

COPING WITH THE COMPETING DEMANDS OF SCHOOL AND SPORT:
A COGNITIVE-MOTIVATIONAL-RELATIONAL
EXAMINATION OF CHRONIC STRESS

By

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To my parents, who cultivated my intellectual curiosity and provided the unconditional support necessary for me to achieve this milestone

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Abstract of Dissertation Presented to the Graduate School
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By

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Chair: Peter R. Giacobbi, Jr.

Major Department: Applied Physiology and Kinesiology

The purposes of my study were to examine the viability of the cognitive-motivational-relational theory of emotion as a research tool in sport psychology, and to test a theoretical model of the explanatory relationships between club sport athletes' achievement goal orientations, cognitive appraisals, coping efforts, and affective experiences. A sample of 223 club sport athletes at a large university in the Southeastern United States described a situation in the preceding 7 days in which they had difficulty balancing their academic and athletic time demands. In addition, they completed the Task and Ego Orientation in Sport Questionnaire (TEOSQ), the threat and challenge subscales of the Stress Appraisal Measure (SAM), the personal control subscale of the Causal Dimension Scale II (CDS-II), subscales of the Coping Orientation for Problem Experiences (COPE) inventory reflecting task-focused and avoidance-focused coping, items attached to the COPE reflecting the perceived effectiveness of task-focused and avoidance-focused coping, and the Positive Affect Negative Affect Schedule (PANAS). I used structural equation modeling techniques to assess the psychometric properties of the measurement protocol, to measure the extent to which my theoretical model accurately reflected the data, and to estimate the explanatory relationships predicted by the model. Results

indicated first that the measurement protocol I employed in my study exhibited acceptable factorial, convergent, and discriminant validity, along with acceptable internal and external consistency reliability. Second, my theoretical model fit the data well, thereby providing further justification for use of cognitive-motivational theory as a guiding framework in sport psychology research. Third, with respect to the specific explanatory relationships estimated by my model, I found that task orientation significantly predicted challenge appraisal, which in turn predicted task-focused coping, with perceived task-focused coping effectiveness acting as a mediator of the relationship between task-focused coping and positive affect. While my study filled several gaps in the extant literature, it nevertheless can be improved upon in future studies by obtaining a random sample, employing procedures more consonant with the ipsative-normative methodology advocated in the cognitive-motivational-relational theory of emotion, and conducting a more sophisticated test of moderation within a structural equation modeling framework. However, despite these limitations, my study has clear applications with respect to stress interventions and the development of tailored services to help club sport athletes deal with balancing their competing academic and athletic time demands.

CHAPTER 1 INTRODUCTION

Up to 40% of college students encounter serious difficulties and fail to complete their degrees (Pantages & Creedon, 1978; Zitzow, 1984). In addition, 10% of college students are diagnosed with depression annually (National Mental Health Association, 2004). Researchers in psychology have identified several sources of stress that may contribute to these disconcerting statistics regarding the psychological well-being of college students (Ross, Neibling, & Heckert, 1999; Tyrrell, 1992). They include changes in eating or sleeping habits, lack of vacations/breaks, increased workload, new responsibilities, falling behind with coursework, finding the motivation to study, time pressures, financial worries, and concerns about academic ability (Ross et al.; Tyrrell). In addition to academic sources of stress, college students who also participate in competitive athletics (e.g., recreation, club, and intercollegiate sports) are confronted with additional stressors unique to their sport involvement. For example, student athletes have indicated that their major sources of stress include being mentally and physically overwhelmed, training intensity, high performance expectations, and interpersonal relationships in their sport (Giacobbi et al., 2004; Tracey & Corlett, 1995). It seems clear then that athletics and academics each present unique sources of psychological stress for student-athletes. Indeed, researchers have shown considerable interest in how student-athletes deal separately with athletic (Giacobbi et al., 2004; Giacobbi & Weinberg, 2000; Kimball & Freysinger, 2003; Ntoumanis & Biddle, 1998; Ntoumanis, Biddle, & Haddock, 1999; Sellers, 1995; Williams & Krane, 1992) and academic stressors. However, an understanding of the ways that individuals cope with specific athletic and academic stressors provides only a small piece of the puzzle. What is also needed is an insight into the ways that student-athletes cope with these stressors in combination (e.g., managing the

dual time demands of athletics and academics). I attempted to address this issue by examining the coping thoughts and behaviors of club sport athletes.

Although my study was more theory- than population-driven, I based my decision to sample club sport athletes on two grounds. First, sport coping researchers have focused almost exclusively on student-athletes at the NCAA level. While the experiences of NCAA athletes are important, there exists a broader population of college students who are both highly skilled and highly involved in their sports. Understanding how these individuals cope with the stress of managing athletic and academic time demands may enhance the ability of practitioners to provide the greatest good to the greatest number. Indeed, at the University of Florida alone there are 36 sport clubs while only 18 NCAA teams. Of these 36 sport clubs there are approximately 1,700 students who participate in a variety of team (i.e., soccer, flag football, basketball) and individual (i.e., golf, tennis) sports.

Second, although the athletic demands placed on club sport athletes may not be as great as those placed on their NCAA counterparts, it is likely that club sport athletes do in fact experience stress related to balancing their athletic and academic roles. For example, club sport athletes compete regionally and nationally, and practice regularly, all while having to keep up with their studies. Therefore, I sampled club sport athletes in my study because they represent a relatively untapped research population and they are likely to experience and cope with a combination of academic and athletic sources of stress.

Need for the Study

Over the past decade, several studies have examined the coping behaviors of student-athletes (Anshel, Williams, & Williams, 2000; Giacobbi & Weinberg, 2000; Ntoumanis & Biddle, 1998). However, the majority of these studies have focused on the ways student-athletes cope with competitive stress. For example, Ntoumanis and Biddle studied the coping behaviors

of intercollegiate athletes in response to a stressful competitive situation they had encountered in the past. Similarly, Anshel and his colleagues required student-athletes to indicate their coping responses to a predetermined list of common competitive stressors. In contrast, there has been a dearth of research in the extant literature regarding the manner in which university athletes cope with stressors outside of competition (See Giacobbi et al., 2004; Petrie & Stoever, 1997; Tracey & Corlett, 1995, for exceptions). One source of non-competitive stress for university athletes that has been identified in the literature was alluded to above, i.e., managing athletic and academic time demands (Giacobbi et al., 2004). In my study, I examined the coping thoughts and behaviors that club sport athletes employ to deal with this non-competitive stressor.

Additionally, the overall study of coping in sport, regardless of the population being studied, has been limited exclusively to examination of responses to acute stress (Anshel & Anderson, 2002; Bouffard & Crocker, 1992; Crocker & Graham, 1995; Crocker & Isaak, 1997; Dugdale, Eklund, & Gordon, 2002; Eubank & Collins, 2000; Gaudreau, Blondin, & Lapierre, 2002; Gaudreau, Lapierre, & Blondin, 2001; Gould, Finch, & Jackson, 1993; Hammermeister & Burton, 2001; Haney & Long, 1995; Krohne & Hindel, 1988). Anshel (1996) offered that acute stress results from the interpretation of a particular event as stressful, while chronic stress results from the continued interpretation of the same event as stressful over a prolonged period of time. The distinction between acute and chronic stress has important implications for coping researchers, as Gottlieb (1997) suggested that acute and chronic stressors may require differential coping strategies. Therefore, there is clearly a need for research on the coping efforts of athletes in response to chronic stress, and my study addressed this issue.

The most widely accepted conceptual framework for examining psychological stress is Lazarus's cognitive-motivational-relational (C-M-R) theory of emotion (1991b, 1999). In his

theory, Lazarus (1991b, 1999) posited that when individuals encounter a potentially stressful situation, they engage in a process of cognitive evaluation called appraisal. Primary appraising is an evaluation of whether or not the situation is relevant to and congruent with one's goals. Lazarus (1991b, 1999) proposed that individuals will not experience psychological stress in a situation that is not perceived as goal relevant. Goal-relevant situations are then subject to secondary appraising, which involves an evaluation of one's ability to deal with the stressor, as well as expectations about the situation's resolution (Lazarus, 1991b, 1999).

The strategies an individual actually employs to deal with a stressful situation are referred to as *coping* (Lazarus & Folkman, 1984). Lazarus and Folkman identified two functional categories of coping behaviors. Problem-focused coping refers to cognitive and behavioral efforts to alter the person-environment relationship that is the source of stress (Lazarus & Folkman). In contrast, emotion-focused coping concerns cognitive and behavioral efforts to regulate stressful emotions without attempting to alter the source of stress (Lazarus & Folkman). According to C-M-R theory (Lazarus, 1991b, 1999), appraisal and coping are predicted to mediate the relationship between the stressful situation and the emotions felt in response to that situation. Furthermore, Lazarus and Folkman emphasized the dynamic, process-oriented nature of relationships between stress, appraisal, coping, and emotion in that they are constantly changing as the situation unfolds.

Research on coping in the general psychology literature has yielded several consistent findings that support the predictions of C-M-R theory (Lazarus, 1991b, 1999). First, individuals employ a number of different coping strategies in combination when dealing with a stressful situation (Folkman & Lazarus, 1980, 1985, 1988). Second, coping is more variable than consistent (Folkman & Lazarus, 1980, 1985). Finally, research on coping in the general

psychology literature has revealed that individual difference variables (e.g., neuroticism, extroversion, optimism, type-A personality) are influential in the relationships between appraisal, coping and emotion (Carver, Scheier & Weintraub, 1989; David & Suls, 1999; Endler, Kantor & Parker, 1994). Coping research in sport has mirrored the general psychology literature in supporting C-M-R theory (Lazarus, 1991b, 1999). Therefore, based on its wide acceptance, its relevance to the constructs to be examined, and its considerable empirical support in both general and sport psychology, I adopted the C-M-R theory of emotion (Lazarus, 1991b, 1999) as the theoretical framework for my study.

It is important to note that Lazarus' (1991b, 1999) theoretical predictions have evolved over time. For instance, Lazarus (1999) recently identified important antecedents of appraisal that operate as moderating variables in the stress, emotion, and coping process. These variables, which Lazarus (1991b, 1999) predicts will interact to influence appraisal, are categorized as environmental variables and person variables. Environmental variables include demands, constraints, opportunities, and culture. Person variables include beliefs about one's self and the world, personal resources, and goals and goal hierarchies.

One type of goal hierarchy identified by researchers in sport psychology is achievement goal orientation, the extent to which an athlete's achievement goals are self- or norm-referenced (Duda, 1989). Specifically, Duda distinguished between task and ego orientations in sport. Athletes adopting a task orientation perceive competence based on self-referenced standards (e.g., task mastery, effort investment, skill development, etc.), and view effort as undifferentiated from ability (i.e., ability results from increased effort rather than innate talent; Duda). In contrast, the competence beliefs of athletes adopting an ego orientation are founded on norm-referenced standards (e.g., defeating opponents, displaying one's superior ability to others; Duda).

Furthermore, ego oriented individuals perceive effort as differentiated from ability (i.e., ability results from innate talent rather than increased effort; Duda).

Achievement goal theory in sport (Duda, 1989) is theoretically compatible with the C-M-R theory of emotion (Lazarus, 1991, 1999). Specifically, both theories offer predictions with respect to the role of motivation in appraisal and emotion. However, little, if any, research has examined the relationships between achievement goals and the major constructs of C-M-R theory. Therefore, I attempted to address this limitation of the extant literature by examining achievement goals as antecedents of appraisal that moderate the relationships between appraisal, coping, and emotion.

Recently, researchers in sport psychology have begun to examine the concept of coping effectiveness (Campen & Roberts, 2001; Haney & Long, 1995; Kim & Duda, 2003; Ntoumanis & Biddle, 1998; Pensgaard & Duda, 2003). In an extension of Folkman (1992), Gould (1996) identified two approaches to studying coping effectiveness in sport, and recommended that researchers utilize both simultaneously. First, Folkman (1992) advocated the goodness-of-fit approach, and proposed that coping effectiveness is determined by the degree of fit between situational appraisals and situational coping efforts. Specifically, Folkman predicted that in situations appraised as controllable, problem-focused strategies are most effective. In contrast, emotion-focused strategies were predicted most effective in situations appraised as uncontrollable. For example, a student who experiences academic stress resulting from the completion of his or her thesis would be best served by using problem-focused coping strategies like increased effort, seeking advice, or other efforts directly linked to the work required. In contrast, after submitting one's thesis, emotion-focused coping strategies would be most effective because the situation is outside of the student's control.

The second approach to assessing the effectiveness of a situational coping strategy has been to determine whether it is associated with improvements in important outcome variables (e.g. athletic performance, performance satisfaction, affect). To date, only two studies in the sport psychology literature (Haney & Long, 1995; Kim & Duda, 2003) have applied both of the above approaches simultaneously to the study of coping effectiveness. My study continued this line of research by assessing perceived control, coping, and affective outcomes in sport.

Because it is difficult to infer causality when relating coping to important outcomes, some researchers have recently focused their attention on a more subjective measure of coping effectiveness, perceived coping effectiveness, which is simply an individual's cognitive evaluation of how effective his or her coping behaviors were in dealing with a particular stressful situation (Campen & Roberts, 2001; Kim & Duda, 2003; Ntoumanis & Biddle, 1998; Pensgaard & Duda, 2003). Preliminary evidence has indicated that an athlete's perceived effectiveness of his or her coping efforts may be a better predictor of sport-related outcomes than the coping efforts themselves (Ntoumanis & Biddle; Pensgaard & Duda). In my study, I further examined the relationships between perceived coping effectiveness and important outcomes in sport.

To summarize, studies in both the general and sport psychology literature that have adopted the C-M-R theory of emotion (Lazarus, 1991b, 1999) as a research framework have found that (a) coping is complex in that individuals use numerous strategies, often in combination when dealing with stress, (b) coping is characterized by both between- and within-situation variability, and (c) coping is related to important individual difference variables like personality. Furthermore, Lazarus's (1991b, 1999) theoretical predictions concerning the relationships between appraisal, coping, and emotion have been demonstrated empirically by researchers in both general (Carver et al., 1989; Folkman & Lazarus, 1980, 1985, 1988; Iwasaki,

2003; Park, Folkman, & Bostrom, 2001; Zeidner, 1995) and sport psychology (Crocker & Graham, 1995; Gaudreau et al., 2002; Gaudreau et al., 2001; Giacobbi et al., 2004; Gould et al., 1993; Kim & Duda, 2003; Pensgaard & Duda, 2003).

Problem Statement, Study Purposes, and Hypotheses

The rationale for my study was founded on both theory and application. To begin, because many college students experience psychological distress, and because many of these same individuals participate in club sports, the study of how college students cope with chronic sources of stress related to academic and sport challenges is important in order to gain a more complete understanding of adaptational processes. In addition, because not all individuals succumb to the deleterious effects of stress, the study of coping also has applied implications (Folkman, 1992). Thus, from an applied perspective, there is a need to study the coping reactions of club sport athletes who are dealing with the stress of managing athletic and academic time demands. As Hill (2001) pointed out, “theory defines the underlying causes of the athlete’s problems, guides the process for solving these problems, and suggests which types of intervention techniques should be used” (p. xv). Therefore, in order to guide and improve interventions, the theory that underlies these interventions must be validated through applied research.

The C-M-R theory of emotion (Lazarus, 1991b, 1999), which informs several cognitive-behavioral interventions (e.g., The Coping with Stress model; Zeitlin, Williamson, & Rosenblatt, 1987), has received considerable support in the extant sport psychology literature. Nevertheless, there are several relatively unexplored aspects of the theory that, if confirmed, might augment existing coping interventions. Specifically, few studies have examined the ways that club sport athletes cope with chronic, non-competitive stress. In addition, while personality traits such as neuroticism, extraversion, and trait anxiety have been shown to relate to coping, appraisal, and

emotion, other person variables (e.g., achievement goal orientations) have received little attention in the extant literature. Furthermore, while recent research has found that perceived coping effectiveness is related to affect and athletic performance, this area of research is relatively new and requires further exploration. Finally, few, if any, studies have simultaneously examined all four major constructs of C-M-R theory (i.e., antecedents of appraisal, appraisal, coping, and emotion).

Based on these limitations of the extant literature, my study had two related objectives. First, the viability of C-M-R theory (Lazarus, 1991b, 1999) was considered by testing a theoretically- and empirically-based model of the relationships between goal orientations, primary appraisals, secondary appraisal, coping, and affect. Specifically, the relationships depicted in this proposed model are based on the theoretical predictions of C-M-R theory (Lazarus, 1991b, 1999) and achievement goal theory in sport (Duda, 1989; Roberts 1992), along with the findings of research showing empirical links between these two theories (Ntoumanis, Biddle, & Haddock, 1999). The second, related purpose of my study was to examine the ways that club sport athletes appraise, cope with, and emotionally respond to chronic, non-competitive stress (i.e., managing athletic and academic time demands).

In the proposed model, I hypothesized that athletes who score highly on a measure of task orientation appraise the chronic stress of managing athletics and academic time demands as challenging and within their control, and therefore employ problem-focused coping efforts. In contrast, ego-oriented athletes appraise the stressor as threatening and outside their control, and therefore employ emotion-focused coping to deal with the threat. Finally, both task- and ego-oriented athletes experience increased positive affect if they perceive their coping efforts to be

effective, and experience increased negative affect if they perceive their coping efforts to be ineffective.

CHAPTER 2 LITERATURE REVIEW

Stress

Levels of Analysis

Stress is a seemingly ubiquitous feature of the human experience and, therefore, an understanding of the causes, mechanisms, and effects of stress has implications for nearly all individuals. However, the study of human stress must begin with a concrete definition of the stress construct. Unfortunately, because it is studied by researchers in scientific disciplines as varied as medicine, psychology, sociology, and sport sciences, a consensus operational definition of stress has proven elusive. Lazarus (1999) offered that the major reason for ambiguity regarding stress definitions is that the different scientific disciplines mentioned above have studied stress at three different levels of scientific analysis: (a) sociocultural; (b) physiological; and (c) psychological.

First, sociologists and cultural anthropologists have studied stress at its broadest level and have been concerned with the ways that the structure of societies and cultures influence the stress processes of the individuals within them (Lazarus, 1999). In sociology, scholars have ascribed the term social strain to the social conditions (e.g., war, racism) and crises (e.g., economic depression, social anarchy) that trigger stress reactions in individuals (Lazarus, 1999). For example, Hollingshead and Redlich (1958) observed that social deviance and mental illness increased under conditions of social strain. Cultural anthropologists also have been interested in the social aspects of stress, and have studied how particular values of a culture define what is considered stressful by its members, and how these values differ between cultures (Lazarus, 1999).

At the opposite extreme, physiologists have studied stress at its most basic level and have been concerned with ways that physical stimuli initiate biological, neural, and hormonal adaptations in the human body (Lazarus, 1999). Selye's (1956/1976) general adaptation syndrome (GAS) is a prototypical example of stress studied at the physiological level of analysis. Selye proposed that when confronted with a harmful stimulus, the human body proceeds through a series of general adaptational stages, utilizing a number of pathways in the nervous system designed to maintain internal homeostasis.

Finally, psychologists have studied stress between the broadest (i.e., sociocultural) and most basic (i.e., physiological) levels and have been concerned with the human mind and behavior (Lazarus, 1999). Because human cognition and behavior influence society, as well as bodily function, the psychological level of analysis complements, rather than diverges from, the sociocultural and physiological levels of analysis. Examples of this complementary relationship are (a) the study by Hollingshead and Redlich (1958) discussed above which dealt with the effects of social strain on mental illness, and (b) Selye's (1956/1976) proposal that the GAS, though physiological in nature, can be initiated in response to psychological stress.

To summarize then, part of the confusion regarding the definition of stress is due to the different levels of analysis, ranging from basic (physiological) to general (sociocultural), through which researchers have sought to examine this construct. Because my study was concerned with psychological stress, what follows is a conceptual review of how psychologists have defined the stress construct.

Psychological Stress

One approach to defining psychological stress has been the stimulus-response approach. Traditionally, stimulus and response definitions of stress have been considered separately. The stimulus-based approach has defined psychological stress as an intrinsic property of particular

situations. For example, Stone and Neale (1984) adopted a stimulus-based definition of stress in their development of the Daily Life Events Checklist (DLE), which requires individuals to indicate the desirability or undesirability of situations (e.g., death of a relative, change in job status) they encountered on a given day. Underlying this measurement approach is the presumption that daily events rated as undesirable are stressful, while events rated as desirable are not stressful. For example, if an individual indicates that receiving a job promotion is desirable, it is presumed that he or she did not experience stress. However, an obvious limitation of this approach is that many desirable situations are nevertheless stressful. For example, receiving a job promotion may be desirable, but it may also be stressful in that the individual might realize that he or she is now personally accountable for the failures of his or her subordinates. Therefore, as Lazarus (1999) argued, certain situations are indeed stressful, but it is the person's perception of the situation, not the situation itself, that generates stress.

In contrast to the stimulus-based approach is the response-based approach, which has defined stress as the emotional and physiological reaction to stressful stimuli (Lazarus, 1999). Researchers adapting Selye's GAS (1956/1976) to examine the body's physiological response to psychological stressors (e.g., ego threat) have adopted this response-based definition of psychological stress (Mason et al., 1976; Symington; Currie, Curran, & Davidson, 1955). Specifically, these researchers have viewed pituitary release of adrenocorticotrophic hormone (ACTH) as the defining feature of psychological stress. For example, Mason and colleagues (1976) found that individuals in an ego-threatening (i.e., stressful) situation exhibited elevated levels of ACTH.

Recently, Lazarus (1999) argued that stimulus-based and response-based definitions of stress are two sides of the same coin, and therefore, should be discussed in terms of a combined

stimulus-response approach. Specifically, he asserted that a stimulus cannot be defined as stressful without the observation of a stress response. For example, a situation listed on the DLE (Stone & Neale, 1984) cannot be considered stressful until an individual responds that the particular event was undesirable. Similarly, Lazarus (1999) argued the stress response cannot be defined without reference to the stimulus that elicited it. For instance, in the study by Mason et al. (1976) cited above, these researchers demonstrated that pituitary secretion of ACTH (i.e., the physiological response) only emerged in response to particular situations (i.e., stimuli) that were perceived as threatening to one's personal well-being. Therefore, to define stress based on a stimulus or a response alone ignores the necessary relationship between the two and limits the predictive utility of each (Lazarus, 1999).

Even when combining the approaches, stimulus-response definitions of stress remain limited in that they ignore the individual difference variables that influence both the stimulus (i.e., what situations an individual considers stressful) and the response (i.e., how an individual is going to respond to a stressful situation; Lazarus, 1999). As Lazarus (1999) stated, "In effect, it takes both the stressful stimulus condition and a vulnerable person to generate a stress reaction. Putting the person into the equation is the only way to solve the dilemma" (p. 53). Stated differently, Lazarus (1999) argued that stress is defined, not by a stimulus and a response, but by an individual's cognitive processes, which intervene between the stressor and its related response.

In order to account for these intervening processes, Lazarus (1991b, 1999) developed the C-M-R theory of emotion, which has emerged as the most widely accepted conceptual framework for examining psychological stress and coping (David & Suls, 1999; Gould, 1996). The basic tenet of C-M-R theory is that the relational meaning generated by a person's

constantly changing, mutually reciprocal transaction with the environment is the primary predictor of stress, coping, and emotion in such an encounter. For instance, the way a player reacts to a poor call by an official depends on the meaning of the situation to the player rather than the simple interaction of variables related to the official's competence (i.e., the environment) and the player's stress reactivity (i.e., the person). Therefore, Lazarus and Folkman (1984) defined psychological stress as, "a particular relationship between the person and the environment that is appraised by the person as taxing or exceeding his or her resources and endangering his or her well-being" (p. 19).

Since its introduction over 20 years ago, the C-M-R theory of emotion (Lazarus, 1991b, 1999) has stimulated a wealth of research in both the general and sport psychological domains (Bouffard & Crocker, 1992; Crocker & Graham, 1995; David & Suls, 1999; Dugdale et al., 2002; Folkman & Lazarus, 1985, 1988; Gaudreau et al., 2002; Gaudreau et al., 2001; Giacobbi & Weinberg, 2000; Gould et al., 1993; Hammermeister & Burton, 2001; Haney & Long, 1995; Ntoumanis & Biddle, 1998; Pensgaard & Duda, 2003). In general, this research supported the basic constructs of C-M-R theory (Lazarus, 1991b, 1999) and confirmed that a process-oriented, cognitive-mediational approach is the most viable alternative for research on psychological stress, coping, and emotion. Given this empirical support and its relevance to the constructs to be examined, I adopted the definitional approach advocated by the C-M-R theory of emotion (Lazarus, 1991b, 1999).

Acute vs. Chronic Stress

Lazarus and Folkman (1984) distinguished between acute and chronic stress in their preliminary work on C-M-R theory. Specifically, they viewed acute stress to result from the interpretation of a particular event as stressful. In contrast, chronic stress results from the continued interpretation of the same event as stressful over a prolonged period of time. Recently,

Lazarus (1999) further argued that chronic stress arises from “harmful or threatening, but stable, conditions of life, and from the stressful roles people continually fulfill at work and in the family” (p. 144). For example, the threat of being unable to successfully manage athletic and academic time demands would be considered a chronic stressor by an individual continually fulfilling the role of student-athlete. Indeed, my study focused on this particular source of chronic stress.

The distinction between acute and chronic stress has important implications for coping research and intervention. First, Gottlieb (1997) argued that different strategies are required to effectively cope with chronic stress and acute stress. Therefore, in order to get a complete picture of how individuals cope with stress, researchers must examine chronic stressors (e.g., daily hassles) in addition to acute stressors (e.g., major life events, Lazarus, 1999). Second, as Aldwin and Brustrom (1997) pointed out, chronic stressors are often dealt with and managed rather than fully resolved (e.g., terminal illness). Therefore, researchers must measure the effectiveness of coping efforts employed in response to a chronic stressor differently than for efforts employed in response to an acute stressor. Despite these implications, the study of acute stress has received the vast majority of attention in extant research on stress, coping, and emotion in both general and sport psychology (Anshel & Anderson, 2002; Bouffard & Crocker, 1992; Carver et al., 1989; Crocker & Graham, 1995; Crocker & Isaak, 1997; David & Suls, 1999; Dugdale et al., 2002; Eubank & Collins, 2000; Folkman & Lazarus, 1985; Endler et al., 1994; Gaudreau et al., 2002; Gaudreau et al., 2001; Gould et al., 1993; Hammermeister & Burton, 2001; Haney & Long, 1995; Krohne & Hindel, 1988). Therefore, I attempted to fill this gap in the literature by examining how individuals who occupy both athletic and academic roles (i.e., university club

sport athletes) appraise, cope with, and experience affective responses to the chronic stress of managing athletic and academic time demands.

Regardless of whether a stressor is acute or chronic, two related processes are contained within Lazarus and Folkman's (1984) definition of stress: (a) appraisal; and (b) coping. Therefore, what follows in the next two sections is a discussion of these two constructs. First, the antecedents and types of appraisals proposed by Lazarus (1999) in the C-M-R theory of emotion will be described in detail. Subsequently, the major theoretical approaches to the study of coping will be outlined, with emphasis on the process approach advocated by Lazarus and Folkman (1984). Finally, the implications of adopting this process approach for my study will be identified and discussed.

Appraisal

According to Lazarus (1991b), appraisal is defined as “an evaluation of the personal significance of what is happening in an encounter with the environment” (p. 820). With respect to the causal role of cognitive appraisal in emotion, Lazarus (1991a) adopted the cognitive-mediational view that appraisal is both necessary and sufficient for an emotion to result. Stated differently, appraisals are not simply capable (sufficient) of producing emotions. Rather, without appraisals emotions would not occur (Lazarus, 1991a). In addition, Lazarus and Smith (1988) emphasized the conceptual distinction between appraisal and knowledge. In contrast to knowledge, which is a cold cognition about the facts of a situation (i.e., who, what, where, when, why, and how), appraisals are warm or hot cognitions regarding the personal meaning of a situation in terms of an individual's goals, beliefs, attitudes, and well-being (Lazarus & Smith; Lazarus, 1999). In the C-M-R theory of emotion, Lazarus (1991b, 1999) specified both the specific types of appraisals and their antecedent conditions, each of which will be discussed below.

Types of Appraisal

Lazarus (1991b, 1999) proposed that individuals engage in two transactional processes when in a potentially stressful encounter: primary and secondary appraising. The products of primary and secondary appraising represent the two types of appraisals identified by Lazarus (1991b, 1999) in the C-M-R theory of emotion: primary and secondary appraisal. Primary appraisal concerns “whether and how the encounter is relevant to the person’s well being” (Lazarus & Smith, 1988, p.284). Secondary appraisal, on the other hand, is a judgment of the resources available to deal with a stressful encounter and its potential outcomes (Lazarus, 1991b, 1999). In addition, Lazarus (1991b, 1999) identified subcomponents of both primary and secondary appraisal. The next two sections of this paper will offer a theoretical discussion of each appraisal subcomponent.

Primary appraisal

Lazarus (1991b, 1999) distinguished between three subcomponents of primary appraisal: (a) goal relevance, (b) goal congruence, and (c) type of ego involvement. Goal relevance refers to a determination of what, if anything, is at stake in an encounter (Lazarus, 1991b). For example, in preparation for a midterm exam, a college student may appraise his or her performance on the exam as being relevant for future goals respecting graduation, and thus, earnings potential. Goal congruence concerns “the extent to which a transaction is consistent or inconsistent with what the person wants” (e.g. graduation, earnings; Lazarus & Smith, 1988, p. 289). Finally, type of ego involvement involves the kind of goal at stake (Lazarus, 1991b, 1999). Lazarus (1999) identified six types of ego involvement: (a) social and self-esteem, (b) moral values, (c) ego ideals, (d) meanings and ideas, (e) other persons and their well-being, and (f) life goals. With respect to the role of each type of primary appraisal in emotion, Lazarus (1991b) proposed that goal relevance determines whether or not an emotion will occur, goal congruence

establishes the valence of the experienced emotion (i.e., whether it is positive or negative), and type of ego involvement distinguishes between the specific harm, threat, and challenge emotions experienced.

Most relevant to the purposes of my study are goal congruence appraisals because, as Lazarus (1991b) argued, they determine the relational meaning of a stressful encounter. Lazarus and colleagues (Lazarus, 1991b, 1999; Folkman & Lazarus, 1980) proposed three distinct relational meanings indicative of psychological stress: (a) harm, a loss that has already occurred; (b) threat, an anticipated loss; and (c) challenge, a difficult-to-attain, yet anticipated gain. Furthermore, Lazarus (1991b, 1999) proposed that these three relational meanings result in three major types of stress emotions: harm emotions, threat emotions, and challenge emotions. Harm emotions are outcome-based and include anger, guilt, shame, and sadness (Lazarus, 1991b, 1999). Threat emotions are anticipatory and include anxiety and fright (Lazarus, 1991b, 1999). Finally, challenge emotions are anticipatory, reflective of movement toward goal attainment, and include happiness, pride, gratitude, and love (Lazarus, 1991b, 1999).

Secondary appraisal

According to the C-M-R theory of emotion (Lazarus, 1991b, 1999), the secondary appraisal process comprises three judgments: (a) future expectations, (b) blame or credit, and (c) coping potential. Future expectations reflect an individual's judgment as to whether or not the stressful encounter will be resolved favorably or unfavorably for his or her well-being (Lazarus, 1991b, 1999). Blame or credit is a determination of whom or what is responsible for the particular harm, threat, or challenge appraised in a stressful situation (Lazarus 1991b, 1999). With regard to emotion, Lazarus (1991b, 1999) argued that appraising blame or credit to oneself results in different emotions than directing blame towards others (e.g., anger vs. guilt, shame, and pride).

Finally, coping potential concerns whether, and in what ways, an individual can influence the person-environment relationship (Lazarus, 1991b, 1999). Specifically, in a given stressful encounter, one must judge whether there is any potential to reduce or eliminate a harm or threat, or attain a challenging goal. According to Lazarus (1991b, 1999), secondary appraisal of coping potential has important implications for the ways that individuals cope with stress. Therefore, the major predictions of C-M-R theory (Lazarus, 1991b, 1999) regarding relationships between coping potential, actual coping efforts, and emotion will be discussed in greater detail in the coping section of this paper. Attention will now turn toward the major cognitive-motivational-relational constructs that influence how an individual appraises a stressful encounter.

Antecedents of Appraisal

Lazarus (1999) identified two broad categories of appraisal antecedents: (a) environmental variables, and (b) person variables. Lazarus viewed these aspects of the person and the environment as primary moderators, through the appraisal process, of the relationships between stress, coping, and emotion. Stated differently, Lazarus argued that an individual's appraisal of an event exerts a direct influence on stress, coping, and emotion, while the influence of the person or environment is indirect. The major types of environmental and person variables will be discussed below.

Environmental variables

Lazarus (1999) identified the following four categories of environmental variables that interact with person variables as antecedents of appraisal: (a) demands, (b) constraints, (c) opportunities, and (d) culture. Opportunities and culture will not be discussed in detail here for two reasons. First, they were not fully detailed by Lazarus (1999) in his presentation of the C-M-R theory of emotion. Second, they are not germane to the purposes of my study. Therefore, this

section will focus on demands and constraints as antecedents of appraisal (See Lazarus, 1999, for a discussion of opportunities and culture as antecedents of appraisal).

Demands are defined as “the implicit or explicit pressures from the social environment to act in certain ways and manifest socially correct attitudes” (Lazarus, 1999, p. 61). Stated differently, demands influence the appraisal process through the pressure to conform to social conventions. For example, students who participate in organized university athletics (e.g., club and intercollegiate sports) are pressured by their professors and academic advisors to behave in ways that will help them excel in academics (e.g., studying for exams, going to class, keeping up with required readings), while at the same time being pressured by their coaches and teammates to behave in ways that will develop excellence in athletics (e.g., attending all practices and meetings, participating in team workouts). When faced with a stressful situation in which he or she must choose between an academic or athletic activity (e.g., having to postpone studying for an exam in order to attend a mandatory team workout), the ways that a student-athlete appraises and copes with these competing environmental demands is influenced by his or her perception of which is more salient. Indeed, in my study, I examined the ways that student-athletes appraise and cope with the competing demands presented in this example.

In contrast to demands, constraints are socially unacceptable ways of behaving that affect appraisal by limiting one’s coping potential and affecting one’s social and self-esteem (Lazarus, 1999). For example, in the stressful situation described above, a student-athlete might decide that his or her academic demands are more salient, and therefore cope by focusing less on his or her athletic responsibilities. However, such a coping strategy would be constrained by the practice and workout attendance rules imposed by his or her coach, thereby limiting his or her coping potential.

Person variables

Person variables include (a) beliefs about self and world, (b) personal resources, and (c) goals and goal hierarchies (Lazarus, 1999). First, one's beliefs about self and the world influence appraisals through their effect on situational expectations. For example, an athlete playing for a vociferous (vs. calm) coach might be more likely to appraise poor individual performance as threatening because he or she expects to be berated by the coach.

According to Lazarus (1999), personal resources (e.g., intelligence, money, attractiveness, social skills, social support network) are aspects of the individual that influence appraisal through their effects on one's chances for adaptational success. For example, at the beginning of his or her first year, a student-athlete might appraise the intense intercollegiate workout regimen as highly stressful. However, at the end of the year, he or she might appraise this same regimen as less stressful because of the strong social support network (i.e., personal resource) he or she cultivated throughout the course of the year. Giacobbi and colleagues (2004), in their longitudinal study of freshmen female athletes, found support for Lazarus predictions' regarding personal resources.

Finally, Lazarus (1999) recognized that goals and goal hierarchies are antecedents of appraisal because individuals are more likely to appraise a situation as meaningful if it involves more important, as opposed to less important, goals. In sport, researchers have identified several individual difference (person) variables reflecting goals and goal hierarchies, including the extent to which an individual prioritizes athletic goals (athletic identity; Brewer, Van Raalte, & Linder, 1993) and the extent to which an athlete's achievement goals are self- or norm-referenced (task and ego orientations; Duda, 1989). I examined the role of this latter person variable, achievement goal orientation, as an antecedent of appraisal, coping, and emotion. Therefore, a brief theoretical discussion of achievement goal orientations is appropriate.

Achievement goal orientations

Nicholls (1984, 1989) in the educational psychology literature and Duda (1989) in the sport psychology literature proposed that an individual's dispositional motivation in an achievement context (e.g., school, athletics) depends on his or her criterion for competence-related beliefs. Furthermore, Duda and Nicholls (1992) argued that these beliefs "cut across...domains," and therefore are "theories in the larger sense of world views" (p. 297).

Specifically, Nicholls (1984, 1989) and Duda (1989) distinguished between two achievement motives: task orientation and ego orientation. Individuals adopting a task orientation perceive personal competence based on self-referenced standards (e.g., task mastery, effort investment, skill development, etc.), and view efforts as undifferentiated from ability (i.e., ability results from increased effort rather than innate talent; Duda, 1989; Nicholls, 1984, 1989). In contrast, the competence beliefs of individuals adopting an ego orientation are founded on norm-referenced standards (e.g., defeating opponents, displaying one's superior ability to others; Duda, 1989; Nicholls, 1984, 1989). Furthermore, individuals with a strong ego orientation perceive effort as differentiated from ability (i.e., ability results from innate talent rather than increased effort; Duda, 1989; Nicholls, 1984, 1989). Achievement goal theory has important implications for the stress process. However, little, if any, research has examined the impact of achievement goals within the C-M-R theory of emotion (Lazarus, 1991b, 1999). Therefore, I attempted to address this limitation of the extant literature by examining achievement goals as antecedents of appraisal that moderate the relationships between appraisal, coping, and emotion.

For the purposes of my study, achievement goal theory (Duda, 1989; Nicholls, 1984, 1989) and the C-M-R theory of emotion (Lazarus, 1991b, 1999) are linked theoretically in at least three ways. First, achievement goal orientations can be considered person variables in the appraisal process. As stated previously, Lazarus (1999) emphasized the motivational aspects of stress by

(a) identifying goal hierarchies as person variables that antecede appraisal, and (b) proposing that the perception of psychological stress in an encounter is dependent on a primary appraisal of goal relevance. Indeed, a central tenet of C-M-R theory is that an individual's motives in an encounter are influential in determining how he or she will appraise the encounter (Lazarus, 1999). Compatible with this view is that of Duda and Hall (2001), who posited that "achievement goals are presumed to be the organizing principle influencing how we interpret, feel about, and react to our achievement-related endeavors" (p. 417).

Second, both achievement goal theory (Duda, 1989; Nicholls, 1984, 1989) and the C-M-R theory of emotion (Lazarus, 1991b, 1999) propose that an individual's perception of control influence his or her cognitive and behavioral strategies in an adaptational encounter. Specifically, achievement goal theory posits that, in the face of adversity, individuals adopting a task orientation perceive successful (or unsuccessful) outcomes to be within their control (i.e., due to effort), and are therefore more likely to be challenged and employ adaptive strategies (e.g., problem-solving, planning, and increased effort; Roberts, 1992). In contrast, individuals with a strong ego orientation perceive success (or failure) as uncontrollable (i.e., due to innate talent), and are therefore more likely to be threatened by adversity and employ maladaptive strategies (e.g., task-irrelevant thoughts; Roberts, 1992). In general, research in both general and sport psychology has supported the prediction that perceptions of control are related to adaptational thoughts and behaviors (Folkman & Lazarus, 1980; Folkman & Lazarus, 1985; Hammermeister & Burton, 2001; Kim & Duda, 2003; Peacock & Wong, 1996; Reese, Kliever, & Suarez, 1997). Specific studies examining the relationships between achievement goal orientations, appraisal, coping, and perceptions of control will be presented in subsequent sections of this paper.

Finally, both achievement goal orientations (Duda, 1989; Nicholls, 1984, 1989) and cognitive-motivational-relational constructs (Lazarus, 1991b, 1999) are proposed to influence emotion. For example, Roberts (1986) argued that individuals scoring highly on measures of task orientation would be less likely than their ego-oriented counterparts to experience competitive anxiety because they are more likely to appraise a competition as challenging (as opposed to threatening). Such an argument is consistent with the cognitive-motivational-relational categorization of anxiety as a threat emotion. Unfortunately, researchers only recently have begun to examine the relationships between goal orientations, relational meanings (i.e., harm, threat, and challenge), and affective experiences. Emerging evidence supporting these relationships will be presented in the subsequent sections of this paper.

To summarize, achievement goal theory (Duda, 1989; Nicholls, 1984, 1989) and the C-M-R theory of emotion (Lazarus, 1991b, 1999) share in common a theoretical framework that attempts to explain an individual's thoughts, feelings, and behaviors in personally meaningful situations. Specifically, it appears theoretically justified to classifying achievement goal orientations as person variables that antecede appraisal and thereby influence the relationships between appraisal, coping, and emotion. However, in the extant sport psychology literature, researchers have shown little interest in examining achievement goal orientations within a cognitive-motivational-relational approach to stress. My study specifically addressed this limitation.

Summary of Appraisal

According to the C-M-R theory of emotion (Lazarus, 1991b, 1999), stress emotions result from an individual's cognitive appraisal that a stressful situation is meaningful for his or her well-being. Lazarus (1991b, 1999) identified two types of cognitive appraisal: primary appraisals and secondary appraisals. Primary appraisals concern whether an encounter has implications for

one's well-being and include (a) goal relevance, (b) goal congruence, and (c) type of ego-involvement. Secondary appraisals involve an evaluation of what can be done about the stressor and include (a) blame or credit, (b) coping potential, and (c) future expectations. Both the primary and secondary appraisal processes are influenced by person and environmental variables, which serve as antecedents of appraisal. In my study, person variables were represented by achievement goal orientations (Duda, 1989; Nicholls, 1984, 1989), which are analogous to the concept of goals and goal hierarchies in the C-M-R theory of emotion (Lazarus, 1991b, 1999).

Coping

Lazarus and Folkman (1984; Folkman & Lazarus, 1988) asserted that coping and appraisal are joined as mediators of stress emotions. From the above discussion of appraisal, one can glean that the coping process greatly influences, and is influenced by, the way an individual appraises the adaptational significance of an event. However, prior to the 1970s, the term coping was used infrequently to describe the ways that people manage their stressful life conditions (Lazarus, 1999). Instead, theorists and researchers viewed stress management efforts as reflective of one's personality, and therefore referred to these efforts in terms consonant with specific personality theories. Based on this history, I will now endeavor to briefly outline the traditional approaches that researchers have adopted to study coping. First, coping as an ego defense mechanism within psychoanalytic theory will be discussed. Next, the trait approach, which focuses on the structural aspects of coping, will be presented. Finally, because I adopted the C-M-R theory of emotion (Lazarus, 1991b, 1999) as a guiding framework for my study, the central tenets of the process approach advocated by these authors will be described in detail.

Ego Approach

In its earliest conceptualizations, coping was studied by researchers from an ego-based perspective that emerged from the psychoanalytic concept of ego defense (Lazarus, 1999). Specifically, these researchers defined coping as the employment of ego defense mechanisms to reduce the tension resulting from a stressful encounter (Folkman & Lazarus, 1980). Typically, ego defenses were stratified in terms of their adaptational utility (Folkman & Lazarus, 1980). For example, some ego psychologists (Haan, 1969; Menninger, 1954) argued that defense mechanisms are not based in reality, and therefore represent the most maladaptive form of coping (Lazarus, 1999). In contrast, Vaillant (1977) considered certain ego defenses (e.g., altruism) to be more mature than others (e.g., reaction formation).

The ego approach is limited in at least two ways. First, its emphasis on tension reduction underestimates other possible functions of coping (e.g., problem-solving; Folkman & Lazarus, 1980). Second, and most importantly, by focusing solely on the defensive stress response, the ego approach fails to consider what it is about the person or the environment that influences such a response (Folkman & Lazarus, 1980). For instance, from an ego perspective, reaction formation is defined as “behavior in a fashion diametrically opposed to an unaccepted instinctual impulse” (Vaillant, 1977, p. 385). Therefore, if an athlete restrains from retaliating toward a verbally abusive coach, he or she is described as having employed reaction formation as an ego defense against the stress of the abusive encounter. However, this analysis is inadequate because it offers little information about the athlete’s appraisals of the encounter (e.g., interpreting the coach’s comments as a threat or challenge), which, as already discussed, are determined by the combined influence of person and environmental variables. Furthermore, the athlete’s actual motives for restraining (e.g., remaining on the team roster), and his or her emotions (e.g., anger, shame, gratitude) are also ignored. Based on these limitations, researchers began to study coping

from a trait perspective, which considers the stable aspects of the individual as major predictors of situational coping efforts (Folkman & Lazarus, 1980).

Trait Approach

Traditionally, researchers have examined trait coping in three distinct ways varying in theoretical sophistication (Lazarus, 1999). The least sophisticated approach has been to examine coping style, which can be defined as an individual's tendency to employ a certain type or category of coping strategy across time and situations (Lazarus, 1999). Typically, coping styles have been expressed in terms of dichotomous dimensions derived from the ego defense approach discussed above (e.g., approach-avoidance, repression-sensitization; Lazarus, 1999). A more sophisticated approach has involved the identification of specific personality traits (e.g., neuroticism, trait anxiety) that might influence an individual's coping style (Lazarus, 1999). For example, an individual who is high trait anxious might consistently use an avoidance coping style (i.e., denial, fantasy) across time and situations. Finally, the most sophisticated approach has been the conditional trait approach, which argues that personality traits influence coping styles only in situations rendered functionally equivalent by the specific personality trait (Wright & Mischel, 1987). From this perspective, a basketball player who is high trait anxious might consistently employ an avoidant coping style (e.g., pass the ball to a teammate instead of shooting late in a game) during competitions, but not during practice.

Regardless of the specific way researchers have examined trait coping, the overall trait perspective is limited in that it reduces coping to a contrast between competing styles, personalities, or conditions (Lazarus, 1999). Specifically, in the trait approach, if an individual is described as exhibiting a particular coping style across situations, several aspects of the coping process are ignored, including (a) the multitude of various coping thoughts and behaviors that the individual actually employed both across and within situations, (b) the aspects of the situation

that influenced those coping thoughts and behaviors, and (c) the shifts in coping thoughts and behaviors that occurred within the specific situation (Folkman & Lazarus, 1980; Lazarus, 1999).

Process Approach

Based on the limitations of the ego and trait approaches to coping, Lazarus and Folkman (1984) advocated a process approach that defines coping multidimensionally as the “constantly changing cognitive and behavioral efforts to manage specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person” (p. 141). Three important issues underlie this process definition of coping: (a) the functions of coping, (b) the measurement of coping effectiveness, and (c) the methods for studying coping from a process approach (Lazarus, 1999). Each of these theoretical challenges will now be detailed along with how Lazarus and colleagues’ work is relevant to my study.

Functions of coping

Lazarus and Folkman (1984) proposed that coping is multidimensional in that an individual’s coping efforts can ameliorate stress by either (a) altering the nature of the situation so that it is less stressful or (b) reducing emotional distress. Lazarus and Folkman termed the cognitive and behavioral efforts aimed at transforming the nature of a stressful situation as problem-focused coping. For example, a football wide receiver who is ashamed after dropping a potential touchdown pass during a game might cope with the shame in a problem-focused manner by catching practice passes from a teammate on the sideline or by talking to the quarterback about ways to repair the timing of a particular play.

In contrast to problem-focused coping, emotion-focused coping refers to an individual’s efforts aimed at changing the relational meaning (i.e., threat, harm, and challenge) of the stressful situation, rather than the situation itself. Emotion-focused coping efforts, although less active than problem-focused coping, are often more cognitive in nature as an individual may

internally restructure the meaning of the event, and therefore his or her emotional reaction (Lazarus, 1991b). Referring to the previous example, the football wide receiver might cope with shame in an emotion-focused way by venting to a teammate, psychologically distancing himself from blame (i.e., engaging in denial), or using self-talk to reinterpret or reframe the reason(s) why he dropped the pass.

Coping effectiveness

With regard to the functions of coping, Lazarus (1999) argued that problem-focused and emotion-focused coping strategies are neither inherently adaptive nor inherently maladaptive. In other words, Lazarus took the position that individuals cope with events regardless of whether their efforts result in a specified outcome. This begs the question: How then can researchers assess the adaptational utility of problem- or emotion-focused coping in a given stressful encounter? One option has been the outcome approach, which assesses only the important outcomes related to a stressful encounter (e.g., sport performance, test grades). However, Lazarus (1999) and Folkman (1992) argued against this approach because adaptational outcomes often do not reflect the effectiveness of an individual's coping efforts. For example, some stressors (e.g., one's partner suffers from HIV/AIDS) are such that there is little the individual can do to improve the outcome (e.g., death of partner). Therefore, in addition to outcomes, researchers should focus on cognitive appraisal as an important predictor of coping effectiveness (Folkman; Lazarus, 1999). Following this recommendation, Folkman proposed an approach to the measurement of coping effectiveness that emphasizes the quality of fit between an individual's coping efforts and his or her situational appraisals. Specifically, in Folkman's goodness-of-fit approach, coping effectiveness depends on two fits between the environment and an individual's situational appraisal. First, an individual must realistically appraise the personal significance of the stressor (Folkman). Folkman argued that over- or underestimation of the

personal significance of a stressful encounter leads to ineffective coping because efforts are less likely to be sufficient in meeting situational demands. For example, a football player who, during a game, blames himself for a teammate's injury (i.e., overestimates personal significance) is unlikely to cope effectively with his guilt because the situation demands continued focus on game play rather than rumination and negative self-talk.

Second, there must be a fit between an individual's coping efforts and his or her secondary appraisal of control over the stressor (Folkman, 1992). As suggested previously with respect to the functions of coping, Folkman contended that problem-focused coping strategies are most effective during situations appraised as controllable because the situation is amenable to such efforts. Similarly, emotion-focused coping strategies are most effective during situations appraised as uncontrollable because the situation is not amenable to change; and therefore, coping efforts should instead be directed towards regulating one's emotions (Folkman). For example, according to the goodness-of-fit approach (Folkman), increasing one's focus on the source of stress (i.e., a problem-focused coping strategy) would be more effective for coping with poor end-of-game performance (i.e., a controllable stressor) than for dealing with a hostile crowd (i.e., an uncontrollable stressor). In contrast, ignoring the stressor (i.e., an emotion-focused coping strategy) would be more effective for coping with a hostile crowd (i.e., an uncontrollable stressor), but less effective for coping with poor end-of-game performance (i.e., a controllable stressor).

Process methodology

Folkman and Lazarus (1985) recommended that process-oriented studies of coping should satisfy three methodological criteria. First, coping should be studied in the context of an ongoing stressful situation (Folkman & Lazarus, 1985). While necessary to some extent given the difficulty of studying cognitive processes, retrospective reports of past stressful encounters might

reflect an individual's intuitive theories and abstract knowledge about what happened, rather than the actual situational appraisal and coping that took place (Lazarus & Smith, 1988). This concern was supported by Smith, Leffingwell, and Ptacek (1999), who found that daily and 7-day retrospective accounts of coping shared only 25% of common variance. Second, Folkman and Lazarus (1985) recommended that researchers should examine how an individual actually copes with a real stressful situation, rather than how they would hypothetically cope.

Methodologies that employ imagery or role-playing exercises are inadequate in that they limit the relational meaning of the person-environment relationship, which is critical for appraisal and coping processes (Lazarus & Smith). Finally, Folkman and Lazarus (1985) recommended that researchers should collect repeated assessments of coping, thereby facilitating examination of changes in coping in relation to the stages of the stressful encounter. Therefore, based on these three criteria, Lazarus (2000) advocated an ipsative-normative longitudinal design whereby a sample of individuals is studied in different situations at different times over an extended period. This methodology simultaneously allows for analysis of both within-participant (ipsative) and between-participant (normative) differences in coping (Lazarus, 2000).

Summary of the Cognitive-Motivational-Relational Theory of Emotion

According to the C-M-R theory of emotion (Lazarus, 1991b, 1999), four general constructs influence the stress process: (a) antecedents of appraisal, (b) appraisal, (c) coping, and (d) emotion. A model of the theoretical relationships between these variables is depicted in Figure 2-1. On the far left of Figure 2-1 are person and environmental variables, which antecede appraisal and therefore influence the mediating processes located in the middle of the model (i.e., primary appraisal, secondary appraisal, and coping). When confronted with a potentially stressful situation, an individual generates a primary appraisal concerning the relational meaning of the situation (i.e., whether it is harmful, threatening, and/or challenging). Based on this relational

meaning, specific stress emotions (e.g., anger, anxiety, sadness) are experienced. To reduce this emotional distress, the individual evaluates his or her coping potential (i.e., secondary appraisal), and engages in efforts to either change the nature of the situation (i.e., problem-focused coping) or directly reduce the emotional distress (i.e., emotion-focused coping). Depending on both the outcomes of these coping efforts and the degree to which they fit the adaptational demands of the situation, specific stress emotions will either disappear or remain (far right of Figure 2-1).

Coping Measurement and Research in General and Sport Psychology

Over the past 20 years, the C-M-R theory of emotion (Lazarus, 1991b, 1999) has gained widespread acceptance in both general and sport psychology as a framework for examining stress, appraisal, coping, and emotion. Therefore, with the relevant constructs and theoretical perspectives defined and discussed, focus will now shift toward the research in general and sport psychology specifically relevant to the predictions of C-M-R theory. First, the major measurement instruments employed by coping researchers will be identified and described. Next, empirical evidence for both the structural and process aspects of coping will be presented. Finally, specific sport coping research related to the purposes of my study will be discussed.

Coping Measurement in General Psychology

The two instruments most commonly used by coping researchers in general psychology to assess coping thoughts and behaviors are the Ways of Coping checklist (Folkman & Lazarus, 1980) and the COPE inventory (Carver et al., 1989). The development, content, psychometric properties, strengths, and weaknesses of both of these instruments will be discussed in this section.

The Ways of Coping checklist

Folkman and Lazarus (1980) developed the Ways of Coping checklist to assess the coping strategies that an individual might use in a specific stressful situation. The original 68 items,

derived from both theory (i.e., C-M-R theory; Lazarus, 1991b, 1999) and extant research, were classified by 10 raters according to the two proposed functions of coping: problem-focused coping and emotion-focused coping. For example, the item, “Made a plan of action and followed it,” was categorized as a form of problem-focused coping, while the item, “Accepted sympathy and understanding from someone,” was hypothesized to represent a form of emotion-focused coping. The instrument instructed individuals to think of a specific stressful situation and respond yes or no to each item, indicating whether they did or did not employ the given coping strategy in response to that situation.

Folkman and Lazarus (1980) reported conflicting findings regarding the reliability and validity of the original Ways of Coping checklist. First, the inter-rater reliability of item classification ($r = .91$), and Cronbach’s alpha for the two subscales (problem-focused coping = .80, emotion-focused coping = .81) were adequate. Second, principal components factor analysis with varimax rotation supported the existence of the two coping factors. However, while the amount of shared variance between the problem- and emotion-focused subscales was low enough ($r^2 = .19$) to support their relative independence, the two subscales were nevertheless intercorrelated ($r = .44$). Furthermore, while factor analysis supported the problem-focused and emotion-focused subscales, it also determined that only 49 of the 68 items actually loaded onto these two factors. Despite these conflicting findings, Folkman and Lazarus (1980) approached the item revision procedure conservatively, deleting only four items and reclassifying one item as emotion-focused rather than problem-focused.

Carver and colleagues (1989) raised three additional concerns with the Ways of Coping checklist (Folkman & Lazarus, 1980). First, they argued that the classification of coping strategies as either problem- or emotion-focused is an oversimplification of the diversity and

complexity of the thoughts and behaviors that individuals use to cope with stress. Indeed, subsequent factor analyses performed on the Ways of Coping checklist have typically revealed solutions comprised of more than two factors (Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, DeLongis, and Gruen, 1986). Second, some of the items on the Ways of Coping checklist (Folkman & Lazarus, 1980) are ambiguously worded (Carver et al.). For example, the item, “Took a big chance or did something risky,” describes an act without indicating why the act is being done. Both the act itself and the rationale for its use have important adaptational implications. For instance, to cope with a stressful coach-player relationship, two teammates might engage in risk-taking behaviors for entirely different reasons. One athlete might engage in binge drinking with teammates because he feels the need to distance himself from the emotions of the situation, while another might engage in binge drinking with the coach because he feels that this bonding experience will directly improve the relationship. In addition, other items on the Ways of Coping checklist (Folkman & Lazarus, 1980) are ambiguous in that they combine two conceptually distinct qualities (Carver et al.). For example, in the item, “I did something which I didn’t think would work, but at least I was doing something,” it is unclear whether it is more important that the individual is taking action or that the individual believes his actions will be unsuccessful (Carver et al.).

The COPE inventory

Based on their dissatisfaction with the Ways of Coping checklist, Carver et al. (1989) developed the COPE as a means of gaining a clearer understanding of the complex thoughts and behaviors individuals employ to cope with stress. The COPE (Carver et al.) comprises 13 conceptually distinct four-item subscales that were informed by the C-M-R theory of emotion (Lazarus, 1991b, 1999), Carver and Scheier’s (1985) model of behavioral self-regulation, and previous empirical research findings. The 13 COPE (Carver et al.) subscales are as follows: (a)

active coping, i.e., “taking active steps to try to remove or circumvent the stressor or ameliorate its effects” (p. 268); (b) planning, i.e., “thinking about how to cope with the stressor” (p. 268); (c) suppression of competing activities, i.e., “putting other projects aside, trying to avoid becoming distracted by other events, even letting other things slide, if necessary, in order to deal with the stressor” (p. 269); (d) restraint coping, i.e., “waiting until an appropriate opportunity to act presents itself, holding one-self back, and not acting prematurely” (p. 269); (e) seeking social support for instrumental reasons, i.e., “seeking advice, assistance, or information” (p. 269); (f) seeking social support for emotional reasons, i.e., “getting moral support, sympathy, or understanding” (p. 269); (g) focusing on and venting of emotions, i.e., “the tendency to focus on whatever distress or upset one is experiencing and to ventilate those feelings” (p. 269); (h) behavioral disengagement, i.e., “reducing one’s effort to deal with the stressor, even giving up the attempt to attain goals with which the stressor is interfering” (p. 269); (i) mental disengagement, i.e., “activities that serve to distract the person from thinking about the behavioral dimension or goal with which the stressor is interfering” (p. 269); (j) positive interpretation and growth, i.e., “coping aimed at managing distress emotions rather than at dealing with the stressor per se” (p. 269); (k) denial, i.e. “refusal to believe that the stressor exists or trying to act as though the stressor is not real” (p. 270); (l) acceptance, accepting the reality of a stressful situation; and (m) turning to religion, i.e., “the tendency to turn to religion in times of stress” (p. 270). Two additional subscales, humor and alcohol/drug use, were not in the published version of the COPE (Carver et al.), but were developed and included later. Humor refers to making jokes about the stressor, while alcohol/drug use represents turning to the use of alcohol or other drugs as a way of disengaging from the stressor.

The COPE (Carver et al., 1989) can be administered in either a dispositional or situational form. The dispositional version of the COPE (Carver et al.) instructs respondents to indicate the extent to which they usually employ a given coping strategy when they experience stress. Items are phrased in the present tense (e.g., “I make a plan of action”), and responses are made on a 4-point Likert scale (1 = I usually don’t do this at all; 4 = I usually do this a lot). The situational version of the COPE (Carver et al.) requests respondents to think of their most stressful situation over the past two months and indicate the degree to which they employed a given coping strategy to deal with that specific situation. In contrast to the dispositional version, items are phrased in the past tense to assess state coping in response to specific stressful encounters (e.g., “I made a plan of action”). Using this format, respondents are instructed to answer on a 4-point Likert scale ranging from 1 (I didn’t do this at all) to 4 (I did this a lot).

Carver and colleagues (1989) assessed the factor structure of the dispositional COPE with a sample of 978 college undergraduates. Principal components factor analysis (with oblique rotation) yielded 12 factors with eigenvalues greater than 1.0. However, one of these factors had no item loadings greater than .30, and was therefore discarded. The structure of the 11 remaining factors deviated from expectations in only three ways. First, with regard to a priori assignment of items to scales, all items loaded on their hypothesized scales except for the active coping and planning items, which loaded onto a single factor. Similarly, items from the seeking social support for instrumental reasons and seeking social support for emotional reasons loaded onto a single factor. Second, two items each from the mental disengagement and positive reinterpretation and growth factors loaded below the standard .30 level. Finally, one item related to alcohol and drug abuse, hypothesized as an aspect of mental disengagement, failed to load on any factor.

One important issue to note about the factor analytic results regards the correlations among the subscales of the dispositional COPE. Specifically, Carver et al. (1989) employed an oblique rotation in their factor analysis to allow for correlations among factors. Despite this methodology, results revealed that, with few exceptions, the COPE (Carver et al.) subscales were not strongly correlated. For example, the diametrically opposed subscales of acceptance and denial were found to inversely correlate only moderately ($r = -.21$). The fact that these intercorrelations were low to moderate implies that the subscales of the dispositional COPE are relatively independent and can therefore be studied separately.

In addition to its factor structure, Carver and colleagues (1989) assessed the reliability of the dispositional COPE using estimates of internal consistency and test-retest reliability. Calculation of Cronbach's alpha reliability coefficients for each subscale revealed that only the mental disengagement subscale ($\alpha = .45$) did not exhibit acceptable internal consistency reliability. The test-retest reliability of the dispositional COPE (Carver et al.) subscales was supported by data collected from two additional samples of college undergraduates, with correlations ranging from .46 to .86.

Carver and colleagues (1989) also administered the situational version of the COPE to 156 participants three weeks after they completed the dispositional version. Exploratory factor analysis of the responses revealed that the factor structure of the situational COPE (Carver et al.) differed from the dispositional version in only two ways. First, unlike its counterpart on the dispositional version, all items on the situational mental disengagement factor exhibited acceptable loadings. Second, positive reinterpretation and growth on the situational version split into two separate factors (although Cronbach's alpha for the four items together was adequate; $\alpha = .74$). In addition to vast similarities in factor structure, the dispositional and situational versions

of the COPE (Carver et al.) also paralleled in terms of the correlations among subscales. Finally, reliability analysis of the situational COPE (Carver et al.) revealed that subscale alpha coefficients tended to be higher than on the dispositional version.

Coping Measurement in Sport Psychology

The major instruments employed by researchers to measure coping in sport have been adapted from those used in general psychology. Specifically, both the Ways of Coping checklist (Folkman & Lazarus, 1980) and the COPE inventory (Carver et al., 1989) have been modified to increase their applicability to the sport domain. In this section, each of these sport-modified instruments will be discussed.

Modifications of the Ways of Coping checklist

The Ways of Coping checklist was modified by Madden and colleagues (Madden, Kirkby, & McDonald, 1989; Madden, Summers, & Brown, 1990) for use in their studies on the coping efforts of middle distance runners and basketball players. Their 54-item Ways of Coping Checklist for Sport (WOCS) comprises eight subscales: (a) problem-focused coping, (b) seeking social support, (c) general emotionality, (d) increased effort and resolve, (e) detachment, (f) denial, (g) wishful thinking, and (h) emphasizing the positive. The subscales differ in number of items, ranging from three (emphasizing the positive) to seven (problem-focused coping).

Although Madden and colleagues (Madden et al., 1989; Madden et al., 1990) provided acceptable evidence for the internal consistency of the composite measure ($\alpha = .91$), the reliability of individual subscales was not reported. The lack of internal consistency estimates for the eight subscales of the WOCS (Madden et al., 1989, 1990) has important implications for its utility in research settings. First, because the number of items influences internal consistency estimates, it remains possible that the individual subscales—especially those with only three items—exhibit far lower, perhaps even unacceptable levels of reliability than the composite

measure (Crocker, Kowalski, & Graham, 1998). Second, Madden et al. (1989, 1990) proposed that the eight subscales represent different coping strategies. However, without adequate evidence for the reliability of each subscale, researchers are prevented from studying each of the proposed coping strategies separately (Crocker et al., 1998). In addition to these reliability concerns, there is little evidence for the validity of the WOCS (Madden et al., 1989, 1990) aside from the actual studies for which it was developed (Crocker et al., 1998).

Crocker (1992) subsequently modified the original Ways of Coping checklist (Folkman & Lazarus, 1980) to measure how athletes cope with a recent stressful athletic situation. Modifications included (a) adding sport-specific items to the original Ways of Coping checklist, (b) deleting irrelevant items, and (c) rewording existing items to increase sport relevance. Crocker administered the modified instrument to 237 competitive athletes and instructed them to indicate on a 4-point Likert-type scale the extent to which they used each strategy to cope with a recent stressful situation (1 = not used; 4 = used very much). Principal axis factor analysis of this data (with varimax rotation) resulted in a final 38-item version of the instrument which consisted of the following eight subscales: (a) active coping, (b) problem focused, (c) social support, (d) positive reappraisal, (e) wishful thinking, (f) self-control, (g) detachment, and (h) self-blame. The subscales differed in number of items, ranging from two (self-blame) to seven (active coping).

Reliability and validity evidence for Crocker's (1992) Modified Ways of Coping checklist provided only partial support for its use in sport psychology research (Crocker et al., 1998). First, half of the subscales (positive reappraisal, self-control, detachment, and self-blame) did not exhibit acceptable levels of internal consistency (α s = .68, .60, .58, and .68 respectively). Second, while it appears to be content valid, the modified Ways of Coping checklist (Crocker) is limited

by its lack of factorial validity (Crocker et al., 1998). Specifically, several items on the modified Ways of Coping checklist loaded on factors inconsistent with both the original Ways of Coping checklist (Folkman & Lazarus, 1980) and the WOCS (Madden et al., 1989, 1990).

Haney and Long (1995) subsequently modified the revised two-factor version of the Ways of Coping checklist (Folkman, Lazarus, Dunkel-Schetter, et al., 1986) to measure higher-order dimensions of coping with competitive stress. Specifically, these authors employed the engagement and disengagement coping dimensions previously identified by Tobin, Holroyd, Reynolds, and Wigal (1989). Engagement coping involves active efforts to manage the situation, while disengagement coping refers to distancing oneself from the situation.

As part of the scale revision process, Haney and Long (1995) conducted a pilot study to both (a) test the modified measure's higher-order factorial validity and (b) reduce the number of items for ease of use. They administered an initial 50-item version of their measure, consisting of the 46-item revised Ways of Coping Checklist (Folkman, Lazarus, Dunkel-Schetter, et al., 1986) and four items from the suppression of competing activities subscale of the COPE (Carver et al., 1989), to a sample of 106 athletes. For each item, participants were instructed to indicate on a 4-point Likert scale (0 = does not apply or not used; 3 = used a great deal) the extent to which they used each coping strategy during the physical activity they had just performed. Confirmatory factor analysis (CFA) revealed that the hypothesized factor structure of the initial measure poorly fit the data. Subsequent CFAs were performed on progressively refined versions of the measure until further modification did not result in significant model improvement. The final 18-item version of the engagement-disengagement checklist (Haney & Long) comprised 11 engagement items and seven disengagement items. The goodness-of-fit index (GFI) for the two-factor model was .84 and the root mean square residual (RMSR) was .08. In addition, internal consistency

reliability was adequate for both the engagement ($\alpha = .82$) and disengagement ($\alpha = .75$) dimensions.

Crocker and colleagues (1998) identified at least two limitations of the engagement-disengagement checklist (Haney & Long, 1995). First, the GFI value of .84 was lower than the acceptable level of .90. One possible explanation is that the items of the engagement-disengagement checklist (Haney & Long) were taken from measures designed to assess coping at a more specific level (i.e., the Ways of Coping checklist and COPE), and therefore may be inadequate for measuring high-order coping dimensions. Second, inspection of the means and standard deviations revealed that, for the disengagement subscale, the vast majority of athletes reported only minimal use of disengagement coping. Finally, it should be noted that the small sample size in the CFAs performed by Haney and Long may have impacted their observed fit indices and subsequent conclusions (See Hu & Bentler, 1995, for a discussion of sample size recommendations when performing a CFA).

Furthermore, Stone, Greenberg, Kennedy-Moore, and Newman (1991) offered three limitations of the original Ways of Coping checklist (Folkman & Lazarus, 1980) that are equally applicable to the three sport-modified checklists (Modified Ways of Coping checklist, Crocker, 1992; engagement-disengagement checklist, Haney & Long, 1995; WOCS, Madden et al., 1989, 1990). First, some items measure coping strategies that are not equally relevant in different sport situations, thereby limiting the ability to compare subscale scores across situations. For example, the item, "I avoided being with people in general," on Haney and Long's engagement-disengagement checklist may not be relevant for team sport contexts where social withdrawal is difficult (Crocker et al., 1998). Second, the three sport-modified measures do not identify a well-defined period of time for which coping is assessed (Stone et al.). For example, in Crocker's

Modified Ways of Coping checklist, participants are instructed to recall coping with a recent stressful situation without respect to the particular stage of the situation. Given that coping has been shown to be a dynamic process whereby coping efforts change as a stressful situation progresses, this is a particularly important problem (Crocker et al.). Finally, the three sport modifications of the Ways of Coping checklist are limited in that the instructions indicate a response set that might be interpreted differently by different participants or by the same participant between items (Stone et al.). Specifically, it is unclear whether the “extent” to which a participant uses a particular coping strategy is defined as the frequency of use, the duration of use, or the amount of effort expended to employ the strategy (Crocker et al.).

Modifications of the COPE inventory

Based on the above criticisms of the Ways of Coping checklist (Folkman & Lazarus, 1980), and the recommendations of Gould et al. (1993), sport psychology researchers have preferred modifying the COPE inventory (Carver et al., 1989) to measure both dispositional (Bouffard & Crocker, 1992; Eubank & Collins, 1999; Giacobbi & Weinberg, 2000) and situational (Crocker & Graham, 1995; Crocker & Isaak, 1997; Dugdale et al., 2002; Gaudreau et al., 2002; Gaudreau et al., 2001; Giacobbi & Weinberg, 2000; Ntoumanis & Biddle, 1998; Pensgaard & Duda, 2003; Hammermeister & Burton, 2001) coping in sport. Because the COPE subscales have been found to represent different coping strategies (Carver et al.), sport psychology researchers have modified the COPE (Carver et al.) by selecting the most relevant subscales and rewording the items to meet their specific study purposes.

Crocker and Graham’s (1995) modified COPE (MCOPE) has been the most consistently employed sport modification of the COPE inventory (Carver et al., 1989). Specifically, the MCOPE is a 48-item scale comprised of 12 four-item subscales designed to measure the coping strategies used by athletes in recent stressful performance situations. Eight of the subscales were

selected directly from Carver and colleagues' situational COPE: (a) active coping; (b) planning; (c) suppression of competing activities; (d) seeking social support for instrumental reasons; (e) seeking social support for emotional reasons; (f) focusing on and venting of emotions; (g) behavioral disengagement; and (h) denial. Three other MCOPE (Crocker & Graham) subscales were derived from research by Crocker (1992) and Madden and colleagues (1990): (a) self-blame (e.g., "I decided I was at fault for my performance"); (b) wishful thinking; (e.g., "I daydreamed about a better performance"); and (c) increasing effort (e.g., "I put more effort into my play"). The final subscale of the MCOPE (Crocker & Graham), humor (e.g., "I made jokes about my performance"), was developed for the original COPE (Carver et al.) but was excluded from the published version of the instrument.

In addition to the selection of subscales, Crocker and Graham (1995) modified the situational COPE (Carver et al., 1989) in four ways. First, items referring to a problem were revised to refer to a performance. Second, the response set was changed to a 5-point Likert scale anchored at 1 (used not at all/very little) and 5 (used very much). Third, the instruction set was changed to, "For each item, indicate how much you used each strategy during the stressful performance situation." Finally, several items were reworded to be understandable at a fifth grade level.

Crocker and Graham (1995) assessed the reliability of the MCOPE by administering it to 235 athletes. Of the 12 subscales, only denial ($\alpha = .42$) demonstrated unacceptably low internal consistency. Subsequent studies have also found the denial subscale to be psychometrically problematic (Crocker & Isaak, 1998; Gaudreau et al., 2001; Giacobbi & Weinberg, 2000). For example, after administering both dispositional and situational versions of the MCOPE (Crocker

& Graham) to 237 college athletes, Giacobbi and Weinberg found that denial was the only situational subscale to exhibit inadequate internal consistency ($\alpha = .67$).

In addition to persistent problems with the denial subscale, several other MCOPE (Crocker & Graham, 1995) subscales have been found to suffer from unacceptable reliability in several studies. For example, Crocker and Isaak (1997) and Dugdale et al. (2002) obtained coefficient alphas of .50 and .52 respectively for the behavioral disengagement subscale. Dugdale and colleagues also found the internal consistency of the suppression of competing activities subscale to be unsatisfactory ($\alpha = .59$). Similarly, Gaudreau et al. (2002) found that the wishful thinking and self-blame subscales exhibited inadequate reliability ($\alpha < .60$) at one or more phases of their three-phase study. Taken together, it appears that these subscales (behavioral disengagement, suppression of competing activities, wishful thinking, and self-blame) are problematic from a reliability standpoint. However, given that these studies varied with respect to instruction set (i.e., specific stressful situation vs. most stressful recent situation), type of assessment (i.e., prospective vs. retrospective), and type of sport (i.e., team vs. individual), strong conclusions cannot be drawn about the reliability of the above-mentioned subscales.

Evidence for the factorial validity of the MCOPE (Crocker & Graham, 1995) was provided by Eklund, Grove, and Heard (1998), who administered the instrument to 621 athletes coping with the stress of a performance slump. Four hypothetical models were tested using confirmatory factor analysis: (a) the original 12-factor model of the MCOPE, (b) an 11-factor model (MCOPE-11AP) that combined the active coping and planning subscales, (c) an 11-factor model (MCOPE-11SS) that combined the two social support subscales, and (d) a 10-factor model (MCOPE-10) that contained both the active coping/planning and instrumental/emotional social support combinations. None of the hypothesized models were clearly supported by the calculated

fit indices. Nevertheless, Eklund and colleagues advocated use of the 10-factor model (MCOPE-10) to measure slump-related sport coping because in each of the other hypothesized models, the active coping and planning subscales, as well as the two social support subscales were exceedingly intercorrelated. Essentially, these subscales were intercorrelated to the point of functional equivalence (Eklund et al.). However, as Eklund and colleagues pointed out, given that all fit indices failed to reach the superior .90 level (Hoyle & Panter, 1995), further research is clearly needed to provide more robust evidence for the factorial validity of the MCOPE.

Summary of Coping Measurement

In summary, while the development of the Ways of Coping checklist (Folkman & Lazarus, 1980) was a watershed event in the study of coping in general psychology, problems with its psychometric properties have led researchers to more frequently employ the COPE (Carver et al., 1989) in their studies. Echoing similar concerns with sport modifications of the Ways of Coping checklist (Madden et al., 1989, Madden et al., 1990), researchers examining how athletes cope with sport-specific stressors have preferred the sport modified COPE (Crocker & Graham, 1995; Eklund et al., 1998). However, rather than relying on modifications of general coping instruments, what is needed in sport coping research is the development of sport-specific coping measures that tap the unique coping strategies utilized by athletes in response to athletic stressors (Crocker et al., 1998).

Nevertheless, given that the Ways of Coping checklist (Folkman & Lazarus, 1980), the COPE inventory (Carver et al., 1989), and their sport-adapted counterparts (Modified Ways of Coping checklist, Crocker, 1992; engagement-disengagement checklist, Haney & Long, 1995; WOCS, Madden et al., 1989, 1990) have been the major instruments in coping research, studies that have employed these measures in both general and sport psychology will be reviewed in the

next section of this paper. Specific attention will be given to research with implications for the structural and process aspects of coping as described C-M-R theory (Lazarus, 1991b, 1999).

Research on the Structural Aspects of Coping

As mentioned in the previous section on approaches to coping, trait (or structural) coping has been described as a cognitive-behavioral style, a personality disposition, or a conditional trait. Therefore, what follows is a discussion of the major findings of general and sport psychology research in each of these three areas.

Coping as a style

General psychology research. As mentioned previously, an individual's coping style is inferred from his or her habitual use of certain coping strategies across time and situations. Whether or not coping is stable (consistent) or variable (situationally determined) has important theoretical and practical implications. First, if coping is stable, this would imply that educationally or clinically based interventions would be less efficacious because individuals would have highly routine or typical ways of responding to stress. Variability across time and situations would suggest that coping is more malleable or open to change, thus allowing for more effective efforts aimed at teaching individuals how to cope effectively with stress. However, systematic examinations of cross-situational coping consistency are scarce in the general psychology literature. Two notable exceptions were studies conducted by Folkman and colleagues (Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Folkman, Lazarus, Gruen, & DeLongis, 1986) on the effects of coping on health status. These authors found that, across five stressful encounters over several months, participants exhibited moderate consistency in their use of some coping strategies (e.g., positive reappraisal), while displaying considerable variability in others (e.g., seeking social support).

Instead of examining cross-situational consistency, the dominant method in general psychology for investigating coping styles has been to calculate correlations between dispositional and situational coping measures. Employing this method, researchers have provided some evidence supporting the coping style view (Carver et al., 1989; Endler et al., 1994; Kohlmann, 1993; Krohne, Slangen, & Kleeman, 1996; Miller, Brody, & Summerton, 1988). For example, Carver and colleagues found that 9 of the 13 subscales on the dispositional COPE were significantly correlated with their situational counterparts. Although only the significant correlation for turning to religion was strong ($r = .76$; remaining r s ranged from .22 to .50), Carver and colleagues suggested that a coping style could be inferred because the low to moderate coefficients resembled those found in other studies between personality and coping variables. A subsequent study by Endler et al. on coping with examination stress also found moderate correlations between reports of dispositional and situational coping (r s ranged from .50 to .55).

Although it appears from the above studies that coping is stylistic to some degree, a strong conclusion cannot be reached for several reasons. First, as evinced by the reported correlations, the amount of situational coping variance explained by coping styles is at least equal to that observed across situations. Therefore, the predictive utility of coping styles is limited. Second, several systematic studies of cross-situational coping consistency suggest that coping exhibits a greater degree of cross-situational variability than consistency (Cohen & Lazarus, 1973; Folkman & Lazarus, 1985; Folkman, Lazarus, Gruen, et al., 1986; Manzi, 1986). Finally, the explanatory utility of the coping style approach is thus far inadequate in that the standard methodology provides more information about the coping strategies than the individuals who employ them in a stressful encounter (Lazarus, 1999).

Sport psychology research. Several studies have assessed the cross-situational consistency of coping with athletic stressors (Bouffard & Crocker, 1992; Crocker & Isaak, 1997; Gaudreau et al., 2001; Giacobbi & Weinberg, 2000). Taken together, these studies suggest that coping in sport exhibits both consistency and variability across situations, supporting a trait-state interactional approach to coping. For example, Bouffard and Crocker administered the COPE (Carver et al., 1989) to 30 physically disabled individuals three times over a 6-month period. Participants were requested to indicate the coping strategies they employed in response to recent challenging physical activity situations. Results revealed that, except for the religion subscale, more than 50% of the total coping variance was explained by a person-by-situation interaction, indicating participants did not consistently use the same coping strategies. In contrast, Crocker and Isaak found that the person-by-situation interaction component of coping variance exceeded 50% for only 3 of 12 subscales, thus supporting the coping style view. It is important to note, however, that both the Bouffard and Crocker (1992) and Crocker and Isaak (1997) studies were limited in that there was no formal assessment of whether participants actually perceived stress in the situations to which they were responding.

Finally, employing the trait-state correlational approach dominant in general psychology, Giacobbi and Weinberg (2000) administered both the trait and situational versions of the MCOPE (Crocker & Graham, 1995) to 273 college athletes. For the situational version, athletes were asked to indicate their coping thoughts and behaviors with respect to their two most stressful sport situations. In addition, Giacobbi and Weinberg addressed the limitation of previous sport coping consistency research by assessing whether the athletes actually perceived these situations as stressful. Correlational analysis revealed that responses on the dispositional

COPE were moderately correlated with responses on the two situational versions (r s ranged from .52 to .80), indicating that sport coping appears to be more stable than situationally variable.

Although the studies cited in this section appear to support the view that coping has both trait and state determinants, they were each limited in that the methodologies employed were atheoretical. Specifically, these studies did not offer explanations regarding what aspects of an individual (i.e., person variables) influenced whether their coping is variable or consistent.

Researchers in both general and sport psychology have addressed this limitation by examining personality correlates of coping, and their findings will be reviewed next.

Coping as a personality disposition

General psychology research. Researchers in general psychology have consistently found that coping thoughts and behaviors are related to aspects of personality (Boland & Cappeliez, 1997; Carver et al., 1989; Chang, 1998; David & Suls, 1999; Elliott, Chartrand, & Harkins, 1994; Endler et al., 1994; Giacobbi et al., 2004; Gunthert, Cohen, & Armeli, 1999; Halamandaris & Power, 1999; Houston, 1977; O'Brien & DeLongis, 1996; Penley & Tomaka, 2002; Shen, Xu, & Cui, 2002; Terry, 1994). For example, in their assessment of the convergent and divergent validity of the COPE, Carver and colleagues administered the dispositional COPE along with measures of optimism, self-esteem, locus of control, hardiness, Type-A personality, and trait anxiety. Results revealed that all of these personality traits were significantly related to at least three COPE subscales. Specifically, they found that optimism, locus of control, self-esteem, hardiness, and Type-A personality appear to reflect an individual's tendency toward the use of problem-focused coping, while trait anxiety reflects the tendency to use emotion-focused coping.

David and Suls (1999) conducted a more process-oriented examination of the relationship between personality dimensions and coping. Specifically, to assess the Big Five personality traits (Neuroticism, Extraversion, Openness to Experience, Agreeableness, and Conscientiousness),

these authors administered the NEO Personality Inventory (NEO-PI; Costa & McCrae, 1985) to 95 community-residing adult males. In addition, participants completed Stone and Neale's (1984) measure of daily coping for eight consecutive nights. Hierarchical linear modeling (HLM), a statistical technique that allows for the simultaneous assessment of both within-participant (i.e., process) and between-participant (i.e., structural) variability, was used to determine relationships between the Big Five personality traits and daily coping efforts. Results revealed that neuroticism was positively associated with the use of catharsis and relaxation, as well as with the employment of more coping strategies overall. Similarly, participants who scored higher on extraversion reported increased coping overall, with specific increases in catharsis and redefinition. Openness to experience was positively associated with direct action, but inversely associated with distraction. Finally, conscientiousness was negatively related to religious coping. In addition to providing support for the prediction that personality traits are related to coping, the study by David and Suls represented a major development in coping research by demonstrating empirically that HLM, with its simultaneous analysis of within- and between-participant relationships among variables, is a useful statistical approach that complements the process-oriented methodological framework recommended by Folkman and Lazarus (1985; Lazarus, 2000). Specifically, HLM improved upon the traditional analysis of daily diary data, which entailed either (a) exclusive focus on between-participant (structure-oriented) variation through the calculation of correlations from data aggregated across days and participants, or (b) exclusive focus on within-participant (process-oriented) variation through the calculation of multiple regression models. As David and Suls argued, these two analytical techniques are inadequate when a study's purpose is to simultaneously examine both the daily changes in appraisal and coping (i.e., within-participant variation), as well as the moderating

influence of person variables (e.g., Big Five personality traits) on relationships between appraisal and coping (i.e., between-participant variation). Indeed, David and Suls reported that when they aggregated coping data across days and participants, only 2 of a possible 40 zero-order correlations between the Big Five personality traits and coping were significant. Therefore, in addition to providing support for the C-M-R theory of emotion (Lazarus, 1991b, 1999), David and Suls advanced the extant literature by applying a new, more sophisticated, statistical technique especially suited for testing complex theoretical relationships. In my study, I attempted to do the same by using structural equation modeling to test a system of explanatory relationships predicted by C-M-R theory.

Sport psychology research. Few studies in the extant sport psychology literature have examined personality predictors of coping (See Giacobbi & Weinberg, 2000; Grove & Heard, 1997; Grove, Lavalley, & Gordon, 1997; Krohne & Hindel, 1988; and Ntoumanis et al., 1999 for exceptions). In general, these studies have supported the view that coping is related to aspects of personality. For example, Grove and Heard assessed dispositional optimism, trait sport confidence, and slump-related coping in a sample of 336 team and individual sport athletes. Hierarchical regression analyses revealed that a significant, albeit modest, amount of variance in task- and emotion-focused coping was predicted by higher levels of optimism and trait sport confidence (Grove & Heard).

Other studies examining the relationships between coping and aspects of personality have shown that problem-focused coping is more likely to be employed by task-oriented athletes (Ntoumanis et al., 1999), while aspects of emotion-focused coping are preferred by athletes who rate highly in trait anxiety (Giacobbi & Weinberg, 2000; Krohne & Hindel, 1988), athletic identity (Grove et al., 1997), and ego orientation (Ntoumanis et al.). In my study, I further

examined personality predictors by assessing the relationships between goal orientations and coping.

Conditional coping

General psychology research. The most sophisticated account of the structural aspects of coping is the conditional trait approach, which, as stated previously, predicts personality traits to influence coping styles only in situations rendered functionally equivalent by the specific personality trait (Wright & Mischel, 1987). Although researchers have yet to empirically identify specific environments that are rendered functionally equivalent by personality traits, the influence of situational context on coping has been demonstrated (Folkman & Lazarus, 1980; Schwartz & Stone, 1993; Stern, Norman, & Komm, 1993). Specifically, in their often-cited study on the coping behaviors of community-residing adults, Folkman and Lazarus (1980) found that the degree to which participants employed problem- or emotion-focused coping depended in part on whether the stressor concerned their work, health, or family. Folkman and Lazarus's (1980) finding is important because it distinguished situational and contextual variations in coping. Coping contexts represent the broad, relatively stable aspects of life, while coping situations are the emotional encounters within them (Folkman & Lazarus, 1980). For example, within the broad context of academics, a student might be confronted with specific stressful situations related to final examinations, interpersonal relationships with teachers and classmates, high workload, etc. The C-M-R theory of emotion (Lazarus, 1991b, 1999) posits that the specific coping strategies employed by this student (e.g., active coping, seeking social support, or denial) might vary with respect to each stressful situation, while the total repertoire of coping strategies (e.g., active coping, seeking social support, and denial) remains relatively stable across stressors within the academic context. Therefore, the context of a stressful encounter represents a structural aspect of coping, while situations represent a process aspect of coping.

Sport psychology research. As is the case with general psychology, systematic identification of environments rendered functionally equivalent by personality traits are virtually nonexistent in the extant sport psychology literature. However, differences in coping were shown to depend on the situational context in the study by Crocker and Isaak (1997) discussed earlier. Specifically, in addition to assessing the training-related coping efforts of youth swimmers, these authors measured the same athletes' coping in a competitive context. Crocker and Isaak found that, in contrast to their relatively consistent use of specific coping strategies across training stressors, youth swimmers exhibited considerable coping variability when dealing with competitive stress. One possible explanation offered by these authors was that training sessions are highly regimented, and therefore place a highly consistent set of demands on swimmers. Familiarity with the adaptational demands of the training context might allow swimmers to develop a repertoire of coping behaviors specific to the training context. While this explanation is plausible, Crocker and Isaak did not assess personality in their study, and therefore more theoretical explanations remain open to investigation.

Summary of research on the structural aspects of coping

With regard to the structural aspects of coping, the findings of research in general psychology have been consonant with those of sport psychology. First, both fields have demonstrated that coping is somewhat consistent across situations (Bouffard & Crocker, 1992; Crocker & Isaak, 1997; Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Folkman, Lazarus, Gruen, et al., 1986). However, due to methodological limitations, and the atheoretical nature of the research, more sophisticated inquiry into the cross-situational consistency of coping is warranted. Second, researchers in both general and sport psychology have shown coping to be related to aspects of personality (e.g., trait anxiety, optimism, neuroticism, extraversion, and goal orientation; Carver et al., 1989; David & Suls, 1999; Giacobbi & Weinberg, 2000; Grove &

Heard, 1997; Krohne & Hindel, 1988; Ntoumanis et al., 1999). Finally, although researchers in both general and sport psychology have found that coping is related to the situational context (e.g., work, family, training, and competition; Crocker & Isaak, 1997; Folkman & Lazarus, 1980), the specific personality traits that influence these contextual coping differences have not been identified. In the next section of this paper, attention will turn toward research examining the process aspects of coping.

Research on the Process Aspects of Coping

As alluded to throughout this review, the C-M-R theory of emotion (Lazarus, 1991b, 1999) emphasizes the dynamic relationship between personal resources (e.g., personality, coping resources, etc.) and situational demands as the main predictors of coping in a stressful encounter. Three unresolved empirical issues emerge from this perspective. First, do individuals use a single coping strategy to deal with a given stressor, or do they employ multiple coping efforts? Second, do individuals use the same coping strategy throughout a stressful situation, or do they employ different coping efforts at different stages of the stressor? Finally, what constitutes effective coping in a given stressful situation? What follows is a review of the major general and sport psychological research related to each of these issues.

Dimensionality of coping

General psychology research. Lazarus and colleagues (Folkman & Lazarus, 1980; Lazarus, 1999) argued that unidimensional conceptualizations of coping are inadequate because stressful encounters typically involve more than one psychological facet (e.g., goals, threats, emotions). Initial evidence in support of this argument was provided by naturalistic observation (Mechanic, 1962; Moos & Tsu, 1977; Murphy, 1974; Visotsky, Hamburg, Goss, & Lebovits, 1961). For example, Moos and Tsu noted that individuals coping with an incapacitating physical illness had to simultaneously manage both the illness itself (e.g., pain, interactions with hospital

staff, surgical procedures) and the emotions that resulted from having a debilitating illness (e.g., sadness, despair, anger).

Researchers in general psychology have subsequently provided support for the multidimensionality of coping (Carver et al., 1989; David & Suls, 1999; Folkman & Lazarus, 1980; Folkman & Lazarus, 1985; Folkman & Lazarus, 1988; Manzi, 1986). For example, in their study of middle-aged adults, Folkman and Lazarus (1980) interviewed participants seven times at 4-week intervals about stressful situations they had experienced during the previous month. In addition to a description of the stressful events, participants indicated on the Ways of Coping checklist (Folkman & Lazarus, 1980) the manner in which they coped with each encounter. Participants reported a total of 1,332 stressful situations over the course of the study. Results revealed that participants employed both problem- and emotion-focused coping strategies in 98% of the situations. Similar results were reported by Folkman and Lazarus (1985) who found that 94% of participants employed both problem- and emotion-focused strategies across the stages of a stressful college examination. Furthermore, in a study of the coping and emotions of young and old adults, Folkman and Lazarus (1988) found that situational variations in emotion were significantly predicted by a combination of problem- and emotion-focused strategies. Together, the results of these studies confirm that individuals employ a complex combination of coping efforts aimed at both altering the source of stress (i.e., problem-focused coping) and regulating their emotions (i.e., emotion-focused coping).

Sport psychology research. Support for the multidimensionality of coping in sport has been demonstrated both qualitatively (Giacobbi et al., 2004; Gould et al., 1993) and quantitatively (Crocker & Graham, 1995; Grove et al., 1997; Hammermeister & Burton, 2001; Kim & Duda, 2003; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999). In their often-cited

study, Gould and colleagues examined coping by conducting semi-structured interviews with 17 former U.S. national champion figure skaters. Eight general coping dimensions emerged from content analysis of the interviews: (a) rational thinking and self-talk, (b) positive focus and orientation, (c) social support, (d) time management and prioritization, (e) precompetitive mental preparation and anxiety management, (f) training hard and smartly, (g) isolation and deflection, and (h) ignoring the stressor. Indicative of the complexity of coping, skaters employed coping strategies from at least two of these eight dimensions irrespective of the source of stress.

Furthermore, in cognitive-motivational-relational terms, the eight coping dimensions served both problem-focused (e.g., training hard and smartly) and emotion-focused (e.g., isolation and deflection) functions. Therefore, the qualitative results reported by Gould and colleagues clearly support the cognitive-motivational-relational view that coping is a complex, multidimensional process. Subsequently, researchers employing quantitative methodologies have confirmed the multidimensionality of coping in sport across athletic populations and stressors (Crocker & Graham, 1995; Grove et al., 1997; Hammermeister & Burton, 2001; Kim & Duda, 2003; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999).

Dynamics of coping

General psychology research. As mentioned previously, C-M-R theory (Lazarus, 1991b, 1999) adopts the process-oriented view that coping efforts constantly change both within and between stressful situations. In addition, Folkman and Lazarus (1985) recommended that in order to adequately examine coping as a process, researchers should make repeated assessments of how an individual actually copes with a specific stressful encounter. Several studies in the general psychology literature that have followed these recommendations have supported the view that coping is a dynamic process (David & Suls, 1999; Folkman & Lazarus, 1980; Folkman

& Lazarus, 1985; Levy-Shiff, Dimitrovsky, Shulman, & Har-Even, 1998; Schwartz & Stone, 1993).

For example, in the frequently cited study by Folkman and Lazarus (1985), participants completed a modified form of the Ways of Coping checklist (Fokman & Lazarus, 1980) during each of three stages of a college midterm examination. Coping was assessed (a) 2 days prior to the exam (the anticipatory stage), (b) 5 days after the exam (the waiting stage), and (c) 5 days after grades were announced (the outcome stage). Results revealed that problem-focused coping was at its highest during the anticipatory stage and decreased significantly during the waiting stage. In contrast, participants increasingly distanced themselves from the stressor (i.e., used emotion-focused coping) during the waiting stage. Third, students' use of wishful thinking and distancing significantly decreased during the outcome stage of the exam.

Folkman and Lazarus (1985) explained these results in terms of the varying adaptational demands that each exam stage places on students. Specifically, they argued that increased problem-focused coping during the anticipatory stage reflected the situational requirement that students study in order to earn a good grade on their exam. In contrast, the 5-day period after the exam required students to shift their focus from studying to simply waiting for their grades to be posted. Therefore, students increasingly distanced themselves from the exam situation as a means of emotional regulation. Folkman and Lazarus (1985) argued that, in order to regulate their emotions during the waiting stage, students might either hope for a good outcome (i.e., use wishful thinking) or distance themselves from the situation altogether. To summarize then, the results reported by Folkman and Lazarus (1985) supported C-M-R theory (Lazarus, 1991b, 1999) by showing that, as a stressful situation unfolds, differential efforts are required to cope with the changing adaptational demands of the person-environment transaction.

Sport psychology research. Process-oriented research on the dynamics of coping is scarce in the sport coping literature (See Gaudreau et al., 2002; Gaudreau et al., 2001; Giacobbi et al., 2004, for exceptions). However, preliminary support for the view that coping changes as a stressful encounter progresses was provided by Gaudreau and colleagues (2001), who performed a sport-specific replication of the study by Folkman and Lazarus (1985). Specifically, these authors assessed the coping efforts of 33 Canadian male youth golfers competing in a qualifying tournament. Gaudreau and colleagues (2001) administered the MCOPE-10 (Eklund et al., 1998) and two exploratory coping subscales (mental disengagement and positive reappraisal) to the golfers 2 hours prior to the competition, 15 minutes after the competition, and 24 hours after the competition. Multivariate analyses of variance (MANOVAs) conducted for each coping subscale revealed that golfers' use of social support, suppression of competing activities, increased effort, active coping/planning, wishful thinking, and behavioral disengagement changed across the three phases of the competition, thereby supporting the process-oriented view that coping is dynamic. Nevertheless, despite these promising findings, further research is clearly needed.

Coping effectiveness

General psychology research. In hopes of identifying which situational coping strategies are more adaptive than others, researchers in general psychology have attempted to link coping efforts with important adaptational outcomes. Many of these studies have indicated that coping is directly related to emotions (Bowman & Stern, 1995; Cochrane, & Slade, 1999; Folkman & Lazarus, 1985, 1988; Hahn, 2000; Morris & Engle, 1981; Zeidner, 1995), psychological well-being (Cochrane & Slade; Essex, Seltzer, & Krauss, 1999; Holland & Holohan, 2003; Meyer, 2001; Terry, Mayocchi, & Hynes, 1996; Wilkinson, Walford, & Espenes, 2000), burnout (Koleck, Bruchon-Schweitzer, Thiebaut, Dumartin, & Sifakin, 2000) and academic performance (Morris & Engle, 1981; Zeidner, 1995). These studies represent important advances in the coping

literature because they go beyond the mere description of coping by attempting to link coping with important outcomes such as subjective well-being, emotional outcomes, and satisfaction in a given context. However, the above-cited studies were limited in several ways. First, Lazarus (1999) argued that the effectiveness of a particular coping strategy is not necessarily reflected by the important outcomes of the situation. For example, it is possible for individuals to cope effectively without necessarily experiencing positive affect, goal achievement, or other desired outcomes (Lazarus, 1999). Second, from a methodological standpoint, Lazarus (1995) pointed out that retrospective one-shot studies of coping and its outcomes assess these constructs simultaneously, and are therefore inadequate for concluding that the coping strategies caused the observed outcomes.

Due to these analytical pitfalls, some researchers have examined relationships between perceived coping effectiveness (i.e., the extent to which an individual perceives that his or her situational coping efforts were effective) and important outcomes (Brauer, 2001; Iwasaki, 2003; Jean, Paul, & Beatty, 1999). For example, in a recent longitudinal study of the ways that university students cope with everyday stressors, Iwasaki found that perceived coping effectiveness was negatively associated with mental illness, while related positively to psychological well-being and stress reduction. However, as this is one of only a handful of studies on perceived coping effectiveness in the general psychology literature, broad conclusions cannot be made.

Another way to assess coping effectiveness that has garnered far more research attention in general psychology is Folkman's (1992) goodness-of-fit approach. As stated previously, Folkman proposed that the effectiveness of a particular coping strategy depends upon whether or not it is appropriate for the adaptational demands of the encounter, i.e., the extent to which an

individual's secondary appraisal of control over the stressor matches his or her situational coping strategies. Specifically, Folkman argued that problem-focused coping is most effective in situations amenable to change (i.e., within personal control) while emotion-focused coping is most effective in uncontrollable situations.

Studies examining the relationship between coping strategies and secondary appraisal of control have generally supported Folkman's (1992) predictions (David & Suls, 1999; Folkman & Lazarus, 1980; Folkman & Lazarus, 1985; Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Forsythe & Compas, 1987; Martin, 1993; Peacock & Wong, 1996; Reese et al., 1997; Wilson, Stelzer, & Bergman, 1995). For example, in their study on the coping efforts of community-residing adults, Folkman and Lazarus (1980) also examined the influence of situational controllability appraisals on the coping process. After reporting a stressful event and completing the Ways of Coping checklist (Folkman & Lazarus, 1980), participants answered in a binary fashion four questions related to their situational appraisals: (a) Is this situation one that you could change or do something about?; (b) Is this situation one that must be accepted or gotten used to?; (c) Is this situation one that you needed to know more about before you could act?; and (d) Is this situation one in which you had to hold yourself back from doing what you wanted to do? Results revealed that situations appraised as controllable (i.e., something constructive could be done or more information was needed) were characterized by increased problem-focused coping, while emotion-focused coping increased in situations appraised as uncontrollable (i.e., must be accepted or had to hold back).

Subsequent studies by Reese et al. (1997) and Peacock and Wong (1996) have also confirmed that situational coping strategies are related to an individual's appraisal of control over a situation. Specifically, in a longitudinal study, Reese and colleagues found that

participant's perception of control over negative life events was positively associated with problem-focused coping across assessments. In contrast, participants who perceived a lack of control over negative life events were more likely to employ emotion-focused coping.

Research relating goodness-of-fit to outcome-related variables has provided inconsistent support for Folkman's (1992) predictions. Specifically, several studies have indeed demonstrated the predicted relationships for both problem- and emotion-focused coping (Conway & Terry, 1992; Park, Folkman, & Bostrom, 2001; Sorgen & Manne, 2002; Vitaliano, DeWolfe, Maiuro, Russo, & Katon, 1990). For example, Sorgen and Manne tested goodness-of-fit in a study on the coping efforts of children who have cancer. They found that (a) problem-focused coping was positively associated with perceptions of control, (b) emotion-focused coping was negatively associated with perceptions of control, and (c) goodness-of-fit was negatively related to psychological distress.

However, several other studies have demonstrated the predicted relationships for only one of the coping functions, (Osowiecki & Compas, 1999; Zakowski, Hall, Cousino, & Baum, 2001). For example, Osowiecki and Compas found that only problem-focused coping interacted with perceived control to influence anxiety/depression symptoms, while Zakowski and colleagues found that only emotion-focused coping interacted with perceived control to impact stress.

Still other studies have failed to demonstrate either of the predicted relationships (Masel, Terry, & Gribble, 1996; O'Rourke & Cappeliez, 2002; Roberts, 1995). For instance, in an examination of the relationships between perceived control, psychological symptomatology, and coping with daily hassles, Roberts found that while participants tended to match coping with perceived control, goodness-of-fit did not affect symptomatology. Therefore, the extant general

psychology literature appears to be equivocal with regard to Folkman's (1992) goodness-of-fit predictions.

Sport psychology research. The dominant methodology for examining coping effectiveness in sport has been to relate coping efforts to important sport outcomes. These studies have found problem-focused coping to be associated with positive affect (Crocker & Graham, 1995; Gaudreau et al., 2002; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999), athletic career satisfaction (Kim & Duda, 2003), sport enjoyment (Kim & Duda, 2003), successful transition to university by freshmen athletes (Giacobbi et al., 2004), and desire to continue in sport (Kim & Duda, 2003). Emotion-focused coping has been found to relate to negative affect (Crocker & Graham, 1995; Gaudreau et al., 2002; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999), athletic career dissatisfaction (Kim & Duda, 2003), lack of sport enjoyment (Kim & Duda, 2003), and lack of desire to continue in sport (Kim & Duda, 2003).

Interestingly, and reflective of a major limitation in the sport coping literature, the few studies that have examined the association between coping and athletic performance have found that neither problem- nor emotion-focused coping are associated with athletic performance, whether measured objectively or subjectively (Dugdale et al., 2002; Pensgaard & Duda, 2003). For example, Pensgaard and Duda studied the coping efforts of 61 Nordic athletes competing at the 2000 Sydney Olympic Games. Coping was measured by the COPE (without the turning to religion subscale; Carver et al., 1989), while performance was measured objectively by the athletes' placing in the Games, and subjectively by performance satisfaction. Results revealed that coping was associated with neither objective nor subjective performance.

Although unable to demonstrate a relationship between coping and Olympic performance, Pensgaard and Duda (2003) did find such a relationship when assessing the extent to which the

Olympians perceived their coping efforts to be effective. Specifically, hierarchical regression analyses revealed that high perceived coping effectiveness positively predicted both objective and subjective result.

Researchers also have found relationships between perceived coping effectiveness and important sport outcomes other than performance (Kim & Duda, 2003; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999). For example, in a study of the mediating effect of perceived coping effectiveness, Ntoumanis and Biddle (1998) administered six subscales of the MCOPE (Crocker & Graham, 1995) and the PANAS (Watson et al., 1988) to 356 British university athletes. In addition, Ntoumanis and Biddle (1998) instructed the athletes to rate the extent to which they perceived each of the six MCOPE (Crocker & Graham) subscales to be effective. Results showed that the perceived coping effectiveness of seeking social support, venting of emotions, and behavioral disengagement mediated the impact of these coping strategies on affect. Specifically, athletes reported higher positive and lower negative affect when they perceived seeking social support as effective. Similarly, when perceived as effective, behavioral disengagement was related to higher positive affect. Finally, when athletes judged venting of emotions to be effective, they experienced lower negative affect than when it was ineffective.

Ntoumanis and Biddle's (1998) finding that perceived coping effectiveness mediated the relationship between coping and affect is important for two reasons. First, the amount of explained affect variance was significantly increased for the three coping strategies (seeking social support, venting of emotions, and behavioral disengagement) when perceived coping effectiveness was included in the analyses. Second, and more importantly, the findings of Ntoumanis and Biddle support the cognitive-motivational-relational view that problem-focused coping is not necessarily more adaptive than emotion-focused coping. Specifically, these authors

found that the emotion-focused coping strategies of behavioral disengagement and venting of emotions had a positive influence on affect when they were perceived as effective. Stated differently, Ntoumanis and Biddle found that both problem- and emotion-focused coping can enhance affect, provided that an athlete perceives these coping efforts as effective. Nevertheless, because few studies have examined perceived coping effectiveness in sport, its contribution to empirical knowledge remains incomplete. Therefore, to address this limitation of the extant literature, I assessed perceived coping effectiveness, and examined its influence on affective outcomes.

Research on coping effectiveness is also necessary with respect to Folkman's (1992) goodness-of-fit hypothesis. The few studies in sport examining the relationship between coping and secondary appraisal of control have only partially supported the goodness-of-fit hypothesis (Dugdale et al., 2002; Hammermeister & Burton, 2001; Haney & Long, 1995; Kim & Duda, 2003). For example, Kim and Duda assessed the manner in which 318 Division I university athletes perceived control over and coped with psychological difficulties in competition. Results revealed that an athlete's appraisal of control over a stressor was positively related to active coping strategies (i.e., planning, social support). Partial support for the goodness-of-fit hypothesis was also provided by Hammermeister and Burton, who found that endurance athletes who appraised low control over potential race performance threats and employed emotional social support to cope with these threats experienced significantly greater precompetitive cognitive state anxiety as measured by the CSAI-2 (Martens, Burton, Vealey, Bump, & Smith, 1990). Stated in cognitive-motivational-relational terms, these authors found that when an athlete perceives that he or she can do relatively little to change a threatening situation, and responds

with emotion-focused coping, a negatively-valenced emotion (i.e., anxiety) is likely to be experienced.

In one of the most sophisticated studies in the sport coping literature on the topic, Haney and Long (1995) examined both outcome and goodness-of-fit related indicators of coping effectiveness. A total of 178 basketball, soccer, and field hockey players participated in a two-round skills competition relevant to their sport (i.e., free throws and penalty shots). Athletes completed a three-item measure of perceived control over performance stress 5 minutes prior to both rounds. In addition, they reported their use of engagement and disengagement coping in response to performance stress 5 minutes after both rounds. Haney and Long proposed a model of coping effectiveness whereby, for both rounds of competition, perceived control would predict in-competition coping behaviors, which would in turn predict performance for that round. Furthermore, in their proposed model, performance in round 1 was hypothesized to predict control appraisal prior to round 2. Path analysis of the data supported goodness-of-fit predictions only with respect to disengagement coping. Specifically, for round 1, athletes who perceived high pre-round control used less disengagement coping and performed better. In addition, athletes who performed well in round 1 perceived even more control prior to round 2. Furthermore, these athletes also employed less disengagement coping and performed better in round 2. In contrast, no significant relationships were found between perceived control and engagement coping in either of the rounds.

Although the three studies discussed above (Hammermeister & Burton, 2001; Haney & Long, 1995; Kim & Duda, 2003) offered support for the goodness-of-fit approach, strong conclusions cannot be drawn for at least two reasons. First, neither Kim and Duda nor Haney and Long measured problem- and emotion-focused coping as defined by the C-M-R theory of

emotion (Lazarus, 1991b, 1999). It is possible that relationships between control and coping as assessed in an engagement/disengagement (or approach/avoidant) framework are dissimilar to those predicted by C-M-R theory. Second, all three of these studies assessed coping within a competitive performance context, potentially limiting the athletes' coping options. Due to the unique ego-involving nature of competition, athletes might be either (a) less likely to appraise their performance stress as uncontrollable, or (b) less likely to avoid/disengage from their performance. If this contextual effect did occur, then it is understandable that the demonstrated relationships were not completely consonant with C-M-R theory (Lazarus, 1991b, 1999). Therefore, to address the above limitations in my study, I assessed secondary appraisal of control, problem-focused coping, and emotion-focused coping in the context of a non-competitive stressor.

Summary of research on the process aspects of coping

From the preceding review of literature in general and sport psychology, several conclusions can be drawn regarding the process aspects of coping. First, studies have consistently shown that coping is a complex, dynamic process in that individuals (a) employ both problem- and emotion-focused coping within the same situation (Carver et al., 1989; Crocker & Graham, 1995; Folkman & Lazarus, 1980; Giacobbi et al., 2004; Gould et al., 1993), and (b) change the ways they cope as the stressful situation progresses (Folkman & Lazarus, 1985; Gaudreau et al., 2001). Second, the effectiveness of coping efforts in a given stressful encounter has been shown to relate to (a) important cognitive, emotional, and behavioral outcomes (Crocker & Graham, 1995; Folkman & Lazarus, 1985; Gaudreau et al., 2002; Zeidner, 1995), (b) the extent to which an individual perceives his or her coping to be effective (Iwasaki, 2003; Pensgaard & Duda, 2003), and (c) the extent to which situational coping efforts are adaptationally compatible with perceived situational control (Kim & Duda, 2003; Park et al.,

2001). Finally, and perhaps most importantly, research over the past 20 years has clearly shown that the C-M-R theory of emotion (Lazarus, 1991b, 1999) is an empirically viable theoretical framework for sport psychology researchers (Gould, 1996).

Despite these conclusions, several issues remain unresolved with respect to C-M-R theory (Lazarus, 1991b, 1999). First, studies that systematically examine how individuals cope with chronic stress are few and far between in the extant literature. The relative lack of research is surprising because chronic stress has been linked to a variety of deleterious health outcomes (e.g., heart disease, somatic complaints, burnout; <http://www.apa.org>). Second, despite research suggesting that coping is linked to the particular context in which it occurs (e.g., work, family, health, training, competition), this area of research has received minimal attention. Third, as illustrated by the divergent approaches that researchers have taken (i.e., important outcomes, perceived coping effectiveness, and goodness-of-fit), measurement of coping effectiveness remains both conceptually and empirically unresolved. Finally, although several studies have examined multiple aspects of C-M-R theory (Lazarus, 1991b, 1999) simultaneously, researchers have yet to link antecedents of appraisal, cognitive appraisals, coping, and emotion within the same study, as was suggested by Lazarus (1999).

Study Rationale

As outlined in the preceding review, the C-M-R theory of emotion (Lazarus, 1991b, 1999) has received considerable support in the extant sport psychology literature. However, several aspects of the theory remain relatively unexplored. Specifically, few studies have examined the ways that athletes appraise, cope with, and emotionally respond to chronic, non-competitive stress. In addition, person variables other than the Big Five personality dimensions and trait anxiety (e.g., achievement goal orientations) have received little attention. Furthermore, while preliminary findings indicate that perceived coping effectiveness may be an important mediator

in the relationship between coping and important outcomes, this issue is by no means resolved, and therefore requires further exploration. Finally, few studies have simultaneously examined all four major constructs of C-M-R theory (i.e., antecedents of appraisal, appraisal, coping, and emotion; Lazarus, 1991b, 1999). Therefore, in my study, I addressed each of these limitations in an attempt to refine scientific knowledge regarding the viability of Lazarus's (1991b, 1999) theory in the sport domain.

Furthermore, several studies have identified managing athletic and academic time demands as a major source of stress for student-athletes at various competitive levels (Giacobbi et al., 2004; Ortez, 1997; Petrie & Stover, 1997; Tracey & Corlett, 1995). Of these studies, club sport athletes have received the least attention. Therefore, in my study, I examined the manner in which club sport athletes appraise, cope with, and experience affective responses to the stress of managing athletic and academic time demands. Based on the C-M-R theory of emotion (Lazarus, 1991b, 1999), I tested the relationships between these constructs (See Figure 2-2) in a proposed model informed by both theory (Duda, 1989; Roberts, 1992; Lazarus, 1991b, 1999) and previous research (Crocker & Graham, 1995; Gaudreau et al., 2002; Hammermeister & Burton, 2001; Haney & Long, 1995; Kim & Duda, 2003; Maier et al., 2003; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999; Pensgaard & Duda, 2003) in general and sport psychology.

In the proposed model, achievement goal orientations represented person variables as antecedents of appraisal. Primary appraisals of threat and challenge, along with secondary appraisal of perceived control represented the appraisal variables in the proposed model. In addition, the model included both task- and avoidance-focused coping efforts. Finally, the perceived effectiveness of these task- and avoidance-focused coping efforts served as mediators of the relationships between coping and the outcome variables in the model, positive and

negative affect. What follows is a discussion of research that formed the rationale for testing the hypothesized relationships between these constructs in the proposed model.

Achievement Goal Orientations and Primary Appraisal

The influence of achievement goal orientations on primary appraisals of threat and challenge have yet to be fully explored in the extant literature. Therefore, the relationships between antecedents of appraisal and other constructs depicted in Figure 2 are based on the theoretical predictions of both the C-M-R theory of emotion (Lazarus, 1991b, 1999) and achievement goal theory in sport (Duda, 1989; Roberts, 1992). Specifically, athletes scoring highly on a measure of task orientation are more likely to seek challenges (Roberts, 1992), and therefore should perceive managing athletic and academic time demands as a challenge. In contrast, athletes who report a strong ego orientation tend to exhibit maladaptive motivational patterns, and therefore are more likely to perceive managing athletic and academic time demands as threatening (Roberts).

Achievement Goal Orientations and Secondary Appraisal

With respect to the relationships between goal orientations and secondary appraisal of control, the knowledge base is also incomplete. For example, Pensgaard (1999) administered measures of goal orientation and perceived control to 19 Norwegian national athletes competing in the 1996 Atlanta Olympic Games, and found that task orientation was associated with high perceived control. However, due to the small sample size in Pensgaard's study, and the lack of subsequent empirical corroboration, strong conclusions regarding the relationships between goal orientations and perceptions of control cannot be made.

Therefore, in the proposed model I tested in my study, inclusion of these relationships was predominately based on the theoretical predictions of C-M-R theory (Lazarus, 1991b, 1999) and achievement goal theory in sport (Duda, 1989; Roberts, 1992). Specifically, consistent with C-

M-R theory (Lazarus, 1991b, 1999), task and ego orientations will be conceptualized as antecedents of secondary appraisal of perceived control. Consistent with Roberts's (1992) arguments, athletes adopting a strong task orientation have a differentiated view of ability, and therefore should be more likely to appraise stressors as within their control. In contrast, athletes who score high on a measure of ego orientation adopt an undifferentiated view of ability, and therefore should be more likely to appraise stressors as outside of their control.

Achievement Goal Orientations, Coping, and Affect

Research in sport psychology is also limited with respect to the relationships between goal orientations, coping, and affect. In one of the few studies on this topic, Ntoumanis et al. (1999) examined whether coping is a mediator of the relationships between goal orientations and coping. Three hundred fifty-six British university athletes completed the Task and Ego Orientation in Sport Questionnaire (TEOSQ; Duda & Nicholls, 1992). In addition, these athletes were instructed to recall a recent important competition in which they perceived threat or challenge. Athletes' use of three emotion-focused coping strategies (seeking social support for instrumental reasons, suppression of competing activities, and effort) and three problem-focused coping strategies (seeking social support for emotional reasons, behavioral disengagement, and venting of emotions) were assessed by subscales of the MCOPE (Crocker & Graham, 1995). Distancing, another emotion-focused coping strategy, was assessed by its subscale on the revised Ways of Coping checklist (Folkman, Lazarus, Dunkel-Schetter, et al., 1986). Finally, the athletes' affective responses to the stressor were measured by the PANAS (Watson et al., 1988). SEM was employed to examine the complex relationships between these variables. In accordance with their predictions, Ntoumanis and colleagues found that problem-focused coping mediated the relationship between task orientation and positive affect, while emotion-focused coping mediated the relationship between ego orientation and negative affect. Because these

results are both consistent with theoretical predictions, and were derived through highly sophisticated statistical analyses (i.e., SEM), the proposed model in my study included (a) task-focused coping as a mediator of the task orientation/positive affect relationship, and (b) avoidance-focused coping as a mediator of the ego orientation/negative affect relationship.

Primary Appraisal, Secondary Appraisal, and Coping

Folkman (1992) predicted that problem-focused coping will predominate in situations appraised by individuals as challenging and controllable, while emotion-focused coping predominates in situations appraised as threatening and uncontrollable. Research in both general and sport psychology has generally supported this prediction. In contrast, few studies in the extant literature have simultaneously examined the relationships between threat and challenge primary appraisals, secondary appraisal of control, and problem- and emotion-focused coping.

One exception in the general psychology literature was a study by Portello and Long (2001), who found that perceived threat and low perceived control were associated with the use of disengagement coping. In the sport coping literature, Hammermeister and Burton (2001) found that perceived threat, low perceived control, and emotion-focused coping (i.e., emotional social support) were predictors of endurance athletes' competitive state anxiety.

Despite the relative lack of research examining all three of these constructs simultaneously (i.e., primary appraisal, secondary appraisal, and coping), evidence does exist supporting the component relationships between (a) primary and secondary appraisal, and (b) secondary appraisal and coping (Campbell & Jones, 2002; Dugdale et al., 2002; Ferguson et al., 2000; Haney & Long, 1995; Kerig, 1998; Kim & Duda, 2003; Solomon, Mikulincer, & Benbenishty, 1989). For example, perceived control has been shown to relate positively to challenge appraisals (Campbell & Jones) and negatively to threat appraisals (Ferguson et al.). Furthermore, research has generally shown that problem-focused coping is related to high perceived control, while

emotion-focused coping is related to low perceived control (David & Suls, 1999; Folkman, 1984; Folkman & Lazarus, 1980, 1985; Folkman, Lazarus, Dunkel-Schetter, et al., 1986; Martin, 1993; Peacock & Wong, 1996; Reese et al., 1997).

For example, Folkman and Lazarus (1980) found that situations appraised as controllable (i.e., something constructive could be done or more information was needed) were characterized by increased problem-focused coping, while emotion-focused coping increased in situations appraised as uncontrollable (i.e., they must be accepted or one had to hold back). Similarly, Reese et al. (1997) and Peacock and Wong (1996) found that participant's perception of control over negative life events was positively associated with problem-focused coping across assessments, while participants who perceived a lack of control over negative life events were more likely to employ emotion-focused coping strategies. In sport, findings by Haney and Long (1995) and Kim and Duda (2003) have confirmed the general psychology research.

Therefore, based on the theory and research presented in this section, I proposed that club sport athletes who appraise managing athletic and academic time demands as challenging and controllable are more likely to employ task-focused coping. In contrast, athletes who appraise this stressor as threatening and uncontrollable are more likely to employ avoidance-focused coping.

Primary Appraisal and Affect

In the C-M-R theory of emotion, Lazarus (1991b, 1999) predicts that challenge appraisals cause positive emotions (e.g., hope) while threat appraisals cause negative emotions (e.g., anxiety). As specific positive and negative emotions are viewed as subsets of a broader affective construct (Ekkekakis & Petruzello, 2000), one can infer that the predictions of C-M-R theory (Lazarus, 1991b, 1999) regarding emotion can extend to affect as well. Therefore, I hypothesized

that challenge appraisals will positively predict positive affect, while threat appraisals will positively predict negative affect.

In addition to the theoretical bases for the relationships between primary appraisals and affect predicted in Figure 2, empirical support has been provided by several studies in the general psychology literature (Dopke & Milner, 2000; Kuiper, McKenzie, & Belanger, 1995; Maier et al., 2003; Pierce, Lydon, & Yang et al., 2001). For example, Kuiper and colleagues (1995) found that challenge appraisal was positively related to positive affect, while studies by Pierce and colleagues (2001) and Dopke and Milner (2000) revealed that threat appraisal was positively related to negative affect.

Although these studies individually supported one of the two predicted primary appraisal-affect relationships (i.e., challenge/positive affect and threat/negative affect), only recently have both relationships been demonstrated in the same study. Specifically, utilizing both experimental and survey methodologies, Maier and colleagues (2003) measured the primary appraisals (i.e., threat and challenge), affect, and cardiovascular reactivity of 56 male participants while they completed a computerized mental arithmetic task. In support of their hypotheses, positive affect was significantly predicted by challenge appraisal ($R^2 = .44$), while negative affect was significantly predicted by threat appraisal ($R^2 = .32$). Therefore, in my study, I predicted that student-athletes who perceive the difficulty of managing athletic and academic time demands as challenging will experience greater positive affect. In contrast, athletes who perceive this stressor as threatening will experience greater negative affect.

Coping, Perceived Coping Effectiveness, and Affect

Research in sport psychology has repeatedly demonstrated that problem-focused coping is positively related to positive affect, and that emotion-focused coping is positively related to negative affect (Anshel & Anderson, 2002; Crocker & Graham, 1995; Gaudreau et al., 2002).

For instance, Gaudreau and colleagues administered the MCOPE-10 (Eklund et al., 1998), an exploratory positive reappraisal subscale, and the PANAS (Watson et al., 1988) to 62 Canadian male golfers competing in a regional golf tournament 2 hours before, 1 hour after, and 24 hours after the competition. Results revealed that problem-focused coping (i.e., active coping/planning, increased effort, positive reappraisal, seeking social support, and suppression of competing activities) was positively related to positive affect at all three phases of the competition. In contrast, emotion-focused coping responses (i.e., venting of emotions, humor, and behavioral disengagement) were positively associated with negative affect at each phase of the competition.

However, recent evidence has expanded the problem-focused coping/positive affect and emotion-focused coping/negative affect relationships to include perceived coping effectiveness as an important mediating variable. Specifically, empirical support for this refinement was provided by Ntoumanis and Biddle (1998), who found that perceived coping effectiveness mediated the coping/affect relationship. Stated differently, according to the results of Ntoumanis and Biddle, both problem-focused coping and emotion-focused coping resulted in either positive or negative affect, depending on whether the athlete perceived their problem- and emotion-focused coping as effective for dealing with stress. Therefore, in my study perceived coping effectiveness was viewed as a mediator of the coping/affect relationship. Specifically, if an athlete perceives his or her coping to be effective, these coping efforts will result in higher positive affect and lower negative affect. In contrast, if an athlete perceives his or her coping to be ineffective, these coping efforts will result in lower positive affect and higher negative affect.

Hypotheses

I tested three hypotheses in my study. First, club sport athletes who score highly on a measure of task orientation will appraise the chronic stress of managing athletic and academic time demands as challenging and within their control, which will result in increased use of

problem-focused coping to deal with the challenge. Second, club sport athletes who score highly on a measure of ego orientation will appraise the chronic stress of managing athletic and academic time demands as threatening and outside their control, and will thus employ emotion-focused coping to deal with the threat. Finally, perceived coping effectiveness will mediate the relationship between coping and affect such that, for all club sport athletes, coping efforts perceived as effective will result in increased positive affect, while those perceived as ineffective will result in increased negative affect.

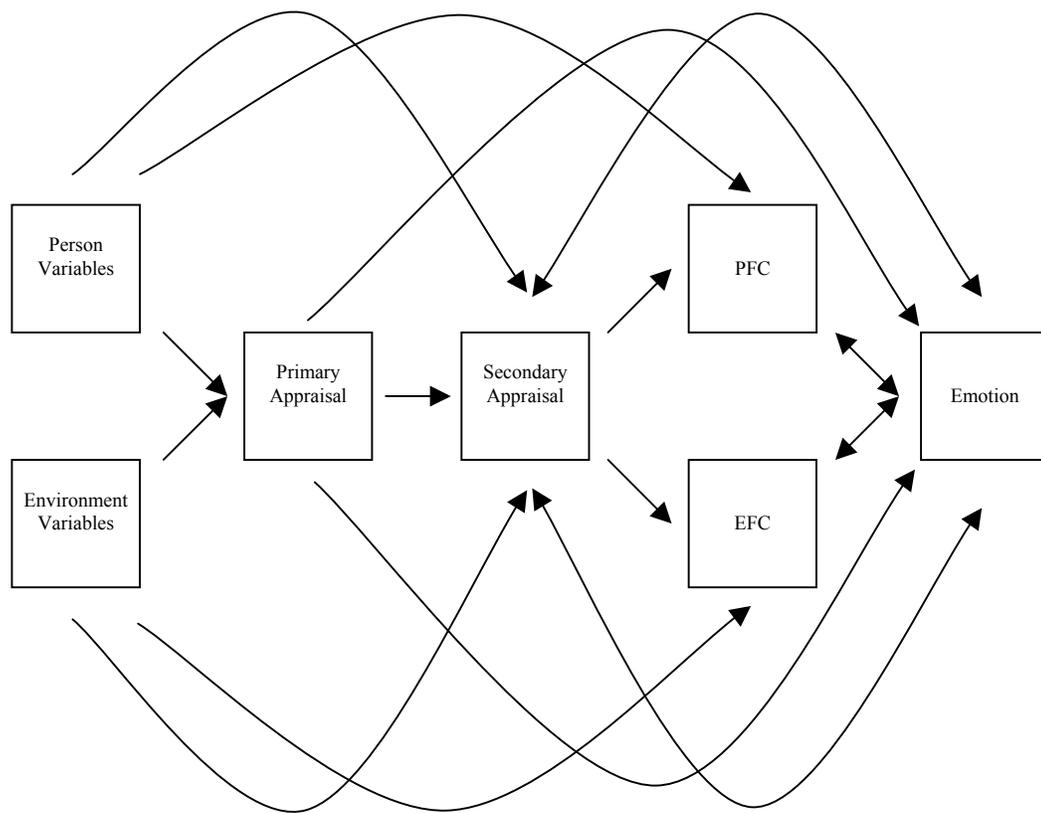


Figure 2-1. Predicted relationships between the major constructs of the cognitive-motivational-relational theory of emotion.

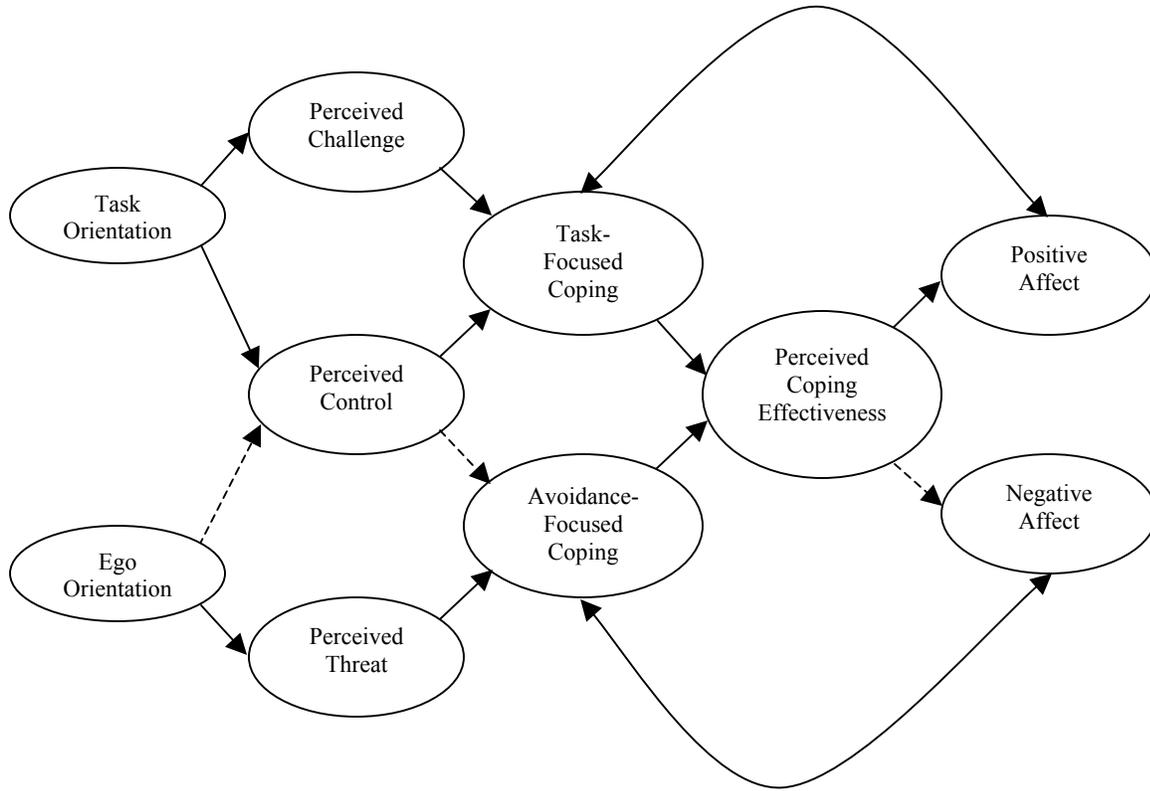


Figure 2-2. Proposed path model of the relationships between goal orientations, primary appraisal, secondary appraisal, coping, perceived coping effectiveness, and affect. Dotted lines represent negative relationships.

CHAPTER 3 METHOD

Participants and Procedure

With assistance from the Coordinator of Sport Clubs, I contacted the presidents of 24 sport clubs at a large university in the Southeast United States, and received permission to recruit participants at a scheduled meeting or practice. During recruitment, I introduced potential participants to the purpose of the study, informed them of what their participation would entail, and assured them that their responses would be anonymous and confidential. By providing their institutionally approved informed consent, 295 club sport athletes (154 women and 141 men) volunteered to participate in this study.

Upon consenting to participate, I gave 80 (47 women and 33 men) of the 295 volunteers unique numerical codes that allowed one-time access to a secure website containing the full measurement protocol, and instructed these participants to access the website as soon as possible after experiencing a situation in which they had difficulty balancing their athletic and academic demands. Upon entry into the website, participants recalled, briefly described, and indicated their appraisals and coping responses to the situation. The decision to employ this same-day retrospective design was based on the recommendation of Smith et al. (1999), who found retrospective bias in the assessment of situational coping strategies. Such a design represented an improvement over the typical methodology employed by sport coping researchers whereby coping is assessed several months subsequent to the adaptational encounter (Crocker & Graham, 1995; Giacobbi & Weinberg, 2000; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999).

I invited the remaining 215 participants (107 women and 108 men) to complete the measurement protocol via traditional paper-and-pencil administration at the time of recruitment. Because these participants completed the surveys at the time of recruitment, and therefore were

unable to wait until they experienced a situation in which they had difficulty balancing their athletic and academic demands, the time frame referenced for the stressor was 7 days. While this did not meet the recommendations of Smith and colleagues (1999), it nevertheless was an improvement over the typical 6-month time frame pervasive in the extant sport coping literature. Finally, in order to ensure the confidentiality of their responses, I placed participants' completed survey packets in a box, which was then sealed and stored in a secure location.

I computed a Multivariate Analysis of Variance (MANOVA) to examine possible method effects. This test was not significant [Wilk's $\lambda = .53$, $F(19, 32) = 1.52$, $p = .145$], indicating that subsequent analyses need not distinguish between participants who completed the measurement protocol online and those who completed the paper and pencil protocol.

The overall response rate was 83.1% (245/295), with 37.5% (30/80) of the volunteers invited to complete the measurement protocol via the study website doing so, and 100.0% (215/215) of the participants who volunteered to complete the paper-and-pencil measures doing so. Of the 245 surveys completed by participants (125 from women and 120 from men), 9 were discarded because of excessive missing data, and 13 were discarded because the participant indicated that they had not experienced the stressor. Therefore, the final sample included 223 athletes (122 women and 101 men) from the following sport clubs: Crew, Cuong Nhu, Cycling, Equestrian, Fencing, Handball, Judo, Men's and Women's Lacrosse, Men's and Women's Rugby, Men's and Women's Soccer, Synchronized Swimming, Tennis, Triathlon, Men's and Women's Ultimate Frisbee, Underwater Hockey, Men's and Women's Volleyball, Men's and Women's Water Polo, and Wrestling.

The remaining demographic characteristics of the final sample are presented in Table 3-1. On average, participants were 20 years old and had approximately four years of organized

competitive experience in their sport. In addition, they appeared to be heavily involved in academics given that they devoted approximately three times as many hours to school than they did to club sports while keeping a semester courseload of over 13 credit hours. The vast majority of participants were Caucasian, while the sample was evenly distributed with respect to class level. Finally, it should be noted that while I obtained my sample in a non-random manner, its demographic characteristics were nevertheless representative of the broader university student population with respect to gender and ethnicity.

Study Measures

Demographics Questionnaire

The first page of the measurement protocol assessed basic demographic information related to each participant's age, gender, race/ethnicity, and university classification (e.g., freshman, sophomore, etc.). The demographics questionnaire (See Appendix A) also requested that participants indicate (a) the sport they played, (b) the approximate number of hours per week they spent in sport-related activities (e.g., training, practicing, competing, traveling), (c) the approximate number of hours per week they spent in school-related activities (e.g., attending class, studying, getting assistance from a tutor, taking exams), (d) the number of years they had been participating in their sport(s), and (e) the number of credit hours in which they were currently enrolled.

The Task and Ego Orientation for Sport Questionnaire (TEOSQ)

The TEOSQ (Duda & Nicholls, 1992; See Appendix B) is a 13-item instrument comprised of a 7-item task orientation (TO) subscale and a 6-item ego orientation (EO) subscale. I requested respondents to think of a time when they felt most successful in sport, and indicate on a 5-point Likert scale (1 = strongly disagree; 5 = strongly agree) their agreement with items reflecting task-oriented and ego-oriented criteria. I calculated subscales scores for TO and EO by

summing their respective item responses. The subscales of the TEOSQ have been found to demonstrate acceptable test-retest (Duda & Nicholls, 1992) and internal consistency reliability (Duda & Whitehead, 1999). In addition, the orthogonal two-factor solution of the TEOSQ has been repeatedly validated through confirmatory factor analysis (CFA; Chi and Duda, 1995; Guivernau & Duda, 1994). Examples of items on the TO subscale are, “I feel most successful in sport when I work really hard,” and “I feel most successful in sport when I learn something that is fun to do.” Sample items from the EO subscale are, “I feel most successful in sport when the others can’t do as well as me,” and “I feel most successful in sport when I score the most points.”

Appraisal Measures

Consistent with previous research in both sport and general psychology, I instructed participants to briefly describe a situation they had experienced in the preceding 7 days in which they had difficulty managing their academic and athletic time demands. As will become evident in the following pages, the situation they described served as the basis for their responses on the appraisal and coping measures I used in my study.

Upon obtaining permission from the instrument’s second author (personal communication, 3/10/2005) I employed the threat and challenge subscales of the Stress Appraisal Measure (SAM; Peacock & Wong, 1989) to measure primary appraisals (See Appendix C). I instructed participants to indicate on a 5-point scale (1 = not at all; 5 = extremely) the extent to which each of the eight items represented the stressful time management situation they previously described. I calculated threat and challenge subscale scores by summing their respective item scores. Across three validation studies, Peacock and Wong reported average internal consistency estimates of .71 for the threat subscale and .73 for the challenge subscale. In addition, the convergent validity of the SAM threat and challenge subscales of the SAM was supported by theoretically meaningful correlations with measures of locus of control, psychological symptoms, and

dysphoric mood (Peacock & Wong). Items on the SAM include, “How threatening is this situation?” from the threat subscale and, “How eager am I to tackle this problem?” from the challenge subscale.

I assessed secondary appraisal of control with a modified version of the three-item personal control subscale of the Revised Causal Dimension Scale (CDSII; McAuley, Duncan, & Russell, 1992; See Appendix C). Specifically, I instructed athletes to indicate on a 9-point scale (with 9 representing the greatest level of each variable) the extent to which the stressful situation they previously described was (a) “manageable by you,” (b) “something you can regulate,” and (c) “something over which you have power.” I calculated a personal control subscale score by summing its item scores. The personal control subscale has demonstrated adequate reliability in both general and sport coping research (Dugdale et al., 2002; McAuley et al., 1992). For instance, across their four initial validation studies, McAuley and colleagues reported an average internal consistency reliability of .79. Similarly, in the sport coping literature, Dugdale and colleagues (2002) reported a Cronbach’s alpha of .80 for the three items.

The COPE Inventory

I used subscales selected from the situational COPE inventory (Carver et al., 1989) to measure the coping thoughts and behaviors of participants in my study. In its complete form, the COPE (See Appendix D) is comprised of 15 conceptually distinct four-item subscales informed by Lazarus’s (1991b, 1999) C-M-R theory of emotion, Carver and Scheier’s (1985) model of behavioral self-regulation, and previous empirical research findings. The 15 COPE subscales are as follows: (a) active coping (ACT), (b) planning (PLAN), (c) suppression of competing activities (SCA), (d) restraint coping (RES), (e) seeking social support for instrumental reasons (SSI), (f) seeking social support for emotional reasons (SSE), (g) focusing on and venting of emotions (VENT), (h) behavioral disengagement (BDIS), (i) mental disengagement (MDIS), (j)

positive interpretation and growth (PRG), (k) denial (DEN), (l) acceptance (ACC), (m) turning to religion (REL), (n) humor (HUM), and (o) alcohol/drug use (ALC). In their initial development of the COPE, Carver and colleagues found that these 15 COPE subscales loaded onto 4 second-order factors. Task coping (TCOPE) was comprised of the ACT, PLAN, and SCA subscales. Avoidance coping (ACOPE) consisted of the MDIS, BDIS, and DEN subscales. Emotion coping (ECOPE) was comprised of the SSI, SSE, and VENT subscales. Finally, cognitive coping (CCOPE) consisted of the RES, PRG, and ACC subscales.

For at least two reasons, I assessed only the subscales of the TCOPE (ACT, PLAN, and SCA) and ACOPE (MDIS, BDIS, and DEN) second-order factors in this study. First, as discussed previously, achievement goal theory (Duda & Nicholls, 1992) predicts that task-oriented individuals believe their skill level is due to factors under personal control (e.g., practice), while ego-oriented individuals believe their skill level is due to factors outside of personal control (e.g., innate ability). In addition, C-M-R theory (Lazarus, 1999) predicts that controllable stressful situations lead to active attempts to alter the stressor, while uncontrollable stressors result in attempts to disengage from the stressful situation and focus instead on ameliorating its negative emotional effects. Therefore, theory suggests that task-oriented individuals are more likely to employ task coping strategies (i.e., ACT, PLAN, and SCA), while ego-oriented individuals are more likely to employ avoidance coping strategies (i.e., MDIS, BDIS, and DEN).

Second, Skinner, Edge, Altman, and Sherwood (2003) recently published an extensive review of the extant literature on coping taxonomies and recommended that, in order to demonstrate consistent and coherent links between coping and adaptation, researchers should employ higher-order measures of coping that exhibit both within-family adaptational similarity

and between-families adaptational distinctiveness. To this end, they identified several empirically and theoretically supported higher-order coping families that best met these criteria. Two of these higher-order coping families, problem solving and escape, closely resemble the task and avoidance second-order coping factors found by Carver and colleagues in their development of the COPE. Specifically, problem solving strategies serve the adaptive function of adjusting ones actions to be effective, and include instrumental action, planning, and strategizing—strategies analogous to the ACT, PLAN, and SCA subscales (Skinner et al., 2003). Escape strategies serve the adaptive function of escaping a noncontingent environment, and include cognitive avoidance, behavioral avoidance, and denial—strategies analogous to the MDIS, BDIS, and DEN subscales (Skinner et al., 2003). Therefore, in the context of the present study the work of Skinner and colleagues suggests that, of the COPE subscales and second-order factors, assessment of task and avoidance higher-order coping is most likely to illuminate relationships between coping and affective responses to stress.

The six situational COPE subscales I used in this study have been shown to represent reliable and valid measures of their respective situational coping strategies in both general and sport psychology with the exception of MDIS (Carver et al, 1989; Eklund et al., 1998). Specifically, in their initial development of the COPE, Carver and colleagues calculated an internal consistency estimate of reliability for MDIS of $\alpha = .45$, while in the sport psychology literature, Eklund et al. found the MDIS subscale to exhibit inadequate reliability ($\alpha = .55$). Despite these findings, I included the MDIS subscale in the present study due to its potential salience as a coping strategy that club sport athletes might employ to deal with the difficulty of balancing their athletic and academic demands.

In its situational form, COPE items are phrased in the past tense to assess coping responses in specific stressful encounters (e.g. “I made a plan of action”). Using this format, I instructed participants to answer on a 4-point Likert-type scale (1 = I didn’t do this at all; 4 = I did this a lot) the degree to which they employed a given coping strategy to deal with the stressful time management situation they previously described. I calculated subscale scores for ACT, PLAN, SCA, MDIS, BDIS, and DEN by summing their respective item scores. In addition, I calculated composite scores for TCOPE and ACOPE by summing the scores for their component subscales.

Perceived Coping Effectiveness Measure

Similar to the procedure employed by Ntoumanis and Biddle (1998), I measured perceived coping effectiveness with 24 items corresponding to those on the COPE. Specifically, I requested participants to indicate on a 7-point Likert-type scale (1 = not at all effective; 7 = very much effective) the overall extent to which they believed their coping efforts were effective in dealing with the stressful time management situation they previously described. For example, with respect to the ACT item, “I concentrated my efforts on doing something about it,” participants responded to the question, “Overall, how effective was this in dealing with the stressful situation?” I calculated subscale scores for the effectiveness of ACT, PLAN, SCA, MDIS, BDIS, and DEN by summing their respective item scores,. In addition, I computed composite scores for TCOPE and ACOPE by summing the scores for their component subscales.

The Positive Affect and Negative Affect Schedule (PANAS)

I used the Positive Affect and Negative Affect Schedule (PANAS; Watson et al., 1988; See Appendix E) to measure the affective experiences of participants in my study. The PANAS (Watson et al) is a 20-item instrument comprising two subscales that represent orthogonal dimensions of affect: Positive Affect (PA) and Negative Affect (NA). The PA subscale consists of 10 positively valenced emotions (e.g., excited, enthusiastic, inspired), while the NA subscale

contains 10 negatively valenced emotions (e.g., distressed, hostile, irritable). Participants indicated on a 5-point Likert-type scale (1 = very slightly or not at all; 5 = extremely) the extent to which they experienced each of the listed emotions during the preceeding 7 days. I computed PA and NA subscale scores by summing their respective item scores. Watson and colleagues reported that the PANAS exhibited acceptable factorial validity and internal consistency ($\alpha = .86$ to $.90$ for PA; $\alpha = .84$ to $.87$ for NA). In the sport coping literature, studies by Crocker and Graham (1995), Ntoumanis and Biddle (1998), and Ntoumanis et al. (1999) have further supported the internal consistency of both the PA ($\alpha s = .89, .91,$ and $.91$ respectively) and NA ($\alpha s = .84, .83,$ and $.83$ respectively) subscales.

Data Analyses

Preliminary Analyses

I began the preliminary analyses by using the Expectation-Maximization (EM) algorithm to replace any missing data that were retained in the final sample. In simple terms, the EM algorithm proceeds through cycles in which it first replaces missing data with expected values from a regression model of the non-missing data, and then maximizes the likelihood that the values are correct by recalculating the regression model using the newly replaced values. Once a full data set was obtained, I calculated the means and standard deviations for all items and their scales. Furthermore, because the parameter estimation method used in this study assumes multivariate normality in the data, I examined the distributional properties of each item. and transformed any item that exhibited excessive non-normality into its natural logarithm.

Next, I computed a series of MANOVAs to determine whether gender, ethnicity, or class level had an impact on the obtained results, and conducted follow-up univariate F-tests for any significant multivariate findings. Finally, I calculated bivariate correlations to assess the

associations between demographic variables (age, years of competition, school hours per week, or club sport hours per week).

Psychometric Analyses (The Measurement Model)

Within an SEM analytical framework, the proposed structural equation model should not be tested until the measurement protocol is first demonstrated to be reliable and valid (Anderson & Gerbing, 1988; Byrne, 1998). Following this recommendation, I performed a multi-construct CFA on the measurement model using the maximum likelihood (ML) method of parameter estimation provided in LISREL 8.53 (Jöreskog & Sörbom, 1996). The measurement model was comprised of first-order latent variables the first-order latent variable indicators, and measurement error terms related to each indicator. Because each perceived coping effectiveness indicator was embedded within the same item as its corresponding coping indicator (i.e., they were two parts of the same question), it was reasonable to assume that the measurement errors for the corresponding indicators would be related. Therefore, I specified the measurement model to include two-way paths relating the error term of each coping indicator to the error term of its corresponding perceived effectiveness indicator. Finally, to remove origin and scale indeterminacy, I set the latent variable variances equal to 1.0 in the measurement model.

I evaluated the construct validity of the measurement protocol using the root mean square error of approximation (RMSEA; Steiger, 1990), its associated confidence interval (CI), the test of close fit (p_{close}), and the model chi-square per degrees of freedom value (Q). A good-fitting model produces (a) an RMSEA less than .05, with its entire CI below this value, (b) a failure to reject the null hypothesis of the p_{close} test of close fit, and (c) a Q value of less than 3.0 (Browne & Cudeck, 1992). Alternatively, a reasonable model has an RMSEA between .05 and .08, while a value greater than .10 indicates unacceptably poor fit.

Due to the plethora of model fit indices currently available within an SEM framework, a justification for using the RMSEA in this study is worth noting. Specifically, the RMSEA offers several statistical and practical advantages over most of the other fit indices available in the SEM literature. First, the RMSEA penalizes for lack of parsimony such that complex models do not automatically fit better than simple models. Second, unlike other fit indices, the RMSEA is unaffected by increases in sample size. Third, because the RMSEA is a point estimate, a CI can be computed to measure its precision. Finally, its associated hypothesis test (p_{close}) focuses on close fit, rather than the impractical standard of exact fit assessed by the χ^2 goodness of fit test.

In addition to overall construct validity, analysis of the measurement model provided evidence regarding the external consistency reliability, convergent validity, and discriminant validity of the measurement protocol. External consistency reliability was supported if the latent variables did not contain cross-loaded indicators. Convergent validity was supported if (a) the factor loadings of a latent variable were significant and greater than .707, (b) the average variance extracted (AVE) by a latent variable was greater than .50, and (c) no more than 10% of its standardized fitted residuals exceeded |2.00| (Bagozzi & Yi, 1988; Fornell & Larcker, 1981). Finally, discriminant validity was established if (a) the 95% CI for a latent variable's correlation with another latent variable did not include 1.0, or (b) its AVE was greater than its squared correlation with another latent variable (Anderson & Gerbing, 1988; Fornell & Larcker, 1981).

I used different procedures, depending on the type of latent variable, to assess internal consistency reliability in this study. For the first-order latent variables other than coping, I calculated Cronbach's alpha coefficient (α). For the first-order coping variables (ACT, PLAN, SCA, MDIS, BDIS, and DEN), I followed the recommendations of Gerbing, Hamilton, and Freeman (1994), who argued that when first-order latent variables serve as "indicators" of

second-order latent variables (as in this study), internal reliability consistency should be examined at the second-order level. The procedure they advocated (and applied here) was to (a) fit a first-order CFA model to determine if the first-order latent variables were unidimensional, and then (b) fit a second-order CFA with these unidimensional first-order latent variables as indicators of the second-order latent variables.

Therefore, I fit a first-order CFA model to the data to examine whether ACT, PLAN, SCA, MDIS, BDIS, and DEN were unidimensional, i.e., whether or not they could be inferred as single “indicators” of second-order coping. Unidimensionality was supported if the model fit the data well using the measures of fit described above. If unidimensionality was supported, I then fit a second-order CFA to the data whereby the COPE items were indicators of ACT, PLAN, SCA, MDIS, BDIS, and DEN; which in turn were indicators of task coping (TCOPE) and avoidance coping (ACOPE). Internal consistency reliability was supported if this model fit the data well. Finally, I repeated the above procedure for perceived coping effectiveness.

I flagged for further scrutiny and possible respecification any model that failed to demonstrate acceptable reliability and validity criteria. For these models, I inspected the modification indices (MIs) to identify localized areas of poor model fit. An MI is provided by LISREL (Jöreskog & Sörbom, 1996) for each parameter that was not estimated in the proposed model, and indicates the approximate amount by which the model χ^2 (lack of fit) would be reduced were the parameter to be estimated in a revised model. Because there is no established criterion for what constitutes an unacceptably large MI, researchers typically identify the largest MI and then, based on substantive considerations, decide whether or not to estimate the corresponding parameter in a revised model. While I employed the above model respecification

procedure here, it must be noted that substantive considerations were given a particularly heavy weight due to this study's focus on testing the C-M-R theory of emotion (Lazarus, 1991b, 1999).

SEM Analyses (The Structural Model)

Once the psychometric analyses supported the reliability and validity of the measurement model, the final stage of data analysis consisted of testing the full structural model. The structural model was identical to the measurement model except that theoretically-predicted relationships between the latent variables were included in the structural model. Therefore, in addition to the global and local fit metrics described above, LISREL (Jöreskog & Sörbom, 1996) also calculated structural regression coefficients (β s) which represented the strength and direction of these predicted relationships. Finally, if necessary, post hoc respecification of the structural model proceeded in a manner identical to that of the measurement model.

Table 3-1. Demographic characteristics of participants (N = 223)

Characteristic	M	SD
Age (years)	20.31	2.34
Sport experience (years)	3.87	3.77
Sport time commitment (hours/week)	9.66	5.71
School time commitment (hours/week)	24.29	12.42
Semester credits (hours/week)	13.59	2.37
Characteristic	n	%
Gender		
Women	122	55
Men	101	45
Ethnicity ^a		
American Indian	1	>1
Asian	9	4
African-American	9	4
Hispanic	26	12
Caucasian	173	78
Other	4	2
Class level ^b		
Freshman	59	27
Sophomore	50	22
Junior	51	23
Senior	43	19
Graduate Student	19	9

^aOne participant did not indicate ethnicity. ^bOne participant did not indicate class level.

CHAPTER 4 RESULTS

Preliminary Analyses

Descriptive Statistics

The EM algorithm detected 44 distinct patterns among the 2.76% of the data that were missing. It converged after 17 iterations, replacing all missing data with imputed values. Means, standard deviations, and skewness values for the study variables are presented in Table 4-1. As shown, participants in this sample were generally more task-oriented than ego-oriented, appraised their time management difficulties as more challenging and personally controllable than threatening and uncontrollable, used more task coping (and found it to be more effective) than avoidance coping, and reported more positive than negative affect. With respect to the normality of the variable distributions, Table 4-1 also shows that TO, personal control, BDIS (and its effectiveness), DEN (and its effectiveness), NA, and ACOPE (as well as its effectiveness) were significantly skewed. Upon closer inspection, 36 offending items (of the 44 total from these scales) were identified and transformed into their natural logarithm. As a result, the personal control, NA, and perceived ACOPE effectiveness distributions were no longer skewed, while the TO, perceived BDIS effectiveness, and perceived DEN effectiveness distributions were still significantly skewed, albeit substantially less so. The remaining distributions—BDIS, DEN, and ACOPE—remained extremely skewed (See Table 4-1).

Demographic Effects

First, I found a significant multivariate effect of gender [Wilk's $\lambda = .84$, $F(19, 203) = 2.04$, $p = .008$]. Follow-up univariate tests revealed that female club sport athletes appraised their time management difficulties as more challenging [$F(1, 222) = 4.40$, $p = .037$], used PLAN more [$F(1, 222) = 9.82$, $p = .002$], perceived PLAN to be more effective [$F(1, 222) = 8.05$, $p = .005$],

and used more ACOPE strategies [$F(1, 222) = 8.57, p = .004$]. Second, I found a significant multivariate effect of class level [Wilk's $\lambda = .63, F(19, 199) = 1.31, p = .050$]. Follow-up univariate ANOVAs with Tukey post hoc tests revealed that seniors employed ACOPE strategies in response to their time management difficulties significantly less than juniors and freshmen [$F(4, 221) = 3.55, p = .008$]. Despite these findings, I chose not to include gender or class level as covariates in the SEM analyses because (a) only a small portion of the total number of possible effects were significantly different between groups, and (b) my sample size prevented proper use of covariates as moderators of the explanatory relationships depicted in Figure 2-2.

Demographic Correlations

Calculation of bivariate correlations revealed that less competitive experience in one's sport was significantly associated with higher TO ($r = -.25, p < .001$), challenge appraisal ($r = -.15, p = .026$), perceived ACT effectiveness ($r = -.13, p = .050$), perceived PLAN effectiveness ($r = -.16, p = .018$), overall perceived TCOPE effectiveness ($r = -.15, p = .024$), and PA ($r = -.16, p = .017$). In addition, the number of hours per week devoted to club sport activities was negatively related to TO ($r = -.14, p = .033$) and PA ($r = -.16, p = .015$) while a greater number of hours per week devoted to school activities was positively associated with TO ($r = .15, p = .029$), ACT ($r = .16, p = .020$), perceived ACT effectiveness ($r = .21, p = .002$), PLAN ($r = .20, p = .003$), perceived PLAN effectiveness ($r = .27, p < .001$), overall TCOPE ($r = .14, p = .039$) and perceived TCOPE effectiveness ($r = .21, p = .001$). In contrast, school hours were negatively associated with DEN ($r = -.16, p = .017$), and overall ACOPE ($r = -.16, p = .021$). Sixth, a larger semester courseload was associated with higher PA ($r = .15, p = .026$).

Correlations Between Study Variables

Intercorrelations between the main study variables are displayed in Table 4-2. It should be noted that, because this study focused on the second-order TCOPE and ACOPE coping

variables, I omitted the first-order coping correlations. Inspection of this table revealed several findings worthy of discussion.

First, I found preliminary support for the measurement strategy I employed in this study. Specifically, the nonsignificant bivariate correlations for EO and TO, and for PA and NA, supported their respective orthogonalities. Second, the pattern of correlations generally supported the proposed model in Figure 2-2. Specifically, PA was positively associated with TO ($r = .23, p = .001$), challenge appraisal ($r = .27, p < .001$), control appraisal ($r = .15, p = .028$), TCOPE ($r = .28, p < .001$), and perceived TCOPE effectiveness ($r = .35, p < .001$). Likewise, higher NA was related to higher EO ($r = .16, p = .016$), higher threat appraisal ($r = .30, p < .001$), lower control appraisal ($r = -.15, p = .024$), higher ACOPE ($r = .36, p < .001$), and lower perceived ACOPE effectiveness ($r = -.14, p = .038$). In addition, two correlations corroborated Ntoumanis' and colleagues' (1998) finding that perceived coping effectiveness had a greater impact on the affective outcomes of a stressful situation than coping strategy use: (a) The perceived effectiveness of TCOPE was negatively related to NA ($r = -.18, p = .007$), while the use of TCOPE was unrelated to NA ($r = .09, p = .173$); and (b) the relationship between PA and the perceived effectiveness of TCOPE ($r = .35, p < .001$) was larger in magnitude than that of PA and TCOPE ($r = .28, p < .001$).

Formulation of the Proposed Structural Model

The model I chose to test in the SEM analysis is shown in Figure 4-1. While an ideal situation would have been to instead test the proposed model in Figure 2-2, several factors convinced me to remove the portion leading from EO to NA and are discussed below.

First, the finding that EO was unrelated to any of the constructs that I proposed to mediate its relationship with NA, and that each of these mediating constructs were, in fact, related to NA, meant that it could have simply omitted EO while including the mediators. However, the primary

purpose of this study was to fill a knowledge gap in the literature by examining relationships between all four of the major constructs in Lazarus' (1991b; 1999) theory (i.e., antecedents of appraisal, appraisal, coping, and emotion). Therefore, omitting EO and including the mediators would have run contrary to the purposes of this study.

Second, the BDIS, DEN, and ACOPE distributions were extremely skewed even after their natural logarithmic transformations. As mentioned previously, the ML method of parameter estimation used to test the measurement and structural models assumes multivariate normality. While researchers have shown that, at reasonably large sample sizes ($N > 100$), ML estimation can be robust to violations of this assumption (Lei & Lomax, 2005; Wang, Fan, & Willson, 1996), I decided not to overwhelm the model with a plethora of skewed variables given that the distribution of TO (which was included in the tested model) also remained significantly skewed post-transformation, albeit considerably less so. Furthermore, including the other constructs leading from EO to NA while omitting ACOPE would have led to the same dilemma described above respecting the primary purpose of my study.

Psychometric Analyses

Overall Construct Validity

The psychometric analyses showed that the measurement model fit the data well, providing support for the overall construct validity of the measurement protocol. Specifically, the *RMSEA* was .047 (95% *CI* = .044, .050), the null hypothesis of the p_{close} test for close fit was not rejected ($p_{close} = .92$), and Q was 1.59 ($\chi^2 = 2436.50$, $df = 1528$).

Convergent Validity

Table 4-3 shows the factor loadings and AVE values for latent variables in the measurement model. Evidence in favor of convergent validity included (a) all indicators loading significantly on their hypothesized latent variables, and (b) only 150 (8.8%) of the fitted

residuals exceeding $|\lambda| \geq .10$. Evidence against convergent validity was related to the amount of item variance explained by the first-order latent variables (Fornell & Larcker, 1981). Specifically, only 14 of the 58 factor loadings were greater than .707 (i.e., less than 50% of the item variance was due to random or measurement error), and only 3 of the 11 first-order latent variables had an AVE value $\geq .50$ (control appraisal, PLAN, and perceived PLAN effectiveness). Taken together, these results provided partial support for the convergent validity of the measurement model.

Discriminant Validity

Table 4-4 displays the estimated correlations between first-order latent variables in the measurement model. Inspection of this table revealed that none of the relationships were within two standard errors of unity. Furthermore, compared with the AVE values displayed in Table 4-3, 7 of the 66 squared correlations between two latent variables exceeded the AVE of either latent variable. Of these seven, six were expected given that they represented the relationships between coping variables that were hypothesized to load onto second-order coping (ACT, PLAN and SCA) and second-order perceived coping effectiveness (perceived ACT effectiveness, perceived PLAN effectiveness, and perceived SCA effectiveness) in the structural model. Therefore, from a substantive perspective, only 1 of the 66 intercorrelations (ACT/perceived ACT effectiveness) failed to meet acceptability criteria. Therefore, these results provided clear support for latent variable discriminant validity in the measurement model.

Internal Consistency Reliability

Table 4-4 also displays alpha reliability coefficients for first-order latent variables in the measurement model. The values for ACT, SCA, and perceived ACT effectiveness were below .70, suggesting that the indicators for these constructs were not sufficiently reliable (Nunnally & Bernstein, 1994). However, in my study, the COPE subscales were conceptualized as indicators of second-order coping. As previously discussed, internal consistency reliability is established at

the second-order level in such instances, with the unidimensionality of first-order latent variables being more critical than internal consistency reliability (Gerbing et al., 1994). Therefore, the alpha coefficients for first-order coping and perceived coping effectiveness were disregarded in favor of results from the two-step procedure advocated by Gerbing and colleagues (1994). To avoid problems with model underidentification, this procedure was modified such that the first-order CFA model used to test coping unidimensionality contained the ACT, PLAN, SCA, perceived ACT effectiveness, perceived PLAN effectiveness, and perceived SCA effectiveness indicators, while the second-order CFA model used to test coping internal consistency reliability contained these indicators along with the second-order latent variables, TCOPE and perceived TCOPE effectiveness.

The first-order coping CFA produced an *RMSEA* of .060 (95% *CI* = .056, .065), the null hypothesis of the p_{close} test for close fit was rejected ($p_{close} = .039$), and Q was 1.77 ($\chi^2 = 398.65$, $df = 225$). In addition, only 1 of the 120 fixed factor loading MIs exceeded 10.00, indicating that indicators did not cross-load. Therefore, I found reasonable evidence to support the unidimensionality of first-order coping constructs.

The second-order coping CFA produced an *RMSEA* of .078 (95% *CI* = .074, .082), the null hypothesis of the p_{close} test for close fit was rejected ($p_{close} < .001$), and Q was 2.30 ($\chi^2 = 538.16$, $df = 234$). Therefore, I found reasonable evidence to support the internal consistency reliabilities of both second-order coping and second-order perceived coping effectiveness.

External Consistency Reliability

The largest fixed factor loading modification index (MI) was 12.62—corresponding to the third perceived PLAN effectiveness item's loading on perceived SCA effectiveness—with only 5 of the 580 fixed factor loading MIs greater than 10.00. Taken together, these results indicated that there would only be a negligible decrease in the model χ^2 were any of these items allowed to

cross-load in a revised measurement model. Therefore, the measurement model supported the external consistency reliability of the study measures.

SEM Analyses

The structural model—which included the first-order indicators, first-order latent variables, second-order latent variables, and structural path coefficients—showed good global fit to the data [$RMSEA = .049$; $95\% CI = .047, .051$; $p_{close} = .059$; $\chi^2 = 2583.39$, $df = 1570$, $Q = 1.65$; 12.6% residuals $> |.10|$). Specifically, the RMSEA was both below .05 and precisely estimated, the p_{close} test failed to disprove the plausibility of the structural model, and the Q value was well below 3.0. Nevertheless, greater than 10% of the fitted residuals exceeded $|2.00|$, indicating localized areas of poor fit. Scrutiny of the residual matrix revealed that the localized lack of fit was primarily due to perceived TCOPE effectiveness and its component first-order latent variables, which accounted for 125 of the 215 offending residuals. Inspection of the MIs revealed that if the fixed path coefficient from control appraisal to perceived TCOPE effectiveness were freed to be estimated by the model, the model χ^2 would decrease by 11.68. Given the lack of a substantive rationale for this modification, along with its relatively minor impact given the size of χ^2 , I did not respecify the model to include this, nor any other, additional relationship.

The path coefficients estimated in the SM, along with their standard errors and t-values are presented in Table 4-5. As shown, I found that four of the seven path coefficients in the model were significant, while another (perceived TCOPE effectiveness \rightarrow NA) approached significance. Specifically, a set of paths leading from TO to PA was confirmed by the structural model. First, high task orientation scores significantly predicted increased challenge appraisal ($\beta = .92$, $t = 3.10$), which in turn predicted increased use of task coping strategies ($\beta = .27$, $t = 4.14$). Increased use of task coping strategies then predicted the perception of those coping strategies as effective ($\beta = 1.40$, $t = 7.34$), which ultimately led to increased positive affect ($\beta = .11$, $t = 4.84$).

Table 4-1. Means, standard deviations, and skewness values for the study variables

Variable	M	SD	Skewness	
			Original	Transformed
Achievement motivations				
Task orientation	30.29	3.95	-1.41*	-.52*
Ego orientation	20.26	5.00	-.24	-.00
Appraisals				
Challenge appraisal	11.61	3.56	-.02	.07
Threat appraisal	9.22	3.12	.44	-.02
Control appraisal	19.87	5.02	-.72*	.31
Task coping				
Active coping	10.91	2.91	-.07	.01
Planning	11.84	3.03	-.33	-.04
Suppression of competing activities	10.20	2.86	-.13	-.13
Perceived task coping effectiveness				
Active coping	18.01	5.62	-.17	-.05
Planning	19.16	5.91	-.41	.25
Suppression of competing activities	16.01	5.57	-.04	-.04
Avoidance coping				
Mental disengagement	8.44	2.70	.44	.15
Behavioral disengagement	6.19	2.65	1.48*	1.06*
Denial	5.60	2.79	1.97*	1.67*
Perceived avoidance coping effectiveness				
Mental disengagement	12.35	5.57	.43	.07
Behavioral disengagement	11.07	7.51	.88*	.50*
Denial	10.68	7.80	.89*	.53*
Affect				
Positive affect	33.84	7.52	-.45	-.29
Negative affect	21.29	7.81	.72*	.31

* $p < .01$.

Table 4-2. Intercorrelations among aspects of achievement motivation, appraisal, second-order coping, and affect

Variable	1	2	3	4	5	6	7	8	9	10	11
1. TO	--										
2. EO	.09	--									
3. Challenge	.21*	-.01	--								
4. Threat	-.12	.01	-.07	--							
5. Control	.09	-.06	.18*	-.30*	--						
6. TCOPE	.09	-.11	.30*	.05	.10	--					
7. ACOPE	-.18*	-.06	.05	.30*	-.17*	.11	--				
8. TCOPEEFF	.20*	.02	.29*	-.10	.24*	.60*	-.28*	--			
9. ACOPEEFF	.06	-.07	.08	.14*	.04	.01	.15*	.34*	--		
10. PA	.23*	-.01	.27*	-.13*	.15*	.28*	-.10	.35*	.08	--	
11. NA	.08	.16*	.01	.30*	-.15*	.09	.36*	-.18*	-.14*	-.08	--

Note: TO = Task orientation; EO = Ego orientation; TCOPE = Task coping; ACOPE = Avoidance coping; TCOPEEFF = Task coping effectiveness; ACOPEEFF = Avoidance coping effectiveness; PA = Positive affect; NA = Negative affect. * $p < .05$.

Table 4-3. Factor loadings (λ), uniqueness (ϵ), and average variance explained (AVE) values for the measurement model

Factor and Item	λ^a	ϵ	AVE
Task orientation			.43
1	.57	.67	
2	.62	.62	
3	.74	.46	
4	.65	.58	
5	.76	.42	
6	.68	.54	
7	.57	.68	
Challenge appraisal			.44
8	.68	.54	
9	.62	.61	
10	.65	.57	
11	.68	.54	
Control appraisal			.62
12	.80	.36	
13	.90	.19	
14	.65	.58	
Active coping (ACT)			.36
15	.63	.60	
16	.66	.56	
17	.53	.72	
18	.56	.69	
Planning (PLAN)			.50
19	.69	.53	
20	.79	.38	
21	.68	.54	
22	.67	.56	
Suppression of competing activities (SCA)			.35
23	.45	.80	
24	.59	.65	
25	.70	.51	
26	.59	.65	
Perceived ACT effectiveness			.40
27	.66	.57	
28	.67	.55	
29	.54	.71	
30	.64	.59	
Perceived PLAN effectiveness			.53
31	.76	.42	
32	.76	.42	
33	.73	.47	
34	.66	.56	

Table 4-3. Continued

Factor and Item	λ	ε	AVE
Perceived SCA effectiveness			.39
35	.51	.74	
36	.72	.48	
37	.73	.47	
38	.51	.74	
Positive affect			.39
39	.69	.52	
40	.58	.66	
41	.56	.68	
42	.59	.65	
43	.54	.70	
44	.60	.64	
45	.78	.39	
46	.63	.60	
47	.62	.62	
48	.56	.69	
Negative affect			.38
49	.54	.70	
50	.80	.36	
51	.80	.36	
52	.54	.70	
53	.43	.82	
54	.54	.71	
55	.77	.41	
56	.63	.61	
57	.53	.72	
58	.48	.77	

^aAll factor loadings were significant at the $\alpha = .05$ level.

Table 4-4. Estimated intercorrelations and coefficient alphas for first-order latent variables in the measurement model

Variable	1	2	3	4	5	6	7	8	9	10	11
1. TO	.84										
2. Challenge	.26*	.72									
3. Control	.11	.23*	.82								
4. ACT	.14	.41*	.23*	.67							
5. PLAN	.14	.26*	.02	.79*	.74						
6. SCA	.10	.32*	.11	.81*	.61*	.67					
7. ACTEFF	.26*	.35*	.33*	.74*	.48*	.47*	.66				
8. PLANEFF	.28*	.27*	.25*	.52*	.58*	.25*	.90*	.82			
9. SCAEFF	.18*	.35*	.25*	.57*	.39*	.57*	.85*	.71*	.71		
10. PA	.25*	.33*	.14	.35*	.34*	.18*	.37*	.43*	.31*	.84	
11. NA	.11	.06	-.14	.11	.11	.17*	-.11	-.12	-.24*	-.06	.82

Note: Coefficient alphas are presented in boldface along the diagonal. TO = Task orientation; ACT = Active coping; PLAN = Planning; SCA = Suppression of competing activities; ACTEFF = Perceived ACT effectiveness; PLANEFF = Perceived PLAN effectiveness; SCAEFF = Perceived SCA effectiveness; PA = Positive affect; NA = Negative affect. * $p < .05$.

Table 4-5. Path coefficients (β), standard errors (SE), and t-values for the structural model

Structural relationship	β	SE	t
Task orientation \rightarrow Challenge appraisal	.92	.30	3.10**
Task orientation \rightarrow Control appraisal	.23	.15	1.50
Challenge appraisal \rightarrow Task coping	.27	.06	4.14**
Control appraisal \rightarrow Task coping	.12	.09	1.37
Task coping \rightarrow Perceived task coping effectiveness	1.40	.19	7.34**
Perceived task coping effectiveness \rightarrow Positive affect	.11	.02	4.84**
Perceived task coping effectiveness \rightarrow Negative affect	-.12	.06	-1.91

* $p < .05$. ** $p < .01$.

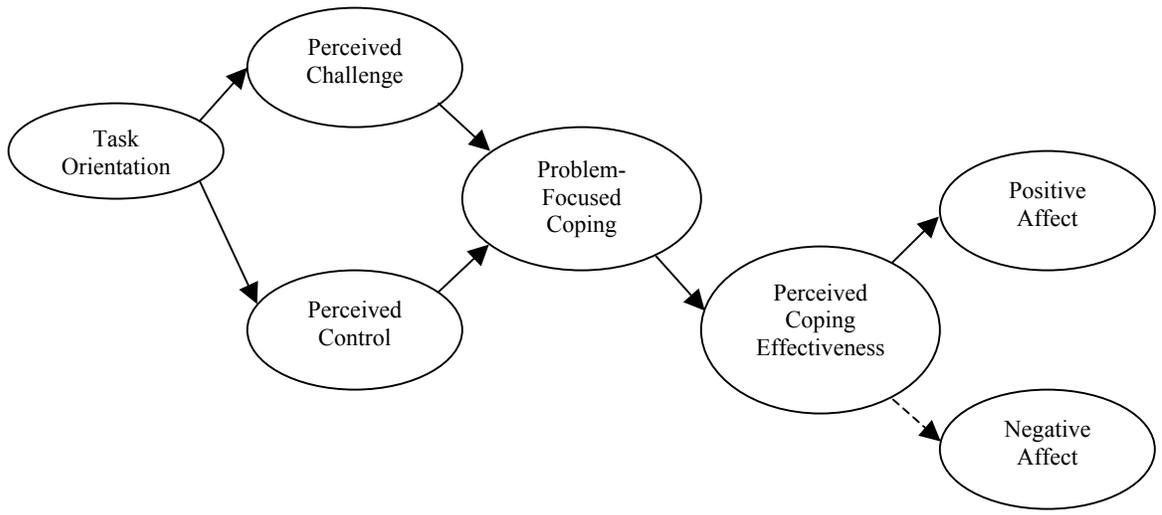


Figure 4-1. Final model tested in the psychometric and structural equation modeling analyses. dotted lines represent negative relationships.

CHAPTER 5 DISCUSSION

The major purpose of the present study was to test several predictions of Lazarus's (1991b, 1999) C-M-R theory of emotion (See Figure 2-1). First, I proposed that club sport athletes who scored highly on a measure of task orientation would appraise time management difficulties as challenging and within their control, which would result in increased use of task-focused coping to deal with the challenge. Second, club sport athletes who scored higher on a measure of ego orientation would appraise time management difficulties as threatening and outside their control, and use increased avoidance coping to deal with the threat. Finally, perceived coping effectiveness would mediate the relationship between coping and affect such that coping efforts perceived by club sport athletes as effective would result in increased positive affect, while coping efforts perceived as ineffective would result in increased negative affect.

The results of SEM analyses partially supported my hypotheses. Specifically, except for relationships involving control appraisal, I found full support for the explanatory relationships leading from task orientation to affect detailed in Hypothesis 1. Due to measurement and empirical issues that were discussed previously, I did not examine Hypothesis 2, which predicted explanatory relationships leading from ego orientation to affect, was not examined. Finally, I found marginal support for the mediational role of perceived coping effectiveness proposed in Hypothesis 3 in that perceived effectiveness predicted positive affect, but its prediction of negative affect only approached significance. What follows is a discussion of the empirical and substantive issues respecting these and other findings, the potential implications of these findings, and limitations of the study that may have impacted the obtained results.

Empirical Issues

Descriptive Statistics

The means for achievement motivation, appraisal, coping, coping effectiveness, and affect were all within two standard deviations of the means from related studies that sampled from athlete or student populations (Crocker & Graham, 1995; Goudreau et al., 2002; Ntoumanis & Biddle, 1998; Ntoumanis et al., 1999; Peacock & Wong, 1990; Pensgaard & Duda, 2003; Pensgaard et al., 1999). Therefore, it appears that this sample as a whole was not atypical with respect to their levels on the study variables.

With respect to the variable distributions, several variables were significantly skewed. However, only BDIS, DEN, and ACOPE remained excessively skewed after being transformed into their natural logarithms. In the context of this study, there are several possible explanations for the skewness of avoidance coping strategies. First, controllable chronic stressors like time management may preclude individuals from relying heavily on avoidance coping. Specifically, in this sample, time management was a stable condition of life, arising out of the participants' role as a club sport athlete (Lazarus, 1999). Furthermore, participants in this sample appraised their time management difficulties as moderately controllable. Therefore, simply disengaging from these difficulties and just hoping they went away may not have been a viable coping option, leading the vast majority of the club sport athletes in this sample to report little or no use of avoidance coping.

Second, skewness of the avoidance coping strategies is consistent with the extant coping literature, which has repeatedly identified problems with their psychometric characteristics (Carver et al, 1989; Eklund et al., 1998; Kallasmaa & Pulver, 2000; Pensgaard & Roberts, 2003). For instance, in their development of the COPE, Carver and colleagues reported (a) coefficient

alphas of .63 and .45 for BDIS and MDIS, and (b) a significant correlation between BDIS and social desirability.

Demographic Variables

Analyses examining relationships between demographic characteristics and the study variables revealed several findings worthy of discussion. First, I found that female club sport athletes used significantly more planning and overall avoidance coping than their male counterparts. These seemingly contradictory findings are consistent with the difficulty researchers in both general and sport psychology have had in identifying gender differences in coping, as well as the mechanisms through which these differences might operate (Billings & Moos, 1981; Carver et al., 1989; Folkman & Lazarus, 1980; Pilar, 2004; Ptacek, Smith, and Zanas, 1992; Stone & Neale, 1984).

Second, I found a pattern of results suggesting that the more participants were involved in club sports, the less they were able to effectively adapt to time management difficulties. Specifically, a greater amount of hours per week devoted to club sports was related to lower positive affect, while fewer hours devoted to school was associated with lower perceived effectiveness for three coping strategies (active coping, planning, and denial). One could interpret these findings as suggestive of an overall negative role for club sports in the lives of students. However, a more reasonable view, and one that is consistent with a transactional approach to stress (Lazarus & Folkman, 1984), is that involvement in any extracurricular activity places increased demands on a student's time, thereby outweighing their personal resources for time management, resulting in greater amounts of stress. Furthermore, given their lack of compensation or future benefit for their efforts, it could be that club sport athletes' perceptions of coping effectiveness are more likely to rest on school-related outcomes. Therefore, with respect to the pattern of results discussed here, it is possible that as participants devoted less time to

school, they presumably decreased their chances of positive school-related outcomes, thereby perceiving their coping efforts to be ineffective. I invited future researchers to explore this idea.

Average Variance Extracted (AVE)

As part of the analyses examining the convergent validity of the latent variables, I found that only 3 of the 11 latent variables explained greater than 50% of the variance in their respective indicators, and that only 14 of the 58 factor loadings exceeded .707. While this suggested a lack of convergent validity, the factor loadings and AVEs were consistent with previous research employing the measures used here.

First, in their initial development of the TEOSQ (Duda & Nicholls, 1992), the task orientation subscale explained only 26.9% of the variance of items on the original TEOSQ. In addition, Ryska (2004) found that 52.6% of the item variance was explained by the task and ego orientation subscales. Therefore, the AVE value of .43 obtained in this study, though below .50, is reasonable relative to previous research. However, it should be noted that these authors obtained their values through exploratory—rather than confirmatory—factor analyses, so the above comparison is not straightforward.

Second, Peacock and Wong (1990) reported factor loadings for the challenge subscale of the SAM to range from .43 to .55, indicating that greater than 50% of each item's variance was due to either measurement error or latent variables not included in the measurement model. Therefore, the AVE value of .44 obtained in this study, though below .50, is higher relative to previous research. However, as was the case with of the TEOSQ, Peacock and Wong obtained their values through exploratory factor analyses, so the above comparison is not straightforward.

Finally, Crawford and Henry (2004) recently performed a confirmatory factor analysis of the PANAS (Watson et al., 1988), and found that 15 of the 20 items loaded below the .707 criterion level. In comparison, 16 of 20 failed to load above .707 in this study. Furthermore, the

model from which Crawford and Henry obtained these factor loadings had been respecified to include correlated error terms. Therefore, in this study, convergent validity results for the PANAS were at least as supportive as evidence available in the extant literature.

From the above discussion it is clear that further research into the psychometric properties of these measures is clearly needed. Specifically, confirmatory factor analytic procedures should be used to investigate issues related to convergent validity, as well as other aspects of construct validity.

Substantive Issues

The findings of this study have several theoretical implications. Therefore, what follows is a discussion of topics related to (a) C-M-R theory (Lazarus, 1999), (b) coping effectiveness, and (c) coping measurement.

The C-M-R Theory of Emotion

The major purpose of my study was to conduct a test of Lazarus's (1991b, 1999) theory wherein a model including all four of its major constructs were evaluated using SEM. Overall, fit indices provided support for the validity of the model depicted in Figure 4-1. However, the explanatory relationships in the model were only partially supported. Specifically, the paths involving control appraisal and negative affect were not significant (although the negative path from perceived task coping effectiveness to negative affect approached significance). Therefore, it can be concluded that CMR theory provides a sound theoretical framework through which to approach the study of stress and coping, although its details require further research.

The above interpretation is based both on the findings of my study, as well as the dearth of studies examining the details of C-M-R theory (Lazarus, 1991b, 1999). Indeed, the extant literature is replete with studies examining relationships between the four major constructs in general (Campbell & Jones, 2002; Dugdale et al., 2002; Ferguson et al., 2000; Hammermeister &

Burton, 2001; Haney & Long, 1995; Kerig, 1998; Kim & Duda, 2003; Ntoumanis et al., 1999; Portello & Long, 2001; Solomon et al., 1989). However, relatively few have examined the specific components of each of these constructs. My view is that these specific components could provide valuable information about stress and coping by providing the trees that are, as of yet, unseen in the forest of research on Lazarus's theory. For instance, the nonsignificant relationship between perceived control and coping in this study could be explained by the fact that perceived control is only one of three components of secondary appraisal. Therefore, future studies which incorporate the other two components of secondary appraisal (future expectations and blame/credit) may, unlike my study, provide support for the predicted relationship between secondary appraisal and coping.

One possible explanation for why more nuanced research on C-M-R theory (Lazarus, 1991b, 1999) has not yet been done is that reliable and valid measures of the construct components are few and far between in the extant literature. For example, there are no known validated measures of future expectations (e.g., coping self-efficacy) and type of ego involvement as components of appraisal. Furthermore, the available measures of categorical emotion focus mostly on anxiety (Martens et al., 1990; Smith, Smoll, & Schutz, 1990; Spielberger, 1983) and anger (McKinnie Burney & Kromrey, 2001; Spielberger, 1988), and do not conceptualize emotion consistent with Lazarus's (1999) core relational themes. Therefore, in order to advance research on C-M-R theory (Lazarus, 1991b, 1999), and to more thoroughly explain and predict stress and coping processes, I recommend that researchers develop the measures necessary to proceed with such work.

Coping Effectiveness

Another purpose of my study was to examine two approaches for assessing coping effectiveness: goodness-of-fit (Folkman, 1992) and perceived coping effectiveness. As

mentioned previously, the goodness-of-fit approach predicts that effective coping results from the fit between the perceived controllability of a stressor and the coping strategies employed to deal with the stressor (Folkman, 1992). Problem-focused coping strategies are more effective in controllable situations, while emotion-focused coping strategies are more effective in uncontrollable situations. The perceived coping effectiveness approach predicts that the affective outcome of a situation depends on whether or not an individual perceives his or her coping to be effective in dealing with the situation (Aldwyn & Revenson, 1987; Ntoumanis & Biddle, 1998). Stated differently, coping strategies that an individual perceives to be effective are more likely to ameliorate stress emotions than those that are perceived to be ineffective. In my study, perceived control was unrelated to task coping, while perceived coping effectiveness was only marginally related to negative affect. Therefore, results did not support goodness-of-fit, and only marginally supported perceived effectiveness. Specifically,

There exist several possible explanations for these results that preclude strong conclusions regarding coping effectiveness. First, I ultimately applied only half of the goodness-of-fit approach in my SEM analyses. Therefore, the prediction that low perceived control would be related to avoidance coping was neither confirmed nor denied by my study. Second, as will be discussed in greater detail below, a test of mediation, wherein coping mediates the relationship between perceived control and affect, was not ultimately conducted in this study.

Finally, the nonsignificant prediction of negative affect by perceived coping effectiveness may have resulted from the dimensional perspective of emotion that I adopted in my study. Proponents of the dimensional view believe that affective states are general, conceptually similar, and therefore best measured as related to one another (Ekkekakis & Petruzzello, 2000). For example, Watson and colleagues (1988) argued that anxiety and fear are both negatively

valenced, and therefore represent the same dimension of negative affective states. In contrast, proponents of the categorical view believe that affective states are specific, conceptually distinct, and therefore best measured independent of one another (Ekkekakis & Petruzzello). For instance, Lazarus (1999) argued that anxiety and fear are both negatively valenced, but have different cognitive antecedents, and therefore represent different categories of negative affective states.

It is possible that the PANAS (Watson et al., 1988), which is based on the dimensional conceptualization of negative affective states, is too broad and does not easily capture associations between perceived coping effectiveness and negative affect in the context of a larger examination of C-M-R theory (Lazarus, 1991b, 1999). Because C-M-R theory (Lazarus, 1991b, 1999) adopts a categorical view of affective states, I recommend that future researchers assess specific emotions rather than general affect.

Coping Measurement

In my study, I chose to assess coping by requesting participants to respond to six subscales of the COPE (Carver et al., 1989) that reflected aspects of second-order task and avoidance coping. My decision to employ this method of coping measurement was based primarily on Skinner and colleagues' (2003) recent theoretical discussion of higher-order coping. Specifically, in an attempt to clarify the integrate the multitude of measurement instruments available to coping researchers, these theorists identified several higher-order coping dimensions, and argued that research linking coping to adaptational outcomes should focus on these dimensions. My study clearly supported their recommendations, and suggests that the second-order factors reported by Carver et al. (task coping, avoidance coping, emotion coping, and cognitive coping) may be especially suitable to uncovering the adaptational implications of situational coping.

Specifically, in my preliminary analyses, I found that club sport athletes' use of higher-order task and avoidance coping was highly related to their affective experiences. Furthermore, I

found that a second-order coping CFA model fit the data well, thereby supporting the construct validity of second-order task and avoidance coping. Finally, while there was not a direct path from task coping to positive affect in the structural model that I tested in my SEM analyses, I nevertheless found that task coping positively predicted a cognitive adaptational outcome (i.e., perceived coping effectiveness). Therefore, given the seemingly arbitrary manner in which coping researchers have chosen one particular measurement strategy over another, I recommend that future studies examining the influence of coping on adaptation also follow the theoretically and empirically based recommendations of Skinner and colleagues.

Limitations

While the findings discussed so far generally support the C-M-R theory of emotion (Lazarus, 1991b, 1999), the limitations of my study prevent strong conclusions to be drawn. What follows is a discussion of these sampling, procedural, and statistical limitations.

Sampling

A purposeful sampling procedure was employed in this study whereby 295 of the approximately 1700 (~18%) club sport athletes at a large Southeastern university were invited to participate. While it appears to have been representative of the subpopulation of club sport athletes at this university, the sample was nevertheless non-random. Given that my study was a test of theory, the characteristics of the sample temper any strong conclusions regarding the nature of stress, coping, and emotion. Specifically, the findings cannot be generalized to club sport athletes at other universities, to all college students, or to the broader adult population. Therefore, future researchers should improve on this study by obtaining a random sample.

Procedure

Lazarus (1999) advocated using an ipsative-normative approach to test his theory whereby repeated measures are taken and a variety of stressors are examined for a given sample.

Therefore, the retrospective, single measure design I employed in my study also limits the conclusions that can be drawn from its findings. Specifically, although I took precautions regarding the time frame in which the referent stressor occurred, participants could have responded in a way that reflected their perception of the situation at the time they completed the measurement protocol. They also could have simply succumbed to errors in memory. In addition, due to the lack of repeated measurement, it remains unknown whether the specific time management stressor that participants described and responded to was representative of their time management stressors in general.

Therefore, future researchers can improve on this study in at least two ways. First, club sport athletes' appraisals, coping, and emotional reactions to the same time management stressor could be measured at several times over the course of the stressor. Second, researchers could concurrently assess reactions to several different stressful time management situations over the course of a semester. Efforts such as these would provide a better test of Lazarus's (1991b, 1999) theory than that reported here.

Statistical Analyses

The final set of limitations is related to the specific SEM procedures used to analyze the data in this study. First, I proposed in my study that achievement goal orientations would moderate the stress relationships. However, testing one model to examine these predictions was inconsistent with SEM moderation analyses. Specifically, moderation is exhibited when a third variable changes the impact of a predictor on its outcome (Baron & Kenny, 1986). Therefore, moderation is tested in SEM by fitting the same model to data from two groups who differ on the moderator, and is supported if the explanatory relationships (i.e., structural path coefficients) proposed by the model are not equal for the two groups. In the context of my study, a more valid test of moderation would have fitted the model in Figure 2-2 (omitting the achievement

motivations) to data from two groups: a high task orientation group and a high ego orientation group. Equality constraints would be placed on the model such that poor fit would indicate that the explanatory relationships for the two groups are not equal, thereby providing support that these relationships were moderated by group membership.

Second, I proposed in my study that coping and its perceived effectiveness would mediate the relationships between appraisals and affect. However, testing one model to examine these predictions was inconsistent with conventional SEM mediation analyses. Specifically, mediation is exhibited when a third variable acts as the mechanism through which a predictor effects its outcome (Baron & Kenny, 1986). Therefore, mediation is tested in SEM by fitting three models to the data—a direct effects model, a partial mediation model, and a full mediation model. Partial mediation is supported if the partial mediation model (including paths from the predictor to the outcome, the predictor to the mediator, and the mediator to the outcome) fits the data significantly better than the direct effects model.(which omits the path from the predictor to the mediator). Full mediation is supported if the full mediation model (which omits the direct effect from the predictor to the outcome) fits the data significantly better than the partial mediation model. In the context of my study, only full mediation was tested. Future researchers should conduct a more valid test of mediation by incorporating the direct effects and partial mediation models into the SEM analyses reported here.

Prior to discussing the applied implications of this study, it should be noted that, while the above methodological limitations do apply, future researchers must also take into account practical considerations because each of my recommended improvements potentially require extremely large sample sizes. Specifically, whether it is to increase generalizability, to avoid participant attrition in a repeated measures study, to perform multi-group moderation analyses, or

to add mediational relationships to an already complex model, the size and nature of the required sample can prove impractical for even the most well-intentioned researcher, as was the case here.

Applications

Taking the above limitations into account, the results of my study can be applied in at least two ways. First, my study confirms that stress is a complex system phenomenon wherein personality, cognition, and behavior each influence the emotional response to a stressful situation. While this might be seen as a barrier to effective stress treatment, my view is that the complexity of stress phenomena suggests several avenues through which interventions can be beneficial. For example, in the context of sport, my findings indicate that stress appraisals can be short-circuited by increasing challenge appraisal through cognitive restructuring, or by increasing an individual's task orientation. Although personality traits like task orientation are, by definition, relatively stable, achievement motivation research has found that promoting a task-oriented learning environment can nurture the development of an individual's task orientation (Digeidlis, Papaioannou, & Lapidis, 2003; Todorovich & Curtner-Smith, 2003; Waldron & Krane, 2005).

Another way to possibly help individuals overcome the adverse effects of stress respects the role of perceived coping effectiveness. Specifically, the findings of my study suggest that, in addition to learning new ways to cope with stress, individuals might also benefit from a cognitive restructuring intervention aimed at modifying the perception that their coping efforts were ineffective. Because the outcome of a given coping strategy is rarely 100% positive or 100% negative, individuals who learn to focus more on the positive outcomes might perceive their coping efforts to be more effective, and thus experience more positive affect.

Third, the findings of my study suggest that on campus services should be tailored to the time management needs of club sport athletes. As my study suggests, what club sport athletes

might lack in competitive stress when compared to their Division I counterparts, they make up for in stress from having to more equally balance their academic and athletic endeavors. For instance, from the stressor descriptions they provided, the club sport athletes in this study routinely traveled for competitions, practiced several times per week, and attended mandatory team meetings throughout the season. Quantitatively, these activities amounted to an average of 10 hours per week devoted to club sports. Put succinctly, participation in club sports is not a trivial time commitment, and therefore, special services should be provided to help club sport athletes deal with the stress that emanates from their unique situation.

APPENDIX A
DEMOGRAPHICS QUESTIONNAIRE

1. What is your current age (in years)?

2. What is your gender?

Male Female

3. What is your race/ethnicity?

American Indian Asian Black (Not of Hispanic Origin) Hispanic

White (Not of Hispanic Origin) Other

4. What is your class level?

Freshman Sophomore Junior Senior Graduate Student

5. What sport club do you participate in (If you **currently** participate in more than one sport club, only indicate the sport club you have participated in the **longest**)?

Badminton Breakdancing Cheerleading Crew Cuong Nhu Cycling

Equestrian Fencing Handball Ice Hockey (Men's) Judo Kendo

Lacrosse (Men's) Lacrosse (Women's) Motor Sports Racquetball

Roller Hockey (Men's) Roller Hockey (Women's) Rugby (Men's)

Rugby (Women's) Sailing Soccer (Men's) Soccer (Women's) Surf

Synchronized Swimming Tennis Tae Kwon Do Tennis Trigators

Ultimate Frisbee (Men's) Ultimate Frisbee (Women's) Underwater Hockey

Volleyball (Men's) Volleyball (Women's) Water Polo (Men's)

Water Polo (Women's) Waterski Wrestling

6. How many years have you been participating in **organized competition** in this sport?

7. How many total hours per week do you engage in activities with this sport club (e.g., training, practicing, competing, traveling)?

8. How many credit hours are you enrolled in at the University of Florida this semester?

9. How many total hours per week do you engage in school-related activities (e.g., attending class, studying, getting assistance from a tutor, taking exams)?

APPENDIX B
TASK AND EGO ORIENTATION SCALE FOR SPORT QUESTIONNAIRE (TEOSQ)

The Task and Ego Orientation Scale for Sport Questionnaire (TEOSQ)

WHAT IS SPORT SUCCESS?

When do you feel most successful in sport? In other words, when do you feel a sport activity has gone really well for you?

	I feel most successful in sport when...	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.	I am the only one who can do a particular skill or play.	1	2	3	4	5
2.	I learn a new skill which makes me want to practice more.	1	2	3	4	5
3.	I perform a skill better than my friends.	1	2	3	4	5
4.	Other people cannot do something as well as I can.	1	2	3	4	5
5.	I learn something that is fun to do.	1	2	3	4	5
6.	Other people mess up, and I don't.	1	2	3	4	5
7.	I learn a new skill by trying hard.	1	2	3	4	5
8.	I work really hard.	1	2	3	4	5
9.	I score the most points/goals or win the most competitions.	1	2	3	4	5
10.	I learn something and it makes me want to go and practice more.	1	2	3	4	5
11.	I am the best.	1	2	3	4	5
12.	I learn a skill which makes me feel really good.	1	2	3	4	5
13.	I do my very best.	1	2	3	4	5

On the scale below, please show us how successful you think you will be in your next (or current) season.

Not at all successful	Not very successful	Maybe a little successful	Somewhat successful	Mostly successful	Really quite successful	Highly successful
1	2	3	4	5	6	7

APPENDIX C
APPRAISAL MEASURES

For this question, stress refers to the negative emotions, feelings, and thoughts that you might have had today while having to manage your time between athletic and academic demands. These feelings might include apprehension, anxiety, muscle tension, nervousness, physical reactions (such as butterflies in the stomach, shaking or nervous sweating) thoughts centered on worry, self-doubt, or negative statements to yourself. Please describe in two or three sentences **THE MOST STRESSFUL OR CHALLENGING SITUATION YOU EXPERIENCED TODAY THAT INVOLVED MANAGING ATHLETIC AND ACADEMIC TIME DEMANDS**. Some examples of this kind of situation are not being able to study for an exam because you had to attend a practice, being late for an early morning training session because you were up all night studying the night before, missing an important class lecture because of a team road trip, etc. Basically, the situation you describe should have (a) involved managing your time between athletic and academic demands, and (b) been stressful for you.

The Stress Appraisal Measure (SAM)

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This questionnaire is concerned with your thoughts about various aspects of the situation identified previously. There are no right or wrong answers. Please respond according to how you view this situation right **NOW**. Please answer **ALL** questions. Answer each question by **CIRCLING** the appropriate number corresponding to the following scale.

1 2 3 4 5
Not at Slightly Moderately Considerably Extremely
all

=====

1. Does this situation make me feel anxious?..... 1 2 3 4 5
2. Is this going to have a positive impact on me?..... 1 2 3 4 5
3. How eager am I to tackle this problem?..... 1 2 3 4 5
4. To what extent can I become a stronger person because of this problem?..... 1 2 3 4 5
5. Will the outcome of this situation be negative?..... 1 2 3 4 5
6. To what extent am I excited thinking about the outcome of this situation? 1 2 3 4 5
7. How threatening is this situation?..... 1 2 3 4 5
8. Is this going to have a negative impact on me?..... 1 2 3 4 5

Think about the situation you described above. The questions below concern your impressions or opinions of this situation. Circle one number for each of the following questions.

Was the situation something:

1. Manageable by you 9 8 7 6 5 4 3 2 1 Not manageable by you
2. You can regulate 9 8 7 6 5 4 3 2 1 You cannot regulate
3. Over which you have power 9 8 7 6 5 4 3 2 1 Over which you have no power

APPENDIX D
COPING ORIENTATION FOR PROBLEM EXPERIENCES (COPE)

The following questions refer to how you coped with the situation you described on the previous page where you had to manage athletic and academic time demands. Please try to respond to each item below *separately in your mind from each other item*. Choose your answers thoughtfully, and make your answers as true FOR YOU as you can. Please answer every item. There are no “right” or “wrong” answers, so choose the most accurate answer for YOU. If the question does not apply to you, choose 1 = I didn’t do that at all.

- 1 = I didn’t do this at all
- 2 = I did this a little bit
- 3 = I did this a medium amount
- 4 = I did this a lot

For each question, also indicate how effective you think that particular coping effort was in dealing with the situation. Please use the scale below to indicate your response. If the question doesn’t apply to you, choose 1 = Not at all effective.

- 1 = Not at all effective
- 2 =
- 3 =
- 4 = Effective a medium amount
- 5 =
- 6 =
- 7 = Very much effective

1. I turned to work or other substitute activities to take my mind off things. _____
How effective do you think this was? _____
2. I concentrated my efforts on doing something about it. _____
How effective do you think this was? _____
3. I said to myself ‘this isn’t real.’ _____
How effective do you think this was? _____
4. I admitted to myself that I can’t deal with it, and quit trying. _____
How effective do you think this was? _____
5. I kept myself from getting distracted by other thoughts or activities. _____
How effective do you think this was? _____
6. I daydreamed about things other than this. _____
How effective do you think this was? _____

Continue to answer each item with these response choices:

1 = I didn't do this at all

2 = I did this a little bit

3 = I did this a medium amount

4 = I did this a lot

1 = Not at all effective

2 =

3 =

4 = Effective a medium amount

5 =

6 =

7 = Very much effective

7. I made a plan of action. _____
How effective do you think this was? _____
8. I just gave up trying to reach my goals. _____
How effective do you think this was? _____
9. I took additional action to try to get rid of the problem. _____
How effective do you think this was? _____
10. I refused to believe that it happened. _____
How effective do you think this was? _____
11. I slept more than usual. _____
How effective do you think this was? _____
12. I tried to come up with a strategy about what to do. _____
How effective do you think this was? _____
13. I focused on dealing with this problem, and if necessary let other things slide a little. _____
How effective do you think this was? _____
14. I gave up the attempt to get what I wanted. _____
How effective do you think this was? _____
15. I thought about how I might best handle the problem. _____
How effective do you think this was? _____
16. I pretended that it hasn't really happened. _____
How effective do you think this was? _____
17. I tried hard to prevent other things from interfering with my efforts at dealing with this. _____
How effective do you think this was? _____
18. I went to the movies to think about it less. _____
How effective do you think this was? _____
19. I took direct action to get around the problem. _____
How effective do you think this was? _____

Continue to answer each item with these response choices:

1 = I didn't do this at all

2 = I did this a little bit

3 = I did this a medium amount

4 = I did this a lot

1 = Not at all effective

2 =

3 =

4 = Effective a medium amount

5 =

6 =

7 = Very much effective

20. I reduced the amount of effort I put into solving the problem. _____
How effective do you think this was? _____

21. I put aside other activities in order to concentrate on this. _____
How effective do you think this was? _____

22. I thought hard about what steps to take. _____
How effective do you think this was? _____

23. I acted as though it hasn't even happened. _____
How effective do you think this was? _____

24. I did what had to be done, one step at a time. _____
How effective do you think this was? _____

APPENDIX E
POSITIVE AFFECT NEGATIVE AFFECT SCHEDULE (PANAS)

The following scale consists of a number of words that describe different feelings and emotions. Read each item and then mark the appropriate answer in the space next to the word. Indicate to what extent you felt all of these feelings today. Use the following scale to record your answers.

- 1 = very slightly or not at all
- 2 = a little
- 3 = moderately
- 4 = quite a bit
- 5 = extremely

_____ interested	_____ irritable	_____ distressed
_____ alert	_____ excited	_____ ashamed
_____ upset	_____ inspired	_____ strong
_____ nervous	_____ guilty	_____ determined
_____ scared	_____ attentive	_____ hostile
_____ jittery	_____ enthusiastic	_____ active
_____ proud	_____ afraid	

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BIOGRAPHICAL SKETCH

Daniel Edward Tuccitto was born on January, 20, 1978 in Miami, Florida. The youngest of three children, Daniel spent his childhood participating in youth sports, extracurricular school activities, and developing his interests in music, science, art, politics, and all things intellectually stimulating. Upon graduating from North Miami Beach Senior High School in the top 10% of his class, he began attending the University of Florida in August 1996. During his years as an undergraduate, Daniel cultivated his interests in sport psychology by majoring in psychology and taking electives in the Department of Exercise and Sport Sciences, experiences that prepared him well for his future graduate studies. In August 2000, he earned his B.S. in psychology from the University of Florida. Upon graduation, Daniel moved back to Miami to work as a paralegal for his brother, an attorney at the Law Office of Russel Lazega in North Miami.

After two years, Daniel applied, and was accepted, to the Sport and Exercise Psychology Master's program in the Department of Exercise and Sport Sciences at the University Florida. Under his advisor, Dr. Peter R. Giacobbi, Jr., Daniel worked on research projects related to (a) the daily appraisals, coping efforts and exercise behavior of college undergraduates, (b) the relationships between certified athletic trainers' stress, coping, exercise, burnout, and physiological reactivity, (c) exercise imagery, and (d) the development and validation of psychological measurement instruments. In addition, he gained experience while serving as a UF graduate teaching assistant by teaching Motor Learning and Control for the Department of Applied Physiology and Kinesiology, and golf for the Sport and Fitness Program. Finally, due to his work with Dr. Giacobbi, and classes taken with Dr. James Algina in the Department of Educational Psychology, Daniel became proficient in two statistical techniques that represent the wave of the future in social science research (i.e., hierarchical linear modeling and structural equation modeling)

Upon earning his Master of Science degree, Daniel will continue his sport and exercise psychology studies as a Ph.D. student. As part of his Ph.D. work, Daniel plans to refine his work on stress and coping by focusing more on personality predictors, and conducting psychometric validation studies of instruments frequently used to measure stress and coping constructs.