents three colored dots, in random locations, on a computer screen for 0.01 s. The objective for the participant was to press the left mouse button whenever a

blue dot appeared on the screen. The task consists of 30 trials presented 1 s apart. Ten of these trials contained a blue dot. The blue dot trials appear to be randomly placed to the participant; however, each trial was set up with a specific pattern of presentation that was unique to that trial (e.g., the blue dot may appear on every third trial). This allowed for an additional strategy component that athletes could use to try to improve their DRT score.

This task was chosen for three important reasons. The first is that the task can be perceived as relatively important for athletes. A test of DRT provides athletes with important information about their ability to respond in a sport situation. Therefore, it is more likely to be valued by the participant. Second, the task does not provide direct knowledge of results to the athlete which will allow the researchers to provide false feedback upon task completion. Finally, the task is novel. Therefore, athletes are not likely to have experience testing their DRT which will make the false feedback more believable.

Manipulation of the Goal Involvement Condition

The athletes' goal involvement was manipulated by instructions given to each participant prior to their engagement in the activity. Athletes were randomly assigned to either a task- or ego-involved condition. For the task-involving situation, the participants were asked to focus on learning and improving their DRT by doing the computer task. They were informed that the purpose of the task was to help the researchers find out whether this computer program can help people improve DRT. Therefore, they were asked to focus on improving their DRT throughout the task. Under the ego-involving condition, the students were asked to perform the DRT task better than other students

their age. A normative standard for their age group was provided (see Appendix A). Additionally, this group was told that those people tested so far had scored between the 45th and 85th percentile with athletes falling between the 65th to 85th percentile. They were then told that because they were an athlete they should be able to place in that percentile range (i.e., above the 65th percentile). Also, each participant, in the ego-involving condition, was given the performance scores of two other mock participants who had fallen in the stated range for athletes and told that they should try to outdo their scores. Finally, to further increase self-awareness this group was told that they were being videotaped so that researchers could watch how they performed on the DRT task.

Procedure

Permission to conduct this study was obtained from the Michigan State University Committee on Research Involving Human Subjects (Appendix B). Permission was also obtained from school administrators prior to asking the students to participate in the study. Upon receiving this approval, the students were informed about the study and parental consent forms were distributed to interested students (Appendix C). Those students who obtained parental consent as well as provided personal consent, filled out a short questionnaire, and signed up for a time to complete the task. The questionnaire included the Task and Ego Orientation in Sport Questionnaire (TEOSQ), and two items related to perceptions of ability with regard to reaction time. The dispositional measure of goal orientations (i.e., the TEOSQ) was given to participants as a precautionary measure if it was found that the manipulation of goal involvement was ineffective and to investigate dispositional goal orientations relative to goals created in the climate. The perceived

ability questions were used to split students into high and low perceived ability groupings. The athletes then completed the computer task at the designated time. The initial instrument took approximately 5 minutes to complete while the computer task and associated questionnaires took approximately 30 minutes. A complete description of all questionnaires used in this study are presented under the formal experiment (refer to Chapter 4, pg. 83).

Each athlete was tested individually on his/her performance of the DRT task. The athlete was first familiarized with the computer task and told how important reaction time can be to an athlete's performance. The experimenter then demonstrated how the task worked and gave the student a short practice trial to ensure that the participant knew how to do the task. The participant then received feedback in the form of average DRT, number of misses (missed responding to the blue dot), and number of errors (pressed button when no blue dot appeared). After looking over the feedback, the participant was asked to complete measures of perceived success, satisfaction with performance, and self-efficacy.

Once the student was acquainted with the task, she/he was informed about the specific purpose of the task which included the manipulation of the goal involvement condition. The athlete then engaged in two more rounds of the task that were considered the actual performance test. Prior to the first performance round, the athlete was asked to set a performance goal for the next round that was in line with the goal involvement manipulation (i.e., a particular time that represents an improvement over their practice round for task involvement or that represents a definite percentile for ego involvement).

Participants also indicated how hard they would try to reach this goal. The athlete then engaged in the first performance round. Although their true practice trial scores along with performance errors and misses were recorded, the participants received summary false failure feedback concerning their DRT. A mathematical computation was performed to add time to the individual's time across trials ensuring that they did not meet their goal or do better than their practice round and, in the case of ego involvement, score higher than the 65th percentile. Therefore, if participants, in the task-involving condition, had an average reaction time which was below their goal or their previous average time, 0.05 s were added to the individual trial responses until the average for the round increased above their goal or previous average DRT. The false failure feedback was presented in three different forms at the end of the round. The first form of feedback was in a graphical presentation which showed the student's DRT. The graphical presentation was in line with the goal manipulation so that under the task-involving conditions participants were shown a graph of her/his performance on each trial to show improvement while those in the ego-involving condition were shown a graph that indicated his/her percentile ranking. The second type of feedback was in the form of the participant's average DRT, number of misses (missed responding to the blue dot), and number of errors (pressed button when no blue dot appeared). Finally, written feedback was provided concerning the participant's performance followed by verbal feedback from the experimenter. The feedback was in line with the goal involvement condition (e.g., For task involvement - Written - "Your average score did not improve. Your times have increased from ___ in the practice round to ___ in this performance round. Verbal - "You failed to meet your goal on this round.

Your times increased. Well, let's see what happens on the next trial." For ego involvement - Written - "You are in the ___ percentile." Verbal - "You failed to meet your goal on this round. You moved down in your percentile score and you didn't reach the 65% percentile. Well, let's see what happens on the next round.") After receiving the failure feedback, the student again was asked to complete measures of success, satisfaction, effort expenditure on current round, self-efficacy, and expected effort on the next round.

Prior to the second round, the athlete was again reminded of his/her goal during the task (i.e., task- or ego-involving) and asked to set another performance goal for the next round that was in line with the goal involvement manipulation. After the completion of this round, the participant was again given false failure feedback that did not allow her/him to meet the goal or show any progress. After receiving the failure feedback, the student was asked to complete measures of success, satisfaction, effort expenditure on current round, and self-efficacy. Following the completion of these measures, the athlete was asked to complete a final questionnaire that related to his/her thoughts about the task in its entirety (these measures are discussed in detail in chapter 4, pg. 83). Specifically, the questionnaire measured attributional responses, enjoyment of the task, excuse making, and strategy use. Additionally, the student responded to manipulation check measures related to task importance and goal involvement. Finally, the student was asked how many additional rounds she/he would like to complete to try to better the score. The response was noted as a measure of persistence. Each student was given the opportunity to complete another round while being debriefed on the project.

During debriefing, each student was interviewed to determine the effectiveness of the manipulations, to find out his/her thoughts about the task, and to check for understanding on the dependent variable items. The specific questions are outlined in Appendix D. Following the interview, the students were informed about the true nature of the study and were assured that their true DRTs could be improved over time. The participants were given their true scores which were recorded during all trials and the participants were shown how they improved over time and given the opportunity to practice with true feedback. They were also given tips for improving their DRT. Additionally, students were informed about the current research related to the use of ego- and task-involving goals in practice and competition.

Results

Effectiveness of the Manipulations

The manipulation check items were examined to see if the participants in the study believed the failure feedback, thought the task was interesting and relatively relevant to them, and adhered to the goal involvement condition in which they were placed.

The general descriptive results revealed that participants in the study did show a decrease in their belief about their success from the practice trial to the last performance trial, $t(27) = 5.73$, $p < .01$, and thought the task was important to them and relevant to their athletic performance (see Table 2). However, when interviewing the students at the end of the task, some students thought they were very successful at the task which was corroborated by their individual response to the item in which they indicated that they thought they were successful or very successful at the task. When probed about their

response, these participants either thought they were still doing alright even though their scores were increasing (n = 1) or did not understand that lower times represented faster and better reaction time (n = 3). Additionally, when examining the individual responses to the items, two additional participants did not think that the task was important to their athletic performance. Therefore, these six students were dropped from further analyses.

Table 2

Mean and Standard Deviations for Belief about Success, Importance, and Relevance of Task

	N	Mean	Standard Deviation
Success following practice	28	3.64[a]	0.99
Success following 1st performance round	28	2.50[b]	1.17
Success following 2nd performance round	28	2.25[b]	1.23
Important to be successful	28	4.14	0.89
Relevant to athletic performance	28	3.89	1.09

Note: Letters represent differences between rounds

The next step was to see if the goal involvement condition was effectively manipulated with the remaining 22 participants. Two independent sample t-tests were conducted to determine whether those in each goal condition (task- or ego-involving) reported higher scores on the manipulation check items representing their goal condition (see Table 3). The results revealed that participants in the task-involving condition had higher scores on the task manipulation item than athletes in the ego-involving condition, $t(20) = -3.23$, $p <$

.05. However, the participants in the ego-involving condition did not have statistically significant higher scores on the ego manipulation item than athletes in the task-involving

Table 3

Means and Standard Deviations for Goal Manipulation Items by Achievement Goal Condition

		Task Manipulation Item		Ego Manipulation Item	
	N	Mean	Standard Deviation	Mean	Standard Deviation
Task Involving Cond.	8	5.00[a]	0.00	2.13	0.99
Ego Involving Cond.	14	3.79[b]	1.05	3.29	1.44

Note: Letters represent differences between groups

condition, t (20) = 2.02, $p < .06$, even though the means moved in the right direction. Further, upon examination of the mean scores it was noted that the individuals in the ego condition rated the task manipulation item no differently than the ego manipulation item suggesting that some individuals did not accept the manipulation, t (13) = 1.07, $p = .30$. Examination of the individuals scores revealed that six participants placed in the ego condition did not use the comparative information as much as their own personal performance information when engaging in the task (i.e., they indicated a higher score on the task manipulation item compared to the ego manipulation item). Additionally, interview data indicated that three of the participants stated that they used the task information just as much or more than the normative information. Therefore, these six participants were removed from the data analysis. Upon their removal, independent

sample t-tests were conducted again. Participants in the task-involving condition (M = 5.00, SD = .00) had higher scores on the task manipulation item than athletes in the ego-involving condition (M = 3.50, SD = 1.07), t (14) = -3.97, p < .01. Additionally, the participants in the ego-involving condition (M = 4.25, SD= .71) had higher scores on the ego manipulation item than athletes in the task-involving condition (M = 2.13, SD= .99), t (14) = 4.94, p < .01. Finally, those in the ego-involving condition had higher scores on the ego manipulation check item than the task manipulation item, t (7) = 3.00, p < .02. The reverse was true for those in the task-involving condition, t (7) = 8.21, p < .01.

Interpretation of Individual Items

To examine the participants' understanding of the questions used to measure thoughts, feelings, self-regulatory behaviors within the study, as participants completed the questions they were encouraged to seek clarification if they did not understand any question. Students were found to be confused by the self-efficacy questions, an ability attribution question, and two positive statement items. For the self-efficacy questions, some students marked very low percentage scores for the questions associated with high reaction time (i.e., "How confident are you that you can achieve an average reaction time of .90 seconds on this task?") while at the same time marking very low percentage scores for the lowest reaction time (i.e., "How confident are you that you can achieve an average reaction time of .10 seconds on this task?"). When asked, these students indicated that they did not want to get a .90 so they marked it low, even though they knew they could achieve the score. Therefore, further clarification is needed before students complete this

measure. The ability attribution question and the positive statement items were not clearly written and were revised in the formal experiment.

Additionally, correlations among items representing particular constructs (e.g., monitoring, elaboration strategies, effort attributions) were examined. Although most constructs showed adequate correlations ($r > .20$), some constructs were in need of further refinement. In particular, the ability attribution questions were negatively correlated indicating that the one item (i.e., "I didn't get the task.") may not be tapping ability attributions and the other question (i.e., "I am just bad at these kinds of tasks.") may be too vague. The positive statement items did not correlate well either. This seems to be related to the items that emphasized thinking about how well they were doing during the task. Given that the students experienced failure, these questions were not appropriate and were revised for the formal experiment. Finally, the on-task thoughts and the negative statement constructs both had one item that did not correlate well with the remaining items. However, it was deemed that the items were appropriate and in the formal experiment these items may be examined as separate constructs (on-task item - I focused my attention on a particular spot on the screen; negative item - I thought about giving up).

Finally, to examine whether the self-regulatory variables were related to one another in conceptually appropriate ways, correlations across all measures were examined. All correlations seemed to move in the appropriate direction with some exception. First the problems noted above related to ability attributions, positive statements, and on-task thoughts were confirmed by the correlations with other items. The ability attribution item (i.e., "I didn't get the task."), positive statement item, and on-task thought item (i.e., "I

focused my attention on a particular spot on the screen.") did not correlate with any other items. Additionally, the effort attribution items were positively correlated with several excuse making items and a negative thought item. Additionally the effort attributions items were negatively correlated with some enjoyment items.

Testing the Hypothesized Relationships

Given the small sample size, hypothesized relationships could not be tested with certainty; however, mean differences are presented. Given the confusion on some items, these items were not included in the analyses or examined individually. The results revealed that all means moved in the hypothesized direction (see Table 4). The only unexpected finding was that effort attributions were endorsed more by those in the ego-involving group than in the task-involving condition. However, these results must be interpreted with extreme caution given the lack of statistical testing and the lack of validity and reliability with some self-regulatory subscales. Stability of self-efficacy was also examined and contrary to the hypothesis ego-involved individuals seemed to maintain their self-efficacy levels across all rounds while task-involved individuals indicated a loss in self-efficacy across trials (see Table 5). This unexpected finding may relate to the confusion associated with filling out the self-efficacy measure.

The hypothesized interactions between goal involvement and perceived ability on excuse making, persistence, and effort ascriptions are presented; however, no conclusions can be drawn from the data given the extremely small cell sizes. Goal discrepancy could not be investigated in this study because the researcher inadvertently forgot to record the false scores that the athletes obtained on the reaction time task to allow a true examination

Table 4

Means (and Standard Deviations) of Measures of Self-Regulatory Processes by Goal Involvement

	Task-Involving (n = 8)	Ego-Involving (n = 8)
Self-monitoring	4.00 (0.89)	4.13 (0.64)
Self-judgment	4.75 (0.71)	3.88 (0.64)
Effort attributions	2.00 (0.54)	2.63 (1.06)
Ability attribution	1.88 (0.84)	2.13 (0.64)
Positive statements	3.50 (1.20)	2.63 (1.41)
Negative statements	1.67 (0.62)	2.42 (0.42)
Elaboration strategies	3.80 (0.67)	3.50 (1.14)
Organizational strategies	4.00 (0.80)	3.67 (1.15)
On-task thoughts	3.80 (0.99)	3.33 (0.82)
Off-task thoughts	2.09 (0.86)	2.50 (0.67)
Enjoyment	3.80 (0.40)	3.45 (0.77)

Table 5

Means and (Standard Deviations) for Self-efficacy Across Rounds by Goal Involvement

	Time 1	Time 2	Time 3
Task Involvement	6.48 (2.41)	5.68 (2.00)	5.23 (1.91)
Ego Involvement	6.35 (1.52)	6.58 (1.28)	6.28 (1.36)

of goal discrepancy. High and low perceived ability groups were created by using the mean score for the entire sample (M = 3.88). The mean scores suggest that ego-involved

athletes made more excuses as a group than task-involved athletes while ego-involved, low ability athletes persisted less than the other groups (see Table 6). Examination of

Table 6

Means and (Standard Deviations) for Excuse Making and Persistence by Achievement Goal Conditions and Perceived Ability

	Excuse Making	Persistence
Ego involved, high ability athletes (n = 6)	2.27 (.80)	9.83 (8.04)
Ego involved, low ability athletes (n = 2)	2.10 (.42)	8.00 (1.41)
Task involved, high ability athletes (n = 5)	1.68 (.76)	12.60 (6.99)
Task involved, low ability athletes (n = 3)	1.80 (.35)	12.33 (9.29)

effort ascriptions showed that all groups gave more effort on the last performance round compared to the first performance round, however, there appeared to be no differences based on the achievement goal condition (see Table 7).

Table 7

Means and (Standard Deviations) for Effort Ascriptions Across Trials for Goal Involvement by Perceived Ability Groups

	Effort Level at Time 1	Effort Level at Time 2
Ego-involved, high ability athletes (n = 6)	3.67 (1.21)	4.33 (0.52)
Ego-involved, low ability athletes (n = 2)	3.50 (0.71)	4.50 (0.71)
Task-involved, high ability athletes (n = 5)	4.00 (0.71)	4.40 (0.55)
Task-involved, low ability athletes (n = 3)	3.67 (1.53)	4.00 (1.00)

Summary and Recommendations

The results of the pilot test were very promising. In general, individuals believed the failure feedback, thought the task was interesting, adopted the goal involvement condition presented to them to some extent, and understood most of the questions presented. However, this pilot study was not without flaws. There are several recommendations for the formal experiment.

The first recommendation related to the participants' knowledge of reaction time. Given that approximately 12% of those involved in the study did not understand the concept of lower times relating to better reaction time, it was recommended that knowledge of reaction time be tested prior to engaging in the experimental study. Those high school students who do not show preexisting knowledge of evaluating better reaction time will be given a short lesson. If, following the lesson, these individuals still experience problems, they will complete only the reaction time task without engaging in the experimental study. Additionally, care will be taken to explain the self-efficacy questionnaire which is based on the reaction times to insure that athletes understand the questions. Also the self-efficacy questionnaire was modified for the formal experiment to include reaction time scores from 0.70 s to 0.10 s rather than 0.90 s to 0.10 s given that all participants felt they were confident at the high end of the scale.

Second, the manipulation seemed to be adequate to engage athletes in an ego-involving climate; however, there were a subset of athletes (n = 6, 43% of those placed in the ego-involving condition) who did not completely let go of their task involvement when

placed in an ego-involving condition. When their dispositional goal orientations were examined it was revealed that individuals who did not buy into the manipulation had lower ego orientation scores ($M = 2.19$, $SD = .61$) than those who adopted the ego-involving condition ($M = 3.17$, $SD = 1.18$), $F(1, 12) = 3.34$, $p = .09$. Additionally, all participants in the ego-involving condition had high task orientations ($M = 4.41$, $SD = .30$). Given that some participants did not accept the ego goal involvement manipulation completely due to their preexisting orientation, which may not be able to be altered, the researcher will attempt to gather a larger number of participants by approximately 20% to ensure an adequate sample size in the end for the ego-involving condition.

Third, the correlation between the excuse making scale and the effort attribution scale revealed a positive association. Therefore, the use of an effort attribution may seem more like an excuse rather than indicate a need to use additional effort. Consequently, it was recommended that the effort attribution scale be examined in conjunction with the excuse making scale in the formal experiment.

The fourth recommendation addresses the effort questions provided at the end of each performance round. The use of effort increased for participants following failure regardless of goal involvement. Although it is encouraging to see that all participants tried hard at the task, it is the opinion of this researcher that this may be a false representation of reality associated with the placement of the question. Prior to starting each round, participants were asked how hard they would try in the upcoming round. Their response was not only recorded but was visible to the experimenter as she recorded their intended goal for the next round. Their desire to provide the experimenter with the notion that they

were trying (even though they may not have tried) led to the recommendation that these questions be discarded. Therefore, the participant will only be asked how hard they tried to meet their goal following each performance round. These questions were not readily seen by the experimenter which may lead to more accurate responses.

Finally, some questions were misinterpreted by the participants or were not appropriate to capture the construct under investigation. Therefore, some questions, addressed earlier, were altered for the formal study.

Chapter 4

FORMAL EXPERIMENT

Method

Participants

The participants were 95 male and 76 female high school age athletes (M age = 15.92, SD = 1.58) enrolled in physical education classes from several Midwest schools. The high school students were primarily white Americans (n = 154); however, diverse ethnic/racial groups were represented (5 African Americans, 6 Hispanic Americans, 3 Asian Americans, and 3 Multiracial Americans). The athletes participated in a variety of sports (basketball - 62, softball/baseball - 55, track & field - 54, football - 52, soccer - 38, volleyball - 31, wrestling - 22, tennis - 20, cross country - 18, swimming - 13, cheerleading - 12, golf - 7, ice hockey - 6, dance - 6, water polo - 3, bowling - 2, diving, mountain biking, martial arts, racquetball, snowboarding, skiing, sailing, power lifting, archery, flag football). Most (78%) had participated in two or more sports. Overall, the athletes had approximately 5 years of sport experience (M = 5.09, SD = 3.41, range = 1 - 15 years) in their respective sports.

Because this study depended on how students perceive the task at hand students who did not feel the task was relevant or important were dropped from this sample (below 3 on a 5 point Likert scale representing somewhat relevant or important). Therefore, 29 participants were removed from the sample because they either felt it was not important to be successful at the task (n = 14) or they felt the task was irrelevant to their athletic

performance (n = 15). Therefore, the final sample size was reduced to 76 male and 66 female high school athletes (M age = 15.77, SD = 1.50).

Task

Athletes tested their discriminant reaction time (DRT) on a computer task. The computer task presented three colored dots, in random locations, on a computer screen for 0.01 s. The objective for the participant was to press the left mouse button whenever a blue dot appeared on the screen. The task consisted of 30 trials presented 1 s apart. Ten of these trials contained a blue dot. The blue dot trials appeared to be randomly placed to the participant; however, each trial was set up with a specific pattern of presentation that was unique to that trial (e.g., the blue dot may appear on every third trial). This allowed for an additional strategy component that athletes could use to try to improve their DRT score.

This task was chosen for three important reasons. First, the task can be perceived as relatively important for athletes. A test of DRT provides athletes with important information about their ability to respond in a sport situation. Therefore, it is more likely to be valued by the participant. Second, the task does not provide direct knowledge of results to the athlete which will allow the researchers to provide false feedback upon task completion. Finally, the task is novel. Therefore, athletes are not likely to have experienced testing their DRT which will make the false feedback more believable.

Manipulation of Goal Involvement

The athletes' goal involvement was manipulated by instructions given to each participant prior to their engagement in the activity. Individuals were randomly assigned

to either the task or ego involving condition. However, given that the pilot test showed that individuals were less likely to "buy in" to the ego-involving condition the likelihood of being placed into an ego condition was almost two times greater than being placed into the task-involving condition. For the task-involving situation, the participants were asked to focus on learning and improving their DRT by doing the computer task. Under the ego-involving condition, the athletes were asked to perform the DRT task better than other students their age. A normative standard for their age group was provided (see Appendix A). Additionally, this group was told that those people tested so far had scored between the 45th and 85th percentile with athletes falling between the 65th to 85th percentile. They were then told that they should be able to place in that percentile range. Finally, participants were given the performance scores of two mock participants who had performed in the stated range for athletes, and were told that they should try to outdo their scores. The specific script for each goal involvement condition was as follows:

> Task Involvement: This task tests how good you are at responding quickly to situations. Many people show slow reaction time at first but with more practice, they begin to show improvements in their reaction time. The purpose of this project is to see if by doing this task people can learn to improve their reaction time. So as you perform this task, we would like you to focus on improving your reaction time score over the course of several attempts at the task. There is no set standard, but you should try to improve your personal score.
>
> Ego Involvement: This task tests how good you are at responding quickly to situations. The purpose of this project is to see which students have the best reaction time. Therefore, as you perform this task I would like you to focus on performing better than as many people as possible. How you do on this task will tell me how good your reaction time is compared to others. There is no set standard, but you should perform better than as many people as possible. The graph will show you how high school students generally perform on this task.

Procedure

Permission to conduct this study was obtained from the Michigan State University Committee on Research Involving Human Subjects (Appendix B). Permission was also obtained from school administrators prior to asking the athletes to participate in the study. Upon receiving this approval, the athletes were informed about the study and parental consent forms were distributed to interested athletes (Appendix C). Those athletes who obtained parental consent as well as provided personal consent, filled out a short questionnaire, and were signed up for a time to complete the task. The questionnaire included the Task and Ego Orientation in Sport Questionnaire (TEOSQ), and two items related to perceptions of ability with regard to reaction time. The dispositional measure of goal orientations (i.e., the TEOSQ) was given to participants to see how the manipulation may influence individuals with different dispositional tendencies and to investigate dispositional goal orientations relative to goals created in the climate. The perceived ability questions were used to split athletes into high and low perceived ability groupings. The athletes then completed the computer task at the designated time. The initial instrument took approximately 5 minutes to complete while the computer task and associated questionnaires required approximately 30 minutes.

Each athlete was tested individually on his/her performance of the computer task. The athlete was first familiarized with the computer task and told how important reaction time could be to an athlete's performance. The experimenter then demonstrated how the task works and gave the athlete a short practice trial to ensure that the participant knew how to do the task. The participant then received feedback in the form of average DRT, number

of misses (missed responding to the blue dot), and number of errors (pressed button when no blue dot appeared). After looking over the feedback, the student-athlete was assessed on her/his reaction time knowledge to determine whether the athlete understood the general notion that a fast reaction time was denoted by a smaller amount of time (i.e., lower scores). This question was included based on pilot work that showed that some athlete's could not easily comprehend the timing concept related to reaction time. Those who did not understand were given a short lesson on reaction time. Following this assessment, the participant completed measures of perceived success, satisfaction with performance, effort on current round, and self-efficacy.

Once the athlete was acquainted with the task, she/he was informed about the specific purpose of the task which included the manipulation of the goal involvement condition. The athlete then engaged in two more rounds of the task which were considered the actual performance test. Prior to the first performance round, the athlete was asked to set a performance goal for the next round that was in line with the goal involvement manipulation (i.e., a particular time that represented an improvement over their practice round for task involvement or that represented a definite percentile for ego involvement). The athlete then engaged in the first performance round. Although their true practice trial scores along with performance errors and misses were recorded, the participant received false summary failure feedback concerning their DRT. To create the failure feedback, a mathematical computation added time to the individual's time across trials ensuring that they did not meet their goal or do better than their practice round and, in the case of ego involvement, score higher than the 65th percentile (the specific computation was

addressed in the pilot study, pg. 64). The false failure feedback was presented in three different forms at the end of the round. The first form of feedback was in a graphical presentation which showed the athlete's DRT. The graphical presentation was in line with the goal manipulation so that under the task-involving conditions participants were shown a graph of his/her performance on each trial to indicate the level of improvement while those in the ego-involving condition were shown a graph that showed her/his percentile ranking. The second type of feedback was in the form of average DRT, number of misses (missed responding to the blue dot), and number of errors (pressed button when no blue dot appeared). The final form was written feedback concerning the participant's performance followed by verbal feedback from the experimenter. The feedback was in line with the goal involvement condition (e.g., For task involvement - Written - "Your average score did not improve. Your times have increased from ___ in the practice trial to ___ in this performance trial. Verbal - "You failed to meet your goal on this round. Your times increased. Well, let's see what happens on the next trial." For ego involvement - Written - "You are in the ___ percentile." Verbal - "You failed to meet your goal on this round. You moved down in your percentile score and you didn't reach the 65% percentile. Well, let's see what happens on the next round.") After receiving the failure feedback, the athlete was again asked to complete measures of success, satisfaction, effort on current round, and self-efficacy.

Prior to the second round, the athlete was again informed of the goal he/she should focus on during the task (i.e., task- or ego-involving) and asked to set another performance goal for the next round which was in line with the goal involvement

manipulation. After the completion of this round, the participant was again given false failure feedback that did not allow her/him to meet the goal or show any progress. After receiving the failure feedback, the athlete was again asked to complete measures of success, satisfaction, effort expenditure on current round, and self-efficacy. Following the completion of these measures, the athlete was also asked to complete a final questionnaire that related to his/her thoughts about the task in its entirety. Specifically, the questionnaire measured attributional responses, enjoyment of the task, excuse making, and strategy use. Additionally, the athlete responded to manipulation check measures related to task importance and goal involvement. Finally, the athlete was asked how many additional rounds she/he would like to complete to try to better his/her score. The response was noted as a measure of persistence. Athletes were then given the opportunity to complete another round while being debriefed on the project.

During debriefing, athletes were informed about the true nature of the study, given a printout of their actual DRT scores, and provided the opportunity to practice their DRT with true feedback. This procedure allowed the athletes to experience success and reassured them that DRT could be improved over time. They were also given tips for improving their DRT in sport situations. Additionally, athletes were informed about the current research related to the use of ego- and task-involving goals in practice and competition.

Measures

Task and Ego Orientation in Sport Questionnaire. The Task and Ego Orientation in Sport Questionnaire (TEOSQ) is a 13-item questionnaire, which was used to assess one's

tendency towards emphasizing task-involved and ego-involved goals in the athletic setting (Duda, 1989; Duda & Nicholls, 1992; Duda & Whitehead, 1998) (Appendix E). When completing the TEOSQ, participants are requested to remember a time when they felt successful in sport and then indicate, on a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), whether they agree or disagree with items reflecting a task orientation (e.g., "I learn a new skill by trying hard") or ego orientation (e.g., "I can do better than my teammates"). Based on the findings from several researchers, the TEOSQ has demonstrated a two factor structure representing a task and ego orientation and has been found to be internally consistent (Cronbach Alpha = .72 - .89 and .78 - .89, respectively) (Duda, 1989; Duda, Fox, Biddle, & Armstrong, 1992; Duda & White, 1992; Newton & Duda, 1993).

Perceived ability. To measure perceived ability, the athletes were asked to respond to two items related to their ability to respond to sport situations quickly (Appendix F). Athletes were asked to read each item and indicate, on a 5-point Likert scale (1 = not so good to 5 = very good), how good they were at responding quickly or how good was their reaction time (e.g., "How good are you at responding quickly in sport?").

Manipulation check items. To ensure that the goal involvement conditions and type of feedback were appropriately manipulated during the experimental task, athletes were asked to respond to several questions on a 5-point Likert scale (Appendix G). The first two questions, based on previous research, assessed goal condition for task involvement (i.e., "In your opinion, the purpose of this task was to improve your own reaction time.") and ego involvement (i.e., "In your opinion, the purpose of this task was to do better than

as many students as possible on this task.") (Cury, Biddle, Sarrazin, & Famose, 1997). Athletes who did not "buy in" to the goal involvement manipulation were excluded from the study. An athlete was designated as believing the goal involvement condition if she/he somewhat agreed with the ego manipulation check item (3 or higher on a 5 point Likert scale) or agreed with the task manipulation check item (4 or higher on a 5 point Likert scale). A lower number was chosen for the ego manipulation item based on research which has found that the dispositional ego orientation is negatively correlated with social desirability (Kavussanu & Roberts, 2001). This suggests that individuals may respond in socially desirable ways to questions that reflect ego involvement. Given this assumption differing cut off criteria were utilized. Therefore, an athlete in the task-involving condition would have to indicate a four or higher on the task manipulation item as well as have indicated lower than a three on the ego manipulation item to remain a participant in the task-involving condition.

The next question related to the failure feedback (i.e., "How successful were you on the last round?"). This question was presented at the end of each round. Additionally, it was also deemed worthwhile to determine the level of importance that the athlete placed on doing the reaction time task (i.e., How important is it for you to be successful at this task?" and "How relevant is reaction time on this task to your athletic performance?"). Athletes who did not feel the task was important or relevant (i.e., indicating a 2 or lower on the 5-point Likert scale) were dropped from the study.

Enjoyment and satisfaction. The participants were asked to indicate their enjoyment of the task and satisfaction with their current performance level. The enjoyment scale was

drawn from the 18-item Intrinsic Motivation Inventory (McAuley, Duncan, & Tammen, 1989). Although the items on the questionnaire represent four subscales, only a modified version of the interest-enjoyment subscale (e.g., "I enjoyed doing this task very much") was utilized for this study (Appendix H). When completing the scale, the participants were asked to respond to each of the items on a 5-point Likert scale (1=strongly disagree to 5=strongly agree). In addition to measuring enjoyment, participants also responded to a Likert scale question (1=very dissatisfied to 5=very satisfied) related to their overall satisfaction with their performance (i.e., "How satisfied are you with your current performance on this task?") drawn from previous research (Bandura & Cervone, 1983; Kitsantas & Zimmerman, 1998). This item was also used to determine whether individuals adopted the false failure feedback.

Self-efficacy. The athletes were asked to indicate their self-efficacy by rating whether they believed they could achieve a specific reaction time on the computer task. A range of reaction times was provided ranging from 0.7 to 0.1 decreasing by one-tenth. Participants were asked to indicate their confidence in achieving each of the specific reaction times listed on a 11-point scale in increments of 10 percent (0 = not certain at all to 100% - completely certain) (Appendix I). The strength of self-efficacy was assessed by adding up the confidence ratings on each item and dividing it by the total number of items (Bandura, 1997; Feltz & Chase, 1998). Additionally, following the last round, athletes were asked to describe what information they used to judge their confidence level relative to the reaction time scores.

Attributions. The attribution measure was based on work conducted by Ames (1984). In her study, she examined attributional responses of effort (e.g., "I usually don't try hard on things like this.") and ability (e.g., "I just don't get these puzzles.") following both success and failure. For the purposes of this study, the measure was modified to only include responses related to failure and representative of appropriate explanations for the given task (Appendix J). Additionally, the items were placed on a Likert scale (1 = not true for me to 5 = very true for me) rather than circling statements that represented their current thoughts.

Excuse making. This measure was adapted from Kernis and Grannemann (1990) who examined excuse making in the classroom setting based on Darley and Goethals (1980) model of performance attributions. This measure incorporated both long and short term factors related to power (e.g., "I did not get enough sleep the night before the exam."), motivation (e.g., "I could not get "psyched up" to study for this exam."), and task-difficulty (e.g., "The material covered in this class is too difficult or 'abstract'."). For this study, only the items that corresponded to motor performance were incorporated representing three main subscales: short-term task difficulty (e.g., "I thought this task was too hard."), short-term power (e.g., "I did not get enough sleep last night and therefore it is hard to concentrate."), and long-term power (e.g., "There are too many other things going on right now for me to focus on this task."). Given the overlap between the motivational scale and effort and ability attributions, it was not included in the excuse making scale. Additionally, one item related to luck was also included (i.e., "I am just having a bad day.") (Appendix K).

Strategy use. In order to tap the self-regulatory strategies that athletes may use, a strategy use questionnaire was devised based on several measures in previous research (Diener & Dweck, 1978; Kanfer & Ackerman, 1989; Pintrich, Smith, Garcia, & McKeachie, 1993; Thill & Brunel, 1995). The intent of the measure was to tap the use of self-monitoring, organizational skills, elaboration strategies, on- and off-task thoughts, and positive and negative thoughts (Appendix L). The athletes were instructed to think about each strategy and determine how much they used the strategy during the performance trials on a 5 point Likert scale (1 = never to 5 = always).

Effort expenditure perceptions and persistence. The level of effort that participants perceived they used to try to reach their goal was measured using questions from previous research (Cury, Biddle, Sarrazin, & Famose, 1997; Thill & Brunel, 1995). Specifically, the athlete was asked to indicate on a 5-point Likert scale how much effort he/she used during the last round (Appendix M). Also, persistence at the task was measured by asking the athletes to indicate whether they would like to engage in more rounds to try to improve their score. Their response to the number of rounds they would like to complete was used as an indicator of persistence.

Goal discrepancy. To determine whether the athlete set a discrepant goal based on their perceived mock scores on the computer task, each athlete was asked to record a goal prior to each performance round (Appendix N). Goal discrepancy was determined by subtracting the recorded goal from the false performance score provided to the athlete.

Experimental Design

The design of this experiment was a 2 X 2 X 3 (Achievement Goal Condition x Perceived Ability x Round) factorial design with repeated measures on the last factor. Goal involvement was manipulated prior to completion of the computer task as either task- or ego-involving. Perceived ability was calculated based on the participants' responses to two questions on perceptions of ability related to reaction time performance. Participants were split into high and low ability groups based on mean scores of the entire sample. There were three rounds including one practice and two performance rounds. To insure that differences which emerged were statistically significant, the alpha value was adjusted for experimentwise error using a Bonferroni adjustment. Therefore, the significance level was set at .005 (.05/10 - the number of dependent variables examined).

Results

The results for this study are examined in four major sections. First, several preliminary analyses are presented to review the effectiveness of the manipulation, validity and reliability of measures, potential gender differences across participants, and finally, to test the assumptions for the statistical analysis. Following the preliminary analysis, hypothesized relationships are examined. The first set of hypotheses to be examined involve the relationships between achievement goals and self-regulatory processes along with some exploratory analyses related to perceptions of ability and gender. Next, the relationships between achievement goals, perceptions of ability, and self-regulation failure are explored. Following these analyses, exploratory analyses are conducted. Third, an exploratory analysis examined the predictive relationship of dispositional achievement

goals on the self-regulatory variables. Finally, a combined task- and ego-involved group is examined.

Preliminary Analyses

Effectiveness of the Manipulations

The manipulation check items were examined to see if the participants in the study believed the failure feedback and followed the achievement goal condition in which they were placed. For failure feedback, perceptions of success and satisfaction were examined. A one-way analysis of variance with repeated measures was conducted to determine if success declined significantly across trials. Because the assumption for sphericity was violated (Mauchly's $W = .91$, $p < .01$), the Huynh-Feldt F-test was utilized instead of the traditional F-test. The results revealed that participants in the study did show a decrease in their perception of success from the practice trial to the last performance trial, F (1.86, 262.05) = 120.63, $p < .01$, $1-\beta = 1.00$, $\eta^2 = .46$ (see Table 8). Specifically, pairwise

Table 8

Means (Standard Deviations) for Belief about Success and Satisfaction

	N	Success	Satisfaction
Practice round	142	3.60 (1.02)[a]	3.43 (0.93)[a]
1st Performance round	142	2.61 (0.95)[b]	2.51 (0.94)[b]
2nd Performance round	142	2.22 (0.97)[c]	2.19 (0.93)[c]

Note: Letters represent differences between rounds

comparisons with a Sidak correction revealed that all perceptions of success decreased across all three time periods. Additionally, examination of the frequencies revealed that during the practice trial only 15% of the participants did not feel successful (marking a 1

or 2 on the 5 point Likert scale) while 61% of the participants did not feel successful after the last performance round. Within this final performance round, an additional 30% of the participants only felt somewhat successful. Satisfaction with one's performance paralleled the above results. Therefore, as athletes progressed through the trials they felt less satisfied with their performance, $F(2, 282) = 107.64$, $p < .01$, $1-\beta = 1.00$, $\eta^2 = .43$. Pairwise comparisons indicated a significant reduction in satisfaction across the three time periods with 69% being dissatisfied with their performance at the end of the task compared to 17% at the beginning of the task. Overall, these results suggest that most athletes experienced some degree of failure at the task and therefore the manipulation of failure feedback was effective.

The next step was to see if the achievement goal condition was effectively manipulated. Two independent sample t-tests were conducted to determine whether those in each goal condition (task- or ego-involving) reported higher scores on items representing their goal condition than the other condition (see Table 9). The results

Table 9

Means and Standard Deviations for Goal Manipulation Item by Achievement Goal Condition

		Task Manipulation Item		Ego Manipulation Item	
	N	Mean	Standard Deviation	Mean	Standard Deviation
Task-Involving Condition	44	4.39	0.89	2.30[a]	1.27
Ego-Involving Condition	98	4.09	1.08	2.87[b]	1.25

Note: Letters represent differences between groups

revealed that participants in both the task-involving and ego-involving conditions had similar scores on the task manipulation item, t (140) = -1.58, p = .12. However, the participants in the ego-involving condition had higher scores on the ego manipulation item than athletes in the task-involving condition, t (140) = 2.51, p = .01. Therefore, although athletes in the ego-involving condition indicated higher levels of ego involvement, they still rated the task manipulation item higher on average than the ego manipulation item suggesting that some individuals did not accept the manipulation. Further, paired sample t-tests conducted for both the task-involving goal condition, t (43) = 9.22, p < .01, and ego-involving goal condition, t (97) = 7.17, p < .01, revealed that participants, regardless of achievement goal condition, perceived higher levels of task involvement than ego involvement. Examination of the individuals' scores on the manipulation check items revealed that 39 participants (17 males and 22 females) placed in the ego-involving condition did not use the comparative information to a great degree when engaging in the task while 8 students in the task-involving condition (6 males and 2 female) did not use self-referenced information. However, an additional 43 individuals in the ego-involving condition and 14 participants in the task-involving condition used both normative and self-referenced information when completing the task. Overall, the goal manipulation was not effective, particularly for those in the ego-involving condition. Rather than drop a significant number of participants from the study, alternative analyses were conducted to address the hypotheses within the study. These analyses are presented following the remaining preliminary analyses.

Validity and Reliability of Self-Regulatory Variables

Before proceeding to the main analyses, it was important to establish the validity and reliability of the measures used within the study. To examine the internal consistency of the measures used within this study, Cronbach Coefficient Alphas (α) were calculated for each measure used. Given the small number of items within each scale, a reliability level of .60 was judged to be acceptable (Nunnally & Bernstein, 1994). To examine validity, principal component factor analyses were conducted with oblique rotations on the attitudinal measures that were created for this study (i.e., attributions, excuse making, and enjoyment). A factor analysis was also conducted for the remaining self-regulatory variables combined (i.e., self-monitoring, self-judgment, strategy use, positive and negative self-talk, and on- and off-task thoughts) given the low reliability obtained for all of the individual scales (see Table 10). The criteria for extracting factors was established as having an eigenvalue greater than one and making conceptual sense. Following the

Table 10

Internal Consistencies for Select Self-Regulatory Variables

	Cronbach Alpha
Self-monitoring	-.08
Organizational strategy use	.44
Elaboration strategy use	.25
Positive self-talk	.52
Negative self-talk	.36
On-task thoughts	.28
Off-task thoughts	.64

identification of the number of factors, those items that had a factor loading of .40 or higher were maintained as a component of the factor.

Attribution measure. For the attribution measure, two interpretable factors emerged from the factor analysis that accounted for 38% and 27% of the total variance, respectively (see Table 11). The factors represented the two attributional responses measured, i.e., effort and ability. Examination of the reliabilities revealed that both effort and ability attribution measures were internally consistent (Cronbach alphas (α) = .74 and .69, respectively).

Table 11

Factor Analysis for Attribution Measure

	Effort Factor	Ability Factor
I didn't focus on the task hard enough.	.79	
I didn't try hard enough.	.86	
I just need to try harder next time.	.77	
I'm just not good at tracking the dots on the screen.		.72
I am just not good at reacting quickly.		.83
I am just not quick at making decisions.		.80
Eigenvalue	2.28	1.61
% Variance	37.94	26.82
Inter-Factor Correlations		
Ability Factor	1.00	.15

Excuse making measure. The factor analysis indicated that two factors should be extracted from the data and examined (see Table 12). The first factor represented general excuse making related to current events or what Kernis and Grannemann (1990) labeled short-term power excuses accounting for 32% of the variance and was found to be

internally consistent (α = .65). The second factor seemed to depict task difficulty as a potential excuse accounting for 17% of the variance. Although this second factor demonstrated adequate factor validity, the three items did not demonstrate adequate reliability (α = .41). Therefore, these items were removed from future analyses.

Table 12

Factor Analysis for Excuse Making Measure

	Short-term Power Factor	Task Difficulty Factor
I am just having a bad day.	.74	
I don't feel very well today.	.78	
I did not get enough sleep last night and therefore it is hard to concentrate on this task.	.68	
There are too many other things going on right now for me to focus on this task.	.57	
I thought the colored dots flashed too quickly on the screen.		.84
I generally get anxious and tense doing these types of tasks and I can't always think straight.		.42
I thought this task was too hard.		.76
Eigenvalue	2.25	1.21
% Variance	32.17	17.34
Inter-Factor Correlations		
Short-term Power Factor	1.00	.28

Enjoyment. The enjoyment subscale was derived from an existing measure (i.e., the Intrinsic Motivation Inventory). A factor analysis of this measure revealed that the scale was unidimensional explaining 59% of the variance (eigenvalue = 2.96). Further, verification of the internal consistency revealed that the scale was reliable (α = .83).

Self-monitoring, self-judgment, and self-regulatory strategies and thoughts. The self-monitoring, organizational strategies, elaboration strategies, on- and off-task thoughts, and positive and negative thought scales all demonstrated low internal reliability (refer to Table 10). Given that all of subscales compose self-regulation variables, they were entered into a factor analysis to determine whether higher order factors would emerge that encompassed components of self-regulation. The principal component factor analysis with an oblique rotation indicated that five factors had an eigenvalue greater than one. However, the first three factors carried higher eigenvalues and the three factor solution made more conceptual sense than the five factor solution (see Table 13). The first factor represented general strategy use and positive self-talk which accounted for 25% of the variance. The second factor identified as self-monitoring of current performance represented 20% of the variance. The final factor depicted self-defeating thoughts accounting for 11% of the variance. All three factors were found to be internally consistent (see Table 13).

Correlations Among Measures

To further examine the validity of the measures, correlations among all measures were examined. Measures used repeatedly (i.e., effort expenditures, self-efficacy, and goal discrepancy) were collapsed across time for convenience of presentation (it should be noted that all correlations for each time period represented a similar relationship as the collapsed measure). In general, the correlations among the measures moved in the appropriate direction providing further support for the validity of the measures (see Table 14). Ability attributions were positively related to self-defeating thoughts and excuse

Table 13

Factor Analysis for Select Self-Regulation Variables

	General Strategy Use Factor	Self-Monitoring Factor	Self-Defeating Thoughts Factor
I watched for mistakes and tried to focus on fixing the error the next time.	-.67		
I planned what type of strategies I could use to improve my performance on this task.	-.79		
I compared how I just performed and how I performed on the previous round to see which strategy worked best.	-.68		
Before each round I tried to create an image of the task in my mind.	-.62		
I thought about what I would do next to improve my performance.	-.80		
I told myself things to encourage me to try harder.	-.61		
I thought about how much I was going to improve.	-.56		
I thought about new strategies for improving my performance.	-.76		
I thought about how well I was going to do on the next round.	-.47		
I paid attention to my performance to see how I was doing on the task.		.98	
I compared how I was doing to the goal I set.		.96	
I thought about what I should focus on before doing the task rather than just going through the task.		.98	
When I had trouble on the task, I tried to figure out what to do to make it better.		.99	

Table 13 con't.

Factor Analysis for Select Self-Regulation Variables

	General Strategy Use Factor	Self-Monitoring Factor	Self-Defeating Thoughts Factor
I thought about how poorly I was doing.			.41
I let my mind wander while doing the task.			.59
While the dots were flashing, I lost interest in the task for short periods.			.71
I thought about how much I did not like this task.			.65
I thought about giving up.			.71
I kept saying to myself- this task is too hard - rather than thinking about what I was supposed to do.			.75
Eigenvalue	4.78	3.79	2.15
% Variance	25.15	19.95	11.33
Cronbach Alpha	0.84	0.99	0.69
Inter-Factor Correlations			
General Strategy Use	1.00		
Self-Monitoring	.06	1.00	
Self-Defeating Thoughts	.09	.20	1.00

making and negatively correlated with strategy use, self-efficacy, and enjoyment. Self-defeating thoughts were positively correlated with excuse making while being negatively correlated with enjoyment and effort expenditures. In turn, enjoyment was positively correlated with strategy use and effort expenditures and negatively correlated with excuse making. Effort expenditures demonstrated a negative relationship with excuse making. Finally, self-efficacy was positively related to strategy use and negatively correlated with goal discrepancy. However, some anomalies were found. Effort attributions were

Table 14

Correlations Among Measures for Total Sample

	EA	AA	EM	SM	SU	SD	E	SE	EE	P	GD
Effort Attributions (EA)	1.00										
Ability Attributions (AA)	.18*	1.00									
Excuse Making (EM)	.23**	.26**	1.00								
Self-Monitoring (SM)	.08	.75***	.10	1.00							
Strategy Use (SU)	-.13	-.17*	-.16	-.06	1.00						
Self-Defeating Thgts. (SD)	.34***	.28***	.36***	.26**	-.14	1.00					
Enjoyment (E)	-.22*	-.26**	-.25**	-.22**	.27**	-.40***	1.00				
Self-efficacy (SE)	.05	-.27**	-.05	-.16	.23**	-.03	.03	1.00			
Effort Exp. (EE)	-.42***	-.05	-.23**	.08	.16	-.39***	.28***	-.02	1.00		
Persistence (P)	.11	-.04	.01	.05	.11	.08	.07	.01	-.02	1.00	
Goal Discrepancy (GD)	.05	.13	.00	.04	-.15	-.04	.09	-.42***	-.03	-.02	1.00

*p < .05, **p < .01, ***p < .001

positively related to ability attributions, excuse making, self-defeating thoughts and negatively associated with enjoyment and effort expenditures. It seems that similar to the pilot study, the effort attributions were perceived more as excuses than as a positive use of effort. Therefore, in future analyses this scale was treated as a component of excuse making. Additionally, the self-monitoring measure was positively associated with ability attributions and self-defeating thoughts and negatively correlated with enjoyment. Further, no relationship emerged between self-monitoring and strategy use. Therefore, this self-monitoring scale may not be depicting adaptive self-regulation as initially anticipated. In general, the construct validity of the measures is sufficient; however, the self-monitoring scale and effort attribution scale were interpreted differently based on the outcome of the correlational analysis.

Gender Differences

Although gender differences have been noted in goal orientations, perceived ability, and attributions (Croxton & Klonsky, 1982; Duda & Whitehead, 1998; Williams & Gill, 1995; Wisniewski & Gaier, 1990), it was believed that the manipulation of achievement goal condition may override any effect found by gender. Yet, to ensure that this variable was not ignored, prior to running the main analysis, gender differences were examined among all dependent and independent variables. Differences were noted only for perceived ability (See Appendix O for non-significant values). Males were found to have higher perceptions of ability ($M = 3.86$, $SD = .63$) than female athletes ($M = 3.57$, $SD = .59$), $t(140) = 2.79$, $p < .01$. Therefore, gender was included as a variable when examining hypotheses involving perceptions of ability.

Testing Assumptions Associated with the Analyses

To ensure the accuracy of the data analyses, several assumptions associated with the data analyses were examined for each of the dependent variables. These testable assumptions were normality, outliers, and linearity. Examination of the dependent variables revealed that several were non-normal. However, they were not extremely non-normal and were expected as a result of the type of questions asked, i.e., enjoyment was positively skewed while self-defeating thoughts was negatively skewed. Given that multiple regression analyses and the analysis of variance is robust to slight non-normality, it was not perceived as a detriment to the analysis. Additionally, examination of the normality of errors revealed that no dependent variable violated this assumption. In the examination of the data two outliers emerged which significantly skewed the data. Both outliers showed very little variability in responses across the dependent variables and were therefore removed from the data sample. Finally, an examination for linearity revealed that there were no dependent variables that were non-linear.

Examination of Hypothesized Relationships with Achievement Goals and Perceived Ability

Descriptive Statistics

Examination of sample means revealed that the athletes, in general, responded in positive and adaptive ways to failure. Specifically, these athletes used self-regulatory strategies, engaged in little self-defeating thoughts, used few excuses, perceived that they gave a lot of effort at the task, and enjoyed participating in the task (see Table 15).

Table 15

Means (and Standard Deviations) of Measures of Self-Regulatory Processes

Effort attributions	2.79 (0.95)
Ability attributions	2.19 (0.77)
Self-monitoring	2.14 (0.97)
Strategy use	3.50 (0.67)
Self-defeating thoughts	1.87 (0.57)
Enjoyment	3.82 (0.59)
Excuse Making	1.96 (0.75)
Self-efficacy	6.26 (1.54)
Effort Expenditures	3.98 (0.67)
Persistence	9.36 (5.96)
Goal Discrepancy	-0.10 (0.07)

The Impact of Achievement Goals on Select Self-Regulatory Processes

The first set of hypotheses tested relate to the impact of the achievement goal condition on effort and ability attributions, enjoyment, self-monitoring, strategy use, and self-defeating thoughts. Specifically, it was hypothesized that athletes in a task-involving condition would have higher levels of enjoyment associated with the task and use more self-regulatory strategies (i.e., organizational and elaboration strategies, on-task thoughts, and positive self-talk) than those in the ego-involving condition. Furthermore, ego-involved athletes were expected to use more self-defeating thoughts (i.e., off-task thoughts, and negative self-talk) and have higher ability attributions than task-involved participants. Hypotheses for self-monitoring and effort attributions were no longer addressed given the anomalies found in the correlational analysis. Yet, there relationship

with the achievement goal conditions were explored. To test these hypotheses six one-way analyses of variance were conducted. Testing these hypotheses, however, was compromised due to the fact that the goal manipulation was not as effective as anticipated. Therefore, analyzing the data based on the goal involvement conditions must be interpreted with caution given that the groups only differed on their level of ego involvement and were similar in their level of task involvement. These one-way analyses of variance, however, revealed no significant differences between the achievement goal conditions (see Table 16 for mean values and Appendix O for non-significant F values).

Table 16

Means (and Standard Deviations) of Self-Regulatory Measures by Achievement Goal Condition

	Task-Involving (n = 43)	Ego-Involving (n = 97)
Effort attribution	2.81 (0.94)	2.80 (0.95)
Ability attributions	2.17 (0.73)	2.20 (0.79)
Self-monitoring	2.09 (1.00)	2.16 (0.95)
Strategy use	3.57 (0.53)	3.50 (0.70)
Self-defeating thoughts	1.78 (0.50)	1.91 (0.58)
Enjoyment	3.95 (0.54)	3.76 (0.60)

Due to the inability to adequately test the hypotheses within goal manipulation groups, a multiple regression analysis was conducted to more directly address the hypotheses given the failure of the goal manipulation. This analysis used the manipulation check items as predictors of the self-regulatory variables. This analysis could address whether those who

were more likely to adopt the task-involving goal manipulation engaged in greater strategy use and had higher levels of enjoyment while having fewer self-defeating thoughts while those who were more likely to adopt the ego-involving goal manipulation would engage in less strategy use and have lower levels of enjoyment while having more self-defeating thoughts and higher ability attributions. The results revealed that self-defeating thoughts were negatively predicted by athletes who were more likely to adopt the task-involving goal of focusing on self-improvement while enjoyment was positively predicted by athletes who perceived that they focused more on self-improvement (see Table 17 and see Appendix O for non-significant regression analyses).

Table 17

Regression Analysis of Self-Regulatory Measures

Variable	Self-defeating Thoughts		Enjoyment	
	b	SE	b	SE
Task Manipulation Item	-.17***	.04	.23***	.04
Ego Manipulation Item	.03	.04	.03	.04
F Value	7.90***		13.58***	
Intercept	2.48		2.85	
Adjusted R^2	.09		.15	

***$p < .001$

The Impact of Achievement Goals on Self-Efficacy

Another self-regulatory component investigated within this study was self-efficacy. It was hypothesized that task-involved athletes would have more stability in their self-efficacy for the task performance than ego-involved individuals. Examination of achievement goal conditions utilizing a 2 x 3 (Achievement Goal Condition by Round)

analysis of variance with repeated measures revealed no differences among the two groups given the ineffectiveness of the manipulation (see Appendix O for complete ANOVA table). However, a significant time main effect emerged, F (1.40, 193.66) = 22.16, p < .01, 1-β = 1, η^2 = .14. Pairwise comparisons with a Sidak correction indicated that across achievement goal groups, self-efficacy decreased as the athletes experienced failure from Time 1 and 2 to Time 3 (see Table 18). Further, examination of self-efficacy via a multiple regression analysis with the perceived adoption of a particular goal (i.e., the

Table 18

Means (and Standard Deviations) for Self-efficacy Across Rounds by Achievement Goal Condition

	Time 1	Time 2	Time 3
Task-Involving Condition	6.60 (1.67)	6.50 (1.43)	6.03 (1.53)
Ego-Involving Condition	6.53 (1.80)	6.32 (1.60)	5.84 (1.75)
Total	6.56 (1.75)[a]	6.37 (1.55)[a]	5.90 (1.68)[b]

Note: Letters represent differences across time

manipulation check items) as potential predictors revealed no significant differences (see Appendix O for complete regression table).

Also of interest was whether differences would be apparent in the sources of information that the athletes within each achievement goal condition used. Examination of the open-ended responses related to athlete's source of confidence revealed that overall the athletes used their past performance at the task or in athletics to judge their confidence on the task (see Table 19). For example, one athlete stated, "I used the practice time first recorded, and what I know about my reaction time from playing sports previously."

Table 19

Frequency of Sources of Confidence by Achievement Goal Condition

	Task-Involving Condition	Ego-Involving Condition
Past Performance	32	61
Strategy Use	5	7
Effort/Improve	3	3
Positive Self-Talk	2	5
Goal Use	5	0
Normative Information	0	10
Demonstration of Ability	0	7
General Confidence	0	7
Effort Regulation	0	4

Additionally, athletes across both groups used self-referenced sources of confidence including strategies (e.g., "Well I used my eyes to see how quick I could push the button. Sometimes I tried to get ahead of myself and clicked wrong so the next time I made sure they were blue."), effort use (e.g., "I just keep working harder and didn't give up."), positive self-talk (e.g., ". . . I knew I could do better next time."), and goal setting (e.g., "I tried to get my goal and I wasn't even close to getting my goal). However, a Chi-Square analysis revealed that the goal involvement groups did differ on the amount of norm-referenced information that was used to judge their confidence, $\chi^2 = 12.88$, $p < .01$. Specifically, ego-involved athletes were more likely to use, normative comparison (e.g., "I used the chart that showed the average reaction time for high school students."), demonstration of ability (e.g., "I didn't think that I could get .5 or better because I am not that fast."), general feelings of confidence (e.g., "Just confidence and I knew I could do

it."), and effort regulation (e.g., "I thought that I wouldn't try too hard and then see what I got, then I figured once I tried hard I would have a better reaction time."). So although the main source of confidence stemmed from past performance at the task, athletes within the task-involving condition used a variety of additional sources of confidence information that were less norm-referenced than those in the ego-involving condition.

Given the difference in sources of information, it was of interest to see whether self-efficacy levels were different across time based on whether an individual focused on past performance, norm-referenced, or self-referenced information. Examination of the means indicated that when individuals focused on self-referenced and norm-referenced sources, self-efficacy did not drop as much and this drop did not occur until after the first performance round (see Table 20). To determine the statistical significance of this observation, a 3 (source of information) x 3 (time) analysis of variance with repeated measures was conducted, however, no time by source interaction occurred, F (2.83, 175.33) = .75, p = .52.

Table 20

Means (and Standard Deviations) for Self-efficacy Across Rounds by Sources of Information

	Time 1	Time 2	Time 3
Past performance (n = 80)	6.40 (1.59)	6.21 (1.36)	5.63 (1.52)
Self-referenced (n = 26)	6.87 (1.64)	6.77 (1.39)	6.42 (1.46)
Norm-referenced (n = 21)	6.65 (2.07)	6.58 (1.81)	6.25 (1.88)

Exploratory Analyses on Self-Regulatory Processes

Exploratory analyses were also conducted to examine the role that perceived ability and gender may have on these variables. Therefore, hierarchical regression analyses were conducted with goal involvement manipulation check items, perceived ability, and gender entered at the first step and the interaction between gender and perceived ability entered at the second step. The results did not reveal any significant gender by perceived ability interaction effect, therefore, only main effect multiple regression analyses are presented and discussed. These results revealed that perceived ability significantly predicted ability attributions and self-monitoring (see Table 21). Specifically, the higher one's perception of ability the less likely he/she was to use ability attributions following failure or use self-monitoring during the task.

Table 21

Regression Analysis of Self-Regulatory Measures

Variable	Ability Attributions		Self-monitoring	
	b	SE	b	SE
Task Manipulation Item	-.09	.06	-.14	.08
Ego Manipulation Item	.05	.05	.08	.06
Perceived Ability	-.52***	.10	-.45***	.13
Gender	-.15	.12	.06	.16
F Value	7.92***		4.30**	
Intercept	4.70		4.29	
Adjusted R^2	.17		.09	

**p < .01, ***p < .001

The Interaction of Achievement Goals and Perceived Ability on Select Self-Regulatory Variables Representing Self-Regulation Failure

The next set of hypotheses examined the interaction between achievement goals and perceived ability on excuse making (including effort-based excuses from the effort attribution scale), persistence, effort ascriptions, and goal discrepancy. A series of unweighted analyses of variance were planned given unequal cell sizes (Tabachnick & Fidell, 1996; Winer, Brown, & Michels, 1991). High and low perceived ability groups were created by using the mean score for the entire sample ($\underline{M}$ = 3.74, $\underline{SD}$ = .63). Given that there were gender differences in perceptions of ability, gender was also included as an independent variable. Because the number of participants were below that anticipated to have adequate power (.80) for a moderate effect size, the observed power (1- β) and effect size (ω^2) were calculated for each analysis to ensure that the finding was not only significant but meaningfully so. Any significant differences found were investigated with pairwise comparisons for significant main effects and Tukey's post-hoc tests with the harmonic *n* being used to examine differences in the unweighted means of significant interactions. Given the failure of the goal manipulation, these analyses were supplemented by hierarchical regression analyses with main effects entered first (i.e., perceived ability, gender, task manipulation item, and ego manipulation item) followed by two-way interactions, three-way interactions, and finally the four-way interaction. Examination of the results revealed that no interaction terms approached significance, therefore, only the main effects multiple regression analyses are presented for each dependent variable.

Excuse making. To examine the hypothesis that low ability ego-involved individuals would make more excuses, separate 2 (Achievement Goal Condition) x 2 (Perceived Ability) unweighted analyses of variance were conducted for general excuse making and effort-based excuse (based on the effort attribution measure). Examination of the analyses revealed that no interaction effect emerged, thus not supporting the hypothesis that low ability, ego-involved individuals made more excuses (see Table 22 and see Appendix O for the complete ANOVA table). Additionally, an interaction effect between achievement

Table 22

Means (and Standard Deviations) for Excuse Making for Achievement Goal Condition by Perceived Ability Groups

	Short-term Power Excuses	Effort-based Excuses
Ego-involving, high ability (n = 54)	1.90 (0.62)	2.78 (0.97)
Ego-involving, low ability (n = 43)	2.19 (0.83)	2.81 (0.94)
Task-involving, high ability (n = 20)	1.63 (0.49)	2.88 (1.08)
Task-involving, low ability (n = 23)	1.99 (0.91)	2.75 (0.82)

goals and gender emerged as significant, F (1, 132) = 13.24, $p < .01$, $1-\beta = .95$, $\omega^2 = .08$. Tukey post-hoc tests indicated that task-involved males used short-term power excuses less than ego-involved males, Tukey *a* (33.11) = 5.45, $p < .05$, and task-involved females, Tukey *a* (20.93) = 4.62, $p < .05$ (see Table 23). No other differences were found. The multiple regression analysis added no additional findings (see Appendix O for regression analysis).

Table 23

Means (and Standard Deviations) for Short-term Power Excuses by Achievement Goal Condition and Gender

	Short-term Power Excuses
Male Athletes	
Ego-involved (n = 49)	2.12 (.75)[b]
Task-involved (n = 25)	1.51 (.60)[a]
Female Athletes	
Ego-involved (n = 48)	1.93 (.71)[a]
Task-involved (n = 18)	2.25 (.76)

Note: Letters represent differences between groups

Of additional interest was the potential relationship of perceived ability and achievement goals on the effort attribution scale. As stated earlier, this scale was positively correlated with the excuse making measure and self-defeating thoughts and negatively related to perceived effort expenditures and therefore may represent an excuse to the athletes rather than a positive self-judgment that would lead to increased effort at the task in the future. Examination of the 2 (Achievement Goal Condition) x 2 (Perceived Ability) x 2 (Gender) analysis of variance revealed no differences (see Table 22 for mean values and Appendix O for the complete ANOVA table). Further, no significant differences emerged for the multiple regression analyses (see Appendix O for the regression analysis).

Effort expenditures. To examine the effort ascriptions of athletes a 2 x 2 x 2 x 2 (Gender by Achievement Goal Condition by Perceived Ability by Time) analysis of variance with repeated measures on the last factor was conducted. This was to test the

hypothesis that ego-involved low ability athletes may be more prone to withdrawing effort as they progress through the task than the other groups. The results did not support this hypothesis (See Appendix O for complete ANOVA table). In fact, trends in the data revealed that ego-involved athletes gave less effort at both time periods (see Table 24). However, only a significant time main effect emerged which showed that all groups gave more effort on the last performance round compared to the first performance round, F (1, 132) = 12.93, $p < .01$, $1-\beta = .95$, $\eta^2 = .09$. No differences emerged for the multiple regression analyses (See Appendix O for complete regression table).

Table 24

Means (and Standard Deviations) for Effort Ascriptions Across Trials for Achievement Goal by Perceived Ability Groups

	Effort Level at Time 1	Effort Level at Time 2
Ego-involved, high ability (n = 54)	3.80 (.76)	4.07 (.84)
Ego-involved, low ability (n = 43)	3.72 (.73)	4.00 (.72)
Task-involved, high ability (n = 20)	4.15 (.67)	4.25 (.72)
Task-involved, low ability (n = 23)	3.96 (.71)	4.26 (.62)
Total	3.85 (.74)[a]	4.11 (.76)[b]

Note: Letters represent differences across time

Persistence. Persistence was hypothesized to be lowest among ego-involved, low ability athletes. To examine this hypothesis a 2 (Achievement Goal Condition) x 2 (Perceived Ability) x 2 (Gender) analysis of variance for persistence was conducted and revealed a significant three-way interaction effect, F (1, 130) = 7.53, $p < .01$, $1-\beta = .78$, $\omega^2 = .04$ (See Appendix O for complete ANOVA table). Follow-up Tukey's post-hoc

tests revealed that, contrary to the hypothesis, low ability ego-involved male athletes had higher levels of persistence than high ability, ego-involved males, Tukey *a* (22.78) = 4.36, $p < .05$, low ability, ego-involved females, Tukey *a* (20.93) = 4.44, $p < .05$, and low ability, task-involved males, Tukey *a* (15.10) = 4.37, $p < .05$ (see Table 25). The multiple regression analyses revealed no significant predictors of persistence (See Appendix O for regression table).

Table 25

Means (and Standard Deviations) for Persistence by Achievement Goal Condition by Perceived Ability

	Total Sample	Males	Females
Ego-involved, high ability	9.43 (6.33)	8.29 (6.21)	10.96 (6.30)
Ego-involved, low ability	10.36 (6.01)	13.56 (6.20)	7.96 (4.69)
Task-involved, high ability	9.20 (6.29)	10.00 (6.90)	8.00 (5.45)
Task-involved, low ability	7.82 (4.41)	7.08 (4.03)	8.70 (4.90)

Goal discrepancy. The final hypothesis related to goal discrepancy among the achievement goal groups. It was hypothesized that high ability, ego-involved athletes would set goals that were more discrepant, in a negative direction, than the other groups. Goal discrepancy was established by subtracting the goal set after each failure trial from the time achieved on that trial. For example, if an athlete scored an average reaction time of .43 and then set a goal for the next round of .40 the goal discrepancy score would be -.03. A 2 x 2 x 2 x 2 (Gender by Achievement Goal Condition by Perceived Ability by Round) unweighted analysis of variance revealed only a time effect for goal discrepancy, therefore, not supporting the hypothesis (See Appendix O for complete ANOVA table).

The significant main effect for time indicated that goals became more discrepant on the last performance round, F (1, 132) = 28.94, $p < .01$, $1-\beta = 1.00$, $\eta^2 = .18$ (see Table 26). In addition to the goals becoming more discrepant over time, the multiple regression analysis revealed that perceiving the task to be more ego-involving negatively predicted goal discrepancy indicating that as one's perception of the task became more ego-involving, one's goals became more discrepant (see Table 27).

Table 26

Means (and Standard Deviations) Goal Discrepancy Across Trials for Achievement Goal Condition by Perceived Ability Groups

	Goal Discrepancy at Time 1	Goal Discrepancy at Time 2
Ego-involved, high ability (n = 54)	-.11 (.10)	-.14 (.09)
Ego-involved, low ability (n = 43)	-.06 (.07)	-.11 (.07)
Task-involved, high ability (n = 20)	-.04 (.07)	-.09 (.07)
Task-involved, low ability (n = 23)	-.08 (.06)	-.10 (.07)
Total	-.08 (.09)[a]	-.12 (.08)[b]

Note: Letters represent differences between across time

Exploratory Analyses for Self-Regulation Failure

Along with the main analyses conducted it was of interest to see whether the pattern of correlations among the self-regulatory variables differed for individuals in the task-involving and ego-involving condition. However, this must be interpreted with caution given that the goal manipulation failed. The only differences between the two groups was their level of perceived ego involvement indicated by the manipulation check item. There are no differences between groups on their perceived task involvement. With this in mind,

Table 27

Regression Analysis of Goal Discrepancy

	Step 1		Step 2	
	b	SE	b	SE
Goal at Time 1	.49***	.07	.47***	.07
Task Manipulation Item			.06	.06
Ego Manipulation Item			-.09*	.06
Perceived Ability			-.01	.06
Gender			.05	.13
F Value	55.15***		13.03***	
Intercept	-.08		-.05	
Adjusted R^2	.28		.30	

*p < .05, ***p < .001

it was interesting to note that the two groups differed in their correlated relationship between effort expenditures, persistence, and goal discrepancy (see Table 28). Specifically, task-involved athletes demonstrated a positive relationship between effort expenditures and strategy use and persistence while ego-involved athletes indicated a no relationship. In regard to persistence, task-involved participants had a positive relationship between persistence and enjoyment while no relationship emerged for ego-involved individuals. Further, persistence and self-defeating thoughts were negatively related for task-involved persons and positively related for ego-involved participants. Finally, ego-involved athletes demonstrated a positive relationship between goal discrepancy and ability attributions and self-monitoring while task-involved individuals had a negative relationship. Lastly, strategy use and goal discrepancy were negatively correlated among ego-involved participants while no relationship appeared for task-involved individuals.

Table 28

Correlations Among Measures for Participants in the Task-Involving Condition and Ego-Involving Condition

	EA	AA	EM	SM	SU	SD	E	SE	EE	P	GD
Effort Attributions (EA)	1.00	.09	.23*	.00	-.12	.29**	-.21*	-.02	-.46***	.19	.12
Ability Attributions (AA)	.33*	1.00	.29**	.74***	-.15	.28**	-.25**	-.29**	.05	.04	.24*
Excuse Making (EM)	.19	.12	1.00	.15	-.16	.32***	-.26**	.02	-.18	.05	.04
Self-Monitoring (SM)	.20	.78***	-.07	1.00	-.04	.29**	-.20*	-.17	.15	.11	.17
Strategy Use (SU)	-.35*	-.40**	-.30	-.24	1.00	-.17	.27**	.22*	.13	.04	-.21*
Self-Defeating Thgts. (SD)	.40**	.16	.39*	.12	-.22	1.00	-.41***	-.03	-.34***	.18	.04
Enjoyment (E)	-.17	-.23	-.10	-.18	.52***	-.23	1.00	.01	.19	.01	.03
Self-efficacy (SE)	-.16	-.27	-.21	-.16	.19	-.03	.09	1.00	.01	.00	-.50***
Effort Exp. (EE)	-.28	-.17	-.19	.05	.41**	-.35*	.36*	-.12	1.00	-.10	-.17
Persistence (P)	-.07	-.23	-.07	-.06	.41**	-.13	.26	.04	.20	1.00	-.02
Goal Discrepancy (GD)	-.11	-.13	.02	-.25	.06	-.18	.14	-.23	.24	.08	1.00

*$p < .05$, **$p < .01$, ***$p < .001$

Note: Correlations for task-involving condition are on the lower diagonal while correlations for the ego-involving condition are on the upper diagonal

The Influence of the Dispositional Achievement Goals

It was also of interest to determine the role that the dispositional achievement goals (i.e., task and ego orientations) may have on the self-regulatory processes examined within this study. In addition to examining the predictive influence of the two goal orientation, it was of interest to determine whether the addition of these more dispositional goals would change the nature of the predictive relationship with goal involvement manipulation and perceptions of ability. Therefore, a series of stepwise multiple regression analyses were conducted for each of the self-regulation variables with goal orientations, the task and ego manipulation check item, and perceptions of ability entered as predictor variables.

In general, the results indicated that goal orientations had some predictive utility in relation to the dependent variables within this study. Strategy use and enjoyment were found to be predicted by a task orientation (see Table 29 and 30). Specifically, the higher levels of task orientation were associated with greater strategy use and more enjoyment at the task. However, the inclusion of the goal orientations did not change the nature of the

Table 29

Results of Stepwise Multiple Regression Predicting Strategy Use

	b	SE
Task Orientation	.49***	.12
F Value	15.58***	
Intercept	1.35	
Adjusted R^2	0.10	

*** $p < .001$

relationship between the achievement goal conditions and the dependent variable. That is, even though a task orientation positively predicted enjoyment, the task-involving

achievement goal condition still had a significant predictive relationship, similar to the earlier findings (see Tables 30). Additionally, similar to previous findings presented above, the manipulation check item of task involvement negatively predicted self-defeating thoughts, the manipulation check item of ego involvement negatively predicted goal discrepancy, while perceptions of ability negatively predicted ability attributions and self-monitoring.

Table 30

Results of Stepwise Multiple Regression Predicting Enjoyment

Variable	Enjoyment			
	Step 1		Step 2	
	b	SE	b	SE
Task Manipulation Item	.23***	.04	.23***	.04
Task Orientation			.33***	.10
F Value	27.68***		19.74***	
Intercept	2.85		1.40	
Adjusted R^2	0.16		0.21	

*** $p < .001$

Exploratory Analyses involving a Combined Ego- and Task-involving Group

Examination of the manipulation check items for the goal involvement condition revealed that several participants indicated using both sets of information (comparative and personal information). Given the large number of individuals who felt they used both task- and ego-involving information ($n = 56$; 14 from the task-involving condition and 42 from the ego-involving condition), it seemed appropriate to understand how these athletes experienced failure compared to those in the task-involving condition and ego-involving

condition. Therefore, new groups were formed based on the manipulation check items as well as the achievement goal condition in which the athlete was placed. Athletes who indicated a score of three or higher on the ego manipulation item and four or higher on the task manipulation item were placed into a combined task- and ego-involving group (denoted as the Both group in subsequent tables). Athletes denoting a score of three or higher on the ego manipulation item and three or lower on the task manipulation item and initially placed into the ego-involving goal manipulation were placed into the ego-involving group (n = 16). Finally, athletes listing a score of two or lower on the ego manipulation item and four or higher on the task manipulation item and initially placed into the task-involving goal manipulation were placed into the task-involving group (n = 22) (refer to methods section for justification of the criteria cutoff).

Upon the removal of participants who did not accept the manipulation and the addition of the combined task- and ego-involving group, a one-way analysis of variance was conducted to see if differences emerged based on the manipulation check items. Significant differences emerged for the task manipulation check item, F (2, 91) = 70.78, p < .01. The ego manipulation check item was also found to be significantly different between groups, F (2, 91) = 88.28, p < .01. Tukey's post-hoc tests revealed that participants in the task-involving condition and the combined task- and ego-involving group (i.e., the both group) had higher scores on the task manipulation item than athletes in the ego-involving condition. Additionally, athletes in the both group and the ego-involving group had higher scores on the ego manipulation item than those in the task-involving condition (see Table 31).

Table 31

Means and Standard Deviations for Goal Manipulation Item by Goal Involvement Group

		Task Manipulation Item		Ego Manipulation Item	
	N	Mean	Standard Deviation	Mean	Standard Deviation
Task Involvement	22	4.73[a]	.46	1.36[a]	.49
Ego Involvement	16	2.63[b]	.62	3.63[b]	.81
Both	56	4.63[a]	.68	3.73[b]	.77

Note: Letters represent differences between groups

Revised Sample Description

Given the removal of participants, the newly defined sample consisted of 52 male and 42 female primarily white American (n = 86) high school age athletes (M age = 15.79, SD = 1.45). The athletes participated in a variety of sports with 76% participating in two or more sports. Overall, the athletes had approximately 5 years of sport experience (M = 5.06, SD = 3.17, range = 1 - 15 years) in their respective sports.

Also of interest was whether differences in dispositional achievement goals existed between the achievement goal groups. Therefore, two one-way analyses of variance were conducted to see if differences emerged in task and ego orientations within the achievement goal groups (see Table 32). There were no differences in task orientation among the three groups, F (2, 91) = .13, p = .88. However, differences did emerge for ego orientation, F (2, 91) = 3.68, p < .03. Tukey's follow-up tests revealed that the both group had a higher ego orientation score than the task-involving condition. Therefore, it

Table 32

Means and Standard Deviations for Dispositional Goal Orientations by Goal Involvement Groups

		Task Orientation		Ego Orientation	
	N	Mean	Standard Deviation	Mean	Standard Deviation
Task Involvement	22	4.41	.39	2.76[a]	0.85
Ego Involvement	16	4.48	.40	3.09	1.01
Both	56	4.42	.48	3.34[b]	0.82

Note: Letters represent differences between groups

seems that the athletes in the task-involving and ego-involving conditions are very similar in terms of the task and ego orientations. Additionally, those in the combined task- and ego-involving group are similar to the ego-involving group; however, the both group differs from the task-involving group in terms of their ego orientation.

The Impact of Achievement Goals on Select Self-Regulatory Processes

To determine whether there were differences in the dependent variables of attributions (effort and ability), self-monitoring, strategy use, self-defeating thoughts, and enjoyment, a series of one-way analyses of variance with the achievement goal conditions as the independent variable were conducted. Unfortunately no significant differences emerged between the goal involvement groups (see Table 33 for mean values and Appendix P for F-values).

The Impact of Achievement Goals on Self-Efficacy

Another self-regulatory component investigated was self-efficacy. Stability of self-efficacy was examined utilizing a 3 x 3 (Goal Involvement by Round) analysis of variance

Table 33

Means (and Standard Deviations) of Measures of Self-Regulatory Processes by Goal Involvement Groups

	Task-Involving (n = 22)	Ego-Involving (n = 16)	Both (n = 56)
Effort attributions	2.74 (0.83)	2.88 (0.75)	2.65 (1.02)
Ability attributions	2.18 (0.67)	2.33 (0.85)	2.04 (0.76)
Self-monitoring	2.09 (1.07)	2.27 (1.06)	1.99 (0.87)
Strategy use	3.45 (0.44)	3.47 (0.61)	3.60 (0.70)
Self-defeating thoughts	1.73 (0.56)	2.24 (0.65)	1.85 (0.52)
Enjoyment	3.89 (0.52)	3.41 (0.51)	3.90 (0.56)

with repeated measures. No differences emerged between the goal involvement groups (see Table 34). However, similar to the previous analysis a main effect for time emerged, $F(1.48, 134.60) = 16.44$, $p < .00$, $1-\beta = 1$, $\eta^2 = .15$. Pairwise comparisons with a Sidak correction indicated that across all achievement goal groups, self-efficacy decreased as the athletes experienced failure from Time 1 and 2 to Time 3.

Table 34

Means (and Standard Deviations) for Self-efficacy Across Rounds by Goal Involvement Groups

	Time 1	Time 2	Time 3
Task Involvement	6.56 (1.80)	6.22 (1.47)	5.88 (1.49)
Ego Involvement	6.33 (1.65)	6.44 (1.29)	5.57 (1.48)
Both	6.79 (1.70)	6.54 (1.53)	6.13 (1.65)
Total	6.66 (1.70)[a]	6.45 (1.47)[a]	5.96 (1.58)[b]

Note: Letters represent differences between across time

The Interaction of Goal Involvement and Perceived Ability on Select Self-Regulatory Variables Representing Self-Regulation Failure

The next set of analyses examined the interaction between achievement goals and perceived ability on excuse making (i.e., short-term power excuses, and effort-based excuses), persistence, effort ascriptions, and goal discrepancy. Again, high and low perceived ability groups were created by using the mean score for the entire sample (M = 3.74, SD = .65). Unlike the previous analyses, gender was not included because differences no longer emerged between males and females on perceptions of ability. Any significant differences found were investigated with pairwise comparisons for significant main effects and Tukey's post-hoc tests with the harmonic *n* being used to examine differences in the unweighted means of significant interactions. Only mean values and significant results are presented here; however, complete analysis of variance tables can be viewed in Appendix P.

A set of 3 (Goal Involvement) x 2 (Perceived Ability) unweighted analyses of variance revealed that no significant differences emerged for general excuse making, effort-based excuses, or persistence (see Table 35). To examine the effort ascriptions of athletes a 3 x 2 x 2 (Goal Involvement by Perceived Ability by Round) analysis of variance with repeated measures on the last factor was conducted. The results only revealed a significant time main effect similar to previous analyses, F (2, 88) = 12.43, $p < .01$, $1-\beta$ = .94, $\eta^2 = .12$ (see Table 36). Finally, examination of a 3 x 2 x 2 (Goal Involvement by Perceived Ability by Round) unweighted analysis of variance revealed only a time effect

Table 35

Means (and Standard Deviations) for Excuse Making for Achievement Goal Condition by Perceived Ability Groups

	Short-term Power Excuses	Effort-based Excuses	Persistence
Ego-involving, high ability (n = 8)	2.06 (0.59)	2.96 (0.70)	6.50 (4.00)
Ego-involving, low ability (n = 8)	2.63 (1.17)	2.79 (0.83)	11.00 (6.46)
Task-involving, high ability (n = 8)	1.59 (0.42)	3.04 (0.92)	8.25 (5.34)
Task-involving, low ability (n = 14)	1.98 (0.92)	2.57 (0.71)	7.64 (4.43)
Both, high ability (n = 34)	1.77 (0.68)	2.51 (1.01)	9.35 (6.29)
Both, low ability (n = 22)	2.17 (0.70)	2.86 (1.03)	10.52 (6.23)

Table 36

Means (and Standard Deviations) for Effort Ascriptions Across Trials for Goal Involvement by Perceived Ability Groups

	Effort Level at Time 1	Effort Level at Time 2
Ego-involving, high ability (n = 8)	3.50 (.53)	4.00 (.53)
Ego-involving, low ability (n = 8)	3.63 (.74)	4.00 (.76)
Task-involving, high ability (n = 8)	4.25 (.71)	4.25 (.71)
Task-involving, low ability (n = 14)	4.07 (.73)	4.29 (.61)
Both, high ability (n = 34)	3.88 (.81)	4.21 (.77)
Both, low ability (n = 22)	3.77 (.69)	4.14 (.77)
Total	3.86 (.74)[a]	4.17 (.71)[b]

Note: Letters represent differences between across time

for goal discrepancy indicating that goals became more discrepant over time, F (2, 88) = 33.23, $p < .01$, $1-\beta = 1.00$, $\eta^2 = .27$ (see Table 37).

Table 37

Means (and Standard Deviations) for Goal Discrepancy Across Trials for Goal Involvement by Perceived Ability Groups

	Goal Discrepancy at Time 1	Goal Discrepancy at Time 2
Ego-involving, high ability (n = 8)	-.10 (.04)	-.16 (.08)
Ego-involving, low ability (n = 8)	-.07 (.09)	-.17 (.06)
Task-involving, high ability (n = 8)	-.01 (.07)	-.08 (.06)
Task-involving, low ability (n = 14)	-.08 (.06)	-.10 (.06)
Both, high ability (n = 34)	-.11 (.10)	-.13 (.09)
Both, low ability (n = 22)	-.05 (.07)	-.10 (.06)
Total	-.07 (.09)[a]	-.12 (.08)[b]

Note: Letters represent differences between across time

Conclusions

Athletes, who perceived a decline in success and satisfaction when receiving false feedback at a discriminant reaction time task, responded in rather adaptive ways to their failure. Specifically, these athletes engaged in moderate levels of strategy use, increased their use of effort across the task, seemed to enjoy their participation in the task and were not inclined to use self-defeating thoughts or make excuses for their less than stellar performances. However, in regard to the specific hypotheses of this study the findings can only shed light on the possible relationships given the failure of the achievement goal manipulation. In partial support of the hypotheses, multiple regression analyses revealed that perceiving the task to be more task-involving was negatively related with self-

defeating thoughts and positively related with enjoyment; perceiving the task to be more ego-involving was negatively associated with goal discrepancy. Further, examination of the achievement goal conditions, which suggested that the two groups differed only in their perception of ego involvement revealed several noteworthy findings. First, differences were noted in the sources of self-efficacy with those in the task-involving condition engaging in fewer normatively referenced sources of efficacy compared to athletes in the ego-involving condition. Second, task-involved males were found to make fewer excuses than ego-involved males and task-involved females. Additionally, ego-involved males with low ability persisted more at the task than ego-involved females with low ability and ego-involved males with high ability. Finally, correlational analyses among the two achievement goal conditions revealed that differences emerged in regard to how effort expenditures, persistence, and goal discrepancy were correlated with other self-regulatory variables (see Table 28).

Exploratory analyses also revealed additional findings. In regards to perceptions of ability, high ability athletes were less likely to attribute failure to lack of ability and used self-monitoring more than low ability persons. Dispositional goal orientations were also found to play a role. Specifically, a task orientation was found to positively predict strategy use and enjoyment. Finally, the inclusion of a combined task- and ego-involved group did not reveal any additional significant findings; however, it is important to note that the examination of the means demonstrated that this group was very similar to the task-involved participants.

Chapter 5

DISCUSSION

Research in the sport domain has been dominated by efforts to understand athletes' response to or acquisition of success. The response of athletes to failure, however, may have greater impact on subsequent achievement behavior. How individuals cope with failure will influence thoughts and feelings about the activity and their behaviors toward the activity. An athlete could respond to failure experiences by encountering negative thoughts and feelings about her participation, reducing her effort during practices, giving up easily when faced with challenge in competition, or withdrawing completely from the sport. Another athlete could respond to failure by using the experience to look for ways to improve his performance, encourage himself to continue in the face of failure, and emphasize his enjoyment of the activity even in the face of failure. Although these represent two distinct responses to failure, there are many variations of responses to failure. However, the question within this research is what causes one athlete to look for the silver lining around the dark cloud while another athlete may focus solely on the dark cloud and not seek to alter the situation? This research was designed to explore this question by examining how achievement goals and perceptions of ability may influence a set of thoughts, feelings, and behaviors, identified as self-regulatory processes, when experiencing failure at a simple motor task. Although research has examined the interrelationships of achievement goals with several motivational variables and

self-regulatory components, very few studies have examined these relationships under failure conditions with a motor task.

Achievement Goal Theory and Self-Regulation

Achievement goal theory suggests that how an individual thinks, feels, and responds in an achievement setting is based on the achievement goal adopted in that setting (Ames, 1992a; Duda, 1993; Dweck, 1986; Nicholls, 1984, 1989). More specifically to failure, Dweck and her colleagues suggest that conceptions of ability influence attributions, persistence, the availability of attentional resources, and behavioral responses (Diener & Dweck, 1978; Dweck, 1999; Dweck & Leggett, 1988; Elliott & Dweck, 1988). Based on this research, hypotheses were derived for the current study. Specifically, that a task-oriented individual would attribute failure to lack of effort. Under this condition, they would focus on altering their level of effort through a variety of self-regulatory strategies (self-monitoring, self-judgment, and general strategy use). Their attention would not be diverted but rather intensified toward achieving the goal via on-task thoughts and positive self-talk. These individuals would not suffer from decreased levels of self-efficacy but rather search for alternative strategies to direct their efforts toward reducing the discrepancy. Finally, dissatisfaction, although apparent, would not undermine their enjoyment of the task. For ego-oriented persons, a failure would be attributed to low ability. For the ego-oriented person this leads to negative self-reactions in terms of thoughts (i.e., negative self-talk), affect (i.e., levels of enjoyment), and efficacy expectations because the failure implicates them as having lower ability. The negative affect and self-defeating thoughts would divert the persons' attention away from the task

at hand, therefore, the person would engage in off-task thoughts. It was also suggested that when ego-involved persons did self-regulate, their strategy use would be qualitatively different from the type of self-regulated strategies utilized by task-involved individuals (Ames & Archer, 1988; Dweck & Leggett, 1988; Meece, 1994; Nicholls, 1984; Nicholls, et al., 1989; Pintrich & Garcia, 1991).

The use of self-regulatory processes by participants in this study provided only partial support for the findings of previous research with non-athlete populations. When faced with failure, athletes who perceived the task to be more task-involving had less self-defeating thoughts and greater levels of enjoyment. Therefore, similar to previous research (Ames, 1984; Diener & Dweck, 1978; Elliott & Dweck, 1988), athletes with higher levels of task involvement responded to failure by not giving up or engaging in negative or off-task thoughts but rather by maintaining enjoyment for the activity. This also supports research on cognitive interference which found that a strong task orientation negatively thoughts of escape (i.e., "I think about quitting.") for tennis and snooker players (Hatzigeorgiadis & Biddle, 1999). The use of more deep processing self-regulatory strategies, however, did not emerge as a distinguishing factor for the task-involved athletes as predicted. Yet, athletes in the task-involving condition, which differed from the athletes in the ego-involving condition on their level of ego involvement, indicated a significant positive relationship between strategy use and effort expenditures as well as persistence while this did not occur for individuals in the ego-involving condition. Therefore, although all athletes indicated using self-regulatory strategies, only athletes in the task-involving condition tended to focus on altering their effort based on a particular

set of strategies which would correspond with previous research (Meece, et al., 1988; Miller, et al., 1993; Nicholls, et. al., 1989; Pintrich, 2000; Pintrich & Garcia, 1991; Wolters, 1998; Wolters, et al., 1996).

Not all of the findings supported the hypotheses regarding the impact of achievement goals on self-regulatory processes. First, the use of self-monitoring of one's performance did not differ among the achievement goal groups. In fact, an examination of the means revealed that these athletes did not focus attention on their performance or make judgments about their performance in relation to their stated goal. It is possible that individuals participating in the task may not have felt that they needed to engage in self-monitoring because of the task simplicity. However, this explanation does not seem as appropriate given that the athletes did state that they engaged in other self-regulatory strategies that to some degree involved the use of self-monitoring (i.e., monitoring performance for mistakes, comparing current performance to previous performance to find the best strategy). It could be that the athletes did not see the benefit of using self-monitoring for their performance outcome. Rather self-monitoring must occur within the context of problem-solving to make one's performance better. Therefore, the questions assessing self-monitoring may not have adequately captured the process of observing and evaluating one's performance in order to master the task but rather focused on the outcome. Further, focusing on the outcome was found to be positively associated with self-defeating thoughts suggesting that it was not adaptive for self-regulation. Additionally, the athletes focusing on mistakes in their performance and seeking alternative strategies rather than focusing on their performance outcomes seem to

correspond with current research on learning a motor skill. Zimmerman and Kitsantas (1996) found that adolescent girls, learning to throw darts, who focused on process outcomes (i.e., focusing on their errors in order to find ways to correct their performance) had more positive motivational outcomes than those focusing on performance outcomes.

The second discrepant finding revolved around athletes' self-efficacy during the task. Although self-efficacy was anticipated to decrease across the performance trials given that the athletes experienced failure, it was hypothesized that individuals in the task-involving situation would maintain a more stable sense of efficacy. Why this did not occur may not only relate to the ineffectiveness of the goal manipulation but also the athletes' source of confidence or self-efficacy. Most athletes (57%) focused on past performance information to determine how confident they were at the task. Given that this was their first experience with the task, athletes may not have had a firm sense of efficacy regarding this task. Therefore, a drop in efficacy across all athletes is not unreasonable. It takes time to develop an accurate self assessment before stability in efficacy beliefs can occur when faced with failure. However, it is interesting to note that the additional sources of confidence tended to differ based on the goal condition in which the athlete was placed. Athletes in the ego-involving condition emphasized more normative referenced sources (i.e., demonstration of ability) than task-involved individuals who focused solely on past performance and self-referenced sources (i.e., effort, or strategy use). Given these different sources of confidence, individuals in the differing achievement goal conditions may have experienced declines in efficacy for different reasons. Bandura (1997) suggests that failure will negatively influence self-efficacy if a great deal of effort was expended.

However, if effort is not exerted, individuals may not alter their judgment of their self-efficacy. So it is possible that although the reductions in efficacy occurred across all achievement goal conditions, the drop could be related to very different factors. Therefore, the correlational analyses between effort expenditures and self-efficacy beliefs for each achievement goal condition were examined. No significant difference emerged; however, a small non-significant negative correlation was found for those in the task-involving condition suggesting that as effort expenditures increased, self-efficacy decreased when both variables were collapsed over (r = -.12). However, this relationship did not hold for those in the ego-involving condition (r = .01). Therefore, these individuals may have judged their self-efficacy based on how their performance compared to others rather than on their use of effort. Yet, this is just speculative given the non-significant relationship and should be investigated in future research.

Overall, the failure of the goal manipulation limited the interpretability of the hypotheses. Within this study, athletes were placed into either a task-involving or ego-involving condition. By manipulating the achievement goal condition, it was believed that individuals would adopt the condition in which they were placed similar to previous research (Cury, et al., 1997; Elliott & Dweck, 1988; Graham & Golan, 1991; Jagacinski & Nicholls, 1987; Miller & Hom, 1990; Solmon, 1996; Thill & Brunel, 1995; Wood & Bandura, 1989). However, examination of the goal manipulation check items indicated that although the two goal condition groups differed on their level of ego involvement they did not differ on task involvement. In fact both groups had higher levels of task involvement than ego involvement. However, based on analyses of the two groups, which

differed on levels of ego involvement, and analyses involving athletes acceptability of the achievement goal condition several interesting findings emerged. However, future research is necessary to create a stronger achievement goal manipulation over an extended period of time in order to corroborate the findings.

Exploring the Relationship between Perceived Ability and Self-Regulation

Although the focus for the self-regulatory factors was on changes as a result of achievement goal conditions, it was also of interest to see what relationships emerged between self-regulation and perceptions of ability as well as the interaction between achievement goal condition and perceptions of ability. Previous research has suggested that individuals with high perceptions of ability may have more adaptive motivational and self-regulatory responses than persons with low perceptions of ability (Bandura, 1990; Harter, 1999; Weinberg, et al., 1979; Weinberg, et al., 1981; Weiss & Ebbeck, 1996). This prediction was true for a subset of variables. Athletes with high perceptions of ability had higher levels of self-monitoring and attributed failure to lack of ability less than athletes with low perceptions of ability when faced with a failure. The attribution findings supports previous research conducted by Chase (2001) who found that children with high levels of self-efficacy were less likely to attribute a failure scenario in physical education or sport to lack of ability than children with lower levels of self-efficacy. Regarding the self-monitoring outcome, it is interesting to note that athletes with high perceptions of ability were less likely to focus on monitoring the outcome of task than low ability participants which may relate to their perception of ability.

In general, however, perceptions of ability were not as predictive as the achievement goal condition in which the athlete was placed. Therefore, having an understanding of how individuals make judgments about their competence may be more useful in helping individuals effectively self-regulate when dealing with failure. But given the different set of variables explained and the limited range of perceptions of ability among these athletes, it is important to consider both perceptions of ability as well as achievement goals.

Achievement Goal Conditions, Perceptions of Ability, and Self-Regulation: Who is at Risk for Self-Regulation Failure?

Although individuals may be more or less effective in their use of self-regulatory mechanisms (i.e., self-observation, self-judgments, and self-reactions), an individual may fail to self-regulate. Researchers have recognized that individuals with low perceptions of ability may act in self-protective ways which can lead to self-regulation failure (Bandura, 1990; Baumeister, 1997; Harter, 1999; Weiss & Ebbeck, 1996). These individuals rather than pursuing strategies that will help them improve, try to protect themselves from being perceived as low in ability by engaging in such strategies as self-handicapping or withdrawing effort. While maintaining high perceptions of ability can often act as a buffer to engaging in self-protective motives, individuals with high perceptions of ability may also be at risk, particularly when a threat to the self is present. Therefore, this study also examined how athletes may experience self-regulation failure, that is, if individuals would make excuses about their performance, withdraw effort or persist in the face of failure, or set unrealistic goals. It was believed that individuals in the ego-involving condition, where a clear threat to ability was present, would withdraw effort, persist less, and engage in

excuse making when they perceived their ability to be low, and set unrealistic goals when they had high perceptions of ability.

Excuse Making

When an individual faces a failure situation, in which he/she can be marked as low in ability, the person may try to explain away the failure by making alternative excuses for why they failed (Baumeister, 1997; Tice, 1993). Within this study, it was anticipated that ego-involved athletes would utilize excuses more because there was a clear threat to their ability given the ego-involving information. Therefore, these athletes may be more likely to explain away their failure with an excuse in an attempt to protect their ability. This was in fact the case for male athletes. Males in the task-involving condition, regardless of ability, were found to use short-term power excuses less than males in the ego-involving condition. Additionally, within the task-involving condition males used fewer excuses than females. Therefore, when faced with failure females may engage in greater excuse making than males under a task-involving condition. Additionally, it was hypothesized that low ability ego-involved athletes would be more susceptible to excuse making since they were not only made more aware of the potential threat to self but also lacked adequate perceptions of self to buffer the threats (Baumeister, 1997). Although there was a trend toward low ability athletes in the ego-involving condition using short-term power excuses more, no interaction effect was found. Why ego-involved, low ability athletes did not emerge with significantly more excuse making may relate to the amount of excuses that were used by the athletes and the ability groupings created for this study (this latter supposition will be discussed in detail later). In general, these athletes did not use a great

deal of excuses to explain away their failure. Therefore, the excuses provided may not have captured their particular excuse for failure. However, more likely is that athletes may perceive making excuses for failure as less permissible given that they are not viewed as acceptable in the athletic context where the high visibility of their failures can be refuted by others.

Effort-based Excuse Making

In addition to the excuse making measure used in the study, a set of effort attributions emerged that appeared to represent a type of excuse making among the athletes based on the positive correlations between this measure and short-term power excuses and self-defeating thoughts. These effort-based excuses were found to be similar to the short-term motivation-related excuse making responses included in Kernis and Grannemann's (1990) measure of excuse-making (e.g., "For whatever reason, I just did not study very hard"). Additionally, athletes seem to use these excuses more than short-term power excuses indicating that when faced with failure, athletes are more likely to seek internal and controllable excuses which can be altered in the future. In fact, the use of effort-based excuses was negatively correlated with perceived effort expenditures suggesting that as one's use of effort is increased, his/her use of effort-based excuses decreases. However, no significant differences emerged among achievement goal conditions.

Perceived Effort Expenditure

Regulation of effort during a task is also extremely important to self-regulation. In general, increasing one's use of effort during task difficulty or task failure is seen as an adaptive self-regulatory response. In this study, athletes demonstrated this response.

Over the two failure performance rounds, athletes were shown to increase their use of effort expenditures. It seems that regardless of ability level or achievement goal condition, athletes perceive that they continued to try hard at the task, in the face of failure.

Persistence

In the face of failure, it is important that athletes continue to persist at the task by refining their skills and trying harder at the task. However, previous literature has found that when individuals are ego-involved and have low perceptions of ability they may reduce their level of persistence to not implicate themselves as not being able. Within this study, however, low ability males were found to have higher levels of persistence (i.e., number of additional times they would like to do the reaction time task) compared to high ability males and low ability females within the ego-involving condition. Although this appears counterintuitive it may make sense given other information surrounding the task. In this task, athletes showed an increase in their perception of effort across failure rounds and engaged in different self-regulatory strategies to get better at the task. Additionally, most participants indicated that the computer task was not hard. Therefore, persisting at the task may not be an effective strategy. So it may be that low ability males in the ego-involving condition may have stated that they would continue to persist at the task to avoid being labeled as low in ability. They may have felt compelled to continue to persist until they reached the standard even if it may not have been within their grasp given that their current level of performance was outside of the normative standard. What is intriguing is why low ability females in the ego-involving condition did not have a similar response. Given that socialization experience for females lead them not to value athletic

prowess as much as males (Eccles, Jacobs, and Harold, 1990), it could be that females may have not seen a need to continue at the task because, although a threat to the self was apparent, the importance of the task was not.

Goal Discrepancy

As an individual successfully progresses through a task, one would expect that the individual would continually readjust his/her goals by making them slightly more challenging. When an individual experiences failure, goals may remain consistent or be altered to match one's current ability level. However, in the face of continual failure, it may not be reasonable to maintain one's current goal but rather adjust the goal to be more realistic. In fact by setting unrealistic goals that cannot be achieved, individuals may be overcompensating for the loss and potential threat to self. Baumeister (1997) believes that this pattern of behavior may be particularly true for high self-esteem individuals under an ego threat. This study examined whether high ability, ego-involved athletes may engage in the same process. Although there was a trend for high ability, ego involved participants to set goals which were more discrepant with their current performance level, and therefore more unrealistic goals, it was not significantly so. In fact, across all athletes, goals became more discrepant as they experienced failure. However, perceiving the task to be more ego-involving was negatively related to goal discrepancy. Therefore, perceiving an ego threat, regardless of perceptions of ability, did relate to setting goals that were more unrealistic for the task given the failure feedback. However, these athletes experienced failure feedback for only two performance rounds. It may be that more failure rounds

would be needed for true differences to emerge for the high ability, ego-involved athletes. Additionally, more extreme perceived ability groupings may be required.

Summary

This study attempted to examine when self-regulation failure may occur related to an athlete's perceptions of ability and achievement goals. Overall, no significant findings were found related to the interaction of perceptions of ability and achievement goal conditions supporting the stated hypotheses. However, the inability to find differences in regard to perceptions of ability may be associated with the fact that perceptions of ability did not truly represent high and low levels of ability. Except for three athletes, all other athletes believed that they were at least somewhat good at responding quickly or having good reaction time (i.e., indicating 3 or above on a 5 point Likert scale). Therefore, the low ability group really represented those athletes that believed themselves to possess moderate ability in regards to reaction time. Therefore, future research should examine more extreme groupings. Additionally, the false failure feedback, although influencing their thoughts about task success and task satisfaction, may not have necessarily elicited a need to engage in self-protective tactics (this notion will be addressed in more detail later).

Dispositional Goal Orientations

Within this study, achievement goals were emphasized in the climate in the anticipation that athletes would focus on this information when engaging in self-regulation. It was believed that the situational context created by the experimenter to emphasize a particular achievement goal would influence how an athlete responded to the achievement setting. However, this manipulation was not as effective as anticipated. Therefore, it was also of

interest to determine how the dispositional goal orientations, which an athlete brings to the setting, may have influenced self-regulatory processes. Additionally, it was of interest to examine whether goal orientations or the achievement goal conditions had more predictive power on the self-regulation variables under investigation. It was believed that the achievement goal conditions which were meant to emphasize task or ego involvement during the task may be more predictive given that involvement is more conducive to understanding what goes on in the achievement setting at a particular point in time. In general, the results indicated differing relationships depending on the dependent variable. For enjoyment, a task orientation was a strong positive predictor while task involvement indicated a slightly smaller positive predictive relationship. Additionally, a task orientation alone was found to be predictive for strategy use. As stated in previous results, task involvement, as measured by the manipulation check item, was negatively related to self-defeating thoughts, while ego involvement was negatively related to goal discrepancy. Overall, it appears that a task orientation may be equally important to consider in examining self-regulatory processes. However, it was interesting to find that an ego orientation did not appear to be influential in predicting self-regulatory responses. It is also important to point out that the nature of the relationship between self-regulatory factors and goal involvement did not change by the inclusion of goal orientations for enjoyment. Therefore, although it is important to consider what an athlete brings to the achievement domain (i.e., their goal orientations) it is also important to consider what cues in the environment are being used to create a level of goal involvement. This supports Dweck and Leggett (1988) who suggest that dispositions are important frameworks which

individuals use to filter information; however, situational factors interact with these dispositional tendencies to influence feelings, thoughts, and behaviors.

Emergence of a Ego- and Task-involving Condition

The emergence of an ego- and task-involving group has not been reported in other experimental research manipulating achievement goals. In fact, in experimental research it is assumed that participants placed in a particular achievement goal context will adopt that goal in isolation. This was not the case in this study. Although the effectiveness of the manipulation can be questioned, an alternative explanation for the failure of the manipulation is that individuals who were both task- and ego-oriented may have viewed the task using both of these perspectives as well as considering the goal involvement manipulated in the task. Therefore, as the individuals progressed through the task, they may have emphasized or used both achievement goals. This is supported by the fact that a group of athletes gave high ratings to both the task and ego involvement manipulation check items. Additionally, examination of this both group revealed that they had high task and ego orientations. For these individuals the emphasis on one particular achievement goal may be more transient. At one point in the experiment, a person may emphasize task involvement (possibly when comparing her practice round to her first performance round); however, within the next minute ego involvement may be more prominent (possibly when they are asked to compare their goal to others who have done the task). However, across the task or situation as a whole, individuals may have perceived that both achievement goals were used to make judgments about their competence. Therefore, this study may not have captured true goal involvement but rather identified goal states that the individual

may have adopted based on both their personal disposition and the manipulation of the climate (Duda, 2001; Duda & Whitehead, 1998). However, it is interesting that this group emerged given that it may actually be closest to reality for athletes who participate in a highly visible arena where normative data are often present and where effort and hard work are expected. Examination of this group compared to the other two goal involvement groups revealed that similar self-regulatory responses to the task-involved group as opposed to the ego-involved participants. However, no significant differences emerged between the three goal involvement groups.

Practical Implications

Achievement Goals

Athletes are often faced with difficult and challenging situations and all athletes at one time or another will be faced with failure. How an athlete responds to this failure will determine the athlete's continued motivation at the activity, their use of effective strategies to help them overcome the failure, and their enjoyment and continuation in the activity. Within this study, it has been found that a manipulation of the climate as well as the athlete's dispositional goals can influence the failure response. By emphasizing an ego-involving goal, which highlights the adequacy of one's ability compared to others, athletes in this study were more likely to set more unrealistic goals. Additionally, athletes in the ego-involving condition, which differed from the task-involving condition only in the degree of ego involvement, based their sources of confidence on more normatively-referenced sources than those in the task-involving condition. Given the difference in ego involvement and sources of confidence between the two groups, it is interesting to note

that although those in the ego-involving condition used self-regulatory strategies, these strategies were not associated with exerting effort during the task. Therefore, although self-regulation strategies were utilized, exerting effort was not perceived to be correlated with strategy use for this group, whereas, in the task-involving condition strategy use and effort expenditures were positively correlated. Also male athletes in the ego-involving condition used more short-term power excuses to account for their failure than males in the task-involving condition. In general, these athletes did not always pursue effective self-regulation in line with some theoretical and empirical findings. Due to the fact that a normative comparison of ability is inherent in sport, it is important that teachers, coaches, and other practitioners avoid creating an ego-involving climate, which fosters a normative comparison of ability, to ensure that individuals have a better chance of effectively dealing with failure situations.

However, altering the ego-involving climate is not the only solution. Within this study, there was a strong indication that an additional suggestion may be to emphasize a task-involving climate to produce a more adaptive response to failure and to possibly counter the negative effects found within the ego-involving climate. In general, the athletes in this study indicated high levels of task orientation and task-involvement (according to the manipulation check item). As they experienced failure at the task, they indicated a decline in perceptions of success, levels of satisfaction, and a decrease in self-efficacy; however, these athletes still continued to exert effort at the task across time, engaged in adaptive strategy use, did not use excuses to explain away their failure, and did not think in self-defeating ways. Similar to Dweck's mastery-oriented students, these

athletes dealt with failure in very adaptive ways that was linked to their level of task involvement or dispositional task orientation. First, those perceiving higher levels of task involvement used fewer self-defeating thoughts and greater enjoyment levels. Therefore, a focus on task involvement seems to help athletes deal with their failure by adjusting their thought processes and affective responses surrounding the task. Secondly, a task orientation was found to positively predict strategy use and given that a task-involving climate may influence one's task orientation over time it is important to consider creating a task-involving climate. Finally, it should be noted that many of the athletes who were placed in the ego-involving condition, stated that they did not only focus on the comparative information but also acknowledged and used self-referenced information in order to help them through the failure response (i.e., the combined task- and ego-involved group). Therefore, maybe the way that ego-involved individuals cope with failure is by using both sets of information if they are made available to them. Given that many of the athletes who represented the combined task- and ego-involving group were high in task and ego orientation this may be the case. Although they were aware of their ability compared to other high school students on the task, which may have increased the importance of the task or increased its value, they may have chosen to rely on the task information to improve their performance. This would seem to correspond to work conducted by Cury and his colleagues related to the types of information that individuals seek under different goal orientations (Cury, Famose, & Sarrazin, 1997). Specifically, they found that ego-oriented participants engaged in a basketball dribbling task asked for more normative information about how they were doing at the task when they possessed

high ability while task-oriented students with high ability sought objective information (i.e., information about their improvement) and task-oriented students with low ability asked for task information. In this study individuals in the combined task- and ego-involved group possessed both a high task and ego orientation and therefore may have used both sets of information. So the combined task- and ego-involved athletes can see the big picture of normative information in the sport setting but choose to use task information to inform practice when experiencing failure.

It seems that to effectively regulate during failure, athletes and students alike should focus on task involvement. This research focused on a small scale manipulation of the climate over a short period of time and contained several limitations. However, differences in self-regulation were noted among achievement goal conditions and goal involvement. Therefore, it may be worthwhile for practitioners to pursue this route. Additionally, previous research, in the sport, physical education and classroom settings, suggest that coaches and teachers can create a motivational climate that will help children and adolescents adopt a task-involving goal and, in turn, positively influence motivational and self-regulatory processes (Ames, 1992a, 1992b; Solmon, 1996; Theeboom, DeKnop, & Weiss, 1995). For example, Theeboom, DeKnop, and Weiss (1995) manipulated the motivational climate of a beginning Chinese martial arts course for children to create either a mastery (task-involving) or a traditional (ego-involving) teaching style. A mastery motivational climate was developed by incorporating a variety of developmentally appropriate tasks, introducing challenging tasks, working on skills in groups, recognizing and evaluating effort and improvement, and allowing children to suggest ways to combine

techniques learned. Those participants in the mastery teaching style had high levels of enjoyment, intrinsic motivation, perceived competence, and improved motor skills. Therefore, situational cues can be utilized to enhance motivation and encourage effective self-regulation in the sport setting by emphasizing how practices are designed, what the reaction is to losing, who is recognized, how performance is evaluated, and how athletes are grouped (Ames, 1992b). Further, researchers also suggest that involvement in a mastery motivational climate over time may foster a task orientation (Ames, 1992a; Duda, 2001; Gano-Overway & Ewing, 1999; Nicholls, 1989). This is important given that a task orientation was also found to be predictive of several self-regulatory variables in this study. Therefore, teachers and coaches should emphasize components of task involvement within their situational contexts.

To create a task-involving climate, Epstein (1989) suggests that individuals focus on six structures, namely, Task, Authority, Reward system, Grouping, Evaluation and Timing, which represent the TARGET principle (adapted by Ames, 1992a; 1992b). Task structures entail designing tasks which approach learning, involve adaptive achievement strategies and provide value and variety. Teachers and coaches should use specific, reasonable and short term goal setting strategies to provide a challenging and controllable task which matches each individual's ability level. Authority structures center on the ability of the athletes to engage in autonomous acts. Therefore, importance is placed on sharing decision making responsibilities which makes the role of the educator twofold. First, to allow athletes to engage in decision making skills in order to increase their opportunities to be autonomous. For example, collaborative decision making could occur

in designing practices as well as line-ups or game strategies. Secondly, the coach can help the athlete develop problem-solving skills (e.g., modeling strategies, probing the athlete for strategies, prompting them with cues) to meet expectations rather than telling her/him what to do (Brophy, 1998). Reward structures focus on recognizing individual effort and performance rather than emphasizing winning and beating others. Grouping structures focus on allowing different abilities to interact in a cooperative style while trying to minimize social comparison. This structure should emphasize the athletes helping and supporting one another. Evaluation structures emphasize the standards set for evaluating performance as well as how these standards are judged by others. This evaluation can be based on personal goals or standards or set by external forces; however, the criteria should focus on exerted effort and improvement over innate ability. Therefore, evaluative feedback should provide the athlete with an understanding about her/his efforts and abilities in a constructive and caring way. This feedback should be private and meaningful and contingent upon performance. Time structures focus on the scheduling of tasks and the importance of providing each individual with the appropriate amount of time to learn a skill. By emphasizing these components teachers and coaches can enhance task involvement.

Additionally, coaches and teachers must be concerned with helping ego-involved athletes/students as they experience failure. It is important that practitioners help these individuals reinterpret the failure and what it means in the context of their ability. Further, coaches/teachers should also provide coping strategies for the athletes/students, which they may not be thinking about given their focus on the normative results and the

implication to their ability. For example, a swimmer who just placed fourth in the 100 meter backstroke at a very important dual meet may be thinking about throwing in the towel because she is just not performing as well as others. Her coach can help reinterpret this situation by emphasizing her performance. It could be that her performance was quite good for her current level of training and ability. Under these circumstances, the coach should congratulate the athlete on her current level of performance while acknowledging the athlete's disappointment. The coach could then use this disappointment to focus the athlete on ways she can try to improve her times in future meets in order to be more competitive with the normative standard, i.e., required time to qualify for regional or state competition. Maybe the athlete needs to work on her technique, maybe she needs to work on her racing strategy, maybe her level of effort in practice is less than stellar, maybe she needs to develop some mental strategies to use prior to the competitive event. Together the coach and athlete could decide what areas to work on in practice and the coach could inform her that with time and effort she could improve. By focusing on improvement and introducing possible solutions to reduce failure in the future, the coach may change the athletes focus from ego involvement to task involvement or may in fact be incorporating a task involving goal with the preexisting ego-involving goal already adopted by the athlete allowing the athlete to have both task- and ego-involving goals.

Perceptions of Ability

In addition to the implications associated with creating achievement goals, teachers and coaches should be cognizant of their students/athletes' perceptions of ability. Within this study individuals with high perceptions of ability were less likely to use self-

monitoring related to performance outcomes and to attribute their failure to lack of ability. Therefore, practitioners should search for ways to realistically enhance perceptions of ability. Interestingly, utilizing a task-involving climate incorporates many of the strategies that can used to successfully enhance perceptions of ability (Weiss & Ebbeck, 1996). However, one must be keenly aware of the potential to overinflate one's sense of efficacy, particularly in a setting where a threat to the self is apparent, and the potential ramifications related to self-regulation failure which has been described previously (Bandura, 1990; Baumeister, 1997; Heatherton & Ambady, 1993; Tice, 1993).

Limitations and Future Research

Although, the findings from this study are promising, more research needs to be conducted to substantiate the results and in many instances statistically confirm the trends found in this study. However, more than replication of the current methods needs to be considered. Several limitations need to be addressed in future research.

First, the manipulation of the ego-involving condition needs to be strengthened. Although those who were placed in the ego-involving condition indicated using more comparative information, there was a large number of participants who did not adopt the ego-involving goal. Several possible explanations for the failure to effectively manipulate the goal condition are addressed here. First, it may be that the ego-involving information provided may not have been clearly understood by the participants. The students involved were asked to achieve a particular percentile and if students did not clearly understand the percentile information they may have disregarded it. Second, the participants within this study were asked to engage in a task that was novel. Since they were engaging in the task

for the first time, they may have adopted a task-involving approach because they were learning the task. Finally, participants in the ego-involving condition may have relied on task-involving information given that they had a high task orientation. Therefore, future research should examine ways to make the the ego-involving information more salient to the participants. This manipulation could also be strengthened by making participants more self-conscious by having them personally rank their ability or creating competition (Ames, 1984; Miller & Hom, 1990; Thill & Brunel, 1995). However, an alternative strategy is to preselect individuals who adopt a particular goal orientation and have the manipulated climate match this condition (Cury, Biddle, Sarrazin, & Famose, 1997).

Also related to the manipulation of the achievement goal conditions is a general concern related to the interaction effects of the dispositional tendency that the athlete brings to the athletic arena and the climate created by the sporting environment and the significant others within this climate. Within this study, both were influential in predicting self-regulatory factors which coincides with other theoretical and empirical work (Ames, 1992b; Duda, 1993, 2001; Dweck, 1999; Nicholls. 1989). However, it is unclear in this study how situational and personal goals interact with one another to influence participants thoughts, feelings, and behaviors. Consequently, future research should examine how motivational processes are influenced when personal goals are supported in the sport context versus when they are in opposition. Additionally, work should begin to examine how the motivational climate and achievement goals may influence one another over time.

Second, the failure trials, although effective, may need to be increased in order for these athletes to truly believe that they failed and therefore respond by using excuses, setting unrealistic goals, and reducing effort and persistence. Athletes, faced with potential setbacks on a regular basis, may not have accepted that they failed at the task given just two failure feedback rounds. Additionally, their own kinesthetic sense about how they were doing at the task may have provided conflicting information in relation to the false feedback provided. So although they were swayed toward believing that they were not successful, the two trials with failure feedback may not have been attributed to personal incapabilities as much as situational factors (Bandura, 1997). This was partially supported by the fact that the athletes' self-efficacy scores did not decrease below 50%. Additionally, one could argue that the athletes may have accepted the feedback as indicative of their ability at the task given they did not have any previous experience with the task. Therefore, they were willing to accept where they were according to the performance feedback and under these circumstances a threat to ability may not arise. Therefore, participants may not have seen a need to engage in self-protective motives to the extent that was anticipated. Further, a better manipulation check measure is needed to ensure that participants believed the failure feedback. This may take the form of placing their perceptions of success on a bipolar scale rather than asking them to measure their degree of success.

Next, the perceived ability grouping created within this study may have resulted in few real differences related to self-regulation failure. Within this sample very few athletes indicated that they were not able at the task. Therefore, it was hard in this study to

determine what true low ability athletes may do when faced with failure. Although one could make the case that involvement in high school athletics would require at least a moderate sense of ability it may be necessary in future research to examine more extreme ability groupings either by tapping a larger sample of athletes in order to identify low ability athletes or creating an ability manipulation.

The validity and reliability of some of the measures (strategy use, negative self-talk, on-task thoughts and excuse making), utilized within this study are also in need of further development. Given that the measures used within this study were adapted from previous research, items need to be further refined for the current task and population. For example, the development of more self-regulation strategies may need to be included. Several athletes mentioned that they took a deep breath before engaging in the task in order to clear their mind to focus on the task while others came up with new ways to press the button in order to reduce their reaction time. Further, several measures had low internal reliability and had to be collapsed into higher order dimensions suggesting that further development of scales needs to occur. Lastly, there were several questionnaires to be completed by the athletes which could have resulted in participants not completing all items thoughtfully. Therefore, future research should also limit the number of questionnaires to be completed.

Finally, the simple motor task may need to be refined in future research. Within this study, participants believed that the task was enjoyable; however, it lacked difficulty for many. So although they did experience failure it was related to not performing as well as one would like rather than task difficulty. Therefore, future research could examine failure

with respect to overcoming a challenging task. Focusing on task difficulty would afford participants a greater number of strategies to utilize to complete the task thereby giving a better picture of the self-regulatory strategies used when facing a difficult situation. Additionally, it would be interesting to examine how the failure response may be different related to the level of experience that the athlete has with the task. In the present study, athletes were exposed to a novel task, however, as experience increases, athletes may engage in more self-protective motives since they have more invested in the activity. Lastly, the generalizability of this study to sport may be weak given the use of a simple motor task; however, it was necessary in order to control the feedback conditions to test the impact of failure on individuals in the ego-involving or task-involving conditions. Nonetheless, external validity will need to be increased in the future. This can be accomplished by creating a task that directly relates to the sport setting which may be more valued by athletes and represent the actual sport setting or by following athletes, who are task or ego-involved, longitudinally in their athletic setting to determine how they experience failure through qualitative and quantitative means.

Future Directions

The current study provides a glimpse at how athletes experience failure under different achievement goal conditions. However, given the limitations of the current study and the general need for information on how to effectively help athletes deal with failure, there is more work that needs to be done. A series of future studies have been suggested based on this work.

First, it is important to replicate the current study trying to resolve many of the limitations involved in the current study. The first step is to determine whether individuals who are ego-involved may be more likely to experience less effective self-regulation and motivational responses compared to task-involved individuals. This will be accomplished by using the same protocol outlined in this study. However, there will be an attempt to match individual's orientation with the climate in order to tap one's goal involvement during the activity. Additionally, the task will be altered to allow increased difficulty to occur as one progresses through the task. This difficulty will coincide with a lack of improvement or inability to beat others and be measured over a longer period of time. This study will seek to validate the measures by first qualitatively investigating what strategies athletes might use as they complete the task. This study will also limit its scope of questions by considering only attributions, strategy use (self-monitoring, deep vs. surface processing strategies, on-task thoughts, off-task thoughts, negative self-statements, and positive self statements), effort, persistence, and enjoyment.

Second, given that a combined task- and ego-involved group emerged in the data, it will also be interesting to see how this group may perform under different climate conditions. Therefore, individuals will be identified who represent the four goal profiles (i.e., high task/high ego; high task/low ego; low task/high ego; low task/low ego). These groups will be placed in either a task-involving or ego-involving condition in order to examine information to which that individuals attends (i.e., their dispositional tendencies or the situational cues in the environment) as well as how dispositional goal orientations may interact with the climate to influence self-regulatory processes.

Third, it is important to replicate these findings in the sport setting. However, in order to do this, one must begin to understand what self-regulatory strategies and motivational responses occur among athletes in order to develop valid and reliable measures to use in a more experimental setting. Therefore, the next step would be to interview athletes, under different goal orientations and perceptions of ability, to find out their response to failure. This would allow researchers and practitioners to see how athletes view failure, begin to provide support for qualitative differences in failure responses among achievement goals, and will also provide a basis to develop measures to use in an experimental design.

Next, in order to move to an experimental design, researchers need to know what type of climate the coach creates. Therefore, an additional qualitative study would need to be conducted which observes coaches that create different motivational climates. These observations would be corroborated by interviews with coaches and athletes. Additionally, athletes' responses to failure under different climates could be examined.

Finally, one could begin to examine the influence of climate in the sport setting experimentally. Coaches who are taught to use a more task-involving climate could be compared to traditional coaching methods to see how athletes differ on self-regulatory and motivational factors under failure conditions.

Conclusion

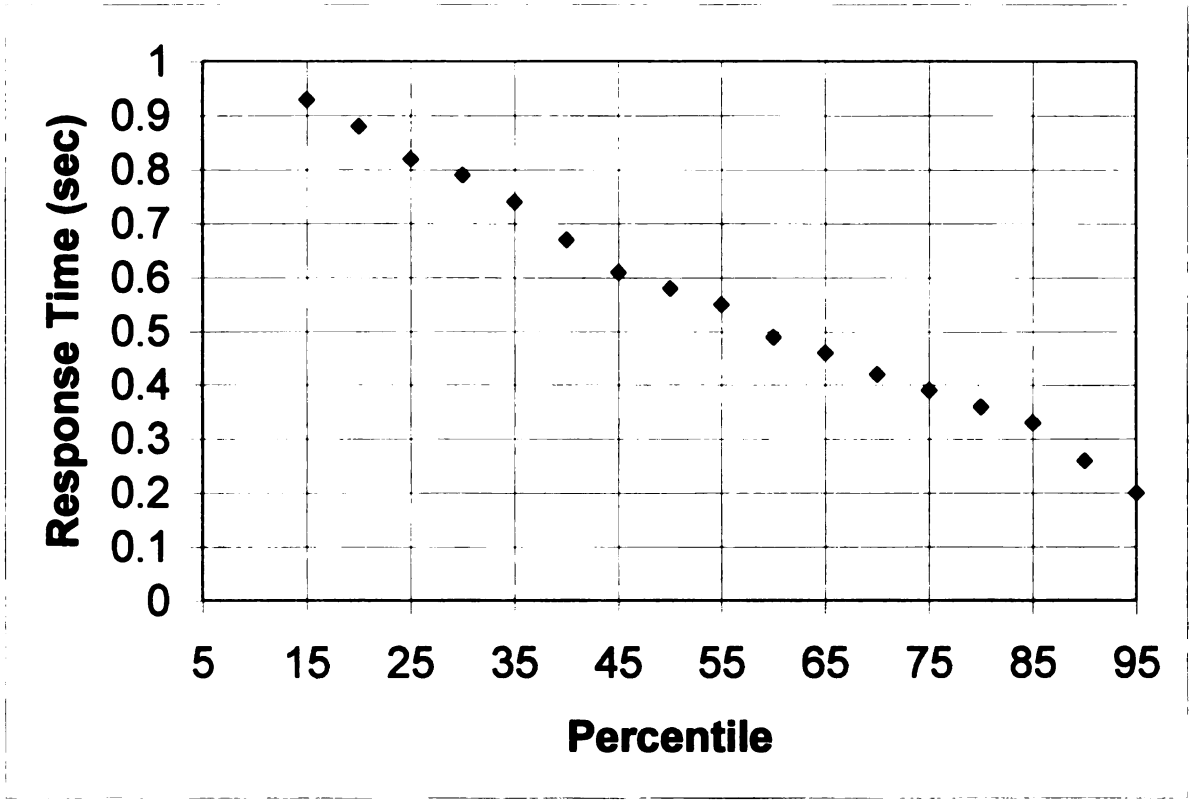
Overall, the current study begins to provide researchers and practitioners a glimpse of how athletes may experience failure under differing achievement goals. Although much more work needs to be done to fill in the picture and provide a richer understanding of how athletes can be assisted in dealing with the challenges and difficulties that occur in

sport, this study demonstrates that failure does not have to be viewed as a negative experience. Athletes who emphasized task involvement or adopted a task orientation, coped with failure by engaging in self-regulatory strategies related to effort expenditure. Further, they did not use negative self-talk but rather indicated a strong level of enjoyment for the task. Therefore, practitioners should begin to athletes cope with failure by emphasizing task-involving goals. This will not only help with their future success at the sport by highlighting adaptive strategy use but also make their sport experience more enjoyable and keep them involved in their sport.

APPENDICES

APPENDIX A

Mock Normative Standards for Ego-Involving Condition



APPENDIX B

Michigan State University Human Subjects Approval

MICHIGAN STATE
UNIVERSITY

May 9, 2000

TO: Martha E. EWING
201 IM Sports Circle
MSU

RE: **IRB# 00-275 CATEGORY:1-C**
APPROVAL DATE: May 3, 2000

TITLE: THE ROLE OF TASK- AND EGO-INVOLVING GOALS AND PERCEIVED ABILITY ON SELF-REGULATORY FACTORS WHEN ENGAGING IN A SIMPLE MOTOR TASK

The University Committee on Research Involving Human Subjects' (UCRIHS) review of this project is complete and I am pleased to advise that the rights and welfare of the human subjects appear to be adequately protected and methods to obtain informed consent are appropriate. Therefore, the UCRIHS approved this project.

RENEWALS: UCRIHS approval is valid for one calendar year, beginning with the approval date shown above. Projects continuing beyond one year must be renewed with the green renewal form. A maximum of four such expedited renewals possible. Investigators wishing to continue a project beyond that time need to submit it again for a complete review.
REVISIONS: UCRIHS must review any changes in procedures involving human subjects, prior to initiation of the change. If this is done at the time of renewal, please use the green renewal form. To revise an approved protocol at any other time during the year, send your written request to the UCRIHS Chair, requesting revised approval and referencing the project's IRB# and title. Include in your request a description of the change and any revised instruments, consent forms or advertisements that are applicable.
PROBLEMS/CHANGES: Should either of the following arise during the course of the work, notify UCRIHS promptly: 1) problems (unexpected side effects, complaints, etc.) involving human subjects or 2) changes in the research environment or new information indicating greater risk to the human subjects than existed when the protocol was previously reviewed and approved.

If we can be of further assistance, please contact us at 517 355-2180 or via email: UCRIHS@pilot.msu.edu. Please note that all UCRIHS forms are located on the web: http://www.msu.edu/unit/vprgs/UCRIHS/

Sincerely,

David E. Wright, Ph.D.

DEW: rj

cc: Lori Gano-Overway
203 I.M. Sports Circle

OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES

University Committee on
Research Involving
Human Subjects

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246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/353-2976
Web: www.msu.edu/user/ucrihs
E-Mail: ucrihs@msu.edu

APPENDIX C

Parental Consent Form

Dear parent:

I am a doctoral student in the area of sport psychology in the process of completing my dissertation. As part of my research, I am looking at how goals can influence athlete's motivation levels and performance on a reaction time task. It is hoped that this research project will provide researchers and practitioners with a greater understanding of the motivation process. As part of this study, participants will be asked to complete a short questionnaire, complete a computer task that measures reaction time, and then complete another questionnaire. The total commitment to the study is 40 minutes.

You should know that the responses to the questionnaires that your son/daughter provide will remain confidential - no one except me (the researcher) will have access to the questions. Additionally, all data from this study will remain anonymous in any report of research findings. Group-based findings will also be made available to anyone who is interested. Additionally, as part of the project, your daughter/son will receive a report of her/his performance on the reaction time task, which they may share with anyone.

Your son's/daughter's participation in this study would be greatly appreciated. However, please know that you or your daughter/son may refuse to answer certain questions or discontinue her/his participation at any time without any penalty. If you would like your son/daughter to participate, please sign this form. Your daughter's/son's willingness to participate in this study will also qualify her/him to enter a raffle that will include all student-athletes who participate. At the end of the study, four prize winners will be chosen at random from all participants. The prize amounts will be $100 for first prize, $50 for second prize, $25 for third prize, and $10 for fourth prize and will be awarded in the Fall.

If you have any questions concerning your son's/daughter's participation in this study, please contact me at (517) 432-7121. Further, if you have questions related to the use of human subjects in research, feel free to contact Dr. David Wright at the University Committee on Research Involving Human Subjects Office at (517) 355-2180 or at 246 Administration Building, Michigan State University, East Lansing, MI 48824-1046.

Respectfully,

Lori Gang-Overway
Ph.D. Candidate
Department of Kinesiology
Michigan State University
39 IM Sport Circle
East Lansing, MI 48824

I fully understand my daughter/son's responsibilities and give permission for,

_____ , to be a participant in the described study.

_____

Parent/Guardian's Signature Date

APPENDIX D

Pilot Study Questions

A list of questions to be answered in the course of the pilot study are as follows:

1. How involving is the task? Was it interesting? Did you find it challenging? Did you just "blow off" the task?

2. How believable was the feedback?

3. Did you believe that you failed?

4. How much did you buy into the goal manipulation? What was your goal during the task?

5. Were there any questions that you did not understand?

6. Are the results in the same trend as predicted by the hypotheses (this question was not used in the interview with the participants)?

APPENDIX E

Task and Ego Orientation in Sport Questionnaire

Directions: Please read each of the statements listed below and show us how much you agree with each statement by circling the appropriate response. In general, when do you feel successful in sports? In other words, when do you feel a sporting activity has gone really well for you? Remember there are no right or wrong answers.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
I feel most successful in sports when I do my very best.	1	2	3	4	5
I feel most successful in sports when I am the only one who can do the skill.	1	2	3	4	5
I feel most successful in sports when I learn a new skill and it makes me want to practice more.	1	2	3	4	5
I feel most successful in sports when I can do better than my teammates.	1	2	3	4	5
I feel most successful in sports when I work really hard.	1	2	3	4	5
I feel most successful in sports when I score the most points or have the fastest times.	1	2	3	4	5

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
I feel most successful in sports when I learn something new that is fun to do.	1	2	3	4	5
I feel most successful in sports when others mess up and I don't.	1	2	3	4	5
I feel most successful in sports when I learn a new skill by trying hard.	1	2	3	4	5
I feel most successful in sports when others can't do as well as me.	1	2	3	4	5
I feel most successful in sports when something I learn makes me want to go and practice more.	1	2	3	4	5
I feel most successful in sports when I'm the best.	1	2	3	4	5
I feel most successful in sports when a new skill I learn really feels right.	1	2	3	4	5

APPENDIX F

Perceived Ability Scale

	Not so good		Some what good		Very good
How good are you at responding quickly in sport?	1	2	3	4	5
How good is your reaction time?	1	2	3	4	5

APPENDIX G

Manipulation Check Items

Perceived Ability

	Not so good		Somewhat good		Very good
How good were you at this task?	1	2	3	4	5

Acceptance of Failure Feedback

	Not successful at all		Somewhat successful		Very successful
How successful were you on the last round?	1	2	3	4	5

Goal Manipulations and Importance of Task

	Not important		Somewhat important		Very important
How important is it for you to be successful at this task?	1	2	3	4	5
	Not relevant at all		Somewhat relevant		Very relevant
How relevant is reaction time on this task to your athletic performance?	1	2	3	4	5

	Don't agree at all		Somewhat agree		Agree completely
In your opinion, the purpose of this task was to improve your own reaction time?	1	2	3	4	5
In your opinion, the purpose of this task was to do better than as many students as possible on this task?	1	2	3	4	5

APPENDIX H

Enjoyment and Satisfaction Measure

Directions: Please read each of the following statements carefully and indicate the number that best represents how you feel.

	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree
I enjoyed doing this task very much.	1	2	3	4	5
While doing this task, I was thinking about how much I enjoyed it.	1	2	3	4	5
I would describe this task as very interesting.	1	2	3	4	5
I thought this task was fun.	1	2	3	4	5
This task held my attention.	1	2	3	4	5

How satisfied were you with your current performance on this task?

Very Dissatisfied	Dissatisfied	Somewhat Satisfied	Satisfied	Very Satisfied
1	2	3	4	5

APPENDIX I

Self-efficacy Measure

Directions: Please read each of the following statements carefully and determine how confident you are that you can achieve the specific reaction times listed.

	Not at all Certain				Moderately Certain						Completely Certain
How certain are you that you can achieve an average reaction time of .70 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100
How certain are you that you can achieve an average reaction time of .60 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100
How certain are you that you can achieve an average reaction time of .50 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100
How certain are you that you can achieve an average reaction time of .40 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100
How certain are you that you can achieve an average reaction time of .30 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100

	Not at all Certain					Moderately Certain					Completely Certain
How certain are you that you can achieve an average reaction time of .20 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100
How certain are you that you can achieve an average reaction time of .10 seconds or better on this task?	0	10	20	30	40	50	60	70	80	90	100

What information did you use to judge how confident you were at achieving each reaction time?

APPENDIX J

Attribution Measure

Directions. Sometimes we don't do as well as we would like on a task. So we tend to ask ourselves how come I didn't do so well and we try to think about how we are going to go about doing it next time. Listed below are some things that people say to themselves when they don't do so well on a task. Please read through each statement listed below and indicate how true this was for you as you performed on the reaction time task.

	Not so true for me		Somewhat true for me		Very true for me
I didn't focus on the task hard enough (effort).	1	2	3	4	5
I am just not good at reacting quickly (ability).	1	2	3	4	5
I didn't try hard enough (effort).	1	2	3	4	5
I am just not good at tracking the dots on the screen (ability).	1	2	3	4	5
I just need to try harder next time (effort).	1	2	3	4	5
I am just not quick at making decisions (ability).	1	2	3	4	5

APPENDIX K

Excuse Making Measure

Directions. Sometimes we don't do as well as we would like on a task. So we tend to ask ourselves how come I didn't do so well and we try to think about how we are going to go about doing it next time. Listed below are some things that people say to themselves when they don't do so well on a task. Please read through each statement listed below and indicate how true this was for you as you performed on the reaction time task.

	Not so true for me		Somewhat true for me		Very true for me
Short-term task-difficulty					
I thought this task was too hard.	1	2	3	4	5
I thought the colored dots flashed too quickly on the screen.	1	2	3	4	5
Short-term power					
I don't feel very well today.	1	2	3	4	5
I did not get enough sleep last night and therefore it is hard to concentrate on this task.	1	2	3	4	5
Long-term power					
I generally get anxious and tense doing these types of tasks and I can't always think straight.	1	2	3	4	5
There are too many other things going on right now for me to focus on this task.	1	2	3	4	5
Luck					
I am just having a bad day.	1	2	3	4	5

APPENDIX L

Self-Regulatory Strategies Measure

Directions: Please read each of the statements listed below and show us how much you used each of the strategies by checking the appropriate response from never to always.

	Never		Sometimes		Always
Monitoring					
I paid attention to my performance to see how I was doing on the task.	1	2	3	4	5
I watched for mistakes during the task and focused on fixing the error the next time.	1	2	3	4	5
Judging					
I compared how I was doing to the goal I set.	1	2	3	4	5
Organization					
I thought about what I should focus on before doing the task rather than just going through the task.	1	2	3	4	5
I planned what type of strategies I could use to improve my performance on this task.	1	2	3	4	5
I thought about what I would do next to improve my performance.	1	2	3	4	5
Elaboration					
When I had trouble on the task, I tried to figure out what to do to make it better.	1	2	3	4	5

	Never		Sometimes		Always
I compared how I just performed and how I performed on the previous round to see which strategy worked best.	1	2	3	4	5
Before each trial, I tried to create an image of the task in my mind.	1	2	3	4	5
On task thoughts - quality of monitoring I focused my attention on a particular spot on the screen in order to see all the dots.	1	2	3	4	5
I thought about new strategies for improving my performance.	1	2	3	4	5
I thought about the pattern in which the blue dots appeared.	1	2	3	4	5
Off-task thoughts - quality of monitoring I let my mind wander while doing the task.	1	2	3	4	5
While the dots were flashing, I lost interest in the task for short periods.	1	2	3	4	5
I kept saying to myself this task is too hard rather than thinking about what I was supposed to do.	1	2	3	4	5
I wondered about how my performance compared to others.	1	2	3	4	5
Positive thoughts I told myself things to encourage me to try harder.	1	2	3	4	5

I thought about how much I was going to improve.	1	2	3	4	5
I thought about how well I was going to do on the next round.	1	2	3	4	5
Negative thoughts					
I thought about how poorly I was doing.	1	2	3	4	5
I though about how much I did not like this task.	1	2	3	4	5
I thought about giving up.	1	2	3	4	5

APPENDIX M

Effort Expenditure Perceptions & Persistence

Directions: Please read each of the statements listed below and show us how much you agree with each statement by circling the appropriate response.

How hard did you try on the round you just completed?

I didn't try at all		I put in some effort		I tried very hard
1	2	3	4	5

If you could play more rounds to try to better your score, how many rounds would you choose (record a number from 1 round to 20 rounds)?

APPENDIX N

Goal Discrepancy

Task Involvement:

Remember, the purpose of this task is to see how quickly you can improve your reaction time with practice. So as you perform this task, keep focusing on improving your reaction time score.

Given your performance, think about a goal for the next round. For example, if your reaction time average was .55 you may have a goal for the next round of .50.

What do you think you can accomplish on the next round (an average across all trials)? Record your goal below.

My goal for the next round is: _____

Ego Involvement:

Remember, the purpose of this task is to see who has the quickest reaction time on this task. So as you perform this task, keep focus on performing better than as many students as possible.

Think about a goal for the next round. For example, if you choose to perform better than 75% of the students, you want to show that you are better than at least 75% of the students by achieving a response time of .40 seconds.

What do you think you can accomplish on the next round (an average across all trials)? Record your goal below.

My goal for the next round is: _____

APPENDIX O

Non-significant Findings for Achievement Goal Conditions

Table 1: Means, Standard Deviations, and T-values for Dependent Variables by Gender

	Gender	Mean	Std. Deviation	t-value	p-value
Effort Attributions	male	2.86	0.89	0.83	0.41
	female	2.72	1.02		
Ability Attributions	male	2.19	0.77	0.13	0.90
	female	2.18	0.78		
Self-monitoring	male	2.06	0.96	-0.97	0.34
	female	2.22	0.97		
Strategy Use	male	3.47	0.73	-0.69	0.49
	female	3.55	0.60		
Self-Defeating	male	1.93	0.56	1.30	0.19
Thoughts	female	1.81	0.57		
Enjoyment	male	3.82	0.57	-0.01	0.99
	female	3.82	0.61		
Excuse Making	male	1.91	0.76	-0.83	0.41
	female	2.02	0.73		
Effort Time 1	male	3.74	0.75	-1.67	0.10
	female	3.96	0.79		
Effort Time 2	male	4.03	0.77	-1.47	0.14
	female	4.21	0.73		
Persistence	male	9.56	6.37	0.42	0.68
	female	9.14	5.49		
Self-efficacy	male	6.52	1.72	-0.29	0.77
Practice time 1	female	6.61	1.82		
Self-efficacy Time 1	male	6.47	1.59	0.95	0.34
	female	6.22	1.50		
Self-efficacy Time 2	male	6.03	1.70	1.26	0.21
	female	5.67	1.70		
Goal Time 1	male	-0.08	0.08	0.11	0.92
	female	-0.07	0.09		
Goal Time 2	male	-0.12	0.08	-0.86	0.39
	female	-0.11	0.08		

Table 2: Statistical F-values for Self-Regulatory Processes by Achievement Goal Condition

Effort attribution	F (1, 140) = .01, p = .92
Ability attributions	F (1, 140) = .03, p = .86
Self-monitoring	F (1, 140) = .13, p = .72
Strategy use	F (1, 140) = .37, p = .55
Self-defeating thoughts	F (1, 140) = 1.66, p = .20
Enjoyment	F(1, 140) = 3.05, p = .08

Table 3: Regression Analyses for Non-significant Self-Regulatory Measures

Variable	Effort Attributions		Ability Attributions		Self-Monitoring		Strategy Use	
	b	SE	b	SE	b	SE	b	SE
Task Manipulation Item	-.08	.08	-.10	.06	-.14	.08	.07	.05
Ego Manipulation Item	-.03	.06	-.05	.05	-.04	.06	.05	.04
F Value	.64		1.75		1.85		1.71	
Intercept	3.22		2.74		2.85		3.07	
Adjusted R^2	-0.01		0.03		0.01		0.02	

Table 4: Analysis of Variance with Repeated Measures Results for Self-Efficacy by Achievement Goal Condition

Source	Type III Sum of Squares	df	Mean Square	Huynh-Feldt F-value	Sig.
Time Factor	25.96	1.40	18.50	22.16	0.00
Time by Achievement Goal	0.29	1.40	0.21	0.25	0.70
Error	161.71	193.66	0.84		

Table 5: Regression Analyses for Time 3 Self-Efficacy Measure

Variable	Step 1		Step 2	
	b	SE	b	SE
Self-Efficacy at Practice	-0.01	.05	-0.01	.05
Self-Efficacy at Time 1	1.01***	.06	1.01***	.06
Task Manipulation Item			-0.06	.06
Ego Manipulation Item			0.01	.05
F Value	378.03***		186.45***	
Intercept	-0.46		-0.47	
Adjusted R^2	0.84		0.84	

***$p < .001$

Table 6: Analysis of Variance Results for Excuse-Making by Achievement Goal Condition and Perceptions of Ability

Short-term Power Excuses

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	12.45	7	1.78	3.66	.00
Intercept	439.03	1	439.03	903.21	.00
Achievement Goal Condition	1.01	1	1.01	2.08	.15
Perceived Ability	3.66	1	3.66	7.52	.01
Gender	1.54	1	1.54	3.17	.08
Perc. Ability by Gender	0.38	1	0.38	0.77	.38
Ach. Goal Cond. by Gender	6.44	1	6.44	13.24	.00
Ach. Goal Cond. by Perc. Ability	0.03	1	0.03	0.06	.81
Ach. Goal by Perc. Ability by Gender	0.87	1	0.87	1.78	.18
Error	64.16	132	0.49		
Total	615.81	140			
Corrected Total	76.62	139			

Table 7: Analysis of Variance Results for Excuse-Making by Achievement Goal Condition and Perceptions of Ability

Effort-based Excuses

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	10.07	7	1.44	1.66	.12
Intercept	919.91	1	919.91	1063.92	.00
Achievement Goal Condition	0.01	1	0.01	0.01	.91
Perceived Ability	0.06	1	0.06	0.01	.93
Gender	0.43	1	0.43	0.49	.48
Perc. Ability by Gender	0.07	1	0.07	0.01	.93
Ach. Goal Cond. by Gender	1.37	1	1.37	1.56	.21
Ach. Goal Cond. by Perc. Ability	0.15	1	0.15	0.17	.68
Ach. Goal by Perc. Ability by Gender	6.44	1	6.44	7.45	.01
Error	114.13	132	0.87		
Total	1223.67	140			
Corrected Total	124.20	139			

Table 8: Regression Analyses for Excuse Making

Variable	Short-term Power Excuses		Effort-based Excuses	
	b	SE	b	SE
Task Manipulation Item	-.15*	.06	-.08	.08
Ego Manipulation Item	.04	.05	-.04	.07
Perceived Ability	-.18	.10	.04	.14
Gender	.10	.13	-.14	.17
F Value	2.57*		.54	
Intercept	2.98		3.27	
Adjusted R^2	.04		-.01	

* $p < .05$

Table 9: Analysis of Variance with Repeated Measures Results for Effort Expenditures by Achievement Goal Condition and Perceptions of Ability

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Time Factor	3.32	1	3.32	12.93	.00
Time by Ach. Goal Condit.	0.13	1	0.13	0.49	.49
Time by Gender	0.02	1	0.02	0.07	.79
Time by Perceived Ability	0.18	1	0.18	0.68	.41
Time by Per. Ability by Gender	0.03	1	0.03	0.01	.92
Time by Ach. Goal by Gender	0.04	1	0.04	0.14	.71
Time by Per. Ability by Ach. Goal	0.18	1	0.18	0.68	.41
Time by Per. Ability by Ach. Goal by Gender	0.13	1	0.13	0.49	.49
Error	33.87	132	0.26		

Table 10: Regression Analyses for Time 2 Effort Expenditures

Variable	Step 1		Step 2	
	b	SE	b	SE
Effort Expenditures at Time 1	.57***	.07	.57***	.07
Task Manipulation Item			.07	.05
Ego Manipulation Item			.03	.04
Perceived Ability			.01	.09
Gender			.09	.11
F Value		62.18***		13.01***
Intercept		1.91		1.37
Adjusted R^2		0.31		0.33

***$p < .001$

Table 11: Analysis of Variance Results for Persistence by Achievement Goal Condition and Perceptions of Ability

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	543.86	7	77.69	2.34	.03
Intercept	9841.60	1	9841.60	296.45	.00
Achievement Goal Condition	86.22	1	86.22	2.60	.11
Perceived Ability	0.05	1	0.05	0.00	.99
Gender	19.46	1	19.46	0.59	.45
Perc. Ability by Gender	38.24	1	38.24	1.15	.29
Ach. Goal Cond. by Gender	11.50	1	11.50	0.35	.56
Ach. Goal Cond. by Perc. Ability	35.61	1	35.61	1.07	.30
Ach. Goal by Perc. Ability by Gender	249.97	1	249.97	7.53	.01
Error	4315.76	130	33.20		
Total	17106.00	138			
Corrected Total	4859.62	137			

Table 12: Regression Analyses for Persistence

	b	SE
Gender	-0.84	1.05
Perceived Ability	-0.48	0.85
Task Manipulation Item	1.00	0.49
Ego Manipulation Item	0.21	0.41
F Value	1.19	
Intercept	10.65	
Adjusted R^2	0.01	

Table 13: Analysis of Variance with Repeated Measures Results for Goal Discrepancy by Achievement Goal Condition and Perceptions of Ability

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Time Factor	.09	1	.09	28.94	.00
Time by Ach. Goal Condit.	.10	1	.10	.30	.58
Time by Gender	.04	1	.04	.14	.71
Time by Perceived Ability	.08	1	.08	.00	.96
Time by Per. Ability by Gender	.01	1	.01	.42	.52
Time by Ach. Goal by Gender	.06	1	.06	2.01	.16
Time by Per. Ability by Ach. Goal	.01	1	.01	3.37	.07
Time by Per. Ability by Ach. Goal by Gender	.07	1	.07	.21	.65
Error	.42	132	.03		

APPENDIX P

Non-significant Findings for Goal Involvement Groups

Table 1: Non-significant F-values for Self-Regulatory Processes by Goal Involvement Groups

Effort attributions	$F(2, 91) = 0.38$, $p = .68$
Ability attributions	$F(2, 91) = 1.05$, $p = .36$
Self-monitoring	$F(2, 91) = 0.55$, $p = .58$
Strategy use	$F(2, 91) = 0.53$, $p = .59$
Self-defeating thoughts	$F(2, 91) = 4.31$, $p = .02$
Enjoyment	$F(2, 91) = 5.30$, $p = .01$

Table 2: Analysis of Variance with Repeated Measures Results for Self-Efficacy by Goal Involvement Group

Source	Type III Sum of Squares	df	Mean Square	Huynh-Feldt F-value	Sig.
Time Factor	19.40	1.48	13.11	16.44	0.00
Time by Achievment Goal	2.01	2.96	0.68	0.85	0.47
Error	107.33	134.60	0.80		

Table 3: Analysis of Variance Results for Excuse-Making by Goal Involvement Group and Perceptions of Ability

Short-term Power Excuses

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	6.95	5	1.39	2.45	.04
Intercept	285.45	1	285.45	503.05	.00
Achievement Goal Condition	2.86	2	1.43	2.52	.09
Perceived Ability	3.53	1	3.53	6.22	.01
Goal Involvement by Perc. Ability	0.09	2	0.04	0.08	.93
Error	49.94	88	0.57		
Total	423.94	94			
Corrected Total	56.88	93			

Effort-based Excuses

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	3.58	5	0.72	0.82	.54
Intercept	537.34	1	537.34	616.53	.00
Achievement Goal Condition	0.53	2	0.26	0.30	.74
Perceived Ability	0.15	1	0.15	0.18	.68
Goal Involvement by Perc. Ability	2.79	2	1.39	1.60	.21
Error	76.70	88	.872		
Total	770.22	94			
Corrected Total	80.27	93			

Table 4: Analysis of Variance with Repeated Measures Results for Effort Expenditures by Goal Involvement Group and Perceptions of Ability

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Time Factor	3.03	1	3.03	12.46	.00
Time by Goal Involvement	0.58	2	0.29	1.19	.31
Time by Perceived Ability	0.02	1	0.02	0.07	.80
Time by Per. Ability by Goal Involvement	0.13	2	0.07	0.27	.77
Error	21.38	88	0.24		

Table 5: Analysis of Variance Results for Persistence by Goal Involvement Group and Perceptions of Ability

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Corrected Model	159.45	5	31.89	0.95	.46
Intercept	5242.13	1	5242.13	155.58	.00
Achievement Goal Condition	62.91	2	31.46	0.93	.40
Perceived Ability	47.37	1	47.37	1.41	.24
Goal Involvement by Perc. Ability	56.95	2	28.47	0.85	.43
Error	2897.72	88	33.69		
Total	10745.00	94			
Corrected Total	3057.16	93			

Table 6: Analysis of Variance with Repeated Measures Results for Goal Discrepancy by Goal Involvement Group and Perceptions of Ability

Source	Type III Sum of Squares	df	Mean Square	F-value	Sig.
Time Factor	0.11	1	0.11	33.23	.00
Time by Ach. Goal Condit.	0.01	2	0.06	1.78	.18
Time by Perceived Ability	0.05	1	0.05	0.01	.91
Time by Per. Ability by Goal Involvement	0.02	2	0.08	2.25	.11
Error	0.29	88	0.03		

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