

**PASSION AND COPING: RELATIONSHIPS WITH BURNOUT AND GOAL
ATTAINMENT IN COLLEGIATE ATHLETES**

by

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B.A. (Hons.), The University of Winnipeg, 2008

A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in

The Faculty of Graduate Studies

(Human Kinetics)

THE UNIVERSITY OF BRITISH COLUMBIA

(Vancouver)

June 2011

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Abstract

The stress process in sport can lead to a number of negative outcomes for athletes, including burnout and a failure to attain desired goals in sport (Gaudreau & Blondin, 2002; Hoar et al., 2006). Athletes can manage stress by coping, which involves various thoughts and actions (Lazarus, 1999). A person-related variable that may influence coping is the passion that athletes have for sport. Vallerand and colleagues (2003) proposed the dualistic model of passion (DMP), which differentiates between two forms of passion: harmonious (HP) and obsessive (OP). This research examined the relationship between passion and coping in sport, and tested if coping mediated the relationship between types of passion and both burnout and goal attainment. College- and university-level volleyball players ($N = 239$; female $n = 126$) participated in a prospective observational study involving two time points approximately 3 months apart. Measures assessing passion, coping style, burnout, and goal attainment were administered using paper and online questionnaires. Results indicated that burnout at time 2 was negatively associated with task-oriented coping and positively associated with both distraction- and disengagement-oriented coping, while change in burnout between time 1 and time 2 was positively associated with change in distraction- and disengagement-oriented coping. Analyses with both prospective data and change scores indicated that goal attainment was positively associated with task-oriented coping and negatively associated with disengagement-oriented coping. HP was negatively associated with burnout and positively associated with goal attainment, and mediation analyses revealed that disengagement-oriented coping mediated the relationship between HP and burnout, while both task- and disengagement-oriented coping mediated the relationship between HP and goal attainment. Prospective analyses revealed that

OP at time 1 was unrelated to both burnout and goal attainment at time 2, but these relationships were suppressed by disengagement-oriented coping. Change in OP was positively associated with change in burnout, and this relationship was mediated by disengagement-oriented coping. Overall, these results highlight the role of coping, particularly disengagement-oriented coping, in the relationship between types of passion and both burnout and goal attainment, and provide insight into the relationship between passion and the stress process in sport.

Preface

Ethics approval for this research was obtained from The University of British Columbia Behavioural Research Ethics Board; certificate number H10-0 1928. Original approval was obtained on September 10, 2010, and an amendment was approved on September 21, 2010.

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Acknowledgements

First, I would like to thank the athletes and coaches who took the time to be involved in this research. Had athletes and coaches not been so accommodating throughout the research process, this study could not have happened.

I would also like to recognize the members of the Exercise and Sport Psychology Lab, whose support and guidance was invaluable throughout the research process: Erica Bennett, Sara Brune, Katie Gunnell, Carolyn McEwen, and Amber Mosewich. I especially acknowledge my supervisor, Dr. Peter Crocker, who has provided healthy portions of advice, encouragement, and support throughout my entire time at UBC.

I also acknowledge the members of the thesis committee, Dr. Mark Beauchamp and Dr. Richard Mosher, whose recommendations and probing questions helped improve my understanding of the material and the quality of the final product.

Financial support for this research was provided by the Social Sciences and Humanities Research Council of Canada and by the UBC Faculty of Education, so special thanks are owed to these two sources of funding.

Finally, I thank my family and friends living in Winnipeg who have provided endless support during my time in Vancouver.

CHAPTER 1 - Introduction and Literature Review

1.1 INTRODUCTION

The stress process in sport has the potential to severely reduce the quality of an athlete's experience (Hoar, Kowalski, Gaudreau, & Crocker, 2006). Negative experiences can result from demands that occur during training and competition (e.g. injury, poor performance, performance expectations) and from those that occur outside of sport (e.g. travel, media expectations, time management; Kowalski & Gaudreau, 2011). Athletes manage these stressors through coping, a deliberate process involving thoughts and actions (Crocker, Kowalski & Graham 1998; Lazarus, 1991). Coping has been identified as a critical component of the athletic stress process; indeed, failing to cope effectively can lead to poor athletic performance, interpersonal problems, and injury (Hoar et al., 2006). Coping ineffectively with environmental demands can also lead to more serious long term effects, such as burnout or a failure to attain desired goals or outcomes (Gaudreau & Blondin, 2002; Gaudreau, Blondin, & Lapierre, 2002; Hoar et al., 2006; Holt & Dunn, 2004).

Coping strategies used in stressful situations are influenced by person-related variables (Carver & Connor-Smith, 2010; Lazarus, 1999; Lazarus & Folkman, 1984; Polman, Clough, & Levy, 2010). One such variable that may influence coping is the passion that individuals have for sport. Passion has been defined as, “a strong inclination towards an activity that people like, that they find important, and in which they invest time and energy” (Vallerand et al., 2003, p. 757). Vallerand et al. (2003) proposed the dualistic model of passion (DMP), which distinguishes between two types of passion: *harmonious passion* (HP), when an activity is

autonomously internalized into the person's identity, and *obsessive passion* (OP), which results from a controlled internalization of an activity into a person's identity. The purpose of this study was to examine the relationship between passion and coping in sport, and to determine if coping mediated the relationships between passion and both burnout and goal attainment.

1.2 LITERATURE REVIEW

1.2.1 Lazarus' Model of Stress and Emotion

The popularity of the term "psychological stress" has caused this term to encompass a variety of meanings, making it difficult to conceptualize and define (Aldwin, 2007; Lazarus, 1990). Stress has been conceptualized as a source of input for the individual (a "stressor") that can range from major life events, such as the death of a spouse, to relatively minor "daily hassles", such as being stuck in traffic (DeLongis, Coyne, Dakof, Folkman, & Lazarus, 1982). Stress can also be viewed as an individual's reaction to the environment (feeling "stressed") and can be expressed through one's physiological functioning, cognitions, affect, and behaviours (the "stress response"; Aldwin, 2007; Gray, 1987; Lazarus, 1990; Selye, 1976). To resolve the ambiguity surrounding this construct, a framework for conceptualizing stress as a *process* has been adopted by many stress researchers. According to Lazarus' cognitive-motivational-relational theoretical model of stress and emotion (Lazarus, 1991; 1999), stress is a dynamic transactional process consisting of multiple processes including environmental demands (stressors), cognitive appraisal, emotion, and coping.

The stress process is initiated by a transaction between the person and the environment which is appraised by an individual in relation to one's values, goals, and beliefs (Lazarus,

1999). The concept of appraisal lies at the core of this model, and two types of appraisals are involved in this process. Primary appraisal involves assessing the degree to which the situation is relevant to the individual, and determining if there is anything that is at stake or threatening to the individual. If the situation is appraised as innocuous or irrelevant to the person, then subsequent appraisals, emotions, and coping responses will not occur. However, if the situation is appraised as relevant, Lazarus (1999) states that there are three types of primary appraisals. *Harm/loss* appraisals involve the appraisal of harm or losses that have already occurred, *threat* appraisals involve the anticipation of harm or losses in the future, and *challenge* appraisals are made when the situation offers an opportunity for gain and growth (Lazarus & Folkman, 1984; Lazarus, 1999). Secondary appraisals involve an evaluation of coping options, and an assessment of what can be done to manage the situation (Lazarus, 1999). Specific emotions develop as a result of the appraisal process, and the individual attempts to manage these emotions as well as the person-environment situation through coping (Lazarus, 1991; Lazarus, 1999). According to Lazarus and Folkman (1984), coping “is the process through which the individual manages the demands of the person-environment relationship that are appraised as stressful and the emotions they generate” (p.19). Coping can involve a number of strategies such as confrontation, seeking social support, denial, and information seeking. The stress process concludes when the person-environment relationship is successfully managed and is no longer appraised by the individual as threatening, harmful, or challenging.

1.2.2 Coping in Sport

1.2.2.1 Stressors.

Athletes often face a variety of environmental demands and challenges that require coping effort. Research has revealed that athletes encounter and are required to manage a variety of environmental demands both during and outside of competition, such as physical, mental, tactical, and technical preparation, performance expectations, injury, body appearance, poor officiating, weather conditions, time management, financial stress, and the behavior of opponents, teammates, spectators and coaches (Gan & Anshel, 2009; Gould, Finch, & Jackson, 1993; Mellalieu, Neil, Hanton, & Fletcher, 2009). To provide a comprehensive list of sport-related stressors would be impractical, as there are countless specific sources of stress for athletes (Kowalski & Gaudreau, 2011).

1.2.2.2 Coping strategies and functions.

The importance of coping with stressors in sport has not gone unnoticed, as a considerable amount of research has been conducted examining athlete coping (for reviews, see Hoar et al., 2006; Nicholls, 2010; Nicholls & Polman, 2007). Research has examined the specific coping strategies that are used by athletes such as mental imagery, relaxation, thought control, support seeking, distraction, distancing, acceptance, aggression, reappraisal, venting, and pursuing spiritual guidance (Gaudreau & Antl, 2008; Hoar, Crocker, Holt, & Tamminen, 2010). This research has clearly demonstrated that athletes use many different strategies to cope with stress in sport.

In addition to examining specific coping strategies at the micro-level, researchers have studied coping from a macro-level perspective and examined the purpose or functions that coping strategies serve (for a review and critique, see Skinner, Edge, Altman, & Sherwood, 2003). Although conceptualizations of higher-order functions differ, most recognize two major coping functions: *problem-focused* and *emotion-focused* coping (Lazarus, 1999). Problem-focused coping refers to actions that aim at changing the person-environment relationship, whereas emotion-focused coping aims to manage the emotions that arise during the stressful situation (Lazarus, 1999). Many also recognize a third coping function, *avoidance*, which occurs when individuals remove themselves from stressful situations (Endler & Parker, 1990; Kowalski & Crocker, 2001).

In sport, a number of taxonomies of coping functions have been proposed (Anshel, 1996; Gaudreau & Blondin, 2002; Kowalski & Crocker, 2001). For example, a sport specific taxonomy was developed by Gaudreau and Blondin (2002) who categorized coping functions into three domains: *task-oriented*, *disengagement-oriented*, and *distraction-oriented* coping. Task-oriented and disengagement-oriented coping are comparable to problem-focused and avoidance coping, respectively, where the individual either attempts to change the person-environment relationship, or attempts to escape or avoid the stressful situation. Distraction-oriented coping occurs when the individual uses coping strategies, such as distancing oneself from others, that are designed to divert the individual's attention away from the stressful situation (Gaudreau & Antl, 2008). Other taxonomies in sport have organized coping into problem-focused, emotion-focused, and avoidance functions (Kowalski & Crocker, 2001), while others have organized task- and emotion-focused coping onto an approach/avoidance dimension

(Anshel, 1996). Although there are noticeable similarities between these different organizations of coping functions, a universal taxonomy has yet to be accepted.

1.2.2.3 Coping processes and dispositions.

Coping researchers have also debated whether to approach coping from a process or a dispositional perspective (Aldwin, 2007; Hoar et al., 2006; Lazarus, 1999). The process perspective treats coping as a situation-dependent variable that changes both between and within stressful situations (Lazarus, 1999). On the other hand, the dispositional approach assumes individuals have a disposition towards using a preferred coping strategy or set of strategies, and tend to respond in a predictable way when facing certain types of stressful situations (Aldwin, 2007). Watson and Hubbard (1996) argue that there are two main approaches that can be adopted in dispositional coping research. First, coping strategies themselves can be examined and treated as a dispositional tendency, known as coping *styles*. Using this approach, an individual's coping style is analogous to a personality trait, allowing certain individuals to be categorized as, for example, "avoidant copers" and others as "distraction-oriented copers". A second approach is to determine if personality *traits* (such as perfectionism or neuroticism) are related to specific coping strategies or general coping styles. For example, using this perspective, research has found that individuals with high neuroticism have a tendency to use avoidant coping styles (Polman et al., 2010). The debate between process and dispositional approaches has yet to be resolved, and research in this area continues to approach coping from both perspectives (Gaudreau, Nicholls, & Levy, 2010; Neil, Hanton, Mellalieu, & Fletcher, 2011). For instance, in a systematic review of the literature on coping in sport, Nicholls and Polman (2007) found 46 articles that supported or adopted a process approach, 11 that supported

a dispositional approach, and two that supported both approaches. Clearly, this review suggests that there is evidence supporting coping as both a process and as a disposition.

One of the many challenges for coping researchers is to determine if a process or dispositional approach to coping should be adopted (Aldwin, 2007). It is, however, important to gain an understanding of coping from both perspectives, as both the process and dispositional perspectives may complement each other to provide a thorough account of how individuals cope during the stress process (Gaudreau & Miranda, 2010; Lazarus & Folkman, 1984). As Aldwin (2007) advises, “[the] key criterion in determining whether to use a process or style measure must be the research question at hand” (p. 133). She continues to argue that process measures are best for predicting immediate outcomes, and that style measures are best for predicting long-term outcomes. To make her point, Aldwin gives the analogy of a researcher wishing to predict a student’s academic performance. If the research question aimed to predict the student’s performance on a particular exam, then it would be important to study how the student prepared for that exam (a process approach). However, if the research question aimed to predict the student’s overall grade point average at the end of a term or academic career, then it would be best to know how the student typically prepares for exams (a dispositional approach). Since research has supported both process and dispositional coping perspectives, researchers must consider the question being studied when adopting a particular approach.

1.2.2.4 Coping and person-related variables.

The coping strategies used by individuals to manage stressful situations are influenced by many variables, including those related to the person (Carver & Connor-Smith, 2010; Lazarus,

1999, Lazarus & Folkman, 1984; Polman et al., 2010). Lazarus' cognitive-motivational-relational theoretical model of stress and emotion states that stress appraisal, coping, and emotion are influenced by the transaction that occurs between the person and the situation (Lazarus, 1991; 1999). Lazarus (1999) specifies three person variables that have a particular influence on the stress process. The first are *goals and goal hierarchies*, which refer to one's motivation to achieve desired outcomes, and the hierarchy of importance of these goals. Second are one's *beliefs about the self and world*, which refers to an individual's expectations and perceptions about the self and the surrounding environment. Finally, *personal resources* are argued to influence the stress process, which include resources such as social relationships, money, health, abilities, and intelligence (Lazarus, 1999).

Research in sport has examined the relationship between coping and personality traits and characteristics, each representing an assorted mix of an individual's goals, beliefs, and personal resources. Gaudreau and Antl (2008) examined the relationship between coping and two forms of perfectionism, personal standards perfectionism and evaluative concerns perfectionism. They found that personal standards perfectionism was associated with task-oriented coping, whereas evaluative concerns perfectionism was associated with distraction- and disengagement-oriented coping. Grove and Heard (1997) examined the influence of dispositional optimism and sport confidence on athletes' coping with performance-related slumps. Both optimism and sport confidence were found to be positively associated with task-oriented coping, negatively associated with emotion-oriented coping, and unrelated to avoidance-oriented coping. Giacobbi and Weinberg (2000) examined differences in coping strategies between high and low trait anxious athletes, and found that athletes with high trait anxiety used

more self-blame, wishful thinking, and denial than their less anxious counterparts. Research has also examined the impact of “mental toughness” on coping in sport, and has found that athletes who are “tough” tend to use more approach and problem-focused coping strategies (such as effort expenditure and thought control) and less avoidant coping strategies (such as distraction or distancing) than those who are not “tough” (Polman et al., 2010). Thus, research has clearly demonstrated that various person-related variables are related to coping in sport.

1.2.3 Passion in Sport

A person-related variable that has a strong theoretical link with coping is the passion that individuals have for sport. The concept of passion has had a storied history within philosophy and psychology, and has appeared frequently in the literature on reason, emotion, and interpersonal relationships (Fisher, 2002; Lazarus & Lazarus, 1994; Meyer, 2000; Sternberg, 1986; Vallerand et al., 2003).¹ The concept of passion in psychology was renewed by Vallerand and colleagues (2003) who studied the role that passion played in the relationship between individuals and certain activities in their lives. According to the authors, a number of prerequisites are needed in order for an activity to be considered a passion: the activity must be valued in a person’s life, something that is enjoyed, and something in which the person invests time and energy. Because of the importance of passionate activities in the individual’s life, these activities are internalized into a person’s sense of self, and become integrated parts of their identity; people are not simply passionate about an activity, but the activity becomes part of who

¹ Interestingly, Richard Lazarus, the originator of the cognitive-motivational-relational theoretical model of stress and emotion, along with his wife Bernice, wrote a book entitled *Passion and Reason: Making sense of our emotions* (Lazarus & Lazarus, 1994). The authors use the term “passion” as a synonym for “emotion”, and provide a succinct historical account of the relationship between these two terms: “The Ancient Greek word for emotion was passion. Only in modern times has the word emotion been substituted for passion” (p. 199).

they are. The theoretical connection between passion and coping is rooted in this internalization process, and in the relationship between passion and self-determination theory.

1.2.3.1 Self-determination theory.

The internalization process of activities into the self is rooted in self-determination theory (SDT), an organismic-dialectic meta-theory of human motivation (Deci & Ryan, 1985). SDT is comprised of five mini-theories; however, the internalization process is primarily addressed within organismic integration theory (OIT). OIT explains the processes that are involved when extrinsically motivated activities are integrated into the self (Deci & Ryan, 2000; Ryan & Deci, 2002). Intrinsically motivating activities are those that are performed because they are inherently enjoyable for the individual, and those that are extrinsically motivating are performed to obtain a benefit or reward, or to avoid a punishment or aversive outcome.

OIT posits that people are capable of incorporating extrinsically motivating activities into their sense of self, and that this form of motivation can be categorized into four types, based on how the activity is regulated into the self. *External regulation* is the least autonomous form of extrinsic motivation, and involves being motivated by external contingencies, such as obtaining money, fame, or status, or avoiding an external punishment. *Introjected regulation* occurs when the behaviour has been somewhat internalized, but is controlled by internal contingencies, such as avoiding guilt, shame, or seeking self-esteem. The third form of extrinsic motivation is *identified regulation*, and is a more autonomous form of regulation that occurs when one values the activity and believes that it is personally important. Finally, *integrated regulation* is the most autonomous form of extrinsic motivation, and differs from intrinsic motivation in that the

activity is performed to obtain outcomes for the individual, and not solely for the sake of engaging in the activity. Thus, intrinsically and extrinsically motivating activities can be incorporated into the self; however, this process involves different types of regulation that range from those that are more controlled, such as external and introjected regulations, to those that are more autonomous, such as identified, integrated, and intrinsic regulation (Deci & Ryan, 2000).

A main theme that permeates SDT is that human motivation is influenced by three psychological needs that are provided by our environment: *autonomy*, which develops when one feels to be the origin of one's behaviour, *competence*, which refers to feeling effective in one's environment, and finally *relatedness*, which involves feeling connected to meaningful others (Ryan & Deci, 2000). According to OIT, providing these three needs can foster the development of autonomous forms of regulation, and environments that fail to provide these needs will thwart the autonomous regulation of extrinsically motivating activities.

1.2.3.2 The dualistic model of passion.

When Vallerand et al. (2003) introduced their new conceptualization of passion towards activities, they proposed the dualistic model of passion (DMP) which, based on SDT, states that two different types of passion can emerge, depending on how the activity is internalized into the self. *Harmonious passion* (HP) is argued to emerge when an activity is autonomously integrated into the self, and *obsessive passion* (OP) emerges when an activity is internalized into the self in a less autonomous, more controlled way. The conceptual nature of the DMP and its link with SDT is displayed in Figure 1.1.

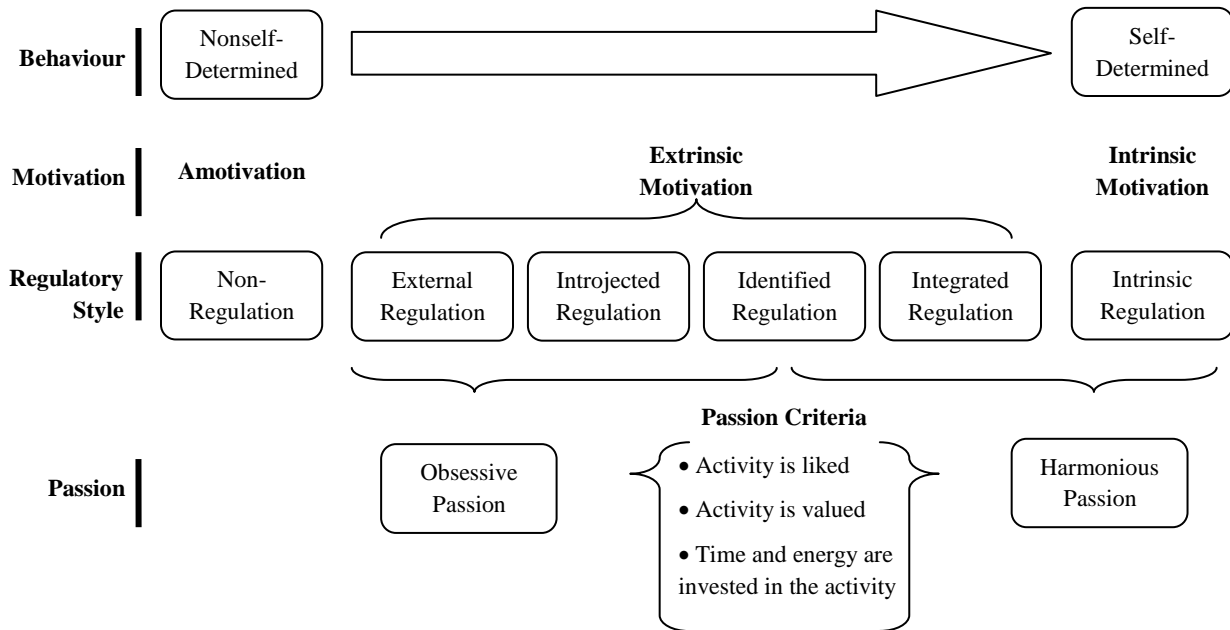


Figure 1.1. Relationship between organismic integration theory (OIT) and the dualistic model of passion (DMP). Adapted from Ryan and Deci (2002).

Harmonious passion. HP emerges when a passionate activity has been internalized into the self through autonomous forms of regulation, such as through integrated or intrinsic regulation. Because an individual freely accepts and integrates the activity into the self, it becomes an important, but not overpowering, component of the individual, and is in harmony with other aspects in the individual's life (Vallerand et al., 2003).

Obsessive passion. When an activity has been integrated into the self through controlled forms of regulation, such as through external or introjected regulation, OP is expected to emerge. Because external contingencies are attached to the activity, individuals do not freely choose to engage in these activities but feel compelled in order to obtain external or internal rewards or

avoid external or internal forms of punishment. Thus, unlike HP, OP involves the activity controlling the person, occupies a disproportionate amount of space in a person's identity, and conflicts with other aspects of the individual's life (Vallerand et al., 2003).

To demonstrate the difference between HP and OP, consider the experience of a passionate volleyball player (the athlete likes playing volleyball, values the role that volleyball has in her life, and spends time and energy playing volleyball). If the athlete had an OP, she may play volleyball because it provides her with a sense of social status, a sense of excitement, or scholarship money (external regulation), or she may play volleyball because she would feel guilt or shame if she were to discontinue, perhaps because she may feel that such an act may disappoint her teammates or coach (introjected regulation). Conversely, if the athlete had an HP, she may play volleyball because the activity is an important part of her sense of self and allows her to attain personally important outcomes (integrated regulation), or because she simply enjoys playing volleyball for its own sake (intrinsic regulation).²

Vallerand et al. (2003) proposed that the impact that a passion has in one's life depends if the passion is an HP or an OP.³ Those with an HP are more in control of the activity, and engage in the activity for more intrinsic reasons compared to those with an OP. Thus, when one has an

² If the athlete were to play volleyball to attain benefits that were personally important to her (such as the importance of learning and mastering a skill), she would be exhibiting identified regulation. As can be seen in Figure 1, this form of behavioural regulation lies on the central point that distinguishes between HP and OP, and the distinction between HP and OP is less clear when one exhibits this type of regulation. Thus, for the sake of clarity, this type of regulation was not incorporated into the above example.

³ Although it is common in the passion literature to refer to individuals as having "an HP" or "an OP", the two types of passion are not mutually exclusive. Indeed, individuals are not diagnosed as having one particular type of passion, but can engage in an activity with varying degrees of HP and OP. For illustrative purposes, this discussion will describe individuals as having "an HP" or "an OP", which refers to the most dominant form of passion an individual has for an activity.

HP, positive outcomes are predicted, such as increased positive affect. OP is predicted to be associated with negative outcomes such as negative affect and rigid behavioural persistence, as those with an OP engage in an activity for extrinsic reasons, may feel internal or external pressure to engage in the passionate activity, and may rigidly persist in the activity even if negative outcomes are experienced (Vallerand et al., 2003). For instance, if our volleyball player had an OP for volleyball, she may feel internal pressure to play volleyball, and may opt to play volleyball in lieu of more constructive alternatives (for instance, studying for an upcoming exam). In addition, because volleyball conflicts with other life domains, she may not be able to fully experience and be engaged while playing volleyball. However, if the athlete had an HP, she would freely engage in the activity without feeling internal or external pressure. Also, she would be better able to control her engagement in the activity, and would be more likely to resist the urge to play volleyball in order to pursue more important alternative activities, such as studying for an exam (Vallerand, 2010).⁴

⁴ An OP towards an activity may resemble an *addiction* towards an activity; indeed, although these two constructs are distinct according to the DMP, research suggests that there may be considerable overlap between OP and addiction. Philippe, Vallerand, and Lavigne (2009) offer three distinctions between OP and addiction. First, it is quite rare for an individual to have an addiction for a daily activity (such as sports, gardening, and playing the guitar). Second, addictions are typically towards substances, such as alcohol and drugs, and not towards an activity; again, an addiction towards an activity is quite a rare pathology (the authors confess that gambling might be an exception to this rule). Thirdly, and most importantly, those with an addiction no longer enjoy the addictive activity, while individuals with an OP enjoy and value the activity in their lives. However, Stenseng, Rise, and Kraft (2011) recently challenged the distinction between OP and addiction, and found a significant relationship between OP and a measure of activity addiction in a group of 194 passionate individuals (partial r [controlling for HP] = .65, $p < .001$). The researchers concluded that "...obsessive passion can be discussed in terms of psychological dependency, even when it is directed towards one's 'favourite activity'" (p. 55).

1.2.3.3 Research in passion and sport.

Research has explored passion for a variety of activities in numerous populations, such as in sports fans (Vallerand et al., 2008b), nurses (Vallerand, Paquet, Philippe, & Charest, 2010), teachers (Carbonneau, Vallerand, Fernet, & Guay, 2008), musicians (Bonneville-Roussy, Lavigne, & Vallerand, 2010), gamblers (Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005), drivers (Philippe, Vallerand, Richer, Vallières, & Bergeron, 2009), online gamers (Wang, Liu, Chye, & Chatzisarantis, 2011; Wang & Chu, 2007), online shoppers (Wang & Yang, 2007), office workers (Ho, Wong, & Lee, 2011; Forest, Mageau, Sarrazin, & Morin, 2010), and fantasy card game players (Mageau, Carpentier, & Vallerand, 2011). However, it is undeniable that many passionate activities are related to sport and exercise. In a sample of over 500 university students, 35% of passionate activities reported were related to individual sport and physical activity, such as jogging and cycling, and 26% of activities reported were related to team sports, such as playing basketball and hockey (Vallerand et al., 2003, Study 1). Thus, over 60% of the sample reported a passionate activity that was related to sport and exercise, which suggests that the concept of passion may be particularly relevant in the realm of sport and exercise.

Research has explored passion for activities related to sport and exercise, and the results have largely provided support for the DMP (for a review, see Vallerand, 2010). In general, research has found HP to be associated with positive outcomes, and OP to be associated with negative outcomes both while engaging in the passionate activity, and when prevented from participating in the activity. Research has found HP to be positively associated with many desirable outcomes and experiences in sport, such as positive affect (Mageau & Vallerand, 2007; Philippe, Vallerand, Andrianarisoa, & Brunel, 2009; Vallerand et al., 2003), positive

relationships (Lafrèniere, Jowett, Vallerand, Donahue, & Lorimer, 2008), and the ability to concentrate during an activity and experience the psychological state of flow (Vallerand et al., 2003, Study 1). Obsessive passion, on the other hand, has been associated with negative affect (Vallerand et al., 2003, Study 2), rigid persistence in exercise (Vallerand et al., 2003; Study 3), aggression (Donahue, Rip, & Vallerand, 2009), injury susceptibility (Stephan, Deroche, Brewer, Caudroit, & Le Scanff, 2009) and negative outcomes in sport fans, such as rumination about a game, missing important events to attend a game, arguments over a team, superstitious behaviour, difficulty concentrating on game day, relationship conflict, and hate emotions (Vallerand et al., 2008b).

One outcome that has been shown to be predicted by both HP and OP is performance (Li, 2010; Vallerand et al., 2007; Vallerand et al., 2008a). In a study involving dramatic arts students, Vallerand and colleagues (2007) found that both HP and OP were positively associated with deliberate practice, which was in turn positively related to school-related performance (as rated by school instructors). This study was supported by Vallerand and colleagues (2008a), who found that the same relationship existed between HP, OP, deliberate practice, and performance in a group of high school basketball players. Finally, when a group of 645 high school athletes from a variety of sports were asked to compare their performance to the performance of others their age, Li (2010) found both HP and OP to be positively associated with this subjective measure of sport performance. Although HP is typically associated with positive outcomes and OP with negative outcomes, both HP and OP appear to be positively associated with performance.

1.2.3.4 Passion and coping.

Little research has examined the relationship between passion and coping. In the single study on this topic, Rip, Fortin, and Vallerand (2006) examined coping with injury in a group of 81 university dancers. Based on semi-partial correlations, the authors determined that HP, when controlling for OP, was positively associated with information seeking and consulting with a professor, and negatively associated with ignoring the pain and hiding the injury. OP, when controlling for HP, was positively associated with ignoring the pain. The results of this study suggest that HP may be positively associated with problem- or task-oriented strategies and negatively related to avoidant strategies when coping with injury, while OP may be positively associated with avoidant coping strategies.

Despite the paucity of research on this topic, there remains a strong conceptual link between the passion that one has for an activity and the coping strategies used to manage situations appraised as stressful. This link is based on SDT where, as outlined earlier, the difference between HP and OP is rooted in the how the activity is internalized into the self: passionate activities that are autonomously internalized are predicted to produce HP, while those that are internalized in less self-determined, more controlled ways are predicted to produce OP (Vallerand et al., 2003; see Figure 1.1). Although little research has studied the passion-coping link, research has examined the relationship between self-determined motivation and coping (Amiot, Gaudreau, & Blanchard, 2004; Gaudreau & Antl, 2008; Knee, Patrick, Vietor, Nanayakkara, & Neighbors, 2002; Skinner & Edge, 2002; for a review in sport, see Amiot & Gaudreau, 2010). Overall, self-determined motivation has been found to be associated with coping strategies aimed at changing the problem or situation (problem-focused or task-oriented

coping), while nonself-determined motivation has been associated with coping strategies aimed at denying or ignoring the situation (avoidance or disengagement-oriented coping).

Research in sport has found support for the connection between self-determined motivation and coping. For instance, Amiot et al. (2004) studied a group of 129 athletes and measured, among other variables, their motivation towards sport and the coping strategies that were used during competition. They found that self-determined motivation was associated with task-oriented coping, which included strategies such as logical analysis, thought control, mental imagery, social support, and effort expenditure. Nonself-determined motivation was associated with disengagement-oriented coping, which included disengagement, emotional venting, and mental distraction strategies. A similar analysis was performed by Gaudreau and Antl (2008), who found that self-determined motivation was positively associated with task-oriented coping, while nonself-determined motivation was positively associated with both disengagement- and distraction-oriented coping.

Similar to the personality traits outlined earlier, an individual's passion for an activity represents a specific mix of goals, beliefs, and personal resources that may influence the stress and coping process (Lazarus, 1999). The goals of individuals with an HP may be more intrinsic in nature, as those with an HP participate in activities to experience their inherent qualities. Individuals with an OP, on the other hand, may have more extrinsic goals such as achieving desirable or avoiding less desirable outcomes (Li, 2010; Vallerand et al., 2007; Vallerand et al., 2003). The belief systems about the self and world may also differ between individuals with an HP and individuals with an OP. Research has found that individuals with an OP derive more of their sense of self and global self-esteem from their passionate activity, and place a higher value

on specializing in one activity rather than pursuing multiple activities compared to individuals with an HP (Mageau et al., 2009; Stenseng & Dalskau, 2010). Finally, the personal resources of those with an HP or OP may differ. For instance, a number of studies have shown HP to be associated with higher quality interpersonal relationships when compared to OP (Lafrèniere et al., 2008; Seguin-Levesque, LaLiberte, Pelletier, Blanchard, & Vallerand, 2003; Philippe, Vallerand, Houliort, Lavigne, & Donahue, 2010), suggesting that personal resources relating to social support may be more available in those with an HP compared to those with an OP. Therefore, based on theoretical and empirical connections that have been established between passion, motivational orientation, and coping, it is likely that the type of passion one has for an activity represents a person-related variable that influences coping in sport.

1.2.4 Burnout in Sport

An important outcome related to the stress process in sport is burnout (Hoar et al., 2006; Smith, 1986). Burnout in athletes is generally accepted as a multidimensional construct involving three facets: *emotion/physical exhaustion*, involving feelings of emotional and physical fatigue resulting from excessive demands, *reduced sense of accomplishment*, consisting of feelings of inefficacy and a negative evaluation of sport performance and achievements, and *sport devaluation*, characterized by a negative, detached attitude towards sport (Raedeke & Smith, 2009). The consequences of experiencing burnout can be quite detrimental to one's physical and psychological health and well-being (Gustafsson, Kentä, & Hassmén, 2011; Melamed, Shirom, Toker, Berliner, & Shapira, 2006), and can result in withdrawal from sport (Weinberg & Gould, 2007).

Research with athletes has identified numerous potential environmental demands that may lead to burnout, such as pressure to perform, work and school demands, low autonomy, insufficient recovery, injury, lack of social support, and training demands (Cresswell & Eklund, 2006; Gustafsson, Hassmén, Kenttä, & Johansson, 2008; Raedeke, Lunney, & Venables, 2002). One type of stressor that may be particularly relevant in the development of burnout in high performance athletes are training demands. Gustafsson et al. (2008) conducted a qualitative study examining the factors that contributed to burnout in a group of burned-out athletes, and found that a major contributor to burnout were factors related to the demands of training. These results were supported in a qualitative analysis of rugby players, who also reported that heavy training loads contributed to burnout (Cresswell & Eklund, 2006). The role of training demands in the development of burnout may be explained by a number of factors associated with training in sport. Not only does training in sport involve physical and mental exertion, but training demands are often uncontrollable (e.g. imposed by a coach or trainer), conflict with other life domains (such as school or social life), and prevent athletes from obtaining sufficient recovery. These aspects of training demands have been identified as key factors in the development of burnout in athletes (Gustafsson et al., 2008).

A number of sport-related burnout theories have been developed (Gustafsson et al., 2011; Raedeke, 1997; Silva, 1990; Smith, 1986). All theories, however, conceptualize burnout as an extreme outcome that results from ineffective adaption to training or insufficient recovery (Goodger, Gorley, Lavalee, & Harwood, 2007), and most theories maintain that the development of burnout is related to the stress process (Kelley, 1994; Raedeke & Smith, 2004). For instance, Smith's (1986) cognitive-affective model of athlete burnout views burnout as an outcome related

to stress process involving environmental demands, person factors, cognitive appraisal, and coping responses. Given the link between burnout and the stress process, coping may play a vital role in the development of burnout.

1.2.4.1 Coping and burnout.

A number of studies in sport have examined the relationship between coping and burnout. Raedeke and Smith (2004) examined burnout and coping in a group of swimmers and found that individuals who reported engaging in a variety of coping behaviours, such as time management and relaxation, experienced less burnout, and that this relationship was mediated by less perceived stress. In a study examining the *types* of coping behaviours that may be associated with burnout, Gould, Udry, Tuffey, and Loehr (1996) examined the use of coping strategies in a group of tennis players that were identified as being “burned out”. Individuals who suffered from burnout were found to use less planning and less positive reinterpretation and growth coping strategies compared to a comparison group of tennis players who did not suffer from burnout. Recently, Hill, Hall, and Appleton (2010) examined how athletes typically coped with stress in sport, known as one’s coping *style*. They found that problem-focused coping was negatively associated with the development of burnout, while avoidant coping was positively associated with burnout.

Research in domains unrelated to sport, such as in teachers, caregivers, and drug service workers, has been more extensive in exploring the relationships that different coping styles have with burnout (Carmona, Buunk, Peiró, Rodríguez, & Bravo, 2006; Maslach, Schaufeli, & Leiter, 2001; Narumoto et al., 2008; Reissner et al., 2010). Results of these studies have generally

found that direct, problem-focused coping actions are negatively related with burnout, while passive, avoidance coping actions are positively related to burnout. For example, Carmona et al. (2006) examined the relationship between direct coping styles (involving rational, task-oriented coping behaviour) and palliative coping styles (involving avoidant or ignoring behaviour) on burnout at two time points in a group of 558 teachers. Direct coping styles were negatively related burnout at both time points, while palliative coping styles were positively related to burnout at the first time point. This research, coupled with research in sport, suggests that coping behaviours and styles are related to burnout, with burnout being negatively associated with problem- or task-oriented forms of coping, and positively associated with avoidance or emotion-focused coping.

1.2.4.2 Passion and burnout.

Research has also examined the relationship between passion and burnout; however, this topic has yet to be studied in sport (Carbonneau et al., 2008; Tassell & Flett, 2007; Vallerand et al., 2010). Two empirical studies have been conducted examining the passion-burnout link in teachers and nurses. Carbonneau and colleagues (2008) conducted a longitudinal study with 494 teachers over a 3-month period, and found that increases in HP throughout the academic year were associated with decreases in burnout, whereas OP was found to be unrelated to burnout. Recently, the mechanisms through which passion affects burnout were examined in a set of studies with nurses (Vallerand et al., 2010). The researchers hypothesised that satisfaction with work and life conflict would act as mediators in the passion-burnout relationship. The results of two studies revealed that HP positively predicted satisfaction with work and negatively predicted life conflict, while OP positively predicted life conflict. Work satisfaction, in turn, was

negatively related to burnout while life conflict positively predicted burnout. Although the results of this study were promising, the authors cautioned that this model of the passion-burnout relationship only accounted for a low to moderate amount of the variance in burnout, and that other variables must be at play in this relationship. In addition, the authors chose to measure only the emotional/physical exhaustion dimension of burnout; thus, the results may not be able to generalize to other dimensions of burnout.

Tassell and Flett (2007) made a theoretical argument regarding how OP may lead to burnout among humanitarian workers. The authors made four arguments for their case. First, individuals with an OP, due to their lack of autonomy, may perceive their work environment as stressful, conflicting, and depressing. Next, they argued that individuals with an OP may rigidly persist in their work despite this negative perception of their working environment. Thirdly, since the activity is internalized in a more controlled way, the authors argued that the work may not be congruent with the individual's identity, which may result in decreased work engagement. Finally, the authors argued that OP will result in a reduced feeling of accomplishment resulting from the humanitarian work failing to reflect the individual's true identity.

Based on these empirical and theoretical arguments, it is likely that passion is related to burnout in sport. For instance, in line with the arguments of Tassell and Flett (2007), an athlete with an OP may suffer from burnout as a result of the athlete's increased perceived stress, rigid persistence, incongruent relationship with sport, or from sport failing to reflect the athlete's true identity. Also, in line with the research of Vallerand et al. (2010), sport may conflict with other activities in the lives of those with an OP, contributing to burnout. Conversely, athletes who are harmoniously passionate may experience more satisfaction in their sport, protecting them from

burnout. These are all plausible mechanisms that could explain the passion-burnout relationship in sport; however, one mechanism that must be considered is coping. Empirical research and the conceptual link between the DMP and SDT suggests that individuals with an HP and OP may differ in the way they cope with stress, and as was discussed earlier, burnout may be related to certain types of coping styles. Thus, coping is a plausible mediating mechanism that deserves consideration in the passion-burnout relationship.

1.2.5 Goal Attainment in Sport

In addition to burnout, another important outcome related to the stress process is the attainment of desired goals in sport. Goal attainment is not only related to the stress process, but is central in the study of achievement motivation (Elliot & Fryer, 2008; Lazarus, 1999; Roberts, 1992). Most motivational theories rely on competence as a key component of behavioural change; individuals strive to achieve competence in the activities that they pursue (Bandura, 1997; Deci & Ryan, 2000; Elliot & Church, 1997; Elliot & Dweck, 2005).⁵ The goal of achieving competence in these activities, such as in sport, depends on how one defines competence and what competence means to the individual (Gaudreau & Amiot, 2009; Nicholls, 1984). Achievement goal theory (Duda, 2001; Nicholls, 1984) is a framework that organizes how individuals define competence into two orientations. Performance-goal orientations involves defining success as outperforming others and achieving outcome-related goals, such as gaining wealth, social status, or winning competitions. On the other hand, mastery-goal orientations define success as improving at a task over time, and viewing participation in an

⁵ In fact, not only do Elliot and Dweck (2005) assert that competence "...be considered the conceptual core of the achievement motivation literature" (p. 5), but also hope that the term "competence motivation" will one day replace the term "achievement motivation".

activity as an opportunity for mastery and growth (Ames, 1992; Mack, Sabiston, McDonough, Wilson, & Paskevich, 2011). Researchers have argued that, within mastery-oriented goals, a differentiation should be made between *mastering* a task and *improving* at a task (Gaudreau & Amiot, 2009; Gaudreau & Antl, 2008). Indeed, one can certainly improve in a specific skill or technique in sport, but fail to achieve mastery. Thus, these two types of goal-orientations have been distinguished, and a tripartite model of achievement goals has been proposed where one can pursue and attain performance goals, mastery goals, and self-improvement goals (Gaudreau & Antl, 2008).

The path from goal setting to goal achievement, referred to as the *conative process*, has been explored in achievement domains (Sheldon & Elliot, 1999). The aim of this process, goal attainment, requires the individual to devote psychological and physical resources towards goal pursuit, and has the potential to positively impact one's experience in achievement settings (Sheldon, 2002). Research in sport has found support for a connection between goal attainment and positive experiences in athletes, such as the experience of positive affect and emotions (Gaudreau & Blondin, 2004; Gaudreau, Blondin, & Lapierre, 2002; Graham, Kowalski, & Crocker, 2002), and life satisfaction (Gaudreau & Antl, 2008).

1.2.5.1 Goal attainment and coping.

Pursuing goals in sport often involves overcoming a variety of obstacles and challenges, meaning that athletes are often required to engage in coping to manage these demands. Indeed, research has linked coping with goal attainment in sport (Gaudreau & Antl, 2008; Gaudreau & Blondin, 2004, 2002; Hoar et al., 2006, Smith, Ntoumanis, Duda, & Vansteenkiste, 2011). Gaudreau and Blondin (2004) conducted a study with a group of 144 adolescent male golfers,

and asked the participants to report their coping behaviours and subjective goal attainment following the first round of a provincial golf tournament. The researchers found that perceived levels of global goal attainment was positively associated with task-oriented coping, negatively related to disengagement-oriented coping, and unrelated to distraction-oriented coping. These findings were replicated by Gaudreau and Antl (2008) and Smith and colleagues (2011), who studied athletes from a variety of sports and competitive levels, and recently by Chartier, Gaudreau, and Fecteau (2011), who examined academic goal attainment. Thus, it appears that goal attainment in sport, when measured globally, is related to coping behaviours, where individuals who engage in more task-oriented coping perceive higher goal attainment, while those who cope by disengaging from the activity perceive less goal attainment.

1.2.5.2 Goal attainment and passion.

Research has yet to explore the relationship between passion and goal attainment in sport; however, research has examined passion in relation to the achievement goals that individuals pursue. Vallerand and colleagues (2007) examined passion and academic goal attainment in a group of undergraduate psychology students, and found that HP positively predicted adopting mastery goals, while OP predicted mastery, performance-approach (demonstrating ability relative to others), and performance-avoidance goals (avoiding exposing incompetence or flaws to others). These results were later replicated in a group of water-polo and synchronized swimming athletes (Vallerand et al., 2008a). Li (2010) examined passion and approach/avoidant forms of achievement goals in a group of high school athletes, and found that HP positively predicted mastery-approach goals while OP predicted mastery-approach and performance-approach goals. Thus, research has found a connection between passion and the

goals individuals pursue; however, whether these goals were attained or not has yet to be addressed in the literature.

Although the connection between passion and goal attainment has not been established, it is likely that these two variables are related. For instance, passionate individuals are characterized by the enjoyment, value, and time and energy they expend on the activity (Vallerand et al., 2003). Considering the role that effort and goal commitment play in goal attainment (Locke & Latham, 2002; Sheldon & Elliot, 1999), individuals with a passion for an activity, whether it is an HP or an OP, are highly engaged and committed towards the pursuit of goals and devote a considerable amount of energy towards this pursuit. Thus, passion for an activity may contribute to the attainment of goals, regardless if the passion is harmonious or obsessive. Also, both HP and OP have shown positive associations with performance (Vallerand et al., 2007; Vallerand et al., 2008a). Performance in sport has the potential to enhance goal attainment in two ways. First, most goals in competitive sport are performance-related, allowing improved performance to be a key contributor to goal attainment (Gaudreau & Amiot, 2009). Second, improved performance can contribute to one's self-efficacy (Bandura, 1997), which can enhance goal commitment (Lock & Latham, 2002). Thus, due to the enhanced performance and "passion" that individuals with an HP and OP have towards their sport, it is plausible that both HP and OP are positively associated with goal attainment.

1.2.6 Summary

The preceding literature review outlined research related to coping, passion, burnout, and goal attainment in sport. First, coping as a component of the stress process was discussed,

including discussions on process and dispositional approaches to coping, and the different taxonomies that have been used to categorize coping strategies into higher-order functions. Second, an overview of the concept of passion towards activities was provided, along with a review of empirical research conducted in the area of passion, and a conceptual argument regarding how passion may be a person-related variable linked with coping. Finally, burnout and goal attainment, two stress-related outcomes, were outlined and connections with coping and passion were reviewed.

1.3 RESEARCH QUESTIONS AND HYPOTHESES

The aim of this study was to examine the relationships between types of passion and both burnout and goal attainment in sport, and test if coping mediated the passion-burnout and passion-goal attainment relationships. More specifically, seven research questions were proposed that concerned relationships between these variables; these questions and their associated hypotheses are described below, and are displayed in Figure 1.2.

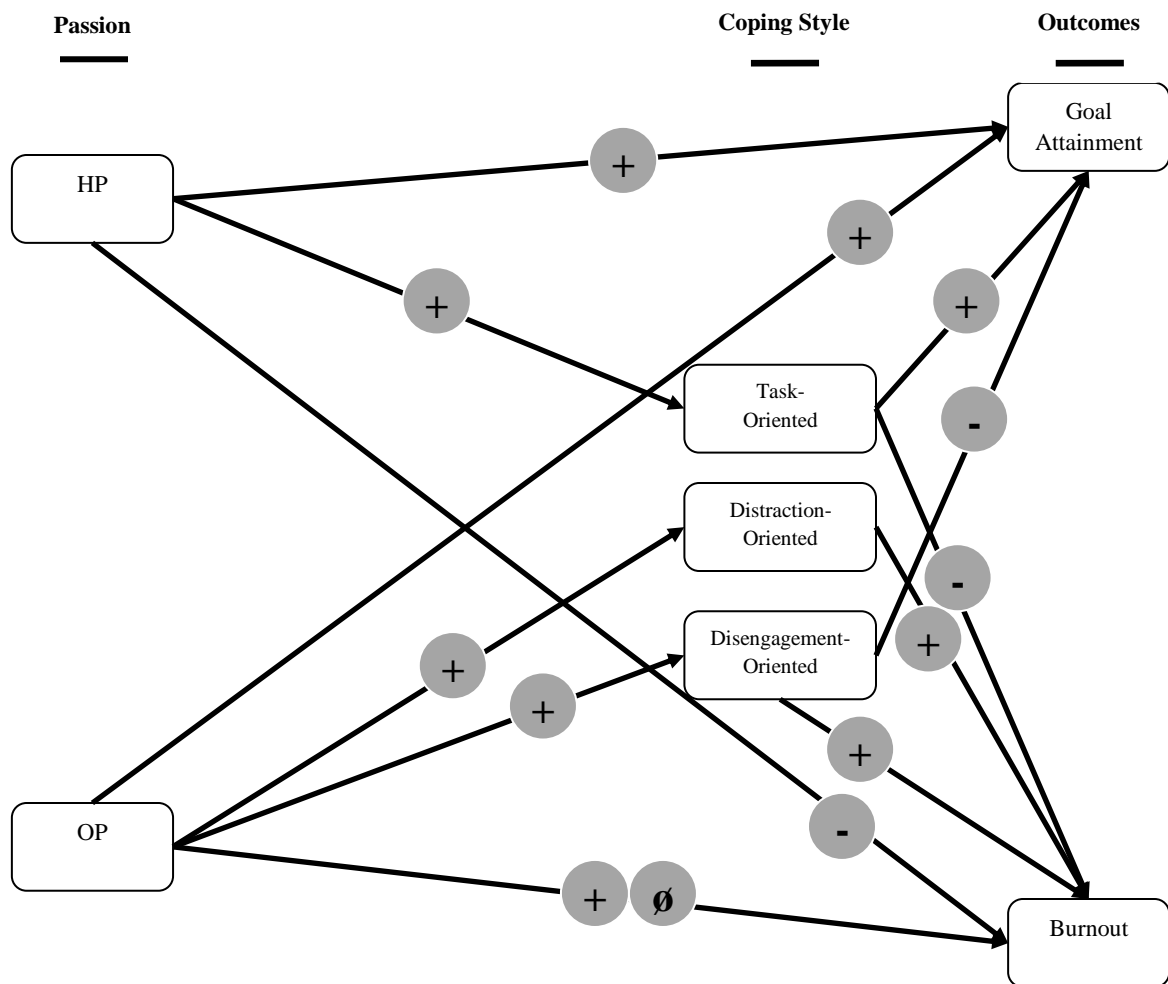


Figure 1.2. Hypotheses regarding differential associations of harmonious (HP) and obsessive (OP) passion with coping, burnout, and goal attainment.

1. What is the relationship between passion and coping in sport?

Based on empirical research examining passion and coping (Rip et al., 2006), the conceptual link between passion and SDT, and the empirical relationship that has been established between SDT and coping (see Amiot & Gaudreau, 2010), HP was expected to be positively related to task-oriented coping (hypothesis 1a), and OP was expected to be positively related to both distraction-oriented coping (hypothesis 1b) and disengagement-oriented coping (hypothesis 1c).

2. What is the relationship between passion and burnout in sport?

Based on prior research that has explored the passion-burnout relationship (Carbonneau et al., 2008; Tassell & Flett, 2007; Vallerand et al., 2010), HP was expected to be negatively related to burnout (hypothesis 2a), and OP was expected to be either positively related, or unrelated to burnout in sport (hypothesis 2b).

3. What is the relationship between coping and burnout?

Based on research conducted in domains related to sport (e.g. Gould et al., 1996; Hill et al., 2010), and unrelated to sport (e.g. Carmona et al., 2006), task-oriented coping was predicted to be negatively related to burnout (hypothesis 3a), and both distraction- and disengagement-oriented coping were expected to be positively related to burnout (hypothesis 3b and 3c, respectively).

4. Is the relationship between passion and burnout mediated by coping?

Due to the relationships that were expected to exist between passion, coping, and burnout, the relationship between both HP and OP and burnout was predicted to be mediated by coping. Thus, in accordance with hypotheses 2a and 2b, if a direct relationship was found between burnout and either HP or OP, this direct relationship would be attenuated once coping was accounted for in the analysis. Specifically, the relationship between HP and burnout was expected to be mediated by task-oriented coping (hypothesis 4a), while the relationship between OP and burnout was expected to be mediated by both distraction-oriented coping (hypothesis 4b) and disengagement-oriented coping (hypothesis 4c).

5. What is the relationship between passion and goal attainment?

Research has yet to examine the link between passion and goal attainment. However, as argued earlier, the enhanced performance and “passion” that individuals with an HP and OP have towards their sport may facilitate the attainment of goals. Thus, both HP and OP were predicted to be positively associated with goal attainment in sport (hypotheses 5a and 5b, respectively).

6. What is the relationship between coping and goal attainment?

Based on prior research (Gaudreau & Antl, 2008; Gaudreau & Blondin, 2004), goal attainment was expected to be positively related to task-oriented coping (hypothesis 6a), negatively related to disengagement-oriented coping (hypothesis 6b), and unrelated to distraction-oriented coping (hypothesis 6c).

7. Is the relationship between passion and goal attainment mediated by coping?

Hypotheses 5a and 5b expected positive relationships between both types of passion and goal attainment. OP, however, was predicted to be positively associated with disengagement-oriented coping (hypothesis 1c), and this type of coping style was predicted to be *negatively* related to goal attainment (hypothesis 6b). Thus, the direct effect between OP and goal attainment was expected to be suppressed by the relationship between OP and disengagement-oriented coping (hypothesis 7a). Suppression occurs when the relationship between an independent variable and the dependent variable strengthens when a third variable (the suppressor) is included in the analysis (MacKinnon, Krull, & Lockwood, 2000; Shrout & Bolger, 2002). MacKinnon et al. (2000) provide an explanation of the role of suppression in mediation analyses:

In the mediational context, the relationship [between an independent and dependent variable] is reduced because the mediator explains part or all of the relationship because it is in the causal path between the independent and dependent variables. In confounding, the relationship is reduced because the third variable removes distortion due to the confounding variable. However, it is possible that the statistical removal of a mediational or confounding effect could increase the magnitude of the relationship between the independent and dependent variable. Such a change would indicate suppression. (p.174)

Therefore, disengagement-oriented coping was expected to suppress the relationship between OP and goal attainment, meaning that the relationship between these two variables was expected to strengthen when disengagement-oriented coping was included in the analysis.

Suppression was not expected in the relationship between HP and goal attainment, as HP was expected to be related to task-oriented coping, which in turn was expected to be positively associated with goal attainment. Therefore, the relationship between HP and goal attainment was predicted to be mediated by task-oriented coping (hypothesis 7b). Thus, the relationship between HP and goal attainment was expected to be attenuated once task-oriented coping was considered as a mediating variable in the analysis.

CHAPTER 2 - Methodology

2.1 METHODOLOGY

2.1.1 Participants

2.1.1.1 Determining sample size.

G*Power software was used to conduct a power analysis to predict the total sample size required for the data analysis in this study. Using conventional levels for regression analysis outlined by Miles and Shevlin (2001), the following parameters were entered: effect size = .10, power = .80, and an alpha level = .0025 (a conservative Bonferroni correction was made to an alpha level of .05, as it was expected that approximately 20 statistical tests would be conducted in this study). The results of this power analysis yielded a required sample size of $N = 155$. A more stringent level of power (.90), yielded a required sample size of $N = 191$.

As this study involved two time points (T1 and T2), a sample size of 400 at T1 was targeted to ensure that a minimum of 200 participants participated at both time points. Thus, a retention rate of at least 50% was expected, because, although similar methods using paper-based questionnaires at two time points have yielded slightly lower retention rates (40%; Vallerand et al., 2010), the online administration at T2 was expected to enhance retention rates. Also, in a comparison of web- and paper-based questionnaire administrations, Greenlaw and Brown-Welty (2009) found that web-based questionnaires had higher response rates (53.46%) and were more cost efficient (US \$0.64/response) compared to the response rate (42.03%) and cost (US \$4.78/response) associated with paper-based administrations. Finally, since participants were

administered a paper-based questionnaire at the first time point, this personal contact with the researcher was anticipated to enhance the response rate at T2.

2.1.1.2 Description of participants.

Four hundred and thirty-eight college- and university-level volleyball players participated in the first phase of this study, and 239 male ($n = 113$) and female ($n = 126$) athletes provided complete data at both time points. A specific sport, volleyball, was chosen to reduce variability related to training demands that differ as a function of sport type. Collegiate volleyball players were recruited because research has found that the proportion of passionate individuals in expert performers tends to be greater than in intermediate and novice performers (Mageau et al., 2009). Athletes were eligible to participate in the study if they were actively training with a college- or university-volleyball team, and were enrolled at that university. The majority of participants (90.80%) identified as being white. Other demographic information such as age, gender, years playing volleyball, and years playing volleyball at the college or university level was collected; a summary of this information is presented in Table 2.1.

Table 2.1

Demographic information

Variable	Total			Males			Females		
	College (<i>n</i> = 117)	University (<i>n</i> = 122)	Total (<i>n</i> = 239)	College (<i>n</i> = 50)	University (<i>n</i> = 63)	Total (<i>n</i> = 113)	College (<i>n</i> = 67)	University (<i>n</i> = 59)	Total (<i>n</i> = 126)
Age	19.69 (1.88)	19.83 (1.67)	19.76 (1.77)	19.94 (1.96)	19.98 (1.77)	19.96 (1.85)	19.51 (1.81)	19.66 (1.54)	19.58 (1.69)
Years in Volleyball	8.35 (2.30)	8.45 (2.61)	8.40 (2.46)	8.01 (2.67)	8.21 (2.64)	8.12 (2.65)	8.60 (1.96)	8.71 (2.57)	8.65 (2.26)
Collegiate Years in Volleyball	2.23 (1.25)	2.71 (1.41)	2.47 (1.35)	2.29 (1.29)	2.78 (1.43)	2.56 (1.39)	2.18 (1.22)	2.63 (1.39)	2.39 (1.31)

Note. *N* = 239. Means are reported (standard deviations in parentheses).

2.1.2 Measures

2.1.2.1 Passion.

Passion was measured with the Passion Scale (Vallerand et al., 2003; Vallerand, 2010; see Appendix E, section 1). The Passion Scale is a 16-item questionnaire consisting of three subscales measuring HP (6 items; e.g. “This activity is in harmony with the other activities in my life”), OP (6 items; e.g. “I have difficulties controlling my urge to do my activity”), and the passion criteria (4 items; e.g. “I spend a lot of time doing this activity”). Items on the Passion Scale were altered slightly to make them more specific to volleyball. For instance, item 14 was changed from “I like this activity” to “I like volleyball”. Items were presented in a Likert-like format, ranging from 1 (*not agree at all*) to 7 (*very strongly agree*). Items from the HP and OP subscales were averaged to create an HP and OP score for each participant, while items measuring the passion criteria were used to determine if individuals were “passionate” towards volleyball. Based on the passion criteria outlined by Vallerand et al. (2003), and previous research on passion (e.g. Philippe et al., 2010), individuals who scored 4 or higher on each of the four items measuring the passion criteria were considered passionate and included in the analysis.

Research using the Passion Scale has provided evidence for the validity and reliability of the test scores. Assessments of the internal consistency of scores derived from the Passion Scale have typically yielded Cronbach’s alpha levels between .75 and .90 for both the HP and OP subscales (Vallerand et al., 2006). Test-retest reliability (with a four-week interval) was also assessed in a version of the Passion Scale adapted for gamblers, which yielded strong

correlations for the HP ($r = .83$) and OP ($r = .82$) subscale scores (Rousseau, Vallerand, Ratelle, Mageau, & Provencher, 2002). Similar test-retest correlations for HP ($r = .80$) and OP ($r = .88$) were found using a three-month interval in a sample of teachers (Carbonneau et al., 2008). Confirmatory factor analysis has also supported the two-factor structure of scores derived from the Passion Scale (Lafrèniere et al., 2008; Vallerand et al., 2003; Vallerand et al., 2006). Validity evidence based on the relationships between test scores and theoretically related variables has also been provided, as many of these relationships have been in agreement with the DMP (Vallerand, 2010). In the current study, Cronbach's alpha levels of internal consistency for the HP and OP subscale scores at T1 and T2 ranged from .72 to .81 (see Table 3.1), and the correlations between T1 and T2 for HP and OP were .47 and .65, respectively (see Table 3.2).

2.1.2.2 Coping style.

This study approached coping from a dispositional perspective and measured individuals' coping *styles*. Based on recommendations offered by Aldwin (2007), a style measure of coping was used because of the nature of the study research questions, which addressed two long-term outcomes in sport: goal attainment and burnout. As recommended by Aldwin (2007), measuring coping style can address how an individual *typically* copes with specific types of stress, which is the most appropriate approach to adopt to answer this study's research questions, rather than measuring how an individual copes in a specific stressful situation.

Coping style was measured using the Coping Inventory for Competitive Sport (CICS; Gaudreau & Blondin, 2002; see Appendix E, section 2). The CICS is a 39-item measure that measures 10 coping strategies organized into three higher-order dimensions of coping: task-

oriented coping (mental imagery, thought control, effort expenditure, logical analysis, relaxation, seeking support), disengagement-oriented coping (venting of unpleasant emotions and disengagement-resignation), and distraction-oriented coping (distancing and mental relaxation). Thus, the CICS measures coping from both micro (strategies) and macro (functions) perspectives. Items were presented in a Likert-like format, ranging from 1 (*does not correspond at all*) to 5 (*corresponds very strongly*). Coping strategy scores were computed by averaging the items measuring each strategy. Higher-order coping dimensions were computed by averaging the scores of the strategies that represented each higher-order coping dimension. Three coping strategy scale scores yielded Cronbach's alpha coefficients less than .60 (thought control, logical analysis, and distancing; see Table 3.1); due to these low levels of internal consistency, these scales were not included when computing higher-order scales.

In the initial development of the CICS, Gaudreau and Blondin (2002) evaluated the internal consistency of the subscale scores and provided Cronbach's alpha levels that ranged between .67 and .87. Similar levels have been reported in other studies (Gaudreau and Antl, 2008). Convergent validity evidence was provided in the initial development of the scale, as the CICS subscale scores were shown to be related to the corresponding subscales of two coping scales: the Ways of Coping Questionnaire and the Modified-COPE Inventory (Gaudreau & Blondin, 2002). Confirmatory factor analysis has also supported the three-factor structure of data derived from the CICS (Gaudreau & Blondin, 2002; Gaudreau, El Ali, & Marivain, 2005). Of the coping strategy scales included in the analysis, Cronbach's alpha levels ranged from .69 to .86 (see Table 3.1), and the correlations of the three higher-order coping dimensions between T1 and T2 ranged from .50 to .60 (see Table 3.2).

Participants were asked to indicate how they *typically* cope with the training demands associated with participating in volleyball at the collegiate level. Training demands were chosen as a specific stressor for three reasons. First, stressors related to competition may not be applicable to many athletes, as many collegiate-level athletes, while training, may not participate regularly in competitions. Second, training demands have been shown to be relevant to elite athletes, and has been identified as a stressor that may play an important role in the development of burnout (Cresswell & Eklund, 2006; Gustafsson et al., 2008). Finally, a specific type of stressor was chosen because coping styles have been argued to be influenced by stressor type (Anshel & Si, 2005; Lazarus, 1999).

The original CICS was designed to measure how athletes had coped during a specific competition; thus, a number of alterations to this measure were made. First, in order to better measure typical rather than specific coping responses, the tense of the items was changed from past tense to present tense. For example, item 1 was changed from “I visualized that I was in total control of the situation” to “I visualize that I am in total control of the situation”. Second, the term “competition” was replaced with the term “training demands”. For example, item 5 was changed from “I occupied my mind in order to think about other things than the competition” to “I occupy my mind in order to think about other things than the training demands”. Also, item 6 which originally read “I tried not to be intimidated by other athletes” was changed to “I try not to be intimidated by the training demands”. Next, rather than ask athletes how they had coped in a recent competition, athletes were asked how they typically manage the training demands associated with playing volleyball during the season. Finally, one item was omitted (“I analyze

the weaknesses of my opponents”) as this item was not applicable to coping with training demands.

2.1.2.3 Burnout.

Burnout was assessed using the Athlete Burnout Questionnaire (ABQ; Raedeke & Smith, 2009; see Appendix E, section 3). The ABQ is comprised of 3 five-item subscales measuring three dimensions of athlete burnout: emotional/physical exhaustion (e.g. “I feel so tired from my training that I have trouble finding energy to do other things”), reduced sense of accomplishment (e.g. “I am not achieving much in my sport”), and sport devaluation (e.g. “The effort I spend in my sport would be better spent doing other things”). Participants were asked to indicate how frequently they experience the content of each item. As recommended by Raedeke and Smith (2009) the words “my sport” were changed to “volleyball” to make the items more sport specific. Items were presented in a Likert-like format, ranging from 1 (*almost never*) to 5 (*almost always*). Participants’ scores for emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation were calculated by averaging the scores of the appropriate subscales (Raedeke & Smith, 2009). A global measure of burnout was calculated by averaging the scores from the three subscales of the ABQ. Global measures of burnout have been calculated in previous research, and this practice has been argued to be conceptually appropriate, as burnout is a syndrome consisting of multiple symptoms (Cresswell & Eklund, 2005). The correlations between the three subscales in this study ranged from .32 to .49 at T1, and from .38 to .57 at T2 (see Table 3.3).

Evidence relating to the reliability and validity of the ABQ test scores has been reviewed by Raedeke and Smith (2009). These authors reported that the Cronbach's alpha level of internal consistency of the ABQ typically ranges from .70 to .91 for the three subscales, and often these values exceed .80. Also, test-retest reliabilities were assessed in a group of athletes over a period of seven to nine days, yielding significant intraclass correlations for emotional/physical exhaustion ($r = .92$), reduced sense of accomplishment ($r = .86$), and sport devaluation ($r = .92$). Confirmatory factor analysis has supported the three-factor structure of data derived from the ABQ (Raedeke & Smith, 2009), and the ABQ subscales have been associated with theoretically related constructs, providing evidence for content validity (Raedeke & Smith, 2004; Raedeke & Smith, 2001). In this study, the Cronbach's alpha levels for the three subscales at both time points ranged from .79 to .93 (see Table 3.1). The correlations between T1 and T2 for the emotional/physical exhaustion, reduced sense of accomplishment, sport devaluation, and global burnout scales were .50, .64, .59, and .62, respectively (see Table 3.3).

2.1.2.4 Goal attainment.

Goal attainment was measured using the Attainment of Sport Achievement Goals Scale (A-SAGS; Gaudreau, Amiot, Blondin, & Blanchard, 2002, as cited in Gaudreau & Blondin, 2004; see Appendix E, section 4). The A-SAGS is a 12-item scale that contains 3 four-item subscales measuring three categories of goal attainment: mastery (e.g. "I executed my movements correctly"), self-improvement (e.g. "I did my best performance of the season"), and performance (e.g. "I showed that I am superior to other athletes"). Items of the A-SAGS are presented in a Likert-like format, ranging from 1 (*does not correspond at all*) to 7 (*corresponds completely*). In this study, the means of the three subscales were averaged to create a single

measure of global goal attainment; this procedure is consistent with previous research (Gaudreau & Antl, 2008; Gaudreau & Blondin, 2004).

Research conducted with the A-SAGS has provided evidence for validity and reliability. Cronbach's alpha levels of internal consistency for data derived from the three subscales of the A-SAGS have ranged from .86 to .93 (Gaudreau & Antl, 2008; Gaudreau & Blondin, 2004). The three-factor structure of scores derived from the A-SAGS has also been supported, as these three factors load significantly on a single factor of goal attainment (Gaudreau et al., 2002, as cited in Gaudreau & Blondin, 2004). This tripartite conceptualization of achievement goals has been shown to be superior to other bidimensional models (Gaudreau & Amiot, 2009). Interscale correlations between the three subscales have ranged from .52 to .81, which again supports the practice of using the three subscales of the A-SAGS as a measure of a single global variable representing goal attainment (Chartier et al., 2011; Gaudreau & Amiot, 2009; Gaudreau & Antl, 2008). In this study, Cronbach's alpha levels for the three subscale scores at both time points ranged from .65 to .92, and the interscale correlations between the three subscales ranged from .53 to .61 at T1, and from .66 to .69 at T2 (see Tables 3.1 and 3.4). Also, the correlations between T1 and T2 for the mastery, improvement, performance, and global goal attainment scales were .38, .21, .55, and .37, respectively (see Table 3.4).

The original version of the A-SAGS was designed to measure goal attainment during a past competition, and incorporated the stem, "During the last competition, I..." This stem was not appropriate for this study for two reasons. First, although it is assumed that all athletes participate regularly in team training activities, many athletes may not regularly participate in competitions. Second, since the A-SAGS was administered during the pre-season phase of the

year, it is likely that many teams had not participated in a volleyball competition at the time the A-SAGS was administered. To resolve this issue, the stem of the A-SAGS was changed to read, “During the past four weeks of training, I have been...” The term “training” was used to account for the two issues raised earlier, and the timeframe of four weeks was used because, (a) as the A-SAGS was administered approximately one month into the season and near the end of the season, this timeframe allowed an individual’s level of goal attainment at the beginning and end of the volleyball season to be measured and, (b) this timeframe allowed for a more overall measure of goal attainment to be assessed, which was more appropriate for this study as goal attainment was examined in relation to passion and coping style, which are two variables that were expected to be relatively stable dispositions.

2.1.3 Procedure and Design

Ethics approval was obtained from the University of British Columbia Behavioural Research Ethics Board prior to the commencement of this study. This study adopted a prospective design, and involved data collection at two time points. Two methods of data collection were used: a paper questionnaire, and an online questionnaire. Figure 2.1 displays a flow chart of the participants involved in the two phases of the study.

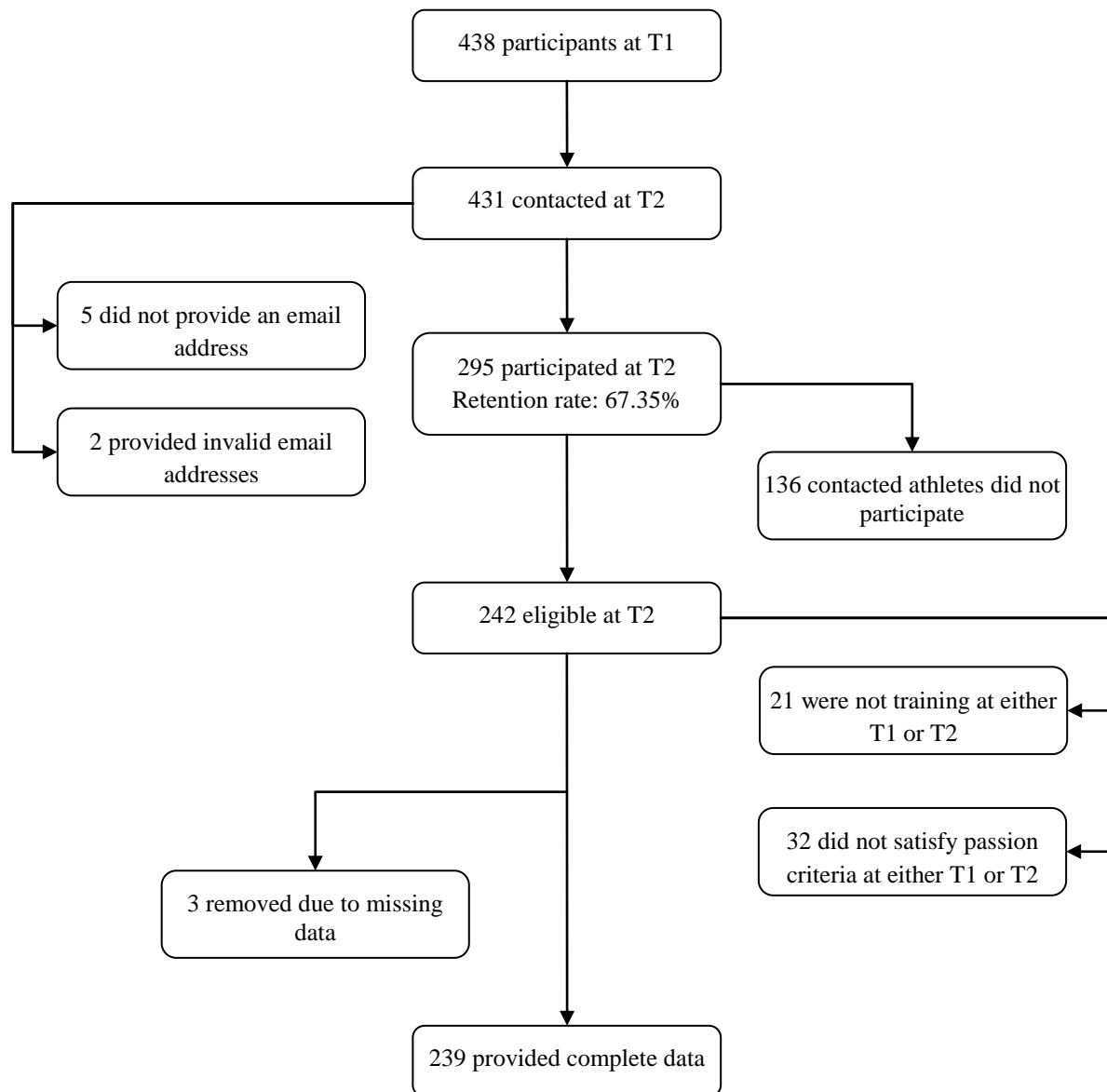


Figure 2.1. Responses received throughout both phases of the study.

2.1.3.1 Time-point 1 (T1).

Data collection at T1 took place in October of 2010, as volleyball training at the college and university level typically begins at the start of September, and collecting data after a month had elapsed in the season ensured that athletes had sufficient time to adjust to and experience the new season. In addition, allowing a month to elapse reduced the likelihood of collecting data during a potential “honeymoon” phase of the season (Boswell, Boudreau, & Tichy, 2005).

Athletes at T1 were recruited using two approaches. First, pre-season volleyball tournaments occurring in western Canada were targeted to recruit volleyball teams. The head coaches of teams participating at these tournaments were contacted via email and telephone to enlist their assistance in the recruitment process; coaches’ email addresses and telephone numbers were accessed through each team’s public internet website. During this initial contact, the purpose and nature of the study was explained to the coaches, and they were asked to facilitate a time during the tournament when the team as a whole could be asked to participate in the study (see Appendix A). Meetings with teams were held in classrooms, meeting rooms, changing rooms, and other quiet areas around tournament venues. During these meetings, which coaches did not attend, consent forms (see Appendix D) were distributed to the athletes and the purpose of the study was explained (for a script, see Appendix C). The T1 questionnaire was provided to those athletes who agreed to participate in the study. Using this procedure, 17 teams from four pre-season tournaments were approached to participate in the study.

The second approach used to recruit participants at T1 was to contact college and university volleyball teams directly; teams that were targeted from the areas near Vancouver, BC

and Winnipeg, MB.⁶ Using the same procedure described above, head coaches of college and university teams were contacted and asked to facilitate a time when the team as a whole could be approached to participate in the study (see Appendix A). Teams were approached before or after team practices, and meetings took place in classrooms, meeting rooms, and in gymnasiums. Using this approach, 18 teams were approached to participate in the study. In total, 35 teams were approached at T1 to participate in the study.⁷

T1 questionnaire. A “High Performance Volleyball Experiences Questionnaire” (HPVEQ; Appendix E) was distributed to athletes who agreed to participate in the study at T1. In order, the HPVEQ consisted of the following scales: the Passion Scale, CICS, ABQ, A-SAGS, and demographic questions. There were 88 total items in this questionnaire, and took approximately 10 minutes to complete. At the end of the questionnaire, participants were given an opportunity to provide an email address where they could be contacted for the second time-point of this study. As demonstrated in Appendix E (section 5), the purpose and confidentiality of the email addresses was emphasized.

⁶ Teams from the Vancouver, BC and Winnipeg, MB areas were recruited because these were two major cities that were accessible to the researcher.

⁷ To ensure that all athletes participating at pre-season tournaments and team practices had the opportunity to participate in the study (i.e., the opportunity to participate was not contingent on the ability or willingness of the head coach to facilitate a team meeting), recruitment posters were created. These posters were designed to be posted around tournament venues and practice facilities. However, all the coaches that were contacted were able to facilitate a time when teams could be approached about the study; thus, recruitment posters were not used in this study.

2.1.3.2 Time-point 2 (T2).

At T2, which occurred in the middle of January, 2011, participants from T1 who had provided an email address were contacted via email to participate in the second phase of the study. Time 2 occurred in the middle of January because this allowed sufficient time to collect data prior to the end each league's regular season, which typically ended in mid-February.

Participants were contacted directly via the email addresses provided at T1. The procedure that was used to contact participants at T2 was based on Dillman's (2007) Tailored Design Method, which involved contacting participants at multiple times. First, in mid-January, *pre-notice emails* were sent to athletes who had provided their email address at T1 that thanked them for their participation at T1, and informed them that a link to the T2 questionnaire would be emailed to them soon (see Appendix F). Three days later, *questionnaire emails* were sent to athletes (see Appendix G) that explained the purpose and the nature of the study, and contained an internet URL that linked to the online questionnaire. Weekly *reminder emails* were sent to individuals encouraging them to complete the T2 questionnaire (Appendix H), and for those who completed the questionnaire, *thank you* emails were sent that thanked individuals for their participation in both phases of the study (Appendix I).⁸ Dillman also recommends a final contact with each participant that is done using a different medium (e.g. telephone, priority mail); however, this was not done as email was the only way participants could be contacted in this study. Dillman reported that response rates for mail surveys range from 58% to 92%, with an average of 74%, and that the response rates for internet-based surveys are similar to these

⁸ More specifically, *pre-notice emails* were sent on January 21, 2011; *questionnaire emails* on January 24, 2011; and *reminder emails* were sent on January 31, February 7, February 14, and February 17, 2011. The final day of data collection at T2 was February 19, 2011.

figures. The retention rate between T1 and T2 obtained in this study, 67.35%, supports this contention.

T2 questionnaire Participants who provided their email addresses at T1 were sent an online version of the HPVEQ at T2.⁹ The first page of the HPVEQ displayed an online version of the informed consent page, and contained contact information for the principal and co-investigator, reminded the participants of the purpose and procedures of the study, addressed which athletes were eligible to participate in the study, and highlighted the potential benefits and risks of participating in the study. Participants were also reminded that their responses were confidential and would be stored using secure storage procedures. This consent page concluded by giving participants the opportunity to “continue to the questionnaire”. If a participant chose not to participate in the study, the participant was instructed to exit from the website.

If the participant chose to continue to the questionnaire, the participant was redirected to the online questionnaire. In order to match responses from T1 to those at T2, participants were first asked to provide their email address. After email addresses were provided, participants were linked to the online version of the HPVEQ which consisted of, in order, the Passion Scale, CICS, ABQ, A-SAGS, and finally, a page thanking the participant for taking part in the study. Athletes were also asked to indicate if they had not been training with their team for the past four weeks (e.g. due to injury), so that these participants could be excluded from the final analysis. There were 83 total items in this online questionnaire, and could be completed on any desktop or laptop computer, and also on most portable handheld devices that could access the internet, such

⁹ This online questionnaire was created using Edudata Canada, a University of British Columbia-based company that provides online data collection services. Edudata Canada provides a secure facility for storing personal information, and complies with British Columbia’s Freedom of Information and Protection of Privacy Act.

as an iPhone, iPod Touch, iPad, and Blackberry. This online questionnaire took approximately 10 minutes for the participants to complete.

2.1.4 Data Analysis

2.1.4.1 Steps of analysis.

Data analysis proceeded through five steps. First, data collected at T1 were entered into Microsoft Excel 2007 using the double data entry method (Kawado et al., 2002). Data were entered on two separate occasions, and an automated comparison of the two versions was performed to check for discrepancies; if differences between the two versions were found, data entry errors were corrected by referring to the original raw data. Data from T2 were imported to Microsoft Excel 2007 from the secure Edudata online database. Data files were exported to PASW Statistics 18 and Mplus 6.1 for subsequent analyses. Second, data were screened for missing values, outliers, and to apply exclusion criteria. Third, descriptive statistics and correlations were examined, including an analysis of the internal consistency of each subscale.

The fourth step involved examining the hypotheses of this study, which primarily involved the use of path analysis. Path analysis is a technique of structural equation modeling, and is based on correlation and multiple regression procedures (Kline, 2005). Path analysis was used because, (a) procedures based on multiple regression can examine the unique relationship between multiple independent variables and a dependent variable, which is an advantage over zero-order correlations as HP and OP are expected to be significantly correlated with each other, (b) the hypothesized causal ordering among variables can be examined, (c) it allows for the

direct relationships between variables to be assessed (hypotheses 1-3, 5, & 6), (d) mediating (indirect) relationships between variables can also be measured (hypotheses 4 and 7).

The variables examined in this study, in particular HP, OP, and coping styles, were expected to be relatively stable between T1 and T2; however, the results obtained suggested otherwise. Thus, in the final stage of data analysis, two methods were used to assess change between T1 and T2 on all measured variables. First, a mixed factorial MANOVA test was used to assess mean differences between both time points with sex (males and females) and level (university and college) entered as between-subjects factors, and time (T1 and T2) entered as a within-subjects factor. In addition, to assess how changes in the measured variables related to each other, residualized change scores were computed and used in correlation and regression analyses (Crocker et al., 2003; Zumbo, 1999).¹⁰ Each residualized change score was obtained by conducting a regression analysis with the T2 measurement entered as the dependent variable and the T1 measurement entered as the independent variable. The residual values from this analysis represent change in the variable that cannot be predicted from the initial value of the variable. Correlation, regression, and mediation analyses were used to assess how change in one variable

¹⁰ Another metric that can be used to represent change in analyses involving two time points are simple difference scores (i.e., T2-T1; Zumbo, 1999). Zumbo (1999) recommends the use of residualized change scores when the ratio of standard deviations from T1 and T2 are greater than the correlations between T1 and T2 for the measured variables. The ratios obtained in this study satisfy this requirement (see Appendix Q); thus, residualized change scores were used rather than simple difference scores.

Interpretation of residualized change scores is slightly different than interpretation of simple difference scores. Simple differences scores assess individual change between T1 and T2, while residualized change scores represent differences between T2 scores and *what would be expected* based on T1 scores (that is, do scores change more or less than expected). Because of these slight differences in interpretation, an additional set of analyses were conducted using simple difference scores. Results of these analyses were comparable to those performed with residualized change scores; thus, due to the recommendations provided by Zumbo (1999), residualized change scores were used.

related to change in another (see Mackinnon, Fairchild, & Fritz, 2007 and Selig & Preacher, 2009 for discussions of the use of change scores in mediation analyses).

All hypotheses were tested at $\alpha = .05$.¹¹ Prior to analyzing these tests, assumptions of linearity, normality, homoscedasticity, and multicollinearity were assessed by inspecting correlation matrices and residual scatterplots (Tabachnick & Fidell, 2007).

2.1.4.2 Testing mediation.

Mediation analysis is an important tool that can be used to assess the mechanisms through which independent variables affect dependent variables. Due to the utility of this procedure, a number of approaches have been developed to test for mediation. Perhaps the most common and well-known method is the regression-based *causal steps approach* (Baron & Kenny, 1986), which claims that mediation is present when four conditions are satisfied : (1) the independent variable significantly predicts the dependent variable (path c), (2), the independent variable significantly predicts the proposed mediator (path a), (3) the mediator, when controlling for the independent variable, significantly predicts the dependent variable (path b), and (4) the relationship between the independent and dependent variable (path c') becomes non-significant (full mediation) or weakens (partial mediation) when the mediator is included in the prediction of

¹¹ This alpha level was not adjusted using a bonferroni correction. Although this would reduce the chance of making a type I error, this adjustment would consequently result in an increased chance in making a type II error (both types of errors are equally wrong). See Perneger (1998) for a discussion of the disadvantages of using a Bonferroni adjustment.

the dependent variable.¹² Despite the popularity of this approach (Preacher & Hayes, 2008), this approach has been criticised for various reasons, including low statistical power, unnecessary steps, a reliance on multiple tests for a single mediation analysis, and an inability to test models that include multiple mediators (MacKinnon, Lockwood, Hoffman, West, & Sheets, 2002; Preacher & Hayes, 2004).

Recently, recommendations for testing mediation in social psychology were provided by Rucker, Preacher, Tormala, and Petty (2011). The authors' main recommendation is that mediation analyses should focus on the magnitude of mediation (that is, the strength of $a*b$), rather than on the direct relationships between independent and dependent variables (c and c' paths). The authors' first argument that mediation can be present without a significant c path (the first step of the causal steps approach) is not new, as this point has been argued elsewhere (see MacKinnon et al., 2000; Shrout & Bolger, 2002). However, ignoring the significance of c' paths in mediation analysis (the final step of the causal steps approach) is more controversial, since this is typically how "full" or "complete" mediation is differentiated from "partial" mediation. However, the significance of c' paths succumbs to the same limitations as other significance tests used when engaging in null hypothesis testing; this is, it is influenced by measurement error, effect size, and sample size. Also, the authors argued that differentiating between "full" and "partial" mediation simply by comparing c and c' significance values to a statistical threshold (most often, $p = .05$) and ignoring the magnitude of mediation is misguided.

¹² The a , b , c and c' paths in mediation analysis can be presented as either unstandardized or standardized regression coefficients. It should also be noted that the direct relationship between the independent and dependent variable (c) is the sum of the direct relationship between the independent and dependent variable when controlling for the proposed mediator (c') and the indirect relationship between the independent and dependent variable ($a*b$). That is, $c = a*b + c'$.

For example, a strong relationship between an independent and dependent variable (c path; e.g., $p < .001$) that weakens when the mediator is included in the analysis (c' path; e.g., $p = .06$) would be considered partial mediation; however, conventional practices would conclude full mediation if a direct relationship decreased from a $p = .04$ (c path) to $p = .06$ (c' path). In the former scenario, a strong mediating effect is present while the latter scenario portrays weak mediation; however, the labels “full” and “partial” fail to represent these effects accurately. This same argument was also made recently by Preacher and Kelley (2011).

Based on these recommendations, mediation was tested by focusing on the product of a and b paths. Two methods were used to assess the magnitude of these $a*b$ estimates. First, Sobel (1982) tests were conducted as a test of significance for $a*b$ estimates. The Sobel test estimates a standard error for each $a*b$ product, and the ratio of the $a*b$ estimates to the standard error yields a Z score, which can be compared to a critical Z value to test for significance. In addition to this traditional statistical testing procedure, bootstrapped estimates of $a*b$ values were computed (Preacher & Hayes, 2008). A main criticism of the Sobel test is that it assumes that $a*b$ values are normally distributed, an assumption that is often satisfied only in large samples (Preacher & Hayes, 2008). To remedy this limitation, bootstrapping can be performed where samples are repeatedly obtained from the data set and $a*b$ estimates are calculated. This resampling procedure is repeated many times (in the analyses conducted for this study, it was repeated 5000 times), and confidence intervals are calculated based on the $a*b$ estimates obtained. Although simulations have concluded that bootstrapping procedures yield higher power and more reasonable Type I error rates compared to Sobel tests (MacKinnon et al., 2002), both methods were used in order to provide a comprehensive analysis of the mediation effects.

As the results of these analyses demonstrate, the conclusions of one method were invariably supported by the other.

A final reason for using Sobel tests and bootstrapping procedures is that these methods allow both total and specific mediating effects to be examined. For instance, the specific mediating effect of task-, distraction-, and disengagement-oriented coping in the relationship between both HP (controlling for OP) or OP (controlling for HP) and a dependent variable (either burnout or goal attainment) can be tested by obtaining estimates based on their respective $a*b$ products. These estimates can be summed to obtain an estimate of the total mediating effect of the three coping styles. Thus, this allowed the analysis to address questions regarding both the total and specific mediating effects of coping between an independent and dependent variable. The latter question is most pertinent to the hypotheses that were tested, and cannot be examined by comparing c and c' paths.

A final recommendation offered by Rucker et al. (2011) is to consider suppression effects that may “cloak” the relationship between an independent and dependent variable (p. 17). Hypothesis 7a predicted that the relationship between OP and goal attainment would be suppressed by the relationship between OP and disengagement-oriented coping. Suppression was tested based on recommendations provided by MacKinnon et al. (2000), who stated that suppression is present when the sign of the $a*b$ estimate is opposite to that of the c path. Thus, for this analysis, $a*b$ estimates were compared to c values, and suppression was presumed if these values had opposite signs.

In addition to tests of statistical significance, effect sizes should be provided when reporting results of mediation analyses (Preacher & Kelley, 2011; Wilkinson, 1999). Recently, Preacher and Kelley (2011) provided recommendations for reporting effect sizes for mediation analyses, and outlined various existing and novel methods to compute effect sizes. Based on this discussion, $a*b$ estimates were reported as measures of effect size, and bootstrapped confidence intervals were provided (confidence intervals serve two functions: measures of effect size and measures of statistical significance). Although there are a variety of other options for reporting effect sizes in mediation analyses (see Preacher & Kelley, 2011), many of these methods are most appropriate for simple mediation designs. For the purposes of this study, standardized $a*b$ estimates were calculated as estimates of effect size, and can be interpreted as the magnitude of the change in the direct relationship between an independent and dependent variable when coping styles are included as mediators (i.e., the difference between c and c' paths).

2.1.4.3 Testing hypotheses.

The prospective design of this study allowed hypotheses to be tested in multiple ways. For example, the relationship between HP and burnout could be tested by examining results exclusively from either T1 or T2, or by using HP measured at T1 to predict burnout at T2. These options become even more overwhelming for mediation analyses, as four variations of time points can be examined (i.e., $T1 \rightarrow T1 \rightarrow T1$; $T2 \rightarrow T2 \rightarrow T2$; $T1 \rightarrow T1 \rightarrow T2$; $T1 \rightarrow T2 \rightarrow T2$). Each of these analyses answers slightly different questions. For instance, conducting three analyses to test the relationship between HP and burnout essentially answers the questions “is HP at T1 related to burnout at T1?”, “is HP at T2 related to burnout at T2?”, and “is HP at T1 related to burnout at T2?”

Taking into account these options, hypotheses were tested using T1 measures of independent variables and T2 measures of dependent variables. These particular time points were used because it allowed relationships to be assessed when independent variables preceded dependent variables in time, allowing these analyses to satisfy the temporal ordering prerequisite of causation (that is, X must precede Y in time; Munro, 2005). For hypotheses that addressed mediation (hypotheses 4 and 7), analyses were conducted with T1 measures of HP and OP (independent variables) and T2 measures of task-, distraction-, and disengagement-oriented coping (mediators) and burnout and goal attainment (dependent variables). This particular arrangement of time-points was used because it allowed HP and OP to precede the hypothesised mediators and outcome variables in time, again allowing the temporal ordering condition of causality to be satisfied between passion and coping, burnout, and goal attainment.¹³

However, correlations between T1 and T2 indicated that the variables measured in this study were less stable than originally expected. This instability provided an opportunity to use change scores as an additional method to test the study hypotheses. Conducting analyses with change scores allowed the relationships between changes in variables between T1 and T2 to be assessed. For instance, in addition to examining the relationship between HP at T1 and burnout at T2, conducting analyses with change scores answers the question: “is change in HP between T1 and T2 associated with change in burnout?” Essentially, are increases or decreases in HP associated with increases or decreases in burnout between T1 and T2? Analyses with change scores were not part of the original intended analyses; thus, these analyses were conducted *post hoc* after the originally planned analyses. It should be noted that the hypothesised relationships

¹³ Analyses were also conducted using data collected exclusively at T1 and T2; these analyses are presented in Appendices J through P.

between variables remained the same for analyses with change scores, but were expressed in units of change. For example, hypothesis 2a expected HP to be negatively associated with burnout; thus, for analyses with change scores, increases in HP were expected to be associated with decreases in burnout (and vice versa).

CHAPTER 3 - Results

3.1 RESULTS

3.1.1 Data Screening

Prior to formal analyses, data were screened to apply exclusion criteria, impute missing data, and remove outliers. The original sample consisted of 438 athletes at T1. Of these participants, 295 completed the questionnaire at T2; thus, this study had a 67.35% retention rate. Twenty-one participants indicated that they had not been training with their team (e.g. due to injury) at either T1 or T2 and were excluded from analysis. Also, 32 participants failed to score 4 or above on each item of the passion criteria at either T1 or T2 and were eliminated from analysis, as these individuals were not considered “passionate”. This protocol has been used in previous passion research (Mageau et al., 2005; Philippe et al., 2010; Vallerand et al., 2003; Vallerand et al., 2010). Within-person median replacement was used to replace missing values for participants with one missing value on a subscale; participants ($n = 3$) with more than one missing value on a subscale were excluded from analysis. At T1, 0.36% of data were missing, and at T2 1.92% were missing. Univariate and multivariate outliers were assessed by inspecting Z-scores and Mahalanobis distances, respectively; participants with a Z-score of ± 3.29 on a higher-order subscale ($n = 2$) were identified as potential univariate outliers, and one participant with a Mahalanobis distance greater than $\chi^2(5) = 20.515$ ($p < .001$) was identified as a potential multivariate outlier (Tabachnick & Fidell, 2007). The two univariate outliers were not removed from analysis, as a few participants with Z-scores that exceed 3.29 are expected with a large sample size (Tabachnick & Fidell, 2007), and the responses of these participants did not appear

atypical. The potential multivariate outlier was also retained in the analysis, as this participant's responses did not appear atypical and failed to suggest that this individual was not a member of the population being studied (Field, 2005; Tabachnick & Fidell, 2007). A final sample of 239 participants remained after data screening (see Figure 2.1).

Participants who completed both phases of the study were compared to those who completed only the first phase of the study. A MANOVA¹⁴ test was conducted with the following variables measured at T1 entered as dependent variables: HP, OP, task-, distraction-, and disengagement-oriented coping, global burnout and global goal attainment. Individuals who did not satisfy the passion criteria, training requirement, and with insufficient data were excluded from this analysis ($n_{\text{first phase only}} = 138$, $n_{\text{both phases}} = 282$), which yielded an $F_{(7, 412)} = 3.97$, $p < .01$, Wilk's $\lambda = .94$, $\eta^2_p = .06$. When univariate test statistics were examined, a statistically significant difference was obtained for distraction-oriented coping, $F_{(1, 418)} = 4.89$, $p = .03$, $\eta^2_p = .01$. Although statistically significant, the amount of difference between the two means ($\bar{x}_{\text{first phase only}} = 2.61$, $\bar{x}_{\text{both phases}} = 2.41$) and the weak effect size ($\eta^2_p = .01$) did not warrant any changes to the planned analyses or interpretations.

Correlations between study variables for male and female participants were compared using Fisher's Z transformations. To reduce the family-wise error rate, Z scores ± 2.56 ($p < .01$, two-tailed) were categorized as significantly different. The correlation between OP at T1 and disengagement-oriented coping at T2 for males ($r = .31$, $p < .01$) and females ($r = -.06$, $p = .50$)

¹⁴ Based on recommendations provided by Tabachnick & Fidell (2007), Wilks' λ was interpreted as the multivariate test statistic, although all test statistics provided by SPSS (Pillai's Trace, Hotelling's Trace, Roy's Largest Root) were identical since the within-subjects factor (time) had only two levels.

yielded a significant $Z = 2.82, p < .01$. However, because all other comparisons were not significantly different, analyses were conducted with males and females combined.

3.1.2 Descriptive Statistics and Correlations

Descriptive statistics for T1 and T2 subscales and higher-order scales were computed, and are presented in Table 3.1. Correlations between higher-order scales and change scores are presented in Table 3.2, while correlations between the burnout and goal attainment subscales are presented in Tables 3.3 and 3.4, respectively.

Table 3.1

Summary of descriptive statistics for study variables

	Range	<i>M</i>	SD	Skew SE = 0.16	Kurt SE = 0.31	α
Passion						
Harmonious Passion T1	1-7	5.58	0.69	-0.19	-0.57	.72
Harmonious Passion T2	1-7	5.10	0.91	-0.54	0.48	.80
Obsessive Passion T1	1-7	3.46	1.13	0.10	-0.64	.78
Obsessive Passion T2	1-7	3.03	1.18	0.48	-0.54	.81
Task-Oriented Coping						
Mental Imagery T1	1-5	3.84	0.71	-0.45	-0.14	.73
Mental Imagery T2	1-5	3.60	0.72	-0.28	-0.58	.74
Effort Expenditure T1	1-5	4.26	0.56	-0.42	-0.61	.73
Effort Expenditure T2	1-5	4.12	0.58	-0.23	-0.40	.80
Thought Control T1	1-5	3.74	0.61	-0.14	-0.60	.52
Thought Control T2	1-5	3.38	0.62	-0.39	0.61	.57
Seeking Support T1	1-5	3.51	0.74	-0.32	-0.32	.69
Seeking Support T2	1-5	3.17	0.83	-0.22	-0.66	.75
Logical Analysis T1	1-5	3.58	0.74	-0.23	-0.26	.54
Logical Analysis T2	1-5	3.28	0.71	-0.24	-0.12	.54
Relaxation T1	1-5	3.30	0.76	-0.00	-0.26	.76
Relaxation T2	1-5	2.99	0.87	0.32	-0.43	.86
Task-Oriented Coping T1	1-5	3.71	0.44	-0.19	0.04	---
Task-Oriented Coping T2	1-5	3.42	0.48	0.03	0.13	---
Distraction-Oriented Coping						
Distancing T1	1-5	2.41	0.56	0.22	-0.35	.41
Distancing T2	1-5	2.25	0.58	0.33	0.12	.59
Mental Distraction T1	1-5	2.35	0.80	0.29	-0.45	.79
Mental Distraction T2	1-5	2.19	0.79	0.31	-0.65	.81
Distraction-Oriented Coping T1	1-5	2.35	0.80	0.29	-0.45	.79
Distraction-Oriented Coping T2	1-5	2.19	0.79	0.31	-0.65	.81

	Range	<i>M</i>	SD	Skew SE = 0.16	Kurt SE = 0.31	α
Disengagement-Oriented Coping						
Venting of Unpleasant Emotions T1	1-5	3.05	0.82	0.03	-0.47	.76
Venting of Unpleasant Emotions T2	1-5	2.82	0.80	0.39	-0.33	.79
Disengagement T1	1-5	1.61	0.56	1.12	1.34	.65
Disengagement T2	1-5	1.67	0.68	1.45	2.70	.79
Disengagement-Oriented Coping T1	1-5	2.33	0.55	0.46	0.35	---
Disengagement-Oriented Coping T2	1-5	2.24	0.60	0.88	1.40	---
Burnout						
Reduced Sense of Accomplishment T1	1-5	2.17	0.60	0.58	0.03	.79
Reduced Sense of Accomplishment T2	1-5	2.36	0.67	0.25	-0.14	.69
Emotional/Physical Exhaustion T1	1-5	2.51	0.84	0.59	0.13	.90
Emotional/Physical Exhaustion T2	1-5	2.66	0.90	0.28	-0.35	.93
Sport Devaluation T1	1-5	1.75	0.75	1.13	0.95	.82
Sport Devaluation T2	1-5	2.05	0.82	0.64	-0.23	.86
Global Burnout T1	1-5	2.14	0.57	0.68	0.43	---
Global Burnout T2	1-5	2.36	0.64	0.29	-0.18	---
Goal Attainment						
Mastery-oriented T1	1-7	5.27	0.68	-0.48	0.94	.65
Mastery-oriented T2	1-7	5.16	0.84	-0.43	-0.02	.78
Improvement-oriented T1	1-7	4.21	1.25	-0.51	0.13	.84
Improvement-oriented T2	1-7	4.39	1.19	-0.45	0.25	.88
Performance-oriented T1	1-7	4.84	1.04	-0.47	-0.12	.89
Performance-oriented T2	1-7	4.77	1.16	-0.24	-0.52	.92
Global Goal Attainment T1	1-7	4.77	0.84	-0.56	0.66	---
Global Goal Attainment T2	1-7	4.77	0.94	-0.28	0.11	---

Note. $n = 239$.

Table 3.2

Summary of intercorrelations for scores on study variables and change scores

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1. HP T1	----																			
2. OP T1	.42**	----																		
3. Task T1	.46**	.25**	----																	
4. Distraction T1	-.08	.01	-.01	----																
5. Disengagement T1	-.08	.15*	-.03	.23**	----															
6. Burnout T1	-.35**	-.13*	-.15*	.31**	.45**	----														
7. Goal Attainment T1	.24**	.16*	.27**	.09	-.08	-.29**	----													
8. HP T2	.47**	.25**	.22**	-.05	-.08	-.34**	.12	----												
9. OP T2	.21**	.65**	.18**	.00	.12	-.16*	.10	.45**	----											
10. Task T2	.26**	.21**	.59**	-.01	-.02	-.16*	.21**	.41**	.29**	----										
11. Distraction T2	-.04	.14*	-.03	.50**	.25**	.17**	.06	-.12	.12	.04	----									
12. Disengagement T2	-.13	.12*	-.02	.16*	.60**	.37**	.04	-.18**	.13*	.00	.36**	----								
13. Burnout T2	-.26**	-.17**	-.08	.23**	.29**	.62**	-.11	-.53**	-.20**	-.22**	.37**	.54**	----							
14. Goal Attainment T2	.19**	.18**	.25**	-.06	-.11	-.33**	.37**	.42**	.23**	.39**	-.13*	-.30**	-.51**	----						
15. HP Change	.00	.06	.01	-.02	-.05	-.20**	.01	.89**	.40**	.32**	-.12	-.14*	-.46**	.37**	----					
16. OP Change	-.08	.00	.03	.00	.04	-.09	.00	.39**	.76**	.21**	.04	.06	-.12	.15*	.48**	----				
17. Task Change	-.01	.08	.00	.00	.00	-.09	.06	.34**	.23**	.81**	.03	.02	-.21**	.30**	.39**	.24**	----			
18. Distraction Change	.00	.15*	.04	.00	.15*	.02	.02	-.11	.13*	.05	.87**	.32**	.29**	-.12	-.13*	.05	.04	----		
19. Disengagement Change	-.09	.04	-.01	.03	.00	.13*	.11	.17**	.07	.01	.26**	.80**	.45**	-.29**	-.14*	.05	.02	.29**	----	
20. Burnout Change	-.05	-.11	.02	.05	.01	.00	.10	-.40**	-.13*	-.15*	.34**	.39**	.78**	-.38**	-.43**	-.08	-.20**	.36**	.48**	----
21. Goal Attainment Change	.11	.13*	.16*	-.10	-.08	-.24**	.00	.40**	.21**	.34**	-.17*	-.33**	-.50**	.93**	.40**	.16	.30**	-.14*	-.35**	-.45**

Note. $n = 239$. Residualized change scores were used as measures of change. * $p < .05$; ** $p < .01$.

Table 3.3

Summary of intercorrelations for burnout subscales and global measures of burnout

	1	2	3	4	5	6	7
1. Reduced Accomplishment T1	----						
2. Emotional/Physical Exhaustion T1	.32	----					
3. Sport Devaluation T1	.50	.40	----				
4. Global Burnout T1	.73	.79	.81	----			
5. Reduced Accomplishment T2	.50	.28	.32	.46	----		
6. Emotional/Physical Exhaustion T2	.18	.64	.29	.51	.38	----	
7. Sport Devaluation T2	.28	.36	.59	.54	.57	.48	----
8. Global Burnout T2	.38	.55	.50	.62	.76	.80	.85

Note. $n = 239$. All $ps < .01$ (two-tailed)

Table 3.4

Summary of intercorrelations for goal attainment subscales and global measures of goal attainment

	1	2	3	4	5	6	7
1. Mastery T1	----						
2. Improvement T1	.57	----					
3. Performance T1	.61	.53	----				
4. Global Goal Attainment T1	.81	.87	.84	----			
5. Mastery T2	.38	.18	.25	.30	----		
6. Improvement T2	.29	.21	.22	.27	.69	----	
7. Performance T2	.35	.19	.55	.42	.68	.66	----
8. Global Goal Attainment T2	.38	.22	.39	.37	.87	.90	.90

Note. $n = 239$. All $ps < .01$ (two-tailed)

3.1.3 Tests of Hypotheses

3.1.3.1 Hypotheses 1a-1c: Passion and coping.

The first set of hypotheses concerned the relationship between both types of passion and coping style. HP was expected to be positively related to task-oriented coping (hypothesis 1a), and OP was expected to be positively related to both distraction-oriented coping (hypothesis 1b) and disengagement-oriented coping (hypothesis 1c). Prior to analysis, assumptions of normality, independence of residuals, homoscedasticity, and multicollinearity were checked by analyzing residuals (Miles & Shevlin, 2001). All assumptions were satisfied.

Hypothesis 1a. Regression analyses were conducted to test the unique relationship of HP with task-oriented coping (see Table 3.5). HP at T1 was positively associated with task-oriented coping at T2 ($\beta = .21, p < .01$). In addition, analyses with change scores revealed that change in HP was positively associated with change in task-oriented coping ($\beta = .36, p < .01$). These results provide support for hypothesis 1a.

Hypothesis 1b. As expected, regression analysis revealed that OP at T1 was positively associated with distraction-oriented coping at T2 ($\beta = .18, p < .01$); however, the relationship between change in OP and change in distraction-oriented coping failed to reach significance ($\beta = .14, p = .06$; see Table 3.6). Thus, these results provide mixed support for this hypothesis. In addition to these relationships, an unexpected negative association was found between change in HP and change in distraction-oriented coping ($\beta = -.20, p < .01$).

Hypothesis 1c. As expected, OP at T1 was positively associated with disengagement-oriented coping at T2 ($\beta = .21, p < .01$). Also, change in OP was positively associated with change in disengagement-oriented coping ($\beta = .15, p = .04$), providing further support for this hypothesis (see Table 3.7). Also, an unexpected negative association was found between HP at T1 and disengagement-oriented coping at T2 ($\beta = -.21, p < .01$), and between change in HP and change in disengagement-oriented coping ($\beta = -.21, p < .01$).

Table 3.5

Regression analyses examining harmonious and obsessive passion predicting task-oriented coping

	Task-Oriented Coping T2							Task-Oriented Coping Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	0.16	0.06, 0.26	0.05	.21	<.01	.08	.07							
OP T1	0.06	-0.01, 0.12	0.03	.12	.08									
HP Change								0.19	0.12, 0.26	0.04	.36	<.01	.16	.15
OP Change								0.03	-0.03, 0.09	0.03	.07	.34		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. Residualized change scores were used as measures of change.

Table 3.6

Regression analyses examining harmonious and obsessive passion predicting distraction-oriented coping

	Distraction-Oriented Coping T2							Distraction-Oriented Coping Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	-0.13	-0.29, 0.03	0.08	-.12	.10	.03	.02							
OP T1	0.13	0.03, 0.23	0.05	.18	<.01									
HP Change								-0.16	-0.29, -0.04	0.06	-.20	<.01	.03	.02
OP Change								0.11	0.00, 0.21	0.06	.14	.06		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. Residualized change scores were used as measures of change.

Table 3.7

Regression analyses examining harmonious and obsessive passion predicting disengagement-oriented coping

	Disengagement-Oriented Coping T2							Disengagement-Oriented Coping Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	-0.19	-0.31, -0.07	0.06	-.21	<.01	.05	.04							
OP T1	0.11	0.04, 0.19	0.04	.21	<.01									
HP Change								-0.13	-0.21, -0.04	0.04	-.21	<.01	.04	.03
OP Change								0.08	0.01, 0.16	0.04	.15	.04		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. Residualized change scores were used as measures of change.

3.1.3.2 Hypotheses 2a-2b: Passion and burnout.

The next set of hypotheses addressed the relationship between both types of passion and burnout. Harmonious passion was expected to be negatively related to burnout (hypothesis 2a), and OP was expected to be either positively related or unrelated to burnout (hypothesis 2b). Regression analyses were conducted to examine the unique relationship between both types of passion and burnout (Table 3.8). Prior to analysis, assumptions were checked and all were satisfied.

Hypothesis 2a. Support for this hypothesis was found, as HP at T1 was significantly negatively related to burnout at T2 ($\beta = -.23, p < .01$). Analyses with change scores supported these results, as change in HP was negatively associated with change in burnout ($\beta = -.51, p < .01$).

Hypothesis 2b. OP measured at T1, as expected, was unrelated to burnout at T2 ($\beta = -.07, p = .31$). However, change in OP was positively associated with change in burnout ($\beta = .16, p = .01$). Although contradictory, these findings coincide with the hypothesised relationship, as HP was expected to be either positively related or unrelated to burnout.

Table 3.8

Regression analyses examining harmonious and obsessive passion predicting global burnout

	Burnout T2							Burnout Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	-0.22	-0.35, -0.09	.07	-.23	<.01	.07	.07							
OP T1	-0.04	-0.12, 0.04	.04	-.07	.31									
HP Change								-0.32	-0.40, -0.23	0.04	-.51	<.01	.20	.20
OP Change								0.09	0.02, 0.16	0.04	.16	.01		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. Residualized change scores were used as measures of change.

3.1.3.3 Hypotheses 3a-3c: Coping and burnout.

The next research question addressed the relationship between coping styles and burnout. Task-oriented coping was expected to be negatively related to burnout (hypotheses 3a), and both distraction- and disengagement-oriented coping were expected to be positively related to burnout (hypotheses 3b and 3c, respectively). Regression analyses were conducted (Table 3.9), and all assumptions were satisfied.

Hypothesis 3a. Contrary to this hypothesis, task-oriented coping at T1 was unrelated to burnout at T2 ($\beta = -.07, p = .25$). However, a negative relationship was found between change in task-oriented coping and change in burnout ($\beta = -.22, p < .01$). Thus, inconsistent support was found for this hypothesis.

Hypothesis 3b. Support was found for this hypothesis, as distraction-oriented coping at T1 was positively associated with burnout at T2 ($\beta = .18, p < .01$). Also, change in distraction-oriented coping was positively associated with change in burnout ($\beta = .25, p < .01$).

Hypothesis 3c. This hypothesis was also supported, as disengagement-oriented coping at T1 was positively associated with burnout at T2 ($\beta = .25, p < .01$). Analyses with change scores also supported this hypothesis, as change in disengagement-oriented coping was positively associated with change in burnout ($\beta = .41, p < .01$).

Table 3.9

Regression analyses examining task-, distraction-, and disengagement-oriented coping predicting global burnout

	Burnout T2							Burnout Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
TASK T1	-0.10	-0.26, 0.07	0.08	-.07	.25									
DISTRACT T1	0.14	0.04, 0.24	0.05	.18	<.01	.12	.11							
DISENGAGE T1	0.29	0.14, 0.43	0.07	.25	<.01									
TASK Change								-0.26	-0.39, -0.13	0.06	-.22	<.01		
DISTRACT Change								0.19	0.10, 0.27	0.04	.25	<.01	.33	.32
DISENGAGE Change								0.43	0.31, 0.54	0.06	.41	<.01		

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. Residualized change scores were used as measures of change.

3.1.3.4 Hypotheses 4a-4b: Passion, burnout, and the mediation of coping.

Coping was examined as a mediator in the relationship between both types of passion and burnout. It was expected that the relationship between HP and burnout would be mediated by task-oriented coping (hypothesis 4a), while the relationship between OP and burnout was expected to be mediated by distraction-oriented coping (hypothesis 4b) and disengagement-oriented coping (hypothesis 4c). First, analyses were conducted with HP and OP measured at T1 and coping styles and burnout measured at T2. Next, analyses were conducted using change scores. Assumptions were analyzed prior to analysis and all were satisfied. Results of these analyses are presented in Table 3.10 and Figures 3.1 and 3.2.

Table 3.10

Mediation of the relationship of harmonious and obsessive passion and burnout through task-, distraction-, and disengagement-oriented coping

					Bootstrapped 95% CI*	
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T1→Burnout T2</u>						
TASK T2	-0.04	0.02	-2.14	.03	-0.07	0.00
DISTRACT T2	-0.03	0.02	-1.52	.13	-0.06	0.01
DISENGAGE T2	-0.10	0.04	-2.84	<.01	-0.17	-0.03
TOTAL	-0.17	0.05	-3.67	<.01	-0.26	-0.08
<u>OP T1→ Burnout T2</u>						
TASK T2	-0.02	0.02	-1.45	.15	-0.05	0.01
DISTRACT T2	0.05	0.02	2.19	.03	0.01	0.09
DISENGAGE T2	0.10	0.04	2.92	<.01	0.03	0.17
TOTAL	0.13	0.04	2.81	<.01	0.04	0.21
<u>HP Change→Burnout Change</u>						
TASK Change	-0.04	0.02	-1.65	.10	-0.08	0.01
DISTRACT Change	-0.04	0.02	-2.24	.03	-0.08	-0.01
DISENGAGE Change	-0.08	0.03	-2.58	.01	-0.14	-0.02
TOTAL	-0.16	0.04	-3.55	<.01	-0.24	-0.07
<u>OP Change→ Burnout Change</u>						
TASK Change	-0.01	0.01	-0.72	.47	-0.02	0.01
DISTRACT Change	0.03	0.02	1.57	.12	-0.01	0.07
DISENGAGE Change	0.06	0.03	2.00	.05	0.00	0.11
TOTAL	0.08	0.04	2.03	.04	0.00	0.16

Note. $n = 239$. HP = Harmonious Passion. OP = Obsessive Passion. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. Standardized estimates are reported. Residualized change scores were used as measures of change.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.

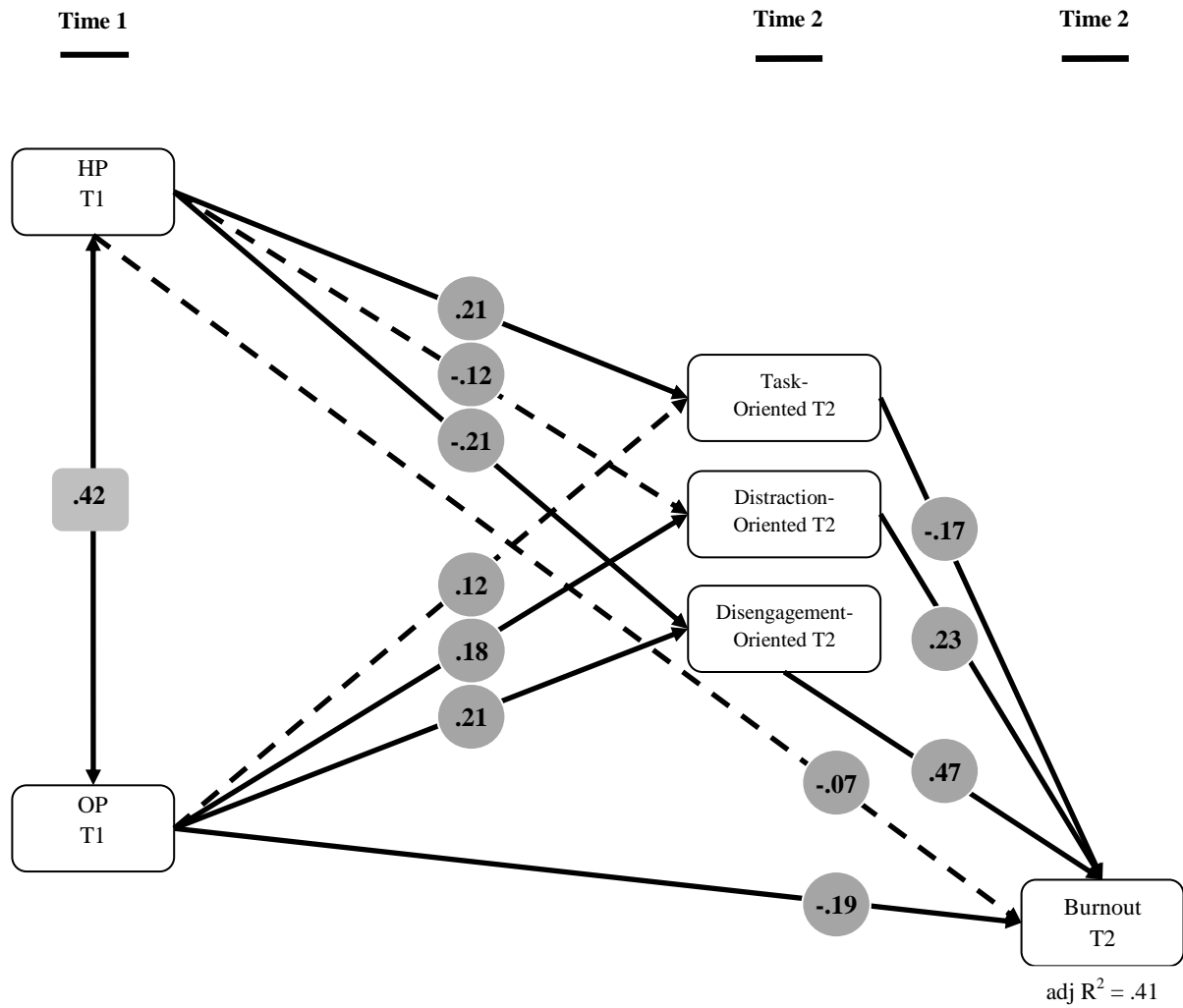


Figure 3.1. Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and burnout. HP and OP were measured at Time 1, while coping styles and burnout were measured at Time 2. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

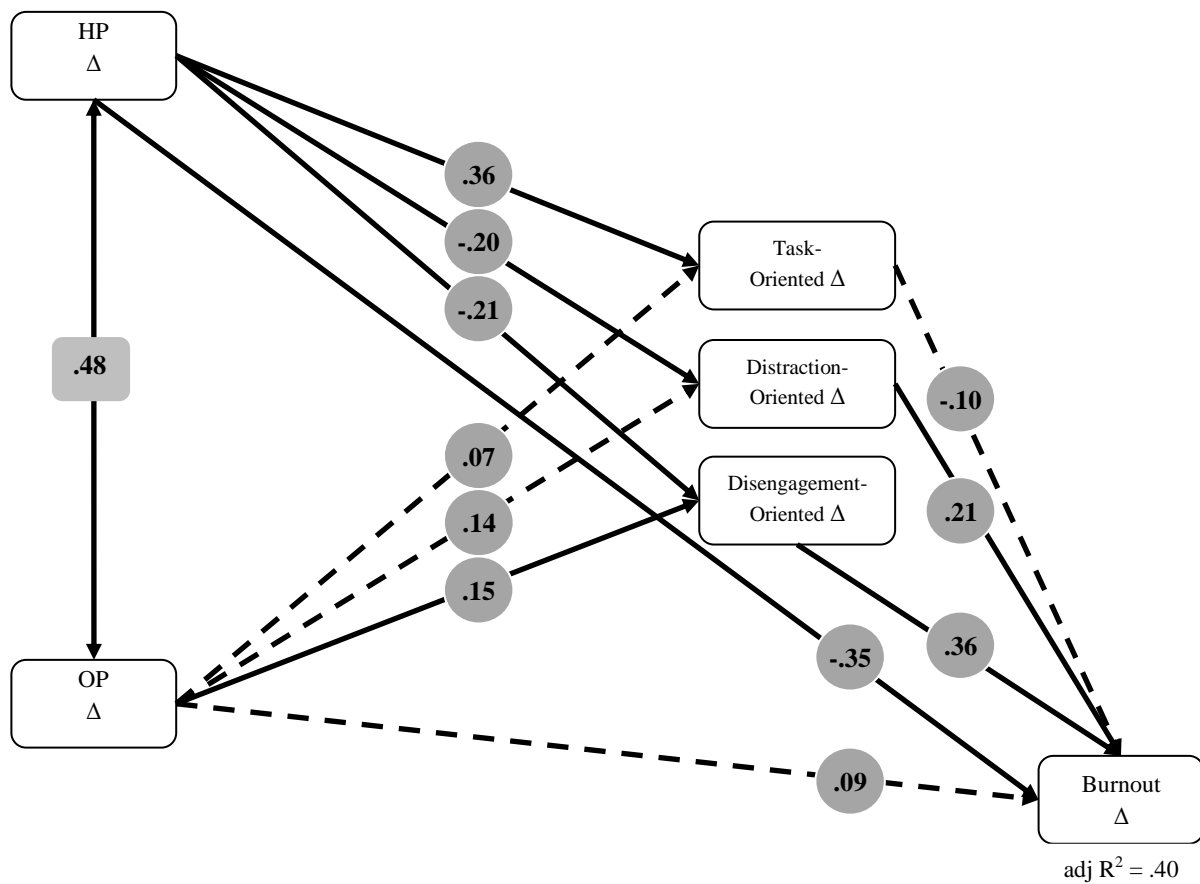


Figure 3.2. Relationships between changes in harmonious passion (HP), obsessive passion (OP), coping styles, and burnout. Residualized change scores were entered as measures of change. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between change in HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

Hypothesis 4a. Overall, weak support was found for this hypothesis. Although task-oriented coping at T2 was a significant mediator of the relationship between HP at T1 and burnout at T2 ($Z = -2.14$, $CI_{95\%} = -0.07, 0.00$), the size effect of this mediation appeared relatively small ($a*b$ estimate = -0.04). In addition, results with change scores failed to identify task-oriented coping as a mediator ($Z = -1.65$, $CI_{95\%} = -0.08, 0.01$).

However, other coping styles were found to mediate the relationship between HP and burnout. Analyses with change scores identified distraction-oriented coping as a mediator of the relationship between change in HP and change in burnout ($Z = -2.24$, $CI_{95\%} = -0.08, -0.01$), although the size of this mediation was again fairly small ($a*b$ estimate = -0.04). More robust relationships were found with disengagement-oriented coping, as disengagement-oriented coping at T2 mediated the relationship between HP at T1 and burnout at T2 ($Z = -2.84$, $CI_{95\%} = -0.17, -0.03$). Analyses with change scores revealed a similar mediating effect ($Z = -2.58$, $CI_{95\%} = -0.14, -0.02$).

Hypothesis 4b. Results revealed that distraction-oriented coping at T2 mediated the relationship between OP at T1 and burnout at T2 ($Z = 2.19$, $CI_{95\%} = 0.01, 0.09$). However, analyses with change scores failed to support this finding ($Z = 1.57$, $CI_{95\%} = -0.01, 0.07$); thus, inconsistent support was found for this hypothesis.

Hypothesis 4c. This hypothesis was supported by the data, as disengagement-oriented coping at T2 was a significant mediator of the relationship between OP at T1 and burnout at T2 ($Z = 2.92$, $CI_{95\%} = 0.03, 0.17$). The direct relationship between OP and burnout was not significant ($\beta = -.07$, $p = .31$, path c); however, the resulting relationship between OP and

burnout, when controlling for HP and all three coping styles, was significant ($\beta = -.19, p < .01$, path c'). Since the sign of the c path ($\beta = -.07$) was opposite to that of the a*b estimate ($a*b = 0.10$), suggesting that disengagement-oriented coping suppressed the relationship between OP at T1 and burnout at T2, meaning that the relationship between OP and burnout strengthened, rather than weakened, when disengagement-oriented coping was included in the mediation analysis. Also, analyses with change scores indicated that change in disengagement-oriented coping mediated the relationship between change in OP and change in burnout ($Z = 2.00, CI_{95\%} = 0.00, 0.11$). Due to the positive association between change in OP and change in burnout ($\beta = .16, p = .01$), change in disengagement-oriented coping functioned as a mediator, rather than a suppressor, between these two variables, meaning that the direct relationship between change in OP and change in burnout weakened when disengagement-oriented coping was entered as a mediator in the analysis.¹⁵

3.1.3.5 Hypotheses 5a-5b: Passion and goal attainment.

The fifth set of hypotheses concerned the relationship between passion and goal attainment. Both HP (hypotheses 5a) and OP (hypotheses 5b) were expected to be positively associated with goal attainment. Regression analyses were conducted (Table 3.11), and all assumptions were satisfied.

¹⁵ This does not mean that the role of disengagement-oriented coping between change OP and change burnout is any different than the role played in the relationship between OP at T1 and burnout at T2 – indeed, controlling for disengagement-oriented coping caused the association between OP and burnout in both analyses to reduce (i.e., become less positive). However, with change data, this reduction resulted in an OP-burnout relationship that was closer to zero (weaker), while with T1 and T2 data, this reduction forced the OP-burnout relationship in a negative direction away from zero (stronger).

Hypothesis 5a. Support was found for this hypothesis, as a positive relationship was found between HP at T1 and goal attainment at T2 ($\beta = .14, p = .05$). Results from change score analyses supported these findings, as change in HP was positively associated with change in goal attainment ($\beta = .42, p < .01$).

Hypothesis 5b. This hypothesis was not supported by the data, as there was no relationship between OP at T1 and goal attainment at T2 ($\beta = .12, p = .08$). Also, results from change scores analyses indicated that change in OP was unrelated to change in goal attainment ($\beta = -.04, p = .59$).

Table 3.11

Regression analyses examining harmonious and obsessive passion predicting goal attainment

	Goal Attainment T2							Goal Attainment Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	.19	0.00, 0.38	0.10	.14	.05	.05	.04							
OP T1	.10	-0.01, 0.22	0.06	.12	.08									
HP Change								0.45	0.31, 0.60	0.07	.42	<.01	.16	.15
OP Change								-0.04	-0.17, 0.09	0.07	-.04	.59		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. Residualized change scores were used as measures of change.

3.1.3.6 Hypotheses 6a-6c: Coping and goal attainment.

The next research question addressed the relationship between coping style and goal attainment. Goal attainment was expected to be positively related to task-oriented coping (hypothesis 6a), negatively related to disengagement-oriented coping (hypothesis 6b), and unrelated to distraction-oriented coping (hypothesis 6c). Regression analyses were conducted to test these hypotheses (Table 3.12), and all assumptions for these analyses were satisfied.

Hypothesis 6a. This hypothesis was supported by the data, as task-oriented coping at T1 was positively associated with goal attainment at T2 ($\beta = .24, p < .01$). In addition, change in task-oriented coping was found to be positively associated with change in goal attainment ($\beta = .31, p < .01$), which provides further support for this hypothesis.

Hypothesis 6b. Disengagement-oriented coping at T1 was unrelated to goal attainment at T2 ($\beta = -.09, p = .15$), which failed to support this hypothesis. However, as expected, change in disengagement-oriented coping was negatively associated with change in goal attainment ($\beta = -.34, p < .01$). Thus, inconsistent support was found for this hypothesis.

Hypothesis 6c. This hypothesis was supported, as no relationship was found between distraction-oriented coping at T1 and goal attainment at T2 ($\beta = -.03, p = .60$). Analyses with change scores also failed to find a relationship between change in distraction-oriented coping and change in goal attainment ($\beta = -.05, p = .43$).

Table 3.12

Regression analyses examining task-, distraction-, and disengagement-oriented coping predicting goal attainment

	Goal Attainment T2							Goal Attainment Change						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
TASK T1	0.48	0.24, 0.73	0.13	.24	<.01									
DISTRACT T1	-0.04	-0.19, 0.11	0.08	-.03	.60	.07	.06							
DISENGAGE T1	-0.16	-0.38, 0.06	0.11	-.09	.15									
TASK Change								0.64	0.41, 0.88	0.12	.31	<.01		
DISTRACT Change								-0.06	-0.21, 0.09	0.08	-.05	.43	.22	.21
DISENGAGE Change								-0.62	-0.84, -0.41	0.11	-.34	<.01		

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. Residualized change scores were used as measures of change.

3.1.3.7 Hypotheses 7a-7b: Passion, goal attainment, and the mediation of coping.

The final set of hypotheses addressed the mediating effect of coping in the relationship between HP, OP, and goal attainment. The relationship between OP and goal attainment was expected to be suppressed by the relationship between OP and disengagement-oriented coping (hypothesis 7a), while the relationship between HP and goal attainment was predicted to be mediated by task-oriented coping (hypothesis 7b). First, analyses were conducted with HP and OP measured at T1 and coping styles and goal attainment measured at T2. Next, analyses were conducted using change scores. Prior to analysis, assumptions were analyzed and all were satisfied. Results of these analyses are presented in Table 3.13 and Figures 3.3 and 3.4.

Table 3.13

Mediation of the relationship of harmonious and obsessive passion and goal attainment through task-, distraction-, and disengagement-oriented coping

					<u>Bootstrapped 95% CI*</u>	
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T1→Goal Attainment T2</u>						
TASK T2	0.08	0.03	2.70	<.01	0.02	0.13
DISTRACT T2	0.01	0.01	0.78	.44	-0.01	0.03
DISENGAGE T2	0.06	0.02	2.54	.01	0.01	0.11
TOTAL	0.14	0.04	4.02	<.01	0.07	0.22
<u>OP T1→ Goal Attainment T2</u>						
TASK T2	0.04	0.03	1.74	.08	-0.01	0.09
DISTRACT T2	-0.01	0.01	-0.95	.34	-0.04	0.01
DISENGAGE T2	-0.06	0.03	-2.38	.02	-0.11	-0.01
TOTAL	-0.03	0.04	-0.74	.46	-0.10	0.05
<u>HP Change→Goal Attainment Change</u>						
TASK Change	0.07	0.03	2.90	<.01	0.02	0.12
DISTRACT Change	0.00	0.01	0.27	.78	-0.02	0.03
DISENGAGE Change	0.07	0.03	2.34	.02	0.01	0.12
TOTAL	0.14	0.04	3.60	<.01	0.06	0.22
<u>OP Change→ Goal Attainment Change</u>						
TASK Change	0.01	0.02	0.86	.39	-0.02	0.04
DISTRACT Change	0.00	0.01	-0.25	.80	-0.02	0.02
DISENGAGE Change	-0.05	0.03	-1.90	.06	-0.10	0.00
TOTAL	-0.04	0.03	-1.25	.21	-0.09	0.02

Note. $n = 239$. HP = Harmonious Passion. OP = Obsessive Passion. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DIENGAGE = Disengagement-oriented coping. Standardized estimates are reported. Residualized change scores were used as measures of change.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.

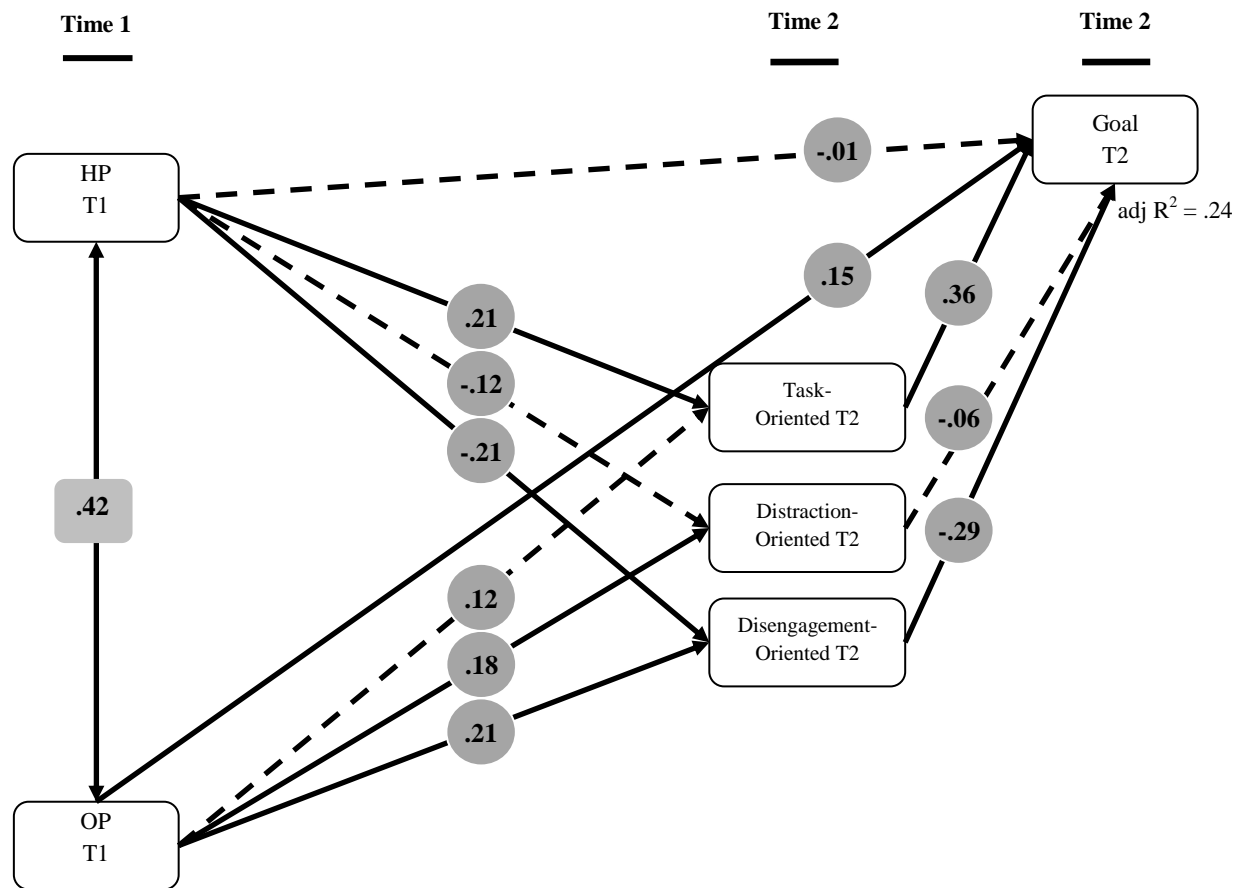


Figure 3.3. Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and goal attainment (Goal). HP and OP were measured at T1, and coping styles and Goal Attainment were measured at Time 2. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

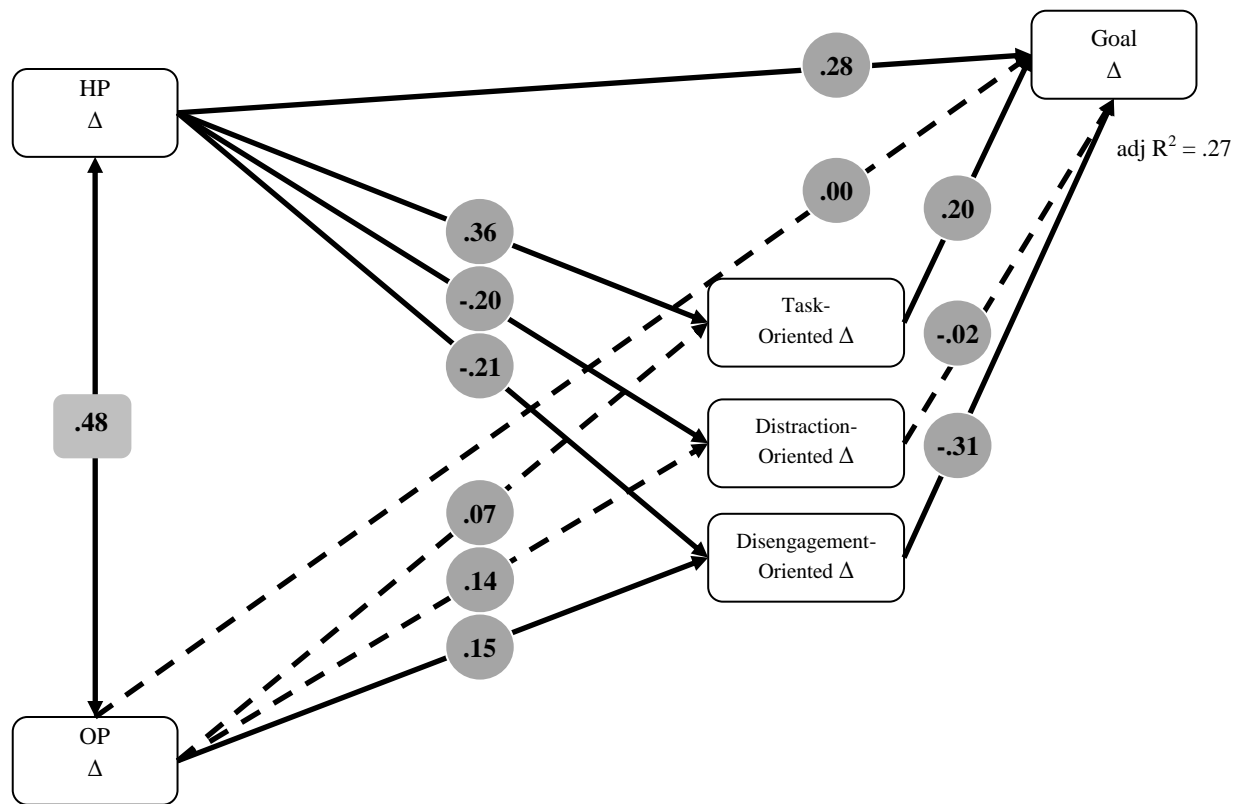


Figure 3.4. Relationships between changes in harmonious passion (HP), obsessive passion (OP), coping styles, and goal attainment (Goal). Residualized change scores were entered as measures of change. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between change in HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

Hypothesis 7a. In support of this hypothesis, disengagement-oriented coping at T2 was found to mediate the relationship between OP at T1 and goal attainment at T2 ($Z = -2.38$, $CI_{95\%} = -0.11, -0.01$). However, analyses with change scores failed to identify change in disengagement-oriented coping as a mediator of the relationship between change in OP and change in goal attainment ($Z = -1.90$, $CI_{95\%} = -0.10, 0.00$). Thus, inconsistent support was obtained for this hypothesis.

Suppression was tested by comparing the sign of the $a*b$ estimate associated with the mediating effect of disengagement-oriented coping in the relationship between OP at T1 and goal attainment at T2. The sign of this estimate (-0.06) was opposite to the relationship obtained between OP at T1 and goal attainment at T2 ($\beta = .12$). Thus, disengagement-oriented coping suppressed the relationship between OP at T1 and goal attainment at T2.

Hypothesis 7b. Support was found for this hypothesis, as task-oriented coping at T2 was a significant mediator of the relationship between HP at T1 goal attainment at T2 ($Z = 2.07$, $CI_{95\%} = 0.02, 0.13$). Also, results from change scores revealed that change in task-oriented coping mediated the relationship between change in HP and change in goal attainment ($Z = 2.90$, $CI_{95\%} = 0.02, 0.12$).

Unexpectedly, disengagement-oriented coping at T2 mediated the relationship between HP at T1 and goal attainment at T2 ($Z = 2.54$, $CI_{95\%} = 0.01, 0.11$). This relationship was supported by analyses with change scores, as change in disengagement-oriented coping mediated the relationship between change in HP and change in goal attainment ($Z = 2.34$, $CI_{95\%} = 0.01, 0.12$).

3.1.4 Mean Differences between Time 1 and Time 2

The variables examined in this study, in particular HP, OP, and coping styles, were expected to be relatively stable between T1 and T2. The correlations (Table 3.2) between T1 and T2 for HP ($r = .47$), OP ($r = .65$), task-oriented coping ($r = .59$), distraction-oriented coping ($r = .50$), disengagement-oriented coping ($r = .60$), burnout ($r = .62$) and goal attainment ($r = .37$) indicate these variables were not as stable as initially expected. These correlations indicate the direction and the strength of the association between T1 and T2 scores. To supplement these correlations, mean differences between T1 and T2 were assessed using mixed factorial MANOVA (Schutz, 1998). This analysis assessed if the means of the T1 scores differ from the means of the T2 scores. Change was assessed in HP, OP, task-, distraction-, and disengagement-oriented coping, burnout, and goal attainment; thus, these variables were entered as dependent variables in the analysis. Time (T1 and T2) was entered as the within-person factor, and sex (male and female) and level (university and college) were entered as between-subject factors. Assumptions of homogeneity of variances and co-variances were inspected prior to analysis and all were satisfied (Field, 2005; Tabachnick & Fidell, 2007).¹⁶

An overall within-subjects effect was found for Time, $F_{(7, 229)} = 27.01, p < .01, \eta_p^2 = .45$, Wilks' $\lambda = .55$. There were no multivariate effects found for the Time by Sex, Time by Level, or

¹⁶ Levene's test of homogeneity of variances yielded significant results for burnout at T2 ($F_{(3, 235)} = 3.93, p = .01$) and HP at T2 ($F_{(3, 235)} = 3.45, p = .02$). This suggested that the variances between males and females and between college and university athletes were not equal on these two variables. Since Levene's test is sensitive with large sample sizes, this assumption was double checked by computing variance ratios (Field, 2005). The ratio of female to male variance in T2 burnout and T2 HP scores (1.21 and 1.59, respectively) and college to university variance in T2 burnout and T2 HP scores (1.19 and 1.07, respectively) did not surpass 2, meaning that homogeneity of variances could be assumed (Field, 2005).

Time by Sex by Level interactions. Univariate analyses revealed significant effects for all variables except for goal attainment; a summary of these analyses is presented in Table 3.14.

Time 1 and T2 means revealed that HP, OP, and task-, distraction-, and disengagement-oriented coping decreased between T1 and T2, while burnout levels increased. The effect sizes of these changes were all fairly robust other than change in distraction-oriented coping ($\eta_p^2 = .04$) and disengagement-oriented coping ($\eta_p^2 = .02$).

Table 3.14
Within-subjects effect of time for study variables

	SS	DF	MS	F	p	η_p^2	\bar{x}_{T1} (SD)	\bar{x}_{T2} (SD)
Harmonious Passion	27.29	1	27.29	76.09	< .01	.25	5.58 (0.69)	5.10 (0.91)
Error	84.29	235	0.36					
Obsessive Passion	21.06	1	21.06	45.03	< .01	.16	3.46 (1.13)	3.03 (1.18)
Error	109.94	235	0.47					
Task-Oriented Coping	7.81	1	7.81	76.23	< .01	.25	3.73 (0.48)	3.47 (0.52)
Error	24.07	235	0.10					
Distraction-Oriented Coping	3.00	1	3.00	9.41	< .01	.04	2.35 (0.80)	2.19 (0.79)
Error	74.84	235	0.32					
Disengagement-Oriented Coping	0.74	1	0.74	5.50	.02	.02	2.33 (0.55)	2.24 (0.60)
Error	31.43	235	0.13					
Burnout	5.58	1	5.58	39.45	< .01	.14	2.14 (0.57)	2.36 (0.64)
Error	33.24	235	0.14					
Goal Attainment	0.00	1	0.00	0.01	.93	.00	4.77 (0.84)	4.77 (0.94)
Error	117.91	235	0.50					

An overall between-subjects effect was found for Sex, $F_{(7, 229)} = 2.33, p = .03, \eta_p^2 = .07$, Wilks' $\lambda = 0.93$. When specific sex effects were examined, significant differences between males and females were found for burnout ($F_{(1, 235)} = 4.20, p = .04, \eta_p^2 = .02$) and goal attainment ($F_{(1, 235)} = 6.08, p = .01, \eta_p^2 = .03$). Inspection of means revealed that females ($\bar{x}_{\text{FEMALE}} = 2.32, SD = 0.63$) had higher levels of burnout compared to males ($\bar{x}_{\text{MALE}} = 2.18, SD = 0.58$). Also, females had lower levels of goal attainment ($\bar{x}_{\text{FEMALE}} = 4.66, SD = 0.88$) compared with males ($\bar{x}_{\text{MALE}} = 4.90, SD = 0.89$). However, the effect sizes obtained for these between-subjects effects suggest that the magnitude of these differences were fairly weak.

3.2 SUMMARY OF RESULTS

A summary of the results obtained in this study is displayed in Table 3.15, and a summary of the hypotheses and support obtained for these hypotheses is displayed in Table 3.16.

Table 3.15
Summary of results

	β	p	a*b	p
HP → TASK				
HP T1 → TASK T2	.21	<.01		
HP CHANGE → TASK CHANGE	.36	<.01		
HP → DISTRACT				
HP T1 → DISTRACT T2	-.12	.10		
HP CHANGE → DISTRACT CHANGE	-.20	<.01		
HP → DISENGAGE				
HP T1 → DISENGAGE T2	-.21	<.01		
HP CHANGE → DISENGAGE CHANGE	-.21	<.01		
OP → TASK				
OP T1 → TASK T2	.12	.08		
OP CHANGE → TASK CHANGE	.07	.34		
OP → DISTRACT				
OP T1 → DISTRACT T2	.18	<.01		
OP CHANGE → DISTRACT CHANGE	.14	.06		
OP → DISENGAGE				
OP T1 → DISENGAGE T2	.21	<.01		
OP CHANGE → DISENGAGE CHANGE	.15	.04		
HP → BURNOUT				
HP T1 → BURNOUT T2	-.23	<.01		
HP CHANGE → BURNOUT CHANGE	-.51	<.01		
OP → BURNOUT				
OP T1 → BURNOUT T2	-.07	.31		
OP CHANGE → BURNOUT CHANGE	.16	.01		
TASK → BURNOUT				
TASK T1 → BURNOUT T2	-.07	.25		
TASK CHANGE → BURNOUT CHANGE	-.22	<.01		
DISTRACT → BURNOUT				
DISTRACT T1 → BURNOUT T2	.18	<.01		
DISTRACT CHANGE → BURNOUT CHANGE	.25	<.01		
DISENGAGE → BURNOUT				
DISENGAGE T1 → BURNOUT T2	.25	<.01		
DISENGAGE CHANGE → BURNOUT CHANGE	.41	<.01		
HP → TASK → BURNOUT				
HP T1 → TASK T2 → BURNOUT T2			-0.04	.03
HP CHANGE → TASK CHANGE → BURNOUT CHANGE			-0.04	.10
HP → DISTRACT → BURNOUT				
HP T1 → DISTRACT T2 → BURNOUT T2			-0.03	.13
HP CHANGE → DISTRACT CHANGE → BURNOUT CHANGE			-0.04	.03
HP → DISENGAGE → BURNOUT				
HP T1 → DISENGAGE T2 → BURNOUT T2			-0.10	<.01
HP CHANGE → DISENGAGE CHANGE → BURNOUT CHANGE			-0.08	.01
OP → TASK → BURNOUT				
OP T1 → TASK T2 → BURNOUT T2			-0.02	.15
OP CHANGE → TASK CHANGE → BURNOUT CHANGE			-0.01	.47
OP → DISTRACT → BURNOUT				
OP T1 → DISTRACT T2 → BURNOUT T2			0.05	.03
OP CHANGE → DISTRACT CHANGE → BURNOUT CHANGE			0.03	.12
OP → DISENGAGE → BURNOUT				
OP T1 → DISENGAGE T2 → BURNOUT T2			0.10	<.01
OP CHANGE → DISENGAGE CHANGE → BURNOUT CHANGE			0.06	.05

	β	p	a*b	p
HP → GOAL				
HP T1 → GOAL T2	.14	.05		
HP CHANGE → GOAL CHANGE	.42	<.01		
OP → GOAL				
OP T1 → GOAL T2	.12	.08		
OP CHANGE → GOAL CHANGE	-.04	.59		
TASK → GOAL				
TASK T1 → GOAL T2	.24	<.01		
TASK CHANGE → GOAL CHANGE	.31	<.01		
DISTRACT → GOAL				
DISTRACT T1 → GOAL T2	-.03	.60		
DISTRACT CHANGE → GOAL CHANGE	-.05	.43		
DISENGAGE → GOAL				
DISENGAGE T1 → GOAL T2	-.09	.15		
DISENGAGE CHANGE → GOAL CHANGE	-.34	<.01		
HP → TASK → GOAL				
HP T1 → TASK T2 → GOAL T2			0.08	<.01
HP CHANGE → TASK CHANGE → GOAL CHANGE			0.07	<.01
HP → DISTRACT → GOAL				
HP T1 → DISTRACT T2 → GOAL T2			0.01	.44
HP CHANGE → DISTRACT CHANGE → GOAL CHANGE			0.00	.78
HP → DISENGAGE → GOAL				
HP T1 → DISENGAGE T2 → GOAL T2			0.06	.01
HP CHANGE → DISENGAGE CHANGE → GOAL CHANGE			0.07	.02
OP → TASK → GOAL				
OP T1 → TASK T2 → GOAL T2			0.04	.08
OP CHANGE → TASK CHANGE → GOAL CHANGE			0.01	.39
OP → DISTRACT → GOAL				
OP T1 → DISTRACT T2 → GOAL T2			-0.01	.34
OP CHANGE → DISTRACT CHANGE → GOAL CHANGE			0.00	.80
OP → DISENGAGE → GOAL				
OP T1 → DISENGAGE T2 → GOAL T2			-0.06	.02
OP CHANGE → DISENGAGE CHANGE → GOAL CHANGE			-0.05	.06

Note. $n = 239$. HP = Harmonious Passion. OP = Obsessive Passion. TASK = Task-Oriented Coping. DISTRACT = Distraction-Oriented Coping. DISENGAGE = Disengagement-Oriented Coping. GOAL = Goal Attainment. Residualized change scores were used as measures of change. Standardized estimates are reported.

Table 3.16

Summary of hypotheses

Relationship	Expected Relationship	Support Obtained (T1 → T2)	Support Obtained (Change Scores)
1. Passion and Coping			
a. HP → Task-Oriented Coping	+	Yes	Yes
b. OP → Distraction-Oriented Coping	+	Yes	No
c. OP → Disengagement-Oriented Coping	+	Yes	Yes
2. Passion and Burnout			
a. HP → Burnout	-	Yes	Yes
b. OP → Burnout	+ or \emptyset	Yes (\emptyset)	Yes (+)
3. Coping and Burnout			
a. Task-Oriented Coping → Burnout	-	No	Yes
b. Distraction-Oriented Coping → Burnout	+	Yes	Yes
c. Disengagement-Oriented Coping → Burnout	+	Yes	Yes
4. Passion → Coping → Burnout			
a. HP → Task-Oriented Coping → Burnout	Mediation	Yes	No
b. OP → Distraction-Oriented Coping → Burnout	Mediation	Yes	No
c. OP → Disengagement-Oriented Coping → Burnout	Mediation	Yes	Yes
5. Passion and Goal Attainment			
a. HP → Goal Attainment	+	Yes	Yes
b. OP → Goal Attainment	+	No	No
6. Coping and Goal Attainment			
a. Task-Oriented Coping → Goal Attainment	+	Yes	Yes
b. Disengagement -Oriented Coping → Goal Attainment	-	No	Yes
c. Distraction -Oriented Coping → Goal Attainment	\emptyset	Yes	Yes
7. Mediating effect of Coping between Passion and Goal Attainment			
a. OP → Disengagement-Oriented Coping → Goal Attainment	Suppression	Yes	No
b. HP → Task-Oriented Coping → Goal Attainment	Mediation	Yes	Yes

Note. $n = 239$. HP = Harmonious Passion. OP = Obsessive Passion.

“+” = an expected positive relationship; “-” = an expected negative relationship; “ \emptyset ” = no relationship expected. T1→T2 analyses examined independent variables at time 1 and both mediators and outcome variables at time 2. Residualized change scores were used as measures of change.

CHAPTER 4 – Discussion and Conclusions

4.1 DISCUSSION

The stress process can influence an athlete's experience in sport, including the development of burnout and the attainment of desired goals (Hoar et al., 2006). Two critical components of the stress process that can impact the development of stress-related outcomes are person-factors and coping (Hoar et al., 2006; Lazarus, 1999; Lazarus & Folkman, 1984; Polman et al., 2010). This study examined if passion for sport was related to burnout and goal attainment over a competitive season in volleyball players, and assessed if coping mediated these relationships. Results revealed that types of passion predicted both burnout and goal attainment, and that these relationships were mediated by specific coping styles. A surprising finding was that types of passion were much less stable between the beginning and end of the competitive season than the literature would predict, which suggests that the type of passion an individual has for an activity may not be as stable as previously thought. Although this study has a number of limitations, it offers an important addition to the existing literature and theory in stress and passion in sport, has implications for applied practice, and provides numerous opportunities for future research.

4.1.1 Passion, Burnout, and the Mediation of Coping

The first key finding was that coping mediated the relationship between both types of passion and burnout. When specific mediating effects were examined, disengagement-oriented coping had the most robust mediating effect; although task- and distraction-oriented coping were also identified as mediators, the size of these mediating effects were fairly weak. The

relationships established between passion, coping, and burnout extends previous research in the passion literature conducted with dancers (Rip et al., 2006), teachers (Carbonneau et al., 2008), nurses (Vallerand et al., 2010), and recently with students (Stoeber, Childs, Hayward, and Feast, 2011).

As expected, results with both T1 and T2 data and change scores found that HP was negatively associated with burnout. However, OP at T1 was unrelated to burnout at T2, but changes in OP were *positively* associated with changes in burnout. Although this discrepancy between analyses was surprising, the results themselves were not; indeed, based on conflicting results in the passion literature (Carbonneau et al., 2008; Vallerand et al., 2010) OP was initially expected to be either positively related or unrelated to burnout. Recently, Stoeber et al. (2011) examined the relationship between passion and burnout in university students. They found that HP was negatively related to all three components of academic burnout (exhaustion, cynicism, and inefficacy), while OP was unrelated to exhaustion and cynicism, but *negatively* related to inefficacy ($\beta = -.17, p < .05$), although this effect was weaker than that found with HP ($\beta = -.58, p < .001$). Although there were indeed differences between analyses conducted with T1 and T2 data and with change scores in this study, the positive association between change in OP and change in burnout was not particularly substantial ($\beta = .16$).

The relationships between coping and burnout also supported the study hypotheses. One exception was the association between task-oriented coping at T1 and burnout at T2, where no relationship was found. Although a negative relationship was found when residualized change scores were analysed, this result suggests that task-oriented coping at the start of the season was not able to predict burnout near the end of the season. One possible explanation for this finding

could be that engaging in task-oriented coping may be an adaptive strategy when coping with training demands, but may be a demand in itself which could contribute to burnout. Engaging in task-oriented coping may be physically and emotionally exhausting, but may also be successful at managing the training demands, and these two competing processes may result in a null relationship between task-oriented coping and burnout. The relationship between task-oriented coping and burnout in athletes may be complex and thus provides an opportunity for future research.

Mediation analyses revealed that coping styles mediated the relationship between both types of passion and burnout. Analysis of specific mediating effects indicated that disengagement-oriented coping had the most robust mediating effect for both HP and OP. This suggests that individuals with elevated levels of HP may be protected from experiencing burnout in part because they typically do not use disengagement-oriented strategies to cope with training demands. These types of coping strategies may not be adequate to manage training demands and resulting emotions, or may be successful at managing these demands in the short-term but fail to address chronic demands that may lead to burnout in the future. Obsessive passion, however, was positively associated with disengagement-oriented coping, indicating that individuals with elevated levels of OP may have a tendency to use coping strategies that may make them more susceptible to burnout.

One noteworthy issue related to mediation analyses is the causal ordering of variables. Passion for sport was expected to influence coping style, and coping style, in turn, was expected to influence the development of burnout. Although this ordering is based on theory, it is quite possible that reciprocal relationships exist between variables. For instance, it is likely that the

experience of burnout would lead an athlete to disengage from environmental demands, or that burnout would result in a decrease in HP. Causation would need to be established in order to fully understand the relationships between variables. To establish a “causal chain” between variables, Spencer, Zanna, and Fong (2005) recommend a series of experiments that establish causation between an independent variable and a proposed mediator, and between a proposed mediator and a dependent variable. However, the authors confess that this “experimental-causal-chain” design is not feasible when it is difficult to manipulate the proposed variables. The variables examined in this study certainly qualify for this exemption, particularly passion, as the factors that influence the development of HP and OP are still unclear (Mageau et al., 2009). In fact, Spencer et al. state that causal ordering based on theory is important, and that “theoretical accounts of psychological process can provide important insights that allow us to intervene to make the world a better place” (p. 851). Although theory guided the causal ordering of variables in this study, the relationships between variables are based on correlations and thus causation cannot be inferred. Future research may wish to manipulate variables in an effort to establish causation between these variables.

There may be processes other than coping that explain the relationship between passion and burnout. Past research with nurses has identified satisfaction with work and life conflict as two mediating factors in the relationship between passion for work and burnout (Vallerand et al., 2010). Carbonneau and colleagues (2008) suggested that affect may be another process that explains the connection between passion and burnout. Such a process would be consistent with the broaden-and-build theory of positive emotions (Fredrickson, 2001). This theory predicts that positive emotions cause thought-action repertoires to broaden, which in turn causes personal

resources to build (including physical, psychological, and social resources), which in turn causes an increase in subsequent positive emotions and well-being (Fredrickson, 2001). Conversely, negative emotions lead to a narrowing of thought-action repertoires, preventing the enhancement of personal resources and subsequent well being. Thus, positive emotions can lead to an “upward spiral” of positive emotions, experiences, and well-being; indeed, empirical support has been found for this spiral effect (Fredrickson & Joiner, 2002). The negative association found between HP and burnout may reflect this upward spiral, as individuals with higher HP may be caught in an upward spiral which would protect them from sources of ill-being, such as burnout. HP has consistently been shown to be positively associated with well-being (see Vallerand, 2010), and longitudinal research with elderly individuals showed that HP leads to positive affect, which in turn leads to subjective well-being (Rousseau & Vallerand, 2008). The broaden-and-build theory of positive emotions would predict that the positive affect and well-being experienced by individuals with an HP would lead to increases in personal resources and subsequent positive experiences, and it is plausible that both positive emotions and personal resources could protect individuals from burnout. The relationship between the DMP and the broaden-and-build theory of positive emotions offers another exciting area for future research.

The passion-burnout relationship can also be approached from a sport commitment perspective (Raedeke, 1997). This perspective suggests that athletes who feel like they *have* to participate in sport will feel “entrapped” in sport, leading to burnout. Athletes who *want* to participate, however, will not feel entrapped and thus not experience burnout. It is likely that individuals with high levels of OP, due to their rigid persistence and controlled behavioural regulation, would become entrapped in sport, while those with high levels of HP would avoid

being entrapped due to their flexible activity engagement and autonomous behavioural regulation (Vallerand et al., 2003). In sum, although results of this study show that coping plays an important role in the relationship between types of passion and burnout, there are other approaches that can be adopted to investigate the processes involved in this relationship.

4.1.2 Passion, Goal Attainment, and the Mediation of Coping

A second main finding was that coping mediated the relationship between both types of passion and goal attainment. When specific mediating effects were examined, the relationship between HP and goal attainment was mediated by both task- and disengagement-oriented coping. This study also found that disengagement-oriented coping suppressed the OP-goal attainment relationship, but this effect was not significant when change scores were analyzed. Although previous research has examined the relationship between types of passion and the type of goals that individuals pursue (Li, 2010; Vallerand et al., 2007; Vallerand et al., 2008a), this research extended this line of inquiry by finding that individuals with an HP are more likely to report attaining these goals, while no direct relationship exists between OP and goal attainment.

This study found that individuals with high levels of HP may be more likely to adopt coping strategies that facilitate goal attainment (task-oriented coping) and avoid strategies that impede goal progress (disengagement-oriented coping), while individuals with high levels of OP may be more likely to use coping strategies that hinder goal attainment (disengagement-oriented coping). The relationships established in this study between coping and goal attainment support the study hypotheses and are consistent with previous research (Gaudreau & Antl, 2008; Gaudreau & Blondin, 2004; Smith et al., 2011). One unexpected result was that disengagement-

oriented coping at T1 was unrelated to goal attainment at T2, suggesting that using disengagement-oriented strategies at the start of the season does not predict the attainment of goals at the end of the season. It should be noted that change in disengagement-oriented coping was negatively associated with change in goal attainment, and this result coincides with the study hypotheses. Little research has examined the direct link between coping strategies and goal attainment in athletes using a prospective design, and future research is needed to understand the relationship between coping and goal attainment over time.

The causal ordering of variables in the analysis implied that passion for sport was expected to influence coping style, and this coping style, in turn, was expected to influence goal attainment. Indeed, coping with training demands by using task-oriented strategies such as effort exertion, mental imagery, thought control, and logical analysis may enable individuals to develop skills and abilities that could be utilized when striving for particular goals in sport. Task-oriented strategies may also promote goal attainment by enabling individuals to remain engaged in the activity and actively confront demands that may impede goal progress. Using disengagement-oriented strategies may not adequately address demands that could thwart goal attainment, and individuals who avoid these demands may lose an opportunity to learn valuable skills that may be developed by adopting more proactive strategies. It is also likely that achieving goals in sport could lead to task-oriented coping, as individuals who achieve their goals may be more likely to remain engaged in the activity when facing high environmental demands. Individuals who fail to achieve goals in sport may be more likely to disengage from the activity, making them more likely to cope by using disengagement and avoidance strategies.

Again, although causal ordering in this study was based on theory and prior research, future research is needed to establish causation between passion, coping, and goal attainment in sport.

The connection between passion and goal attainment may be explained by factors other than coping. One factor that may play a vital role in the passion-goal attainment relationship is effort (Locke & Latham, 2002). Smith and colleagues (2011) studied the relationship between goal attainment and goal-directed effort in a group of athletes, and found, unsurprisingly, that goal-directed effort predicted future goal attainment. They also found that effort mediated the relationship between coping and goal attainment – task-oriented and disengagement-oriented coping were positively and negatively associated with goal-directed effort, respectively.

Goal-directed effort may explain the relationships obtained in this study in two ways. First, HP and OP may have different direct associations with goal-directed effort. Contrary to what was initially hypothesised, individuals with high levels of HP may put forth more effort towards goal attainment compared to individuals with elevated levels of OP. The goals pursued by individuals with high HP may be more in concordance with these individuals' identities compared to those with elevated levels of OP, which may contribute to goal-directed effort (Sheldon & Elliot, 1999). However, individuals with an OP must satisfy the passion criterion of spending time and energy engaging in the activity, and OP has even been associated with the “persistence paradox” – despite experiencing negative outcomes, individuals with an OP may continue to participate in the activity (Vallerand, 2010). A more likely explanation is that the effort put forth by individuals with an HP may be more focused and efficient compared with individuals in an OP. Results from previous studies suggest that individuals with an HP are more fully engaged in the activity compared to individuals with an OP (Vallerand et al., 2003;

Vallerand et al., 2008b). Thus, even if individuals with an HP or OP provide equal amounts of effort towards goal pursuit, it is plausible that the effort provided by individuals with an HP is more efficient and effective at achieving these goals; that is, although the *quantity* of goal-directed effort may be similar between athletes with an HP and those with an OP, the *quality* of this effort may differ (Smith et al., 2011). A second way that goal-directed effort may explain the passion-goal attainment relationship is as a mediator of the coping-goal attainment relationship. The positive relationship between HP and task-oriented coping found in this study may lead to higher goal-directed effort, while individuals with an OP may put forth less effort in part due to the use of disengagement-oriented coping strategies. However, the association between disengagement-oriented coping, goal-directed effort, and goal attainment may have a common cause, which leads to a second approach that can explain the passion-goal attainment relationship.

The broaden-and-build theory of positive emotions (Fredrickson, 2001), previously proposed as a potential explanation of the passion-burnout relationship, may explain the relationship found between passion and goal attainment. First, the broaden-and-build theory predicts that the positive emotions and experiences enjoyed by individuals with an HP will lead to increased personal resources and a broadening of thought-action repertoires (Fredrickson, 2001) – these predictions have been supported in the passion literature (Philippe et al., 2010; Vallerand et al., 2003; Vallerand, 2010). These resources and broad thought-action repertoires would allow individuals with an HP to have a more open, flexible approach towards goal striving, and have resources available to assist in this pursuit. In addition to this direct association, it is possible that positive emotions would lead to increased goal-directed effort,

which in turn would lead to higher goal attainment. Positive emotions may results in increased effort by freeing up personal resources that would be required for self-regulation (Schmeichel & Baumeister, 2004), or leading to increases in task-oriented coping (Chartier et al., 2011), or both. Indeed, it is difficult to situate the role of coping, emotion, effort, and goal attainment (and burnout, for that matter) in a causal order, as each factor may cause, and be caused by, another – it is possible that they are all related to each other in an “upward spiral” of positive experiences (Fredrickson & Joiner, 2002).

4.1.3 Passion

4.1.3.1 Stability of passion.

Another key finding of this study was that both HP and OP were relatively unstable between T1 and T2. The correlations between T1 and T2 for HP and OP were .47 and .65, respectively, meaning that the amount of variance shared between both time points was 22% for HP and 42% for OP. Although test-retest correlations invariably will be imperfect due to measurement error (Schutz, 1998), these results suggested that HP and OP were not particularly stable over the 3-month time span of this study. Results of a MANOVA test revealed that both HP and OP decreased between T1 and T2, and the effects of these mean decreases were fairly substantial (see Table 3.14).

Although longitudinal designs are common in passion research (see Vallerand, 2010), it is surprisingly uncommon for these studies to measure passion at multiple time points. Carbonneau and colleagues (2008) were one of the few researchers to measure HP and OP at multiple times, and found fairly strong correlations between HP ($r = .80$) and OP ($r = .88$) over a

3-month time span in teachers. The correlations obtained in this study are clearly less substantial than those obtained by Carbonneau and colleagues, and potential explanations for these discrepancies are discussed below.

To determine the factors that may influence the stability of passion over time, it may be useful to examine the factors that influence the initial development of HP and OP.

Unfortunately, this is another topic where research is lacking. The most thorough examination of the topic was a series of studies conducted by Mageau and colleagues (2009). The authors identified four factors that influenced whether one developed an HP or an OP: individual preference for activity specialization, parent valuation of the activity, and deriving a sense of identity from the activity were found to predict the development of OP, while an autonomy-supportive environment predicted the development of HP. These factors support the DMP, which posits that any personal or social force that leads to the autonomous incorporation of an activity into a person's identity would lead to the development of HP, while factors that promote controlled behavioural regulation would lead to OP (Vallerand et al., 2003). It is possible that the weak stability in HP and OP between T1 and T2 may be due to these personal and environmental factors.

An interesting result was that OP was much more stable ($r = .65$) compared to HP ($r = .47$), allowing the shared variance between T1 and T2 to be almost double with OP (42%) compared to HP (22%). Research suggests that activities may play a more dominant role in an individual's identity in those with an OP compared to those with an HP (Mageau et al., 2009, 2011; Stenseng & Dalskau, 2010). The overpowering role of activities in those with an OP may

explain why OP is more stable compared to those with an HP, whose activity engagement is more flexible and less overpowering.

Another interesting finding was that the means of both HP and OP decreased between T1 and T2. It is possible that environmental factors at the end of the season may be different than those at the start of a season, which would influence one's passion. One possibility is that the athletic demands at the end of a season may be more controlling and less autonomy-supportive than those at the beginning of a season. For example, teams at the end of the volleyball season are often competing for limited spots in playoffs or National championship tournaments, and may feel pressured to engage in extra training. Teams may organize extra training sessions to focus on specific areas of weakness, game plan for upcoming opponents, or simply to stay "sharp". Athletes may feel pressured and less autonomous when engaging in these types of activities, which may cause levels of HP to decrease; however, the decreased athlete autonomy at the end of the season fails to explain the decrease in OP between T1 and T2. A realistic possibility is that decreases in HP and OP may be a reflection of overall decreases in passion between T1 and T2. To explore this possibility, average passion scores were computed by averaging the four items that measured the passion criteria, and a dependent t-test was conducted comparing passion scores at T1 to those at T2. Results indicated that overall levels of passion decreased between T1 ($\bar{x} = 6.58$, $SD = 0.50$) and T2 ($\bar{x} = 6.32$, $SD = 0.63$), $t(238) = 6.97$, $p <$

.01, $r = .51$, Cohen's $d = 0.46$.¹⁷ This result indicates that overall passion for volleyball decreased, which may explain the decreases in HP and OP between T1 and T2.

Although both HP and OP were fairly unstable over the 3-month span of this study, this finding unlocks an avenue for future research that would not have existed had there been no change in HP and OP. There are certainly factors that influence whether one's level and type of passion will change, and research is needed to uncover these factors. For instance, parents may play an important role (Mageau et al., 2009); however, particularly in collegiate level athletes, the influence of peers (Harris, 1998) or coaches may be much more substantial. Another influence may be the athletic environment, as those that are autonomy-supportive may contribute to HP, while OP may result from those that are controlling. According to self-determination theory (Ryan & Deci, 2002), autonomous behavioural regulation is fostered when the needs of competence, autonomy, and relatedness are provided. Athletic environments that consistently provide these three psychological needs throughout the season may promote HP, and research is needed to determine the role of psychological needs in the development and maintenance of HP and OP.

We may be able to uncover some of the environmental factors influencing the stability of levels and types of passion by comparing test-retest relationships between samples. For instance, what is it about teachers or the teaching environment that makes passion for teaching much more

¹⁷ The final data set omitted individuals who failed to satisfy the passion criteria (individuals who did not score > 4 on each item measuring the passion criteria). Thus, a second analysis was conducted with the original data set ($N = 438$) to incorporate these individuals in the analysis. Individuals who participated at both time points and who were training at T1 and T2 were included in the analysis ($n = 274$). Similar decreases were again found between T1 ($\bar{x} = 6.49$, $SD = 0.63$) and T2 ($\bar{x} = 6.11$, $SD = 0.87$), $t(273) = 8.62$, $p < .01$, $r = .57$, Cohen's $d = 0.50$. However, in both analyses, passion scores were negatively skewed.

stable compared to volleyball players (Carbonneau et al., 2008)? Are teachers more in control of their environment compared to athletes, whose environment may be controlled by a coach and thus may not be as stable over time? Were the identities of teachers more fully formed and stable due to their age ($\bar{x} = 43.07$, $SD = 10.16$) compared to the younger sample obtained in the current study ($\bar{x} = 19.76$, $SD = 1.77$)? Or perhaps experience may contribute to passion stability, as the teachers in the Carbonneau et al. (2008) study averaged almost twice as much experience teaching ($\bar{x} = 15.82$, $SD = 10.33$) compared to the volleyball players in the current study ($\bar{x} = 8.40$, $SD = 2.46$)? Research is needed to explore not only what contributes to the development of HP and OP but, as this research shows, what contributes to the *maintenance* of both types of passion.

4.1.3.2 Passion and coping.

The relationships established between passion and coping are not only informative to explain relationships with burnout and goal attainment, but reveal more about the passion construct in general. The hypothesised relationships between types of passion and coping were largely supported and are in agreement with past research (Rip et al., 2006). One exception was the relationship between change in OP and change in distraction-oriented coping, which was not significant. The magnitude of this effect ($\beta = .14$) was similar to the relationship between OP at T1 and distraction-oriented coping at T2 ($\beta = .18$), suggesting that the relationship between OP and distraction-oriented coping in general may be fairly weak. This may be due to the nature of distraction-oriented coping, which involves focusing one's attention elsewhere while remaining engaged in the activity. Because this type of coping involves both mental disengagement and physical engagement in demanding situations, associations with distraction-oriented coping in

the literature tend to be fairly weak (P. Gaudreau, personal communication, June 2, 2011). This may also explain why change in HP was negatively associated with change in distraction-oriented coping, while HP at T1 failed to predict distraction-oriented coping at T2. Another unanticipated result was the negative association between HP and disengagement-oriented coping. This negative association was found both when prospective data and residualized change scores were examined. Although not expected, these results are not surprising, as individuals with high HP tend to engage in task-oriented coping, suggesting that these individuals would not disengage from the activity when coping with training demands.

The links established between passion and coping are informative when the reasons for *why* these relationships exist are considered. For instance, research has found that self-determined motivation is positively associated with task-oriented coping strategies, while nonself-determined motivation is associated with disengagement-oriented coping strategies (Amiot et al., 2004; Amiot & Gaudreau, 2010; Gaudreau & Antl, 2008). Harmonious passion stems from an underlying self-determined, autonomous behavioural regulation, while OP is a form of a nonself-determined, controlled behavioural regulation (Vallerand et al., 2003; Vallerand, 2010). Thus, the associations found between HP, OP and coping may be due to these underlying motivational regulations. Future research may wish to test this hypothesis by examining behavioural regulations as a mediator of the relationship between passion and coping; a similar analysis was conducted by Gaudreau and Antl (2008) who found that the relationship between types of perfectionism and coping was mediated by levels of self-determined motivation.

Another explanation for the passion-coping relationship may be differences in appraisal (Lazarus, 1991; 1999). Individuals with an HP and those with an OP may tend to appraise person-environment transactions differently, which would in turn influence the coping strategies employed. This study demonstrated that HP was positively associated with task-oriented coping and negatively associated with disengagement-oriented coping, suggesting that individuals with an HP may appraise person-environment transactions as challenging and controllable. Obsessive passion was positively associated with disengagement-oriented coping, which suggests that these individuals may appraise these types of situations as threatening and uncontrollable (Ntoumanis, Edmunds, & Duda, 2009). In fact, it is quite likely that a relationship exists between passion and appraisal. Ntoumanis and colleagues (2009) argued that motivational regulation and psychological need satisfaction are related to stress appraisal. They argued that challenge and control appraisals are likely to result when one's psychological needs have been satisfied leading to self-determined motivation, while appraisals of threat and uncontrollability will result when one engages in an activity for more controlled, less self-determined motives. Since HP is linked with self-determined motivation and OP with nonself-determined motivation, differences in appraisal between HP and OP may be due to differences in motivation regulation.

Another mechanism linking passion with appraisal may stem from the nature of the passion construct itself. Control is a core concept in the passion literature – individuals with an HP are expected to have control over their activity engagement (i.e., the individual controls the activity), while individuals with an OP are expected to lack this control (i.e., the activity controls the individual; Vallerand, 2010). The control perceived by individuals with an HP may cause them to make control appraisals when confronted with demanding person-environment

transactions. Individuals with an OP, due to their lack of control over their activity engagement, may have a tendency to appraise stressful situations as uncontrollable. In addition, because more of their identity is tied to the activity, individuals with an OP may have a tendency to make more threat appraisals. Research has shown that individuals with an OP derive more of their global self-esteem from the passionate activity compared with those with an HP, and experience fluctuations in state self-esteem based on their performance in the passionate activity (Mageau et al., 2011; Stenseng & Dalskau, 2010). Demanding person-environment situations may be more threatening to those with an OP compared to those with an HP, since more of their self-worth may be tied to the activity. It appears likely that appraisals of demanding situations may differ depending on one's passion. Research should directly investigate this relationship.

A third concept that may play a role the passion-coping relationship is emotion. Emotion is closely tied with appraisal, in that different emotions can cause, and be caused by, different appraisals (Lazarus, 1999). Emotion can influence how individuals cope with demanding person-environment transactions (Lazarus, 1999). For instance, Chartier et al. (2011) examined the relationship between affect (a concept incorporating emotions, feelings, and mood; see Vallerand & Blanchard, 2000) and coping in university students, and found that dispositional positive affect at the start of a semester predicted task-oriented coping four weeks later. Negative affect, conversely, predicted disengagement-oriented coping. Considering that HP has been shown to be positively associated with positive emotions and affect while OP has been associated with negative affect (Mageau & Vallerand, 2007; Vallerand et al., 2003; Vallerand et al., 2006), it is likely that the relationship between passion and coping may be mediated by the

relationship between passion and affect. This line of inquiry offers another potential area for future research.

A final possible explanation of the different associations found in this study between types of passion and coping styles originates from research on self-regulation. Coping is a form of self-regulation, meaning that it is an effort by the individual to alter and control functions, internal states, and processes (Vohs & Baumeister, 2004). Research in self-regulation has shown that self-regulation draws on a limited amount of resources, and one's ability to self-regulate can diminish when these resources have been depleted. According to the self-regulatory strength model (Muraven & Baumeister, 2000; Schmeichel & Baumeister, 2004), any act that depletes regulatory resources will make subsequent self-regulatory acts more difficult. In this study, task-oriented coping involved efforts that may be more resource demanding (e.g. item 14: "I give a relentless effort") compared to disengagement-oriented coping (e.g. item 10: "I lose all hope of attainment my goal"). It is possible that individuals with high levels of OP not only used disengagement-oriented coping, but did not have the self-regulatory resources required to engage in more resource-demanding coping strategies, such as those involved with task-oriented coping. Thus, individuals scoring high on OP may employ disengagement-oriented strategies because they are the only types of coping strategies that they are capable of using. For this to be a plausible argument, the self-regulatory resources of those with an OP would have to be more taxed and depleted compared to those with an HP. Any act that requires effortful executive functioning, such as controlling thoughts and behaviours, making difficult decisions, planning, and resisting temptation, can deplete one's self-regulatory strength (Schmeichel & Baumeister, 2004). Thus, if individuals with an OP engage in more of these types of effortful actions

compared to those with an HP, then the “self-regulatory strength” explanation may have some support.

There are a number of potential sources of resource depletion that may cause the self-regulatory strength of individuals with an OP to be weaker than those with an HP. First, individuals with an OP experience more conflict between the passionate activity and other life domains compared to those with an HP (Vallerand, 2003; Vallerand et al., 2010). Due to this conflict, individuals with an OP may face difficult decisions about whether to engage in the passionate activity, and may even ruminate about the outcomes of these decisions (Vallerand et al., 2003). For example, if we return to the story of the obsessively passionate volleyball player (section 1.2.3.2), recall that she was faced with the difficult decision of either playing volleyball or studying for an upcoming exam. In addition to this difficult decision, it is likely that she would ruminate about the decision that she made, and would have difficulty engaging in her chosen activity because of this conflict. This type of scenario would appear to be quite draining on one’s self-regulatory resources, and research suggests that even simplest of choices can deplete one’s resources. For instance, one study found that individuals who were forced to make relatively simple choices (such as between two candy bars, candles, or t-shirts), performed worse on a cold pressor task compared to individuals who were not forced to make these simple choices (Vohs, Twenge, Baumeister, Schmeichel, & Tice, 2003). In addition, a series of experiments by Moller, Deci, and Ryan (2006) found that making controlled choices (i.e., being subtly pressured into choosing a particular option) was more ego-depleting compared to making autonomous choices (i.e., having complete control over the choice). A fundamental characteristic of OP is feeling internal or external pressure to engage in the passionate activity, and it is likely that this

pressure would cause individuals to make controlled decisions, leading to a depletion in self-regulatory strength. Individuals with an HP, however, do not experience this internal pressure, which may allow them to have the resources required to engage in demanding self-regulatory processes associated with task-oriented coping.

A second source of resource depletion for those with an OP relates to their general activity engagement. As outlined earlier, individuals with an OP are more ego-involved in the activity and have self-esteem that is more contingent on the activity (Mageau et al., 2011; Stenseng & Dalskau, 2010). Thus, in general, functioning in these environments may be more cognitively demanding than with individuals with an HP, who enjoy a more balanced relationship with the passionate activity. Because there is more at stake for individuals with an OP compared to those with an HP, engaging in the activity may require more self-regulatory resources which may deplete the resources required to engage in task-oriented coping. Moreover, Smith and colleagues (2011) suggested that pursuing goals that are not in concordance with one's identity may be more mentally draining and energy consuming compared to pursuing goals that are in concordance with one's sense of self. Since a controlled behavioural orientation is a fundamental characteristic of OP, it is likely that individuals with an OP may experience depleted resources because the goals they target are not autonomously pursued.

In sum, there are a number of possible explanations for the relationship between passion and coping. All or none of the explanations discussed may be involved in the passion-coping link, and learning more about this connection will not only reveal why passion and coping are related, but may reveal new information about the passion and coping concepts in general.

4.1.4 Stability of Coping, Burnout, and Goal Attainment

4.1.4.1 Stability of coping.

A secondary objective of this study was to assess the stability of coping style over the course of an athletic season. Results revealed that mean levels of task, distraction-, and disengagement-oriented coping decreased between T1 and T2, although this effect was strongest with task-oriented coping. Also, correlations between T1 and T2 for the three coping styles ranged from .50 to .60, providing weak evidence for coping stability. Given that athletes were provided with a specific environmental stressor (training demands), and asked how they *typically* cope with these demands, these correlations were lower than expected. Louvet, Gaudreau, Menaut, Gentry, and Deneuve (2007) suggested that evidence for stability in coping would be obtained if correlations greater than .70 were obtained between T1 and T2, as this would indicate that coping at both time points share at least 50% of the variance. They also suggested that weaker correlations of less than .30 would provide evidence for a state-like approach to coping, as this would indicate that less than 10% of the variance could be attributed to individual differences. Since the correlations obtained in this study fall between these two thresholds, mixed support was found for trait- and state approaches (Louvet et al., 2007).

The mixed evidence for coping stability found in this study is an accurate reflection of the state of the coping literature in sport. Research in sport has examined coping from both process (state) and dispositional (trait) perspectives, and has found support for both approaches (Hoar et al., 2006; Kowalski & Gaudreau, 2011; Nicholls & Polman, 2007). For example, in support of the process perspective, Bouffard and Crocker (1992) failed to find consistent use of

coping strategies to challenging physical activities among a group of physically disabled individuals. Qualitative studies with athletes have also supported coping as a dynamic process that can change within and between stressful situations (Giacobbi et al., 2004; Holt & Hogg, 2002). On the other hand, research in sport has supported coping as a stable disposition (Anshel, 1996; Giacobbi & Weinberg, 2000). Other studies have found support for both approaches (e.g. Crocker & Isaak, 1997).

A study that captured the complex nature of coping over time was conducted by Louvet and colleagues (2007), who measured the coping strategies used during three competitions, each separated by two months, in a group of soccer players. Results found no mean differences in the use of task-, distraction-, and disengagement-oriented strategies between the three competitions. However, similar to the correlations obtained in the present study, the correlations between adjacent time points for the three coping dimensions ranged from .48 to .63, suggesting that there was some change in coping between time points. When the authors examined change between time points using latent class growth modelling, they found that some athletes changed between time points (the “changers”), while others did not. Moreover, the changers did not all change in similar ways: some increased the use of particular coping strategies over time, and some decreased the use of these strategies.

The results of the Louvet et al. (2007) study may explain the results obtained in the present study. Mean level differences indicated that, overall, athletes decreased the use of all three coping dimensions between T1 and T2, with the decrease in task-oriented coping being particularly prominent. This may mean that the training demands at the end of the season were less demanding compared to those at the start of the season, and would required less coping

effort. There could also be differences in change within subgroups of athletes, as found in the Louvet et al. study: some athletes may have decreased the use of coping strategies between T1 and T2, some may have maintained their used, and other may have actually *increased* coping effort between T1 and T2. Mean coping levels may mask the differences in coping between subgroups (Schutz, 1998), and more advanced statistical procedures such as latent class growth modelling are required to assess these subgroup effects. Overall, the results of this study provide mixed support for coping stability over a three-month period, and future research may wish to probe the potentially dynamic instability of coping.

4.1.4.2 Stability of burnout.

Analysis of change between T1 and T2 burnout scores yielded results that were generally unsurprising: moderate increases in global burnout scores were found between T1 and T2, and a correlation of .62 was obtained between scores at both time points. The correlation obtained between both time points was lower than in past test-retest procedures with the ABQ. Radeke and Smith (2009), for instance, reported seven to nine day test-retest correlations between the three subscales of the ABQ that ranged from .86 to .92. However, the present study used a 3-month interval which may explain the weaker test-retest correlations found with global burnout (.62) and the three burnout subscales (range of .50 to .64).

Change in burnout over time, particularly within a competitive season, is supported by theory and research. A recent review of burnout in sport (Gustafsson, et al., 2011) identified a number of factors that may act as antecedents of burnout, including training demands, school or work demands, stressful social relations, negative performance demands, lack of recovery, and

early success. Changes in these factors over time may influence the development of burnout. Change in burnout is also unsurprising when approached from the perspective of the stress process (Smith, 1986), which posits that burnout is an outcome resulting from chronic stress and ineffective management of person-environment transactions. Thus, it is likely that burnout symptoms would increase between the start and end of an athletic season, as chronic demands that tax one's resources may require time to manifest as symptoms of burnout. Research has also found that experiences of burnout change throughout a competitive season. For example, Cresswell and Eklund (2005) found variation in the three dimensions of burnout over the course of a competitive season in a group of rugby players.

An interesting, and quite common, question in burnout research is the proportion of “burned out” individuals in a particular group or sample. Unfortunately, there are no diagnostic thresholds associated with data derived from the ABQ, meaning that athletes cannot be categorized as “burned out” based on their ABQ scores (Raedeke & Smith, 2009). However, the percentage of athletes that surpass a particularly high score can be assessed to determine the amount of athletes that *may* be burned out, or who frequently suffer from symptoms of burnout. Such a *post hoc* analysis was conducted in the present study, and the percentage of athletes who scored 3.5 or higher on a burnout subscale or global measure of burnout were assessed at T1 and T2 (3.5 was used as a cut-off point because athletes who score above this threshold are individuals who, on average, experienced symptoms associated with burnout more often than “sometimes”). Results of this analysis are displayed in Appendix R, and show that 1.26% of individuals at T1 surpassed this threshold for global burnout, and this percentage increased to 4.60% at T2. There was some variation between the burnout subscales, particularly with the

emotional and physical exhaustion dimension where 13.39% and 15.48% of athletes surpassed this threshold at T1 and T2, respectively. These proportions are similar to those reported by Raedeke and Smith (2009), and indicate that athletes typically endorse statements of high emotional and physical exhaustion compared to reduced accomplishment and sport devaluation.

4.1.4.3 Stability of goal attainment.

Overall, a weak relationship was found between goal attainment at T1 and T2. There was no mean difference between the two time points, and a low to moderate correlation between both time points was found ($r = .37$). The correlations between T1 and T2 varied between subscales, with a stronger correlation found in the performance subscale ($r = .55$) compared to the mastery ($r = .38$) and improvement ($r = .21$) subscales. Due to the design of this study, the weak relationship of goal attainment found between T1 and T2 was unsurprising. Athletes were asked to report how they had been feeling “during the past four weeks of training” at T1 and T2, which suggests that there was a weak relationship between the way athletes had felt about the goal attainment during the first four weeks of the season and these feelings at the end of the season.

Assessing change between the beginning and the end of an athletic season is informative, but fails to provide insight into the pattern of these changes throughout the season. For instance, change in goal attainment (and in passion, coping, and burnout, for that matter) may not be linear, and may fluctuate during a season (e.g. Louvet et al., 2007). Individuals may perceive that they are attaining their goals during particular parts of the season or after particularly inspired performances, but may feel otherwise when they fail to perform up to their perceived capabilities. In addition, similar to the process described by Louvet et al. (2007), perceived goal

attainment may change in certain athletes and remain stable in others, and the “changers” may not always change in the same pattern over time. Considering the potential of goal attainment to contribute to life satisfaction and well-being (Gaudreau & Antl, 2008; Smith et al., 2011), future research may wish to examine fluctuations in goal attainment over time.

4.3 STRENGTHS AND LIMITATIONS

4.3.1 Study Strengths

There were a number of features of this study that allowed it to provide a unique and substantial contribution to research and theory. First, the purpose and design of this study was based on theory, as coping has a strong theoretical and empirical connection with passion (Rip et al., 2006) and both burnout and goal attainment (Hoar et al., 2006). Multiple mediation analyses also allowed this study to examine the specific mediating effect of task-, distraction-, and disengagement-oriented coping in the passion-burnout and passion-goal attainment relationships. Another strength of this study was that it used measures that have demonstrated sound psychometric properties in past research; the results of this study largely supported these findings. Also, this study adopted a two-wave design, which allowed the experiences of athletes at the start and the end of an athletic season, and changes in these experiences between these two time points, to be assessed. Finally, 239 athletes provided complete data at both time points, and this sample size was more than sufficient for the analyses conducted in this study. Athletes were also recruited from teams and pre-season tournaments that took place near Winnipeg, MB and Vancouver, BC, allowing collegiate volleyball players from across Canada to be represented.

4.3.2 Study Limitations

There are also a number of limitations of this research. First, an important limitation of this study concerns the issue of causality. The causal ordering of the relationships examined in this study were based on theory, but the observational design of this study does not allow causality to be inferred. For causality between two variables (X and Y) to be established, three requirements must be satisfied: there must be a relationship (covariation) between X and Y, one variable (X) should precede the other (Y), and there should be a non-spurious relationship between both variables, meaning that the relationship between X and Y cannot be explained by any other process (Munro, 2005). This study allows the first two questions to be addressed, but is not capable of addressing the third.

Another limitation relates to the composition of the scales used in this study. To begin, although the majority of scales demonstrated adequate psychometric properties, lower-order coping scales measuring distancing, logical analysis, and thought control were omitted from higher-order coping computations due to inadequate Cronbach's alpha levels ($< .60$), indicating that the relationships among items measuring these three scales were weak. This result was quite unexpected, and the Cronbach's alpha levels were much lower than in previous studies using the CICS (Gaudreau & Antl, 2008; Gaudreau & Blondin, 2002). When inter-item correlations were examined, omitting one item from each scale did not improve the internal consistency, suggesting that these levels could not be blamed on one rogue item. One explanation may be that distancing oneself from athletes may not be a feasible strategies used in athletes competing in a team sport (e.g. item 3: "I take my distance from other athletes"), while logical analysis and thought control may not be applicable when coping with training demands (e.g. item 9 from the

logical analysis subscale: “I analyze my past performances”). Responses on the items measuring these three scales may have been idiosyncratic because the scales themselves may not have been applicable to the athletes and their coping efforts.

Next, one potential limitation of this study was the creation of global measures of goal attainment and burnout from subscales measuring these constructs. First, global goal attainment was computed by averaging scores on self-improvement, mastery, and performance goal attainment subscales. Although these scales measure different types of goal attainment, the correlations between the three scales at T1 (.53 to .66) and T2 (.66 to .69) suggest that the three subscales are sufficiently related to be aggregated into a single measure of goal attainment. In addition, previous research using structural equation modelling has demonstrated that these three scales represent a single latent variable measuring goal attainment (Chartier et al., 2011; Gaudreau & Antl, 2008). However, weaker relationships were found between the three scales used to compute global burnout: emotional/physical exhaustion, reduced sense of accomplishment, and sport devaluation. Correlations between these three scales ranged between .32 to .49 at T1 and .38 to .57 at T2. Despite these weak relationships, burnout is conceptualized as a syndrome involving three symptoms (measured by the three subscales), and the purpose of this study was to examine this syndrome as a whole. Thus, the multidimensional nature of burnout would be lost if particular subscales were excluded from analyses or if the three subscales were examined separately. In addition, past research using confirmatory factor analysis has demonstrated the appropriateness of a latent measure of global burnout representing the three subscales of the ABQ (Hill et al., 2010).

Next, this study approached coping from a dispositional perspective, and adopting a process approach may complement the relationships established in this study (Aldwin, 2007). Rather than asking athletes to retrospectively recall coping strategies that were used in a previous competition or period of training, athletes were asked to report the coping strategies that they typically use. Considering the debate surrounding this dispositional approach (Lazarus, 1999), future research may wish to replicate this study using a process approach, and measure coping by asking athletes to retrospectively recall the coping strategies used in a recent competition (e.g. Gaudreau & Antl, 2008), or adopt a daily process method and ask athletes to provide daily accounts of their coping efforts (see DeLongis & Holtzman, 2005). Athletes were also asked to report how they typically cope with training demands, meaning that different strategies may be used to cope with other environmental demands in the sport environment, such as performance demands, school and work demands, and media expectations (see Hoar et al., 2006). Although training demands were targeted as a specific stressor because of their applicability to burnout and goal attainment (Cresswell & Eklund, 2006; Gustafsson et al., 2008; Raedeke et al., 2002), the relationships established in this study may not apply to other demands.

Finally, the sample consisted exclusively of collegiate-level volleyball players, which may not allow the results to generalize to athletes who play other sports or compete at different levels (e.g. youth, Olympic level), or to populations other than athletes, such as teachers and health care workers.

4.4 PRACTICAL IMPLICATIONS

This study has the potential to inform individuals working with athletes in applied settings. These individuals (hereinafter called “practitioners”) include sport psychology consultants, mental trainers, coaches, or any individual who works with athletes in an effort to enhance athlete performance and experience in sport. Three main practical implications of this research include contributions to stress management programs, methods to prevent burnout, and techniques to enhance goal attainment in athletes.

4.4.1 Stress Management Programs

Practitioners may be informed by the relationships obtained between one’s passion for sport and typical coping style. Stress management programs are often used by practitioners who work with athletes, and most of these programs involve the acquisition and practice of different coping skills (see Hoar et al., 2006 and Nicholls, 2010). This research may guide these programs by informing the practitioner of the coping strategies that particular athletes may be more comfortable using or more likely to employ based on their passion. For instance, an athlete with high OP may be more likely to use disengagement-oriented coping strategies when managing the demands of a new training phase, and may need additional practice and support from practitioner when learning to use coping strategies that are more task-oriented. Conversely, in situations where disengagement-coping is the only effective way to manage a particular sport-related demand, an athlete with high HP may need additional practice and encouragement to use these types of strategies, since the results of this study suggest that HP is negatively associated with

disengagement-oriented coping. Thus, understanding one's passion for sport may help to guide stress management programs and make them more specific for the athlete.

4.4.2 Burnout Prevention

This research may also inform practitioners wishing to prevent the development of burnout in athletes in two ways. First, practitioners may aim to promote HP as a strategy to prevent burnout, as HP has consistently been negatively associated with burnout. Although little research has examined the factors that influence the development of HP, it appears that an autonomy-supportive environment may promote the development of HP (Mageau et al., 2009). Practitioners wishing to promote HP may strive to increase athlete autonomy by increasing the amount of choice and control athletes have in their sporting environment. Second, burnout may be prevented by promoting the use of task-oriented coping strategies and avoiding the use of disengagement-oriented coping strategies. By using task-oriented coping strategies, the individual may be more likely to remain engaged in the activity when faced with demanding situations, and this proactive coping strategy may allow an athlete to adequately manage these situations and avoid experiencing burnout.

Ideally, decreasing the prevalence of burnout in athletes will increase athlete well-being and promote sport participation. However, in the case of passionate individuals, the influence of burnout on sport participation is unclear. For instance, this study found that individuals with elevated levels of HP are resilient against burnout while individuals with elevated levels of OP are not, but this by no means suggests that individuals with high levels of OP are more likely to withdraw from sport. First, considering that OP has been associated with rigid persistence in an

activity (Vallerand et al., 2003), obsessively passionate athletes may continue to persist in sport despite suffering from burnout. Another factor that weakens the burnout-sport withdrawal relationship is the fact that individuals with an OP, because the activity occupies a disproportional part of their identity, may not have many attractive alternatives to lure them away from sport (Mageau et al., 2009). Attractive alternatives have been negatively associated with sport commitment (Scanlan, Carpenter, Schmidt, Simons, & Keeler, 1993), and failing to have these alternatives may persuade an individual to continue participation in sport. Although the connection between burnout and sport withdrawal has yet to be explored in those who are passionate towards sport, it is likely that this relationship is weak, and may focus the main objective of practitioners wishing to prevent athlete burnout to be the promotion of well-being rather than sport participation.

4.4.3 Facilitating Goal Attainment

Practitioners working with athletes may also benefit from the connections established between passion and goal attainment. Again, as in the case with burnout prevention, practitioners aiming to promote goal attainment in athletes can choose to augment one's HP towards sport, or target coping and aim to promote the use of strategies that are more task-oriented. However, in addition to the issue of causality, the efforts of practitioners may be best applied to targeting either HP or coping exclusively, in combination, or along with other processes that may influence goal attainment, such as goal-directed effort or psychological need satisfaction (Smith et al., 2011). Research has just begun to explore the associations among passion and coping and goal attainment in sport, and hopefully research will be able to provide firm recommendations to practitioners in the future.

It is important to note that although an objective of practitioners aiming to enhance athlete goal attainment may be to increase athlete well-being, the attainment of goals does not always lead to positive outcomes, and may depend on the content, or type of goal attained. According to the self-concordance model of goal pursuit (Sheldon & Elliot, 1999; Sheldon, 2002), positive outcomes will be experienced to the extent to which the goals attained agree or coincide with an individual's values, beliefs, and identity. Goals that are not self-integrated into an individual's sense of self, even when attained, will fail to satisfy the individual's basic psychological needs, and thus fail to lead to positive experiences. For example, a volleyball player who attains the goal of executing ten consecutive digs during a training session may experience little change in well-being if this goal is not a valued component of the athlete's identity, whereas an athlete who prides himself as being a "volleyball player" may experience an increase in well-being after this accomplishment. Thus, although attaining goals is generally believed to be a positive experience, it will be less so if the goals attained are not in concordance with the individual's identity. It is likely that the goals attained by those with high levels of HP are in concordance with the individual's identity, as activities in general are theorized to be autonomously integrated into the individual's identity (Vallerand et al., 2003). This would lead goal attainment by individuals with high levels of HP to facilitate increases in well-being, while the same relationship may not be seen with individuals with elevated OP. The connection between goal attainment, well-being, and the role of self-concordance in those who are passionate towards an activity offers another exciting area of research.

Finally, these potential implications for applied practice come with two important caveats. First, much more research is needed before passion can be used by practitioners to

make important decisions with athletes. For instance, it may be more advantageous and efficient for practitioners to focus on processes underlying the passion-coping relationship (such as appraisal), rather than target coping skills directly. Second, causality cannot be inferred from this study, and causality would have to be established prior to making recommendations to practitioners. Thus, although firm recommendations based on this research may be made to practitioners in the future, more research is needed before this can happen.

4.5 FUTURE DIRECTIONS

Throughout this discussion, multiple areas for future research have been suggested. I will briefly discuss two design strategies that I believe will be particularly useful to examine relationships between passion, coping, and various athletic outcomes.

4.5.1 Longitudinal Design

This study measured passion, coping, burnout, and goal attainment at two time points, which allowed the change in these variables between the start and end of an athletic season to be assessed. However, the dynamic relationship between passion and associated experiences may be better understood by employing a longitudinal design involving more than two assessments.¹⁸ For example, based on the broaden-and-build theory of positive emotions (Fredrickson, 2001), a researcher could examine the dynamic relationship between passion, coping, and burnout by measuring these variables at multiple times throughout an athletic season. Through the use of advanced statistical procedures such as latent growth modelling, a researcher could examine if

¹⁸ As Rogosa, Brandt, and Zimowski (1982) stated: “Two waves of data are better than one, but maybe not much better. Two data points provide meagre information on individual change, and thus the measurement of change often will require more than traditional pre-post data” (p. 744).

HP is a construct that is associated with an “upward spiral” of positive experiences in sport, and assess if change in HP is associated with increases in goal attainment and decreases in burnout, and whether the changes in goal attainment and burnout influence subsequent change in HP and coping. Other variables that may be involved in this cycle, such as positive affect, could be examined as well.

Longitudinal research designs could also allow researchers to approach coping from a process perspective. This study approached coping for a dispositional perspective and measured athletes’ coping styles, and these relationships would gain strength if replicated using a process approach. One method to study coping is to adopt a daily diary approach (DeLongis & Holtzman, 2005) and ask athletes to record the coping strategies that they use on a daily basis. This method could not only shed light onto the coping strategies that athletes use, but could measure outcomes that may be more immediately associated with coping, such as performance and emotion. For example, after an initial assessment of passion, athletes could be asked to keep a diary for a week and provide daily accounts of the coping strategies that they used to manage training demands. At the end of the week, relationships between HP, OP and the coping strategies reported could be assessed to determine if HP and OP are associated with different types of coping. This method would also allow other interesting effects to be examined, such as the influence that variables such as coping, burnout, and goal attainment have on outcomes measured the next day (e.g. DeLongis, Capreol, Holtzman, O’Brien, & Campbell, 2004).

4.5.2 Experimental Design

Experimental designs would allow causality between variables to be established, and future research may wish to employ this design to build upon the results of the present study. Two main objectives could be pursued with this type of design that could be particularly informative. First, differences between individuals with an HP and OP could be assessed in controlled settings to gain a more thorough understanding in the differences between these two groups. For example, a researcher aiming to study the differences in coping and appraisal between individuals with an HP and OP could design a quasi-experimental study where individuals are categorized as having an HP or OP (based on Z-scores or the relation between HP and OP scores; e.g. Mageau et al., 2009). Participants could be brought into a lab and asked to cope with a demand related in some way to their passionate activity (e.g. passionate musicians could be asked to write a very challenging music theory exam), and coping strategies and stress appraisals could be assessed. Differences between groups would suggest that individuals with an HP and OP differ in the coping strategies and stress appraisals that they use.

Another main aim of experimental research could be to manipulate the development of HP and OP and examine the effects on various outcomes and experiences. A researcher may recruit participants who are new to an activity, and assign half the participants to an environment that is expected to promote HP and the other half to a control condition (ethical concerns would undoubtedly prevent the researcher from assigning individuals to an environment that is intended to promote OP). After a period of time functioning in these environments, differences between the two groups could be assessed on a variety of outcomes, such as coping, goal attainment, and burnout. This design strategy would be exceptionally informative, but comes with a variety of

challenges, such as identifying a sample of novice participants where the researcher has control over the environment (summer camps are a potential solution to this problem; see Mageau et al., 2009), and selecting a method to quickly and effectively ensure that the participants in the HP-promoting environment not only develop a passion for an activity, but that this passion is harmonious. Despite these challenges, the creativity and ingenuity of researchers who study passion will undoubtedly allow them to solve these and other questions that have yet to be addressed in the passion literature.

4.6 CONCLUSION

Since the renewal of passion as a construct in psychology by Vallerand and colleagues (2003), it has quickly blossomed and produced a rich body of research (see Vallerand, 2010). However, as is true with the social sciences, each piece of knowledge that is added to this puzzle reveals that there are even more pieces yet to fill. The purpose of this study was to add a small but important piece to this puzzle, and examine the associations between HP, OP and coping styles, and assess if these relationships mediated the link between both types of passion and two important outcomes in sport, burnout and goal attainment.

In addition to adding to the extant passion literature, I hope that this research has unveiled even more avenues for further inquiry, and perhaps has even inspired researchers interested in passion to pursue these research questions. These researchers, however, would be wise to learn from research conducted with teachers, students, drivers, musicians, dancers, and of course volleyball players: positive experiences during these research pursuits are more likely to

be enjoyed when passion for research is harmonious rather than obsessive. In the words of Vallerand and colleagues' (2003) introductory comments:

Indeed, individuals who wake up in the morning with a smile on their face “because today is basketball day,” musicians who practice several hours per day in the hope of achieving excellence, and scientists who spend years researching a phenomenon all have a passion activity that makes their lives worth living. Passion can fuel motivation, enhance well-being, and provide meaning in everyday life. However ... passion can also arouse negative emotions, lead to inflexible persistence, and interfere with achieving a balanced, successful life. (p. 756)

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Appendices

Appendix A – Coach Contact Email

To: [Coach's email address]

Cc:

Bcc:

Subject: High Performance Volleyball Study

Dear **[Coach]**,

My name is Ben Schellenberg and I'm a graduate student in Human Kinetics at UBC – I'm also a former volleyball player at the University of Winnipeg. I plan to conduct a research study this year with elite volleyball players, and would like to distribute questionnaires to athletes on college and university teams.

I'm writing to ask if you would be willing to facilitate a time when I could meet with your team and invite them to participate. During the meeting I would explain the study, distribute consent forms, and provide a questionnaire to those who agree to participate. This meeting will last approximately 25 minutes.

I am able to meet with the team at the **[upcoming volleyball tournament or team practice]** taking place on **[tournament/practice date]**. The best place for this meeting to occur would be a classroom; however, if this is not possible, any quiet area would be fine. I am available to meet before or after the **[game/practice]**.

I have attached the consent forms that will be distributed to the athletes, which provides a little more detail about the study. If you have any questions, do not hesitate to ask!

Ben

Phone #: [REDACTED]

Appendix B – Participant Recruitment Poster



Exercise and Sport Psychology Lab
School of Human Kinetics
War Memorial Gymnasium
210 – 6081 University Blvd, Vancouver, BC, V6T 1Z1

PARTICIPANTS NEEDED

Purpose of Study: We are interested in examining the experiences of high performance volleyball players. Elements of the athletic experience, such as goals, coping strategies, and passion for sport will be examined in an effort to learn more about the experience of high performance athletes. Volleyball players from throughout Canada who compete at the college and university levels are being asked to participate in this research.

Study Procedures:

- This study involves **two phases**. At the **first phase**, you will be asked to complete a questionnaire regarding your experience as a high performance volleyball player. This questionnaire usually takes about 15-20 minutes to complete.
- The **second phase** of the study will take place in mid-January, when an online questionnaire will be distributed. Most questions in these questionnaires will ask you to rank your level of agreement with various statements about volleyball. This second questionnaire will take about 10 minutes to complete.
- *Both phases of this study are important, as we are interesting in comparing volleyball experiences at the start of the season to those at the end of the season.*

Confidentiality: Your identity will be kept strictly confidential. All documents will be identified only by code number and kept in a locked filing cabinet. Responses will be entered into a desktop computer located in the Exercise and Sport Psychology Lab. Data collected online will be stored using Edudata Canada, a University of British Columbia-based company that provides online data collection services. (<http://www.edudata.ca>). Edudata provides a secure facility for storing personal information, and complies with British Columbia's Freedom of Information and Protection of Privacy Act. Participants will not be identified by name in any reports of the completed study.

Although your name will not be required, this study will request your email address. Email addresses will be used to contact participants for the second phase of the study, and used to match follow-up responses with earlier responses. After matching has taken place, email addresses will be permanently deleted.

Potential Risks: There are no known risks associated with participating in this study.

Potential Benefits: Participating in this study will allow you to share your experiences as an athlete, and the information collected may result in enhanced athletic experiences of future high performance volleyball players.

For more information about this study, please contact:

Benjamin Schellenberg

at

Email: [REDACTED]@interchange.ubc.ca

**This study has been reviewed by, and received ethics clearance
through, the UBC Behavioural Research Ethics Board**

Appendix C – Participant Meeting Script



Exercise and Sport Psychology Lab

School of Human Kinetics

War Memorial Gymnasium

210 – 6081 University Blvd ,Vancouver, BC, V6T 1Z1

Participant Meeting Script

My name is Ben Schellenberg and I'm a graduate student at UBC in Human Kinetics – I am also a former university volleyball athlete. For my Master's thesis, I'm conducting a research study on the experiences of high performance volleyball players. I'm planning to look at elements of the athletic experience, such as goals, coping strategies, and passion for sport, in an effort to learn more about the experience of high performance athletes.

There are two phases in this study. The first phase asks you to complete a questionnaire that asks a number of questions regarding your experience as a high performance volleyball player. This questionnaire usually takes about 15 to 20 minutes to complete.

At the end of the questionnaire, you will have an opportunity to write down your email address. Email addresses will be used to contact participants about the second phase of the study. This second phase will involve emailing out a link to a short online questionnaire, which should take about 10 minutes to complete. Most questions will ask you to rank your level of agreement with various statements about volleyball.

Finally, participation in this study is voluntary and, if you choose to participate, your identity will be kept strictly confidential. This confidentiality applies to your teammates and coaches, who will not have access to the responses that you make. This is not a team requirement or a requirement of your coach. There will be no negative consequences if you choose to withdraw or not to participate.

I've handed out a consent form that provides more detail. If you'd like to participate, please complete the questionnaire, and remember to write down your email address on the last page in order to be contacted about the second phase of the study.

Appendix D – High Performance Volleyball Experiences Questionnaire Consent Form



Exercise and Sport Psychology Lab
School of Human Kinetics
War Memorial Gymnasium
210 – 6081 University Blvd, Vancouver, BC, V6T 1Z1

CONSENT FORM

HIGH PERFORMANCE VOLLEYBALL EXPERIENCES STUDY

Principal Investigator:

Peter Crocker, PhD (Principal Investigator)
School of Human Kinetics
University of British Columbia
Contact Number: [REDACTED]
[REDACTED]@interchange.ubc.ca

Co-Investigator:

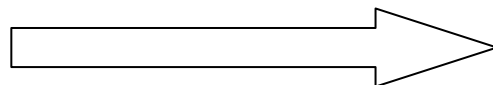
Benjamin Schellenberg, BA (Hons)
School of Human Kinetics
University of British Columbia
Contact Number: [REDACTED]
[REDACTED]@interchange.ubc.ca

Purpose of Study: We are interested in examining the experiences of high performance volleyball players. Elements of the athletic experience, such as goals, coping strategies, and passion for sport will be examined in an effort to learn more about the experience of high performance athletes. Volleyball players from throughout Canada who compete at the college and university levels are being asked to participate in this research, and as a qualifying athlete, your participation is highly valued. The data collected will be used in a Master's thesis written by the co-investigator.

Study Procedures:

- This study involves **two phases**. At the **first phase**, you will be asked to complete a questionnaire regarding your experience as a high performance volleyball player. This questionnaire usually takes about 15-20 minutes to complete.
- The **second phase** of the study will take place in mid-January, when an online questionnaire will be distributed. Most questions on this questionnaire will ask you to rank your level of agreement with various statements about volleyball. This second phase will take about 10 minutes to complete.
- *Both phases of this study are important, as we are interested in comparing volleyball experiences at the start of the season to those at the end of the season.*

SEE REVERSE



Confidentiality: Your identity will be kept strictly confidential. All documents will be identified only by code number and kept in a locked filing cabinet. Responses will be entered into a desktop computer located in the Exercise and Sport Psychology Lab. Data collected online will be stored using Edudata Canada, a University of British Columbia-based company that provides online data collection services (<http://www.edudata.ca>). Edudata provides a secure facility for storing personal information, and complies with British Columbia's Freedom of Information and Protection of Privacy Act. Participants will not be identified by name in any reports of the completed study.

Although your name will not be required, this study will request your email address. Email addresses will be used to contact participants for the second phase of the study, and used to match responses from the first and second phases. After matching has taken place, email addresses will be permanently deleted.

Potential Risks: There are no known risks associated with participating in this study.

Potential Benefits: Participating in this study will allow you to share your experiences as an athlete, and the information collected may result in enhanced athletic experiences of future high performance volleyball players.

Contact for information about the study:

If you have any questions or desire further information with respect to this study, or would like to be informed of the results, you may contact Benjamin Schellenberg at [REDACTED] or [REDACTED]@interchange.ubc.ca

Your Rights: If you have any concerns about your rights or treatment as a research subject please contact the 'Research Subject Information Line' in the UBC Office of Research Services at ([REDACTED]) [REDACTED] or, if long distance, email to [REDACTED]@ors.ubc.ca.

Consent:

- I understand that my participation in this study is entirely voluntary and that I may refuse to participate or withdraw from the study at anytime without jeopardy to my standing with the team, university, or league.
- I have read the consent form and know who to contact if I have any further questions.
- **By returning the first completed questionnaire you are consenting to participate in this study. Please keep a copy of this consent form for your records.**

Appendix E – High Performance Volleyball Experiences Questionnaire

High Performance Volleyball Experiences Questionnaire – First Phase

The following questionnaire asks a number of questions regarding your experience playing volleyball. Please answer truthfully and honestly – there are no right or wrong answers. There are **FIVE** sections of this questionnaire, so read each section's instructions carefully. Please try to answer all the items, and don't spend too much time on each question. If you have any questions, feel free to ask.

SECTION 1

INSTRUCTIONS: While thinking of volleyball, use the scale below and indicate your level of agreement with each item. Circle a number 1 to 7, where 1 means “I do not agree at all with this statement”, and 7 means “I very strongly agree with this statement”.

Do Not Agree at All	Very Slightly Agree	Slightly Agree	Moderately Agree	Mostly Agree	Strongly Agree	Very Strongly Agree
1	2	3	4	5	6	7

	Do Not Agree at All		Moderately Agree			Very Strongly Agree	
	⇓		⇓			⇓	
1. Volleyball is in harmony with the other activities in my life.	1	2	3	4	5	6	7
2. I have difficulties controlling my urge to play volleyball.	1	2	3	4	5	6	7
3. The new things that I discover with volleyball allow me to appreciate it even more.	1	2	3	4	5	6	7
4. I have almost an obsessive feeling for volleyball.	1	2	3	4	5	6	7
5. Volleyball reflects the qualities I like about myself.	1	2	3	4	5	6	7
6. Volleyball allows me to live a variety of experiences.	1	2	3	4	5	6	7
7. Volleyball is the only thing that really turns me on.	1	2	3	4	5	6	7
8. Volleyball is well integrated in my life.	1	2	3	4	5	6	7
9. If I could, I would only play volleyball.	1	2	3	4	5	6	7
10. Volleyball is in harmony with other things that are part of me.	1	2	3	4	5	6	7
11. Volleyball is so exciting that I sometimes lose control over it.	1	2	3	4	5	6	7
12. I have the impression that volleyball controls me.	1	2	3	4	5	6	7
13. I spend a lot of time playing volleyball.	1	2	3	4	5	6	7
14. I like volleyball.	1	2	3	4	5	6	7
16. Volleyball is important for me.	1	2	3	4	5	6	7
17. Volleyball is a passion for me.	1	2	3	4	5	6	7

SECTION 2

INSTRUCTIONS: High performance volleyball often involves high training demands, which can include the time and effort that is devoted to training. For each of the items, indicate the extent to which it corresponds to the way you **TYPICALLY** manage these demands in your life during the season. To do so, please use the following choice of answers.

Circle the answers that best corresponds to what you typically do to manage training demands during the season.

Not At All	A Little	Moderately	Strongly	Very Strongly
1	2	3	4	5

	Not At All		Moderately		Very Strongly
	⌋		⌋		⌋
1. I visualize that I am in total control of the situation.	1	2	3	4	5
2. I use swear-words loudly or in my head in order to expel my anger.	1	2	3	4	5
3. I take my distance from other athletes.	1	2	3	4	5
4. I commit myself by giving a consistent effort.	1	2	3	4	5
5. I occupy my mind in order to think about things other than the training demands.	1	2	3	4	5
6. I try not to be intimidated by the training demands.	1	2	3	4	5
7. I ask someone for advice concerning my mental preparation.	1	2	3	4	5
8. I try to relax my body.	1	2	3	4	5
9. I analyze my past performances.	1	2	3	4	5
10. I lose all hope of attaining my goal.	1	2	3	4	5

	Not At All		Moderately		Very Strongly
	⌋		⌋		⌋
11. I mentally rehearse the execution of my movements.	1	2	3	4	5
12. I get angry.	1	2	3	4	5
13. I retreat in a place where it is easy to think.	1	2	3	4	5
14. I give a relentless effort.	1	2	3	4	5
15. I think about my favourite leisure in order not to think about the training demands.	1	2	3	4	5
16. I try to get rid of my doubts by thinking positively.	1	2	3	4	5
17. I ask other athletes for advice.	1	2	3	4	5
18. I try to reduce the tension in my muscles.	1	2	3	4	5
19. I let myself feel hopeless and discouraged.	1	2	3	4	5
20. I visualize myself doing a good performance.	1	2	3	4	5

	Not At All		Moderately		Very Strongly
	⏏		⏏		⏏
21. I express my discontent.	1	2	3	4	5
22. I keep all people at a distance.	1	2	3	4	5
23. I give my best effort.	1	2	3	4	5
24. I entertain myself in order not to think about the training demands.	1	2	3	4	5
25. I replace negative thoughts with positive ones.	1	2	3	4	5
26. I talk to a trustworthy person.	1	2	3	4	5
27. I do some relaxation exercises.	1	2	3	4	5
28. I think about possible solutions in order to manage the training demands.	1	2	3	4	5
29. I wish that the training demands would end immediately.	1	2	3	4	5
30. I visualize my all-time best performance.	1	2	3	4	5

	Not At All		Moderately		Very Strongly
	⏏		⏏		⏏
31. I express my frustrations.	1	2	3	4	5
32. I search for calmness and quietness.	1	2	3	4	5
33. I try not to think about my mistakes.	1	2	3	4	5
34. I talk to someone who is able to motivate me.	1	2	3	4	5
35. I relax my muscles.	1	2	3	4	5
36. I analyze the training demands.	1	2	3	4	5
37. I stop believing in my ability to attain my goal.	1	2	3	4	5
38. I think about my family or about my friends to distract myself.	1	2	3	4	5

SECTION 3

INSTRUCTIONS: Please read each statement carefully and decide if you ever feel this way about your participation in volleyball this season. This includes all the training you have completed during the season. Please indicate how often you have had this feeling or thought this season by circling a number 1 to 5, where 1 means “I almost never feel this way”, and 5 means “I feel this way most of the time”.

Almost Never	Rarely	Sometimes	Frequently	Almost Always
1	2	3	4	5

	Almost Never ↓	2	Sometimes ↓	3	4	Almost Always ↓
1. I'm accomplishing many worthwhile things in volleyball.	1	2	3	4	5	
2. I feel so tired from training that I have trouble finding energy to do other things.	1	2	3	4	5	
3. The effort I spend in volleyball would be better spent doing other things.	1	2	3	4	5	
4. I feel overly tired from my participation in volleyball.	1	2	3	4	5	
5. I am not achieving much in volleyball.	1	2	3	4	5	
6. I don't care as much about my volleyball performance as I used to.	1	2	3	4	5	
7. I am not performing up to my ability in volleyball.	1	2	3	4	5	
8. I feel “wiped out” from volleyball.	1	2	3	4	5	
9. I'm not into volleyball like I used to be.	1	2	3	4	5	
10. I feel physically worn out from volleyball.	1	2	3	4	5	
11. I feel less concerned about being successful in volleyball than I use to.	1	2	3	4	5	
12. I am exhausted by the mental and physical demands of volleyball.	1	2	3	4	5	
13. It seems that no matter what I do, I don't perform as well as I should.	1	2	3	4	5	
14. I feel successful at volleyball.	1	2	3	4	5	
15. I have negative feelings toward volleyball.	1	2	3	4	5	

SECTION 4

INSTRUCTIONS: Please read each statement carefully and indicate the degree to which you have felt a certain way during THE PAST 4 WEEKS of training.
Please respond by circling a number 1 to 7.

Do Not Agree at All	Very Slightly Agree	Slightly Agree	Moderately Agree	Mostly Agree	Strongly Agree	Very Strongly Agree
1	2	3	4	5	6	7

During THE PAST 4 WEEKS of training, I have been...

	Do Not Agree at All		Moderately Agree			Very Strongly Agree	
	↓		↓			↓	
1. Executing my movements correctly.	1	2	3	4	5	6	7
2. Doing my best performances of the season.	1	2	3	4	5	6	7
3. Showing that I am superior to other athletes.	1	2	3	4	5	6	7
4. Providing a quality effort.	1	2	3	4	5	6	7
5. Doing better than my usual performances.	1	2	3	4	5	6	7
6. Outperforming other athletes.	1	2	3	4	5	6	7
7. Concentrating on the task at hand.	1	2	3	4	5	6	7
8. Doing better than my previous performances.	1	2	3	4	5	6	7
9. Showing that I am part of the best.	1	2	3	4	5	6	7
10. Mastering the difficulties of the situations that I face.	1	2	3	4	5	6	7
11. Performing better than my personal standards.	1	2	3	4	5	6	7
12. Doing better than most other athletes.	1	2	3	4	5	6	7

INSTRUCTIONS: This final section asks you for a little more information about yourself

1. What is your gender (circle)? Male Female
2. What is your age? _____
3. How many years TOTAL (including this year) have you been playing volleyball?


4. How many years TOTAL (including this year) have you been playing volleyball at the university and/or college level? _____
5. How would you describe yourself? Mark (X) your response or specify, if applicable.
- | | | | | |
|----------------|--------------|--------------------|--|---------------------------|
| ___ Aboriginal | ___ Chinese | ___ Korean | ___ Southeast Asian (e.g. Vietnamese, Cambodian, Malaysian, Laotian, etc...) | ___ Other, Specify: _____ |
| ___ Arab | ___ Filipino | ___ Latin American | ___ West Asian (e.g. Iranian, Afghan, etc...) | |
| ___ Black | ___ Japanese | ___ White | ___ South Asian (e.g. East Indian, Pakistani, Sri Lankan, etc...) | |

We would also like you to participate in the **SECOND PHASE** of this study. This phase will take place in 3 months, and will be administered using an **ONLINE** questionnaire. This online questionnaire should take approximately 10 minutes to complete.

Both phases are extremely important, as it will ask questions regarding your experience in volleyball at the end of the season.

If you would like to be contacted about this second phase, an internet link will be sent to your email address in approximately 3 months, directing you to the online questionnaire. The purpose, procedure, risks, and benefits will be explained at this time.

Please be aware that email addresses will be used to contact participants to take part in the second phase and to match follow-up responses to those provided in the first phase. **After responses have been matched, email addresses will be PERMANENTLY deleted from data spreadsheets and email programs. There will be NO record of your email address after this study is concluded.**

ENTER YOUR
EMAIL ADDRESS 

--

THANKS FOR YOUR PARTICIPATION IN THIS STUDY!

Appendix F – Time 2 Pre-Notice Email

To: [Participant's email address]

Cc:

Bcc:

Subject: Notice: High Performance Volleyball Study

Dear Athlete,

My name is Ben Schellenberg and I'm a graduate student at UBC in human kinetics. If you'll remember, during the pre-season you completed the High Performance Volleyball Experiences Questionnaire. Again, THANK YOU for your participation.

A few days from now you will receive an email containing information about the second phase of this study, and a link to a BRIEF ONLINE QUESTIONNAIRE. The questionnaire will be a bit shorter than the one you completed during the pre-season, and should take you about 20 MINUTES to complete.

I am contacting you in advance because many people prefer to know ahead of time when they will receive an online questionnaire. The questions in this questionnaire will be similar to those that you completed during the first phase of this study, and will ask you about your experiences as a high performance volleyball player. In order to compare experiences at the start of the season to those at the end of the season, it is important that both phases of the study are completed.

Thank you for your involvement in this study. If you have any questions, please don't hesitate to ask!

Ben

Appendix G – Time 2 Questionnaire Email

To: [Participant's email address]

Cc:

Bcc:

Subject: High Performance Volleyball Study Link

Dear Athlete,

I would to invite you to participate in the second phase of the High Performance Volleyball Experiences Study. Your participation in the study will involve completing a BRIEF ONLINE QUESTIONNAIRE. It will be a bit shorter than the one you completed during the pre-season, and should take you about 20 MINUTES to complete.

The questionnaire can be accessed by clicking on the link below. When you click on the link, you will be redirected to the first page of the questionnaire (consent form), which contains information about the study such as the potential risks (none), benefits, contact information, and the purpose of the study. Clicking on the link does not automatically involve you in this phase of the study, you must read this page first and then click “continue” to participate.

TO ACCESS THE CONFIDENTIAL QUESTIONNAIRE, CLICK ON THE FOLLOWING LINK:

[http://\[REDACTED\]](http://[REDACTED])

Again, thank you for your involvement in this study. If you have any questions, please don't hesitate to ask (you can reply to this email, or use the contact information provided by clicking the link).

Ben

Appendix H – Time 2 Reminder Email

To: [Participant's email address]

Cc:

Bcc:

Subject: Reminder: High Performance Volleyball Study

Dear Athlete,

About a week ago, I sent an email to you inviting you to participate in the second phase of the High Performance Volleyball Experiences Study. Your participation in the first phase of this study was GREATLY appreciated, but it is important for both phases of this study to be completed to get a full account of the experience of high performances volleyball players. I have received many responses from other high performance volleyball players involved in this study, and your participation in the second phase of this study is extremely important.

Your participation in this phase of the study will involve completing a BRIEF ONLINE QUESTIONNAIRE. It will be a bit shorter than the one you completed during the pre-season, and should take you about 20 MINUTES to complete.

The questionnaire can be accessed by clicking on the link below. When you click on the link, you will be redirected to the first page of the questionnaire (consent form), which contains information about the study such as the potential risks (none), benefits, contact information, and the purpose of the study. Clicking on the link does not automatically involve you in this phase of the study, you must read this page first and then click “continue” to participate.

TO ACCESS THE CONFIDENTIAL QUESTIONNAIRE, CLICK ON THE FOLLOWING LINK:

http://[REDACTED]

Again, thank you for your involvement in this study. If you have any questions, please don't hesitate to ask (you can reply to this email, or use the contact information provided by clicking the link).

Ben

Appendix I – Time 2 Thank You Email

To: [Participant's email address]

Cc:

Bcc:

Subject: Thank You: High Performance Volleyball Study

Dear Athlete,

I am writing to thank you for your participation in the High Performance Volleyball Experiences Study.

If you have any questions or comments regarding the study, please don't hesitate to contact me at the information below.

Ben

██████████@interchange.ubc.ca

Phone #: ██████████

Appendix J – Relationship between Passion and Coping at Time 1 and Time 2.

	Task-Oriented Coping T1							Task-Oriented Coping T2						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	0.30	0.21, 0.38	0.04	.43	<.01	.21	.21							
OP T1	0.03	-0.02, 0.08	0.03	.07	.25									
HP T2								0.20	0.12, 0.27	0.04	.34	<.01	.18	.17
OP T2								0.06	0.00, 0.12	0.03	.14	.04		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. T1 = Time 1. T2 = Time 2.

	Distraction-Oriented Coping T1							Distraction-Oriented Coping T2						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	-0.11	-0.28, 0.05	0.08	-.10	.18	.01	.00							
OP T1	0.04	-0.07, 0.13	0.05	.05	.49									
HP T2								-0.19	-0.31, -0.71	0.06	-.22	<.01	.05	.05
OP T2								0.15	0.05, 0.24	0.05	.22	<.01		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. T1 = Time 1. T2 = Time 2.

	Disengagement-Oriented Coping T1							Disengagement-Oriented Coping T2						
	B	95% CI	SE B	β	p	R^2	adj R^2	B	95% CI	SE B	β	p	R^2	adj R^2
HP T1	-0.19	-0.31, -0.71	0.06	-.22	<.01	.05	.04							
OP T1	0.15	0.05, 0.24	0.05	.22	<.01									
HP T2								-0.20	-0.29, -0.11	0.05	-.30	<.01	.09	.08
OP T2								0.13	0.06, 0.20	0.04	.26	<.01		

Note. $n = 239$. HP = Harmonious Passion; OP = Obsessive Passion. T1 = Time 1. T2 = Time 2.

Appendix K – Relationship between Passion and Burnout at Time 1 and Time 2.

	Burnout T1							Burnout T2						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	-0.30	-0.41, -0.19	.05	-.36	<.01	.13	.12							
OP T1	0.01	-0.06, 0.07	.03	.02	.81									
HP T2								-0.39	-0.48, -0.30	0.04	-.55	<.01	.28	.28
OP T2								0.03	-0.04, 0.10	0.03	.05	.39		

Note. *n* = 239. HP = Harmonious Passion; OP = Obsessive Passion. T1 = Time 1. T2 = Time 2.

Appendix L – Relationship between Coping and Burnout at Time 1 and Time 2.

	Burnout T1							Burnout T2						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
TASK T1	-0.17	-0.30, -0.04	0.07	-.14	.01									
DISTRACT T1	0.15	0.07, 0.23	0.04	.22	<.01	.26	.25							
DISENGAGE T1	0.41	0.29, 0.52	0.06	.39	<.01									
TASK T2								0.28	-0.41, -0.15	0.06	-.23	<.01		
DISTRACT T2								0.18	0.09, 0.27	0.05	.22	<.01	.37	.37
DISENGAGE T2								0.49	0.37, 0.60	0.06	.46	<.01		

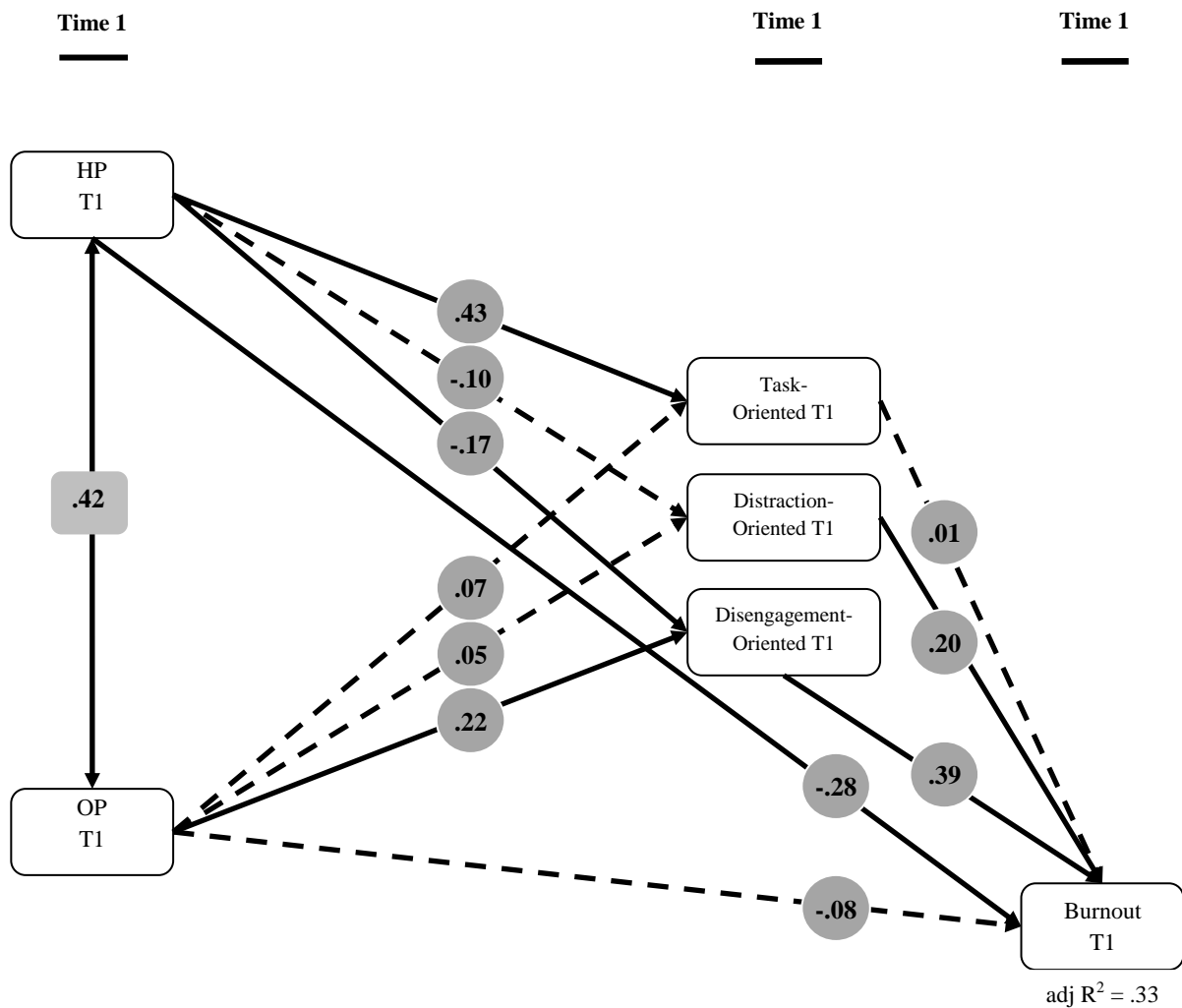
Note. $n = 239$. TASK = Task-oriented coping. DISTRACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. T1 = Time 1. T2 = Time 2.

Appendix M – Mediation of the Relationship of Passion and Burnout through Coping at Time 1 and Time 2.

Bootstrapped 95% CI*						
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T1→Burnout T1</u>						
TASK T1	0.00	0.03	0.09	.93	-0.05	0.06
DISTRACT T1	-0.02	0.02	-1.19	.24	-0.05	0.01
DISENGAGE T1	-0.07	0.03	-2.31	.02	-0.13	-0.01
TOTAL	-0.09	0.05	-1.74	.08	-0.18	0.01
<u>OP T1→Burnout T1</u>						
TASK T1	0.00	0.01	0.07	.94	-0.01	0.01
DISTRACT T1	0.01	0.02	0.63	.53	-0.02	0.04
DISENGAGE T1	0.09	0.03	2.98	<.01	0.03	0.14
TOTAL	0.10	0.04	2.80	<.01	0.03	0.17

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. T1 = Time 1. Standardized estimates are reported.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.

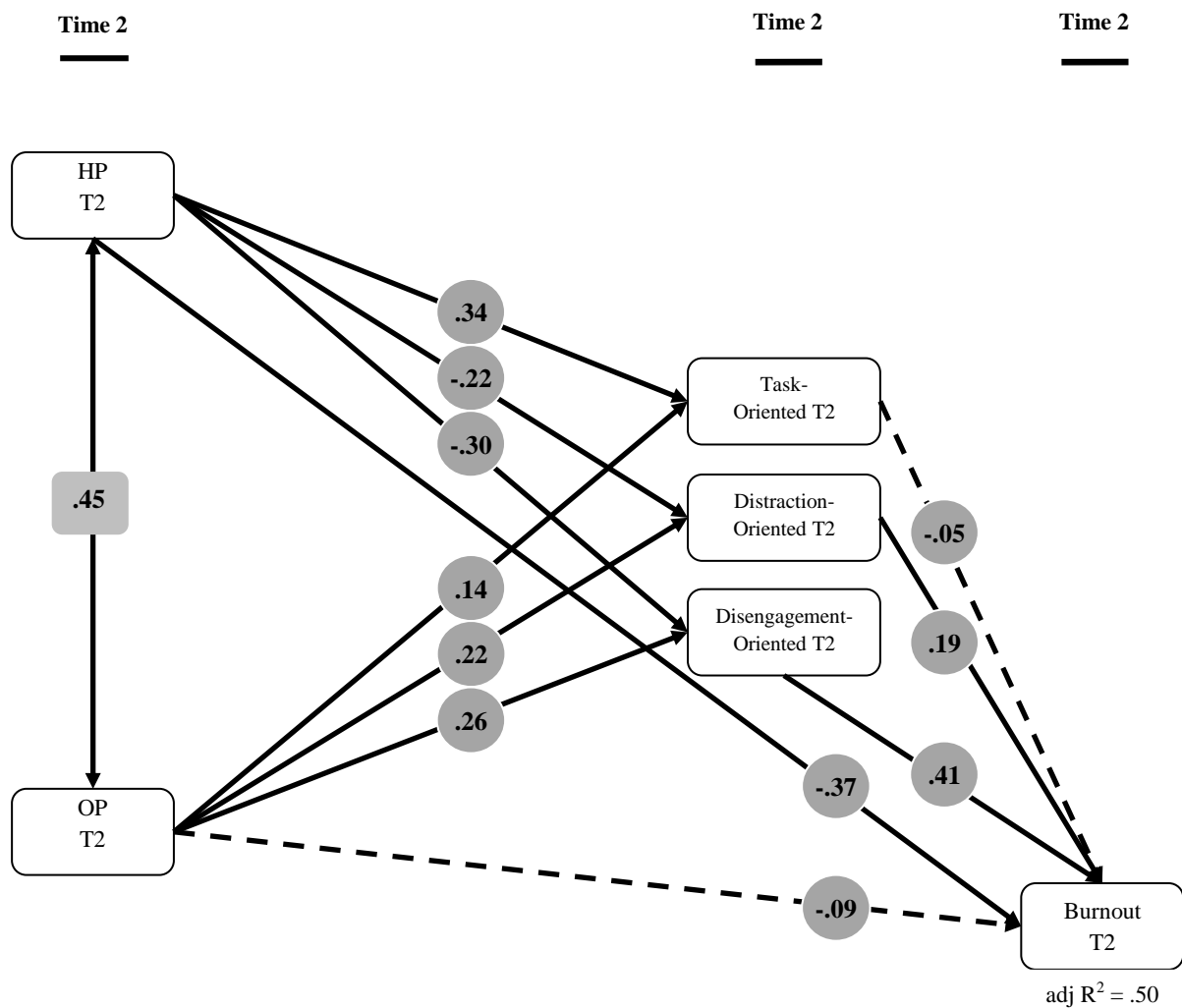


Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and burnout. All variables were measured at Time 1. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

					<u>Bootstrapped 95% CI*</u>	
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T2→Burnout T2</u>						
TASK T2	-0.02	0.02	-0.90	.37	-0.06	0.02
DISTRACT T2	-0.04	0.02	-2.37	.02	-0.08	-0.01
DISENGAGE T2	-0.13	0.04	-3.60	<.01	-0.19	-0.06
TOTAL	-0.19	0.05	-4.06	<.01	-0.28	-0.10
<u>OP T2→ Burnout T2</u>						
TASK T2	-0.01	0.01	-0.78	.44	-0.03	0.01
DISTRACT T2	0.04	0.02	2.26	.02	0.01	0.08
DISENGAGE T2	0.11	0.03	3.46	<.01	0.05	0.17
TOTAL	0.15	0.04	3.63	<.01	0.07	0.22

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. T2 = Time 2. Standardized estimates are reported.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.

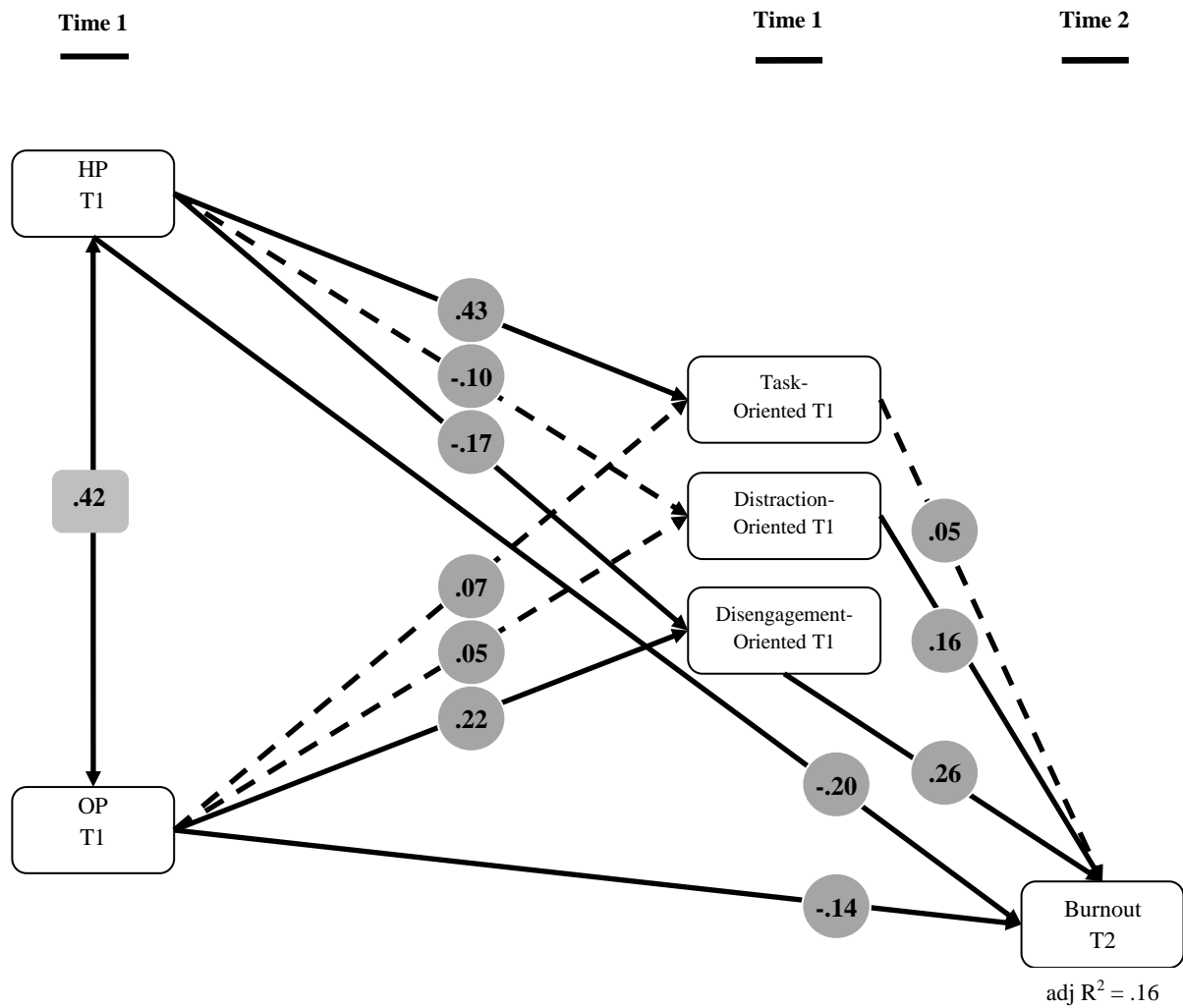


Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and burnout. All variables were measured at Time 2. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

	Estimate	SE	Z	P	<u>Bootstrapped 95% CI*</u>	
	(a*b)				Lower	Upper
<u>HP T1→Burnout T2</u>						
TASK T1	0.02	0.03	0.74	.46	-0.04	0.08
DISTRACT T1	-0.02	0.01	-1.09	.28	-0.04	0.01
DISENGAGE T1	-0.05	0.02	-2.03	.04	-0.09	0.00
TOTAL	-0.04	0.04	-0.87	.38	-0.12	0.05
<u>OP T1→ Burnout T2</u>						
TASK T1	0.00	0.01	0.53	.60	-0.01	0.02
DISTRACT T1	0.01	0.01	0.60	.55	-0.02	0.03
DISENGAGE T1	0.06	0.01	2.60	<.01	0.02	0.10
TOTAL	0.07	0.03	2.65	<.01	0.02	0.12

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. HP, OP, TASK, DISTACT, and DISENGAGE were measured at Time 1 (T1), and Burnout was measured at Time 2 (T2). Standardized estimates are reported.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.



Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and burnout. HP, OP, and coping styles were measured at Time 1, and Burnout was measured at Time 2. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

Appendix N – Relationship between Passion and Goal Attainment at Time 1 and Time 2.

	Goal Attainment T1							Goal Attainment T2						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
HP T1	0.25	0.09, 0.42	0.08	.21	<.01	.06	.05							
OP T1	0.05	-0.05, 0.15	0.05	.07	.30									
HP T2								0.41	0.27, 0.54	0.07	.40	<.01	.18	.17
OP T2								0.04	-0.06, 0.15	0.05	.05	.44		

Note. *n* = 239. HP = Harmonious Passion; OP = Obsessive Passion. T1 = Time 1. T2 = Time 2.

Appendix O – Relationship between Coping and Goal Attainment at Time 1 and Time 2.

	Goal Attainment T1							Goal Attainment T2						
	B	95% CI	SE B	β	p	R ²	adj R ²	B	95% CI	SE B	β	p	R ²	adj R ²
TASK T1	0.46	0.25, 0.68	0.11	.26	<.01									
DISTRACT T1	0.12	-0.02, 0.25	0.07	.11	.09	.09	.08							
DISENGAGE T1	-0.16	-0.35, 0.04	0.10	-.10	.11									
TASK T2								0.71	0.50, 0.91	0.10	.39	<.01		
DISTRACT T2								-0.06	-0.20, 0.09	0.07	-.05	.44	.24	.23
DISENGAGE T2								-0.43	-0.62, -0.24	0.10	-.28	<.01		

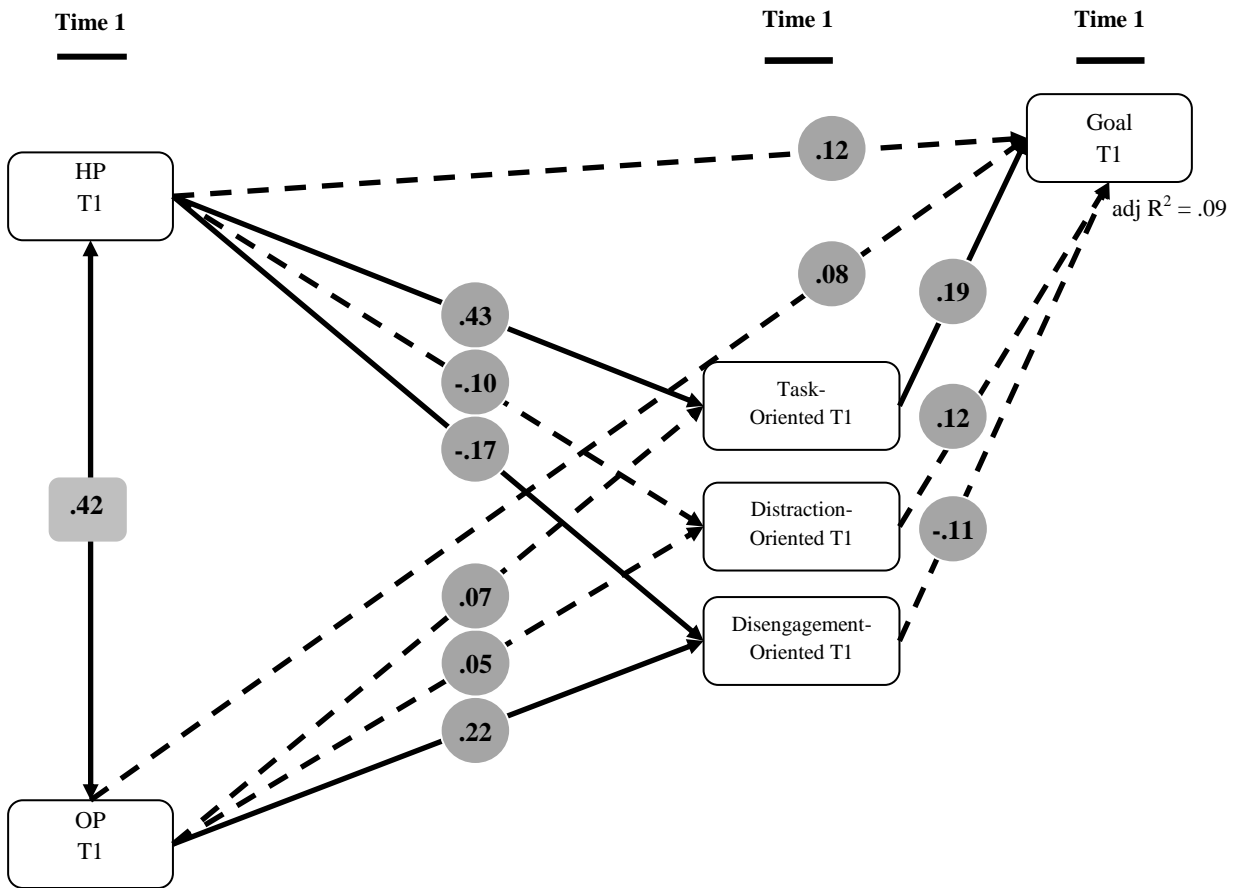
Note. $n = 239$. TASK = Task-oriented coping. DISTRACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. T1 = Time 1. T2 = Time 2.

Appendix P – Mediation of the Relationship of Passion and Goal Attainment through Coping at Time 1 and Time 2.

	Bootstrapped 95% CI*					
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T1→ Goal Attainment T1</u>						
TASK T1	0.08	0.04	2.34	.02	0.01	0.15
DISTRACT T1	-0.01	0.01	-1.03	.31	-0.03	0.01
DISENGAGE T1	0.02	0.02	1.22	.22	-0.01	0.05
TOTAL	0.09	0.04	2.33	.02	0.01	0.16
<u>OP T1→ Goal Attainment T1</u>						
TASK T1	0.01	0.01	0.99	.32	-0.01	0.04
DISTRACT T1	0.01	0.01	0.61	.54	-0.01	0.03
DISENGAGE T1	-0.02	0.02	-1.28	.20	-0.06	0.01
TOTAL	0.00	0.03	-0.16	.88	-0.05	0.04

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. All variables were measured at Time 1 (T1). Standardized estimates are reported.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.

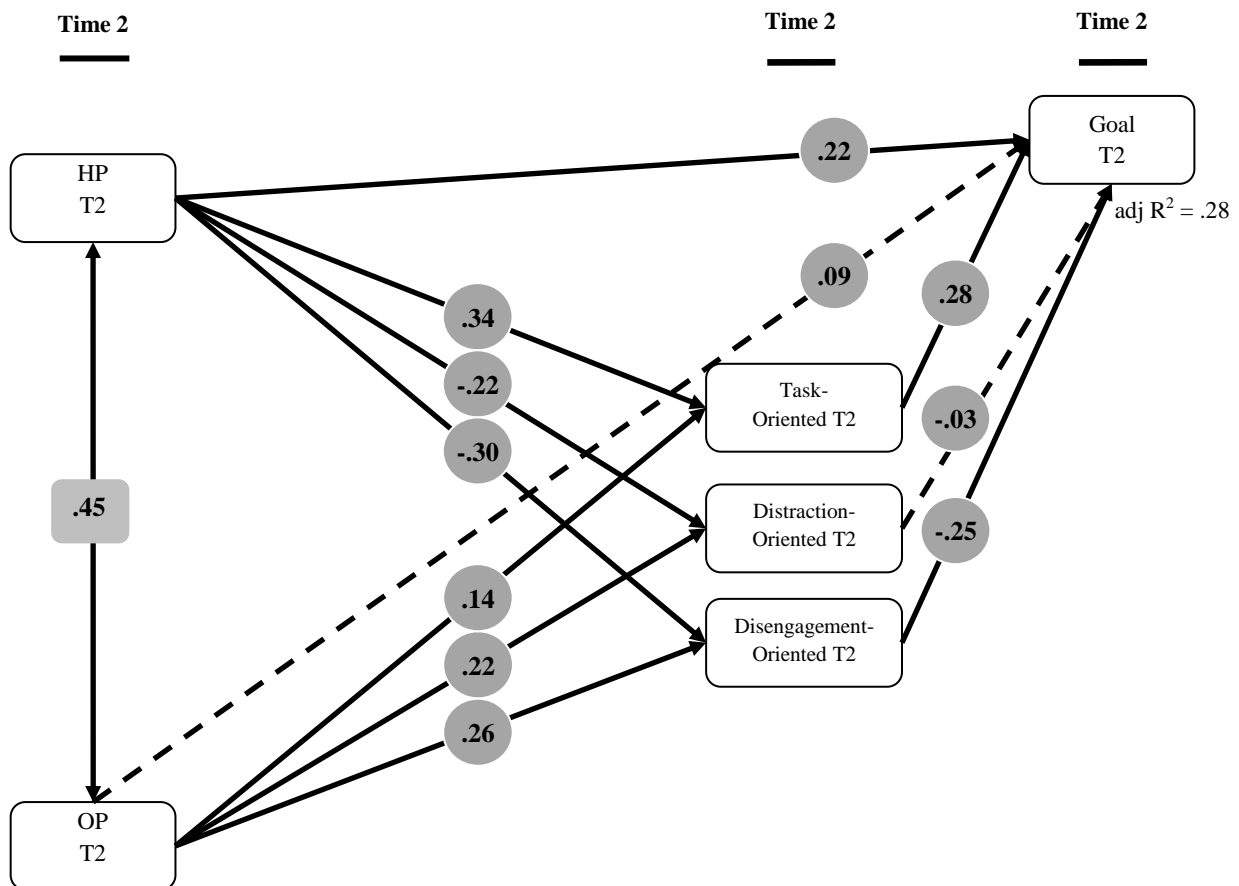


Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and goal attainment (Goal). All variables were measured at Time 1. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

					<u>Bootstrapped 95% CI*</u>	
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T2→ Goal Attainment T2</u>						
TASK T2	0.10	0.03	3.49	<.01	0.04	0.15
DISTRACT T2	0.01	0.01	0.57	.57	-0.02	0.03
DISENGAGE T2	0.08	0.03	3.07	<.01	0.03	0.12
TOTAL	0.18	0.04	4.62	<.01	0.10	0.25
<u>OP T2→ Goal Attainment T2</u>						
TASK T2	0.04	0.02	2.04	.04	0.00	0.08
DISTRACT T2	-0.01	0.01	-0.56	.58	-0.03	0.02
DISENGAGE T2	-0.07	0.03	-2.56	.01	-0.12	-0.02
TOTAL	-0.04	0.03	-1.04	.30	-0.10	0.03

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. All variables were measured at Time 2 (T2). Standardized estimates are reported.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.

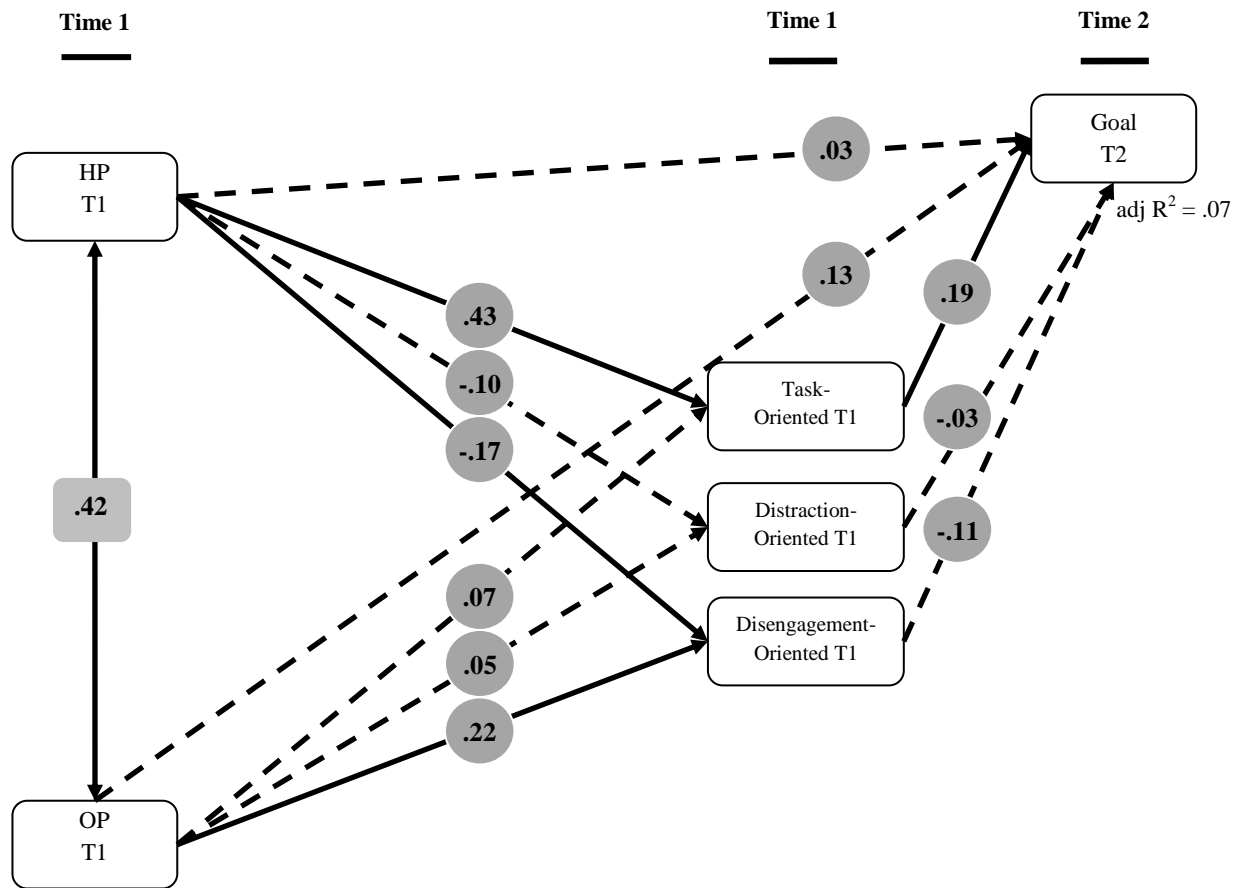


Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and goal attainment (Goal). All variables were measured at Time 2. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

					<u>Bootstrapped 95% CI*</u>	
	Estimate (a*b)	SE	Z	P	Lower	Upper
<u>HP T1→ Goal Attainment T2</u>						
TASK T1	0.08	0.03	2.66	<.01	0.02	0.14
DISTRACT T1	0.00	0.01	0.34	.73	-0.01	0.02
DISENGAGE T1	0.02	0.02	1.29	.20	-0.01	0.05
TOTAL	0.11	0.04	2.86	<.01	0.03	0.18
<u>OP T1→ Goal Attainment T2</u>						
TASK T1	0.01	0.01	1.06	.29	-0.01	0.04
DISTRACT T1	0.00	0.01	-0.24	.81	-0.01	0.01
DISENGAGE T1	-0.03	0.02	-1.43	.15	-0.06	0.01
TOTAL	-0.01	0.02	-0.55	.58	-0.06	0.03

Note. $n = 239$. TASK = Task-oriented coping. DISTACT = Distraction-oriented coping. DISENGAGE = Disengagement-oriented coping. HP, OP, TASK, DISTACT, and DISENGAGE were measured at Time 1 (T1), and Goal Attainment was measured at Time 2 (T2). Standardized estimates are reported.

* Standardized estimates of a*b paths are based on 5000 bootstrap samples.



Relationships between harmonious passion (HP), obsessive passion (OP), coping styles, and goal attainment (Goal). HP, OP, and coping styles were measured at Time 1, and Goal Attainment was measured at Time 2. Standardized regression coefficients are presented in shaded circles, and the zero-order correlation between HP and OP is presented in the shaded square. Solid lines represent significance at $p < .05$.

Appendix Q – Comparison of Time 1 and Time 2 Correlations to the Ratio of Time 1 and Time 2

Standard Deviations.

Variable	Correlation		$\sigma_{x1} / \sigma_{x2}$
HP _{T1T2}	.47	<	0.76
OP _{T1T2}	.65	<	0.96
TASK _{T1T2}	.59	<	0.92
DISTRACT _{T1T2}	.50	<	1.01
DISENGAGE _{T1T2}	.60	<	0.92
BURNOUT _{T1T2}	.62	<	0.89
GOAL ATTAINMENT _{T1T2}	.37	<	0.89

Appendix R – Percentage of Participants Scoring 3.5 or Above on Measures of Burnout.

	Time 1	Time 2
Global Burnout	1.26	4.60
Reduced Accomplishment	2.09	4.60
Emotional/Physical Exhaustion	13.39	15.48
Sport Devaluation	2.92	6.28