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Passion, Coping, and Anxiety in Sport:
The Interplay Between Key Motivational and Self-Regulatory Processes

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Abstract

The present paper examined the interplay between key motivational and self-regulatory processes, namely passion and coping strategies, and their relation with anxiety in the sport domain. Two studies with a combined 348 athletes were conducted in order to test a model whereby two types of passion were differentially related to anxiety through the use of different coping strategies. Overall, results supported our hypotheses by demonstrating that harmonious passion was associated to approach-oriented coping strategies which, in turn, were related to less anxiety. In contrast, obsessive passion was positively related to avoidance-oriented coping strategies which, in turn, were associated with more anxiety. This paper identifies coping strategies as a mediator in the relation between passion and anxiety, thus providing further support for the study of the relation between motivational and self-regulatory processes in order to better understand athletes' psychological adjustment in sport.

Keywords: Passion, Coping Strategies, Anxiety, Sport

Passion, Coping, and Anxiety in Sport:

The Interplay Between Key Motivational and Self-Regulatory Processes

Motivational processes underlie peoples' involvement in sport and exercise. Past research has shown that passion represents a key motivational process leading people to actively engage in their passionate activities, such as sport and exercise, spending on average more than eight hours per week for several years (Vallerand et al., 2003). Such an intense engagement in an activity oftentimes leads to positive experiences and consequences. Indeed, people who have a passion for sport or exercise may feel more energized and perceive more meaning in everyday life in large part because their passionate activity gives them something to look forward to when they wake up in the morning. Nonetheless, no matter how passionate or motivated athletes can be toward their sport, engagement in a given sport can sometimes be stressful and thus, generate anxiety (Martens, Vealey, & Burton, 1990; Smith, Smoll, & Schutz, 1990). The way individuals use self-regulatory strategies in order to deal with stress should determine in large part the level of anxiety they will experience. Coping is an important self-regulatory process to consider when looking at how people manage the demands of stressful situations. Past research has shown that dispositional or personality variables influence the adoption of coping strategies (Connor-Smith & Flachsbart, 2007). Specifically, passion toward sport is proposed to be one of these variables. As we shall see below, evidence exists to support the differentiation between two types of passion (Vallerand, 2010). Further, each type of passion can lead to the use of different coping strategies which, in turn, differentially influence athletes' anxiety. The purpose of the present research was to test this basic hypothesis.

The Dualistic Model of Passion

The Dualistic Model of Passion (DMP; Vallerand, 2010; Vallerand et al., 2003) defines passion as a strong inclination toward an activity that is important, liked, and in which a significant amount of time and energy is invested. This model further proposes that passion is not a monolithic concept. Rather, theoretical and empirical evidence exists to support the differentiation of two dimensions of passion, namely *harmonious passion* (HP) and *obsessive passion* (OP). These two types of passion can be distinguished in terms of how the passionate activity is regulated and integrated with other life domains. On the one hand, HP is derived from an autonomous internalization of this activity in the self. This internalization process occurs when individuals freely accept the activity and choose to engage in their passionate activity without any contingency attached to it (Mageau, Carpentier, & Vallerand, 2011). Thus, with HP, the activity occupies a significant, but not overpowering, space in one's identity. This is because the activity is part of an integrated self-structure (Hodgins & Knee, 2002). Therefore, the activity remains under the control of the individual and in harmony with other important life aspects (Séguin-Lévesque, Laliberté, Pelletier, Blanchard, & Vallerand, 2003).

On the other hand, OP results from a controlled internalization of the activity in the self. This type of internalization originates from intra- and/or interpersonal pressure such as self-esteem or social acceptance contingencies that are attached to the activity, or because the feeling of excitement derived from activity engagement is uncontrollable (Mageau et al., 2011). With OP, the activity becomes a part of one's identity because it is loved, but also because it brings other more extrinsic benefits, such as a boost of self-esteem or a reward (Lafrenière, St-Louis, Vallerand, & Donahue, 2011; Mageau et al., 2011). Therefore, people with an OP find themselves in the position of experiencing an uncontrollable urge to partake in the activity they view as important and enjoyable. With OP, individuals feel pressured to

continuously engage in the activity as the activity is beyond one's control. Therefore, OP is associated with a rigid persistence, even when activity engagement comes at the expense of other important activities (Vallerand et al., 2003). With OP everything gravitates around one's passionate activity, which leads to many self-regulatory challenges such as conflicts with other life domains (Séguin-Lévesque et al., 2003) and susceptibility to threat and defensiveness (Donahue, Rip, & Vallerand, 2009; Rip, Vallerand, & Lafrenière, 2012).

Much research has supported the basic premises of the DMP. Specifically, research has supported the existence of the two constructs of HP and OP. Along the same line, results from partial correlations revealed that both types of passion are positively associated with measures of activity valuation and measures of the activity being perceived as a passion, thereby providing support for the definition of passion (Vallerand et al., 2003). In addition, HP has generally been associated more adaptive cognitive, affective, relational and behavioural outcomes compared to OP (see, Vallerand, 2010, for a review).

Passion, Anxiety, and Coping

Sport competition can be a source of anxiety for athletes. While various types of anxiety have been scientifically studied, cognitive anxiety remains one of the most important ones. Cognitive anxiety corresponds to the mental component of anxiety caused by negative expectations about the game's outcome or by negative self-evaluations. According to Martens, Burton and colleagues (1990), cognitive anxiety is the most impairing form of anxiety as it drains peoples' cognitive resources, leaving room for rumination and thus, little energy to focus on the task at hand. Furthermore, a meta-analysis of 43 studies demonstrated a negative link between cognitive anxiety and performance in sports (Woodman & Hardy, 2003). Therefore, cognitive anxiety is proposed to be a good indicator of the effectiveness of the coping process.

While an increasing amount of research has looked at the role of passion in sports (see, Vallerand, 2012; Vallerand, Verner-Filion & Paquet, 2014, for reviews), very little research has looked at the passion-anxiety relationship in the realm of sport. Past research has studied this relationship in other domains such as gambling (Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Ratelle, Vallerand, Mageau, Rousseau, & Provencher, 2004). Results from these studies have shown that OP is positively associated with anxiety, while HP is not significantly related to it (Mageau et al., 2005; Ratelle et al., 2004). However, other research with people practicing yoga has demonstrated that HP is negatively related to anxiety, while OP was not significantly related to it (Carbonneau, Vallerand, & Massicotte, 2010). The relation between passion and anxiety thus remains ambiguous.

One explanation for these equivocal findings may be that some intervening self-regulatory mechanisms are at play between passion and the experience of stress and anxiety. One set of such self-regulatory processes related to anxiety is coping. Coping is defined by Lazarus and Folkman (1984) as “constantly changing cognitive and behavioral efforts to manage specific internal and/or external demands that are appraised as exceeding the resources of the person” (p.141). Many studies have supported the existence of a relationship between coping strategies and anxiety in various life domains such as education, relationships (e.g., Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen, 1986; Folkman, Lazarus, Gruen, & DeLongis, 1986), and sports (e.g., Gaudreau & Blondin, 2004; Ntoumanis & Biddle, 2000).

Some types of coping strategies are expected to help individuals handle stressful events. As such, coping with adversity (Smith, Schutz, Smoll, & Ptacek, 1995) typically helps athletes to experience lower levels of anxiety. Moreover, past research has demonstrated that coping strategies can be regrouped in dimensions, which are expected to serve three primary

functions (Kowalski & Crocker, 2001). First, problem-focused coping is an active attempt to change the stressful situation through either acting directly upon the environment or changing one's part in that environment (e.g., planning). Second, emotion-focused coping is an attempt to regulate the emotional experience, or produce a subjective change in the stressful situation (e.g., venting unpleasant emotions). Third, avoidance coping includes both behavioral (e.g., disengaging the self) and psychological (e.g., blocking) withdrawal from the situation (Kowalski & Crocker, 2001). The coping strategies used by athletes have been found to have significant implications for psychological parameters. For instance, the use of problem-focused coping is associated with positive affective consequences, whereas avoidance coping is related to more negative affective consequences in athletes (see, Hoar, Kowalski, Gaudreau, & Crocker, 2006, for a review). More specifically, problem-focused coping has been positively associated with positive affect while also being negatively related to negative affect, while avoidance coping has been related to higher levels of anxiety (Hammermeister & Burton, 2001; Ntoumanis & Biddle, 2000). The role emotion-focused coping is more ambiguous, whereby it is either positively related (Ntoumanis & Biddle, 2000) or not significantly related (Stanton, Kirk, Cameron, & Danoff-Burg, 2000) to anxiety.

Furthermore, Connor-Smith and Flachsbart (2007) have demonstrated that individual differences existed with respect to the selection of coping strategies. We believe that such differences may exist as a function of the type of passion. More precisely, HP and OP are predominantly characterized by approach and avoidance self-regulatory orientations, respectively. Past research has demonstrated that HP is associated with purposeful, volitional and active efforts to attain success, such as mastery goals (Bonneville-Roussy, Lavigne, & Vallerand, 2011; Vallerand et al., 2008; Vallerand et al., 2007) and information seeking (Rip, Fortin, & Vallerand, 2006). In contrast, OP is characterized by a defensive, ego-invested and

avoidance-oriented mode of functioning. Specifically, OP has been associated with self-enhancement (Lafrenière, Vallerand, & Sedikides, 2012), goal-shielding (Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013b), ignoring the pain when injured (Rip et al., 2006), and the predominant use of avoidance goals (Bonneville-Roussy et al., 2011; Vallerand et al., 2008; Vallerand et al., 2007).

A recent study by Schellenberg, Gaudreau, and Crocker (2013) tested the above hypotheses in a short longitudinal study with volleyball players. Results from structural equation modeling analyses revealed that HP positively predicted the use of task-oriented (i.e., problem-focused) coping strategies, whereas OP positively predicted disengagement-oriented (i.e., avoidance) three months later. Results further demonstrated that task-oriented coping suppressed the negative relation between HP and changes in goal attainment. Moreover, disengagement-oriented coping suppressed the positive relation between OP and changes in goal attainment, as well as the negative relation between OP and changes in burnout over a three months period. The study of Schellenberg and colleagues (2013) thus provides initial support for the differential links between the two types of passion and coping in sport. Therefore, we expected that HP would be positively related to coping with adversity and problem-focused coping, whereas OP would be positively associated to avoidance coping.

The Present Research

Two studies were conducted to assess the interplay between motivational (i.e., passion), self-regulatory (i.e., coping strategies) and emotional (i.e., anxiety) variables in the realm of sports, using two distinct ways of measuring coping. The type of passion individuals have toward an activity was thus hypothesized to influence the coping strategies they use which, in turn, should predict anxiety. More precisely, it was proposed that HP is more likely

to lead athletes to use coping with adversity (Study 1) and problem-focused coping (Study 2). Subsequently, these coping strategies are more likely to lead athletes to experience lower levels of anxiety. In contrast, OP is more likely to the use of coping strategies primarily focused on avoidance-focused coping (Study 2). In turn, this is more likely to lead athletes to experience higher levels of anxiety.

Study 1

For the purpose of this study, high-school athletes participating in a sport-study program completed instruments assessing passion, coping, and sport anxiety. It was predicted that passion would influence the capacity to cope with adversity which, in turn, should predict anxiety. On the one hand, it was proposed that HP would positively predict the use of coping with adversity because coping with adversity represents an important coping strategy that helps athletes to efficiently deal with the stress and demands of competition in sport (Smith et al., 1995)¹. On the other hand, it was proposed that OP would be unrelated to coping with adversity. Furthermore, it was hypothesized the coping with adversity would be negatively and significantly related to cognitive anxiety. It was thus hypothesized that coping with adversity would mediate the negative relation between HP and cognitive anxiety. However, it was also hypothesized that coping with adversity would not act as a mediator in the positive relation between OP and cognitive anxiety.

Method

Participants. Participants were 180 high-school students from a sport-study program (67 women and 113 men) who participated in one of five sports (hockey, soccer, tennis, figure

¹ Smith and colleagues (1995) identified seven psychological skills that help athletes in the face of the stress and demands of sport competition. However, issues with several of these psychological skills have been raised, as they seem to measure coping efficiency rather than coping itself (Gaudreau & Blondin, 2002). Thus, only the subscale of “coping with adversity” was kept for further analysis and discussion in this first study.

skating, and gymnastics). The average age of the participants was 15 years ($SD = 1.25$ years), ranging from 13 to 17 years. On average, these participants engaged in their sports for 12.66 hours per week ($SD = 5.12$ hours) and had been practicing their sports for an average of 8 years and 4 months ($SD = 2$ years and 3 months).

Procedure. Participation was voluntary. Prior to the study, we obtained permission to conduct the study from the Research Ethics Board as well as the school administration. Athletes were told that the purpose of the questionnaire was to learn more about athletes' behaviors and attitudes toward their sport in general. Furthermore, prior to data collection, parents of all athletes were asked to sign a consent form. In order for their children to participate to the study, parents of all athletes had to return a signed consent form to the experimenter. Once the consent for all the participants was obtained, each participant filled out the questionnaire individually in class and returned it to the experimenter. After completing the questionnaire, participants were debriefed with respect to the purpose of the study.

Measures.

Passion. Passion toward sport was measured using the Passion Scale (Marsh et al., 2013; Vallerand et al., 2003). This scale has two six-item subscales assessing HP (e.g., "My sport is in harmony with the other activities in my life"; $\alpha = .74$) and OP (e.g., "I have a tough time controlling my need to play my sport"; $\alpha = .83$). Participants indicated their responses using a seven-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*very strongly agree*).

Coping. The four-item subscale of coping with adversity was taken from the Athletic Coping Scale Inventory-28 (Smith et al., 1995) in order to assess the capacity to cope with adversity (e.g., "In general, I remain positive and enthusiastic during competition, no matter

how badly things are going”; $\alpha = .71$). Participants were asked to refer to an important sport competition, such as games and tournaments, and indicated their responses using a seven-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*very strongly agree*).

Competitive Anxiety. The Competitive State Anxiety Inventory-2 (Martens, Burton, Vealey, Bump, & Smith, 1990) is the most commonly used questionnaire to assess anxiety in sport (Ntoumanis & Biddle, 2000). For the sake of this study, the CSAI-2 was used to measure sport anxiety before important sporting events, such as games and tournaments. The five-item subscale of cognitive anxiety (e.g., “In general, before a competition, I feel mentally calm”; reversed; $\alpha = .80$) was used in this study. Participants indicated their responses using a four-point Likert scale ranging from 1 (*do not agree at all*) to 4 (*agree a lot*).

Results

Preliminary Analyses. Prior to analyses, all variables included in the subsequent analyses were examined for accuracy of data entry, missing data, and fit between their distributions and the assumptions underlying maximum likelihood procedures (Tabachnick & Fidell, 2000). Four participants were excluded because they had important amount of missing values. Furthermore, one participant was identified as a multivariate outlier using Mahalanobis’ distance ($\chi^2_{(4)} = 18.47, p < .001$) and was therefore removed from the final sample ($n = 175$). Descriptive statistics and error-free correlations are reported in Table 1. In this study, females reported higher levels of cognitive anxiety ($M = 2.41, SD = 0.69$) compared to males ($M = 2.00, SD = 0.75$), $F(1, 173) = 12.40, p = .001$. This finding is consistent with past research (Martens, Burton, et al., 1990). No other significant gender differences were found in this study.

Main Analyses.

Measurement Model. The adequacy of the measurement model was with a structural equation modeling (SEM) with AMOS 19.0. The measurement model was constructed by creating two indicators of two or three items each for the latent variables in the model, using the item-to-construct balance parceling approach proposed by Little and colleagues (2002)². Several indices were used to assess the model fit (Hu & Bentler, 1999). First, fit of the model to the data was examined using the chi-square test. A non-significant chi-square indicates that the model was able to replicate suitably the sample covariance matrix. Additionally, other well-established fit indices were used in order to further assess model fit: the Comparative Fit Index (CFI), the Normed Fit Index (NFI), the Incremental Fit Index (IFI), and the Root Mean Square Error of Approximation (RMSEA). According to Kline (2005) and Tabachnick and Fidell (2000), the CFI, NFI, and IFI should be .90 or higher for acceptable model fit. Moreover, the RMSEA should be .08 or lower and the 90% confidence interval should not exceed .10 for acceptable model fit (Kline, 2005). The results revealed a satisfactory fit of the measurement model. The chi-square value was not significant, $\chi^2 (df = 14, N = 175) = 22.307$, $p = .073$, and other fit indices were satisfactory, CFI = .983, NFI = .958, IFI = .984 and RMSEA = .058 (.000; .100).

Structural Model. A hybrid model including both a measurement model and a structural model was employed (Kline, 2005) in order to test our hypotheses. The results revealed a satisfactory fit of the structural model to the data. The chi-square value was not significant, $\chi^2 (df = 14, N = 175) = 22.307$, $p = .073$, and other fit indices were satisfactory, CFI = .983, NFI = .958, IFI = .984 and RMSEA = .058 (.000; .100). Importantly, this model

² Each latent variable was formed using two parcels, which were composed as follow: harmonious passion (HP1, items 1, 2, and 3; HP2, items 4, 5, and 6), obsessive passion (OP1, items 1, 3, and 6; OP2, items 2, 4, and 5), coping with adversity (CWA1, items 1, and 4; CWA2, items 2, and 3), and cognitive anxiety (ANX1, items 1, 4, and 5; ANX2, items 2, and 3).

enabled for the estimation of the total effect of both types of passion on cognitive anxiety as well as its decomposition into direct and indirect effects. The direct effect represents the association of an independent variable with a dependent variable, whereas the specific indirect effect corresponds to a mediating variable in that relationship. The 95% bias-corrected bootstrapped confidence intervals were estimated using the ML estimator. The 95 % confidence intervals of the indirect effects were obtained with 5,000 bootstrap resamples. Using bootstrap methods to estimate indirect effects is especially recommended in small-to-moderate samples (Shrout & Bolger, 2002). It should be noted that the indirect effect is significant at $p < 0.05$ if the 95 % confidence intervals do not include the value of zero. In the present study, the confidence interval was bias-corrected given that this correction is believed to improve power and Type 1 error rates (MacKinnon, Lockwood, & Williams, 2004). Evidence for full mediation requires a specific indirect effect to be significant and the direct effect to be non-significant. In contrast, partial mediation occurs when both the specific indirect effect and the direct effect are significant.

First, the results showed that the total effect of HP on cognitive anxiety ($\beta = -.380$; CI = $-.622$ to $-.102$, $p = .005$) was reduced to nonsignificance after the taking coping with adversity into account ($\beta = -.114$; CI = $-.489$ to $.335$, $p = .626$). Furthermore, the presence of a significant indirect effect ($\beta = -.267$; CI = $-.671$ to $-.041$, $p = .012$) thus provided support for the role of full mediator of coping with adversity in the relation between HP and cognitive anxiety. Second, the results showed that, although the total and direct effect of OP on cognitive anxiety were positive and significant ($\beta = .331$; CI = $.102$ to $.555$, $p = .004$; $\beta = .283$; CI = $.012$ to $.520$, $p = .034$, respectively), results of the indirect effects supported that coping with adversity was not a significant mediator in the relation between OP and cognitive anxiety ($\beta = .048$; CI = $-.016$ to $.285$, $p = .140$). Overall, the results supported both of our

hypotheses by demonstrating that coping with adversity fully mediated the negative relation between HP and cognitive anxiety, whereas the positive relation between OP and cognitive anxiety was not mediated by coping with adversity.

Study 2

The results of Study 1 enabled us to provide a clearer portrait of the link between both types of passion and anxiety in sport. Specifically, HP and OP were respectively associated with lower and higher levels of cognitive anxiety in sport. This is because HP was positively related to the capacity to cope with adversity. In contrast, OP was not significantly related to coping with adversity. In turn, coping with adversity was negatively related to cognitive anxiety. Stated differently, these findings suggest that HP is positively related to the capacity of dealing with the stress and demands associated with sport, while OP is not significantly related to such capacity.

However, Study 1 did not address the specific coping strategies associated with both HP and OP. According to the sport psychology literature, most coping strategies are structured into higher-order dimensions, namely problem-focused coping, emotion-focused coping, and avoidance coping (Kowalski & Crocker, 2001). In line with past research and the results of Study 1, it was hypothesized that HP would be positively related to problem-focused coping, whereas OP would be positively associated with avoidance-focused coping (Schellenberg et al., 2013). With respect to the relation between coping dimension and anxiety, it was hypothesized that problem-focused coping should be negatively, whereas avoidance coping should be positively, associated with cognitive anxiety. More specifically, problem-focused coping was expected to mediate the negative relation between HP and cognitive anxiety. Moreover, avoidance coping was hypothesized to mediate the positive relation between OP and cognitive anxiety.

Method

Participants. Participants were 168 athletes (76 women and 92 men) from around the world (mostly from Canada and the United States) who participated in an online study. They participated in a variety of sports (hockey, soccer, basketball, track and field, equestrian, swimming, etc.). The average age of the participants was 21.58 years ($SD = 6.94$ years), ranging from 14 to 55 years. On average, these participants engaged in their sports for 10.50 hours per week ($SD = 7.09$ hours) and had been practicing their sports for an average of 9 years and 10 months ($SD = 6$ years and 6 months).

Procedure. Permission to conduct the study was obtained from the Research Ethics Board prior to the beginning of the study. Participants were contacted through search engines such as Facebook or Yahoo Groups to complete a web questionnaire. Each participant was informed that participation was voluntary and signed a consent form before completing the scales. Participants were told that the purpose of the questionnaire was to learn more about athletes' behaviors and attitudes toward their sport before a competition. After completing the last scale, participants were debriefed with respect to the purpose of the study.

Measures.

Passion. The Passion Scale (Marsh et al., 2013; Vallerand et al., 2003) used in Study 1 was again used in Study 2. Cronbach alphas of .71 and .82 were obtained for the HP and OP subscales, respectively.

Coping Strategies. Three subscales from the Coping Function Questionnaire (Kowalski & Crocker, 2001) were used to assess problem-focused coping (6 items; "I tried to find a way to change the situation"; $\alpha = .78$), emotion-focused coping (7 items; "I worked through my emotions in order to feel better"; $\alpha = .88$), and avoidance coping (5 items; "I tried to get out of the situation to get away from the stress"; $\alpha = .90$). Participants were asked to

refer to an important sport competition and to indicate their responses using a seven-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*very strongly agree*). The Coping Function Questionnaire has been used in several studies and has been found to have good levels of validity and reliability (Kowalski & Crocker, 2001; Kowalski, Mack, Crocker, Niefer, & Fleming, 2006).

Competitive Anxiety. The cognitive anxiety subscale of the Competitive State Anxiety Inventory-2 (Martens, Burton, et al., 1990) was used again in Study 2. A Cronbach alpha of .83 was obtained.

Results

Preliminary Analyses. Prior to analyses, all variables included in the subsequent path analyses were examined for accuracy of data entry, missing data, and fit between their distributions and the assumptions underlying maximum likelihood procedures (Tabachnick & Fidell, 2000). Six participants were identified as multivariate outliers using Mahalanobis' distance ($\chi^2_{(7)} = 24.32, p < .001$) and were therefore removed from the final sample ($n = 162$). Descriptive statistics and error-free correlation are reported in Table 2. Furthermore, no significant gender differences were found on any of the variables ($p > .08$).

Main Analyses.

Measurement model. The adequacy of the hypothesized model was assessed by way of a structural equation modeling (SEM) with AMOS 19.0. As in Study 1, the measurement model was constructed by creating two indicators of two or three items each for the latent variables in the model, using the item-to-construct balance parceling approach proposed by Little and colleagues (2002)³. The same fit indices as in Study 1 were used to assess the

³ Each latent variable were formed using two parcels, which were composed as follow: harmonious passion (HP1, items 1, 3, and 4; HP2, items 2, 5, and 6), obsessive passion (OP1, items 1, 3, and 6; OP2, items 2, 4, and 5), problem-focused coping (PFC1, items 1, 2, and 6;

model fit. The results revealed a satisfactory fit of the measurement model. The chi-square value was not significant, $\chi^2 (df = 39, N = 162) = 30.012, p = .849$, and other fit indices were satisfactory, CFI = 1.000, NFI = .963, IFI = 1.000 and RMSEA = .000 (.000; .032).

Structural Model. As in Study 1, a hybrid model including both a measurement model and a structural model was employed (Kline, 2005) in order to test our hypotheses. The results revealed a satisfactory fit of the structural model to the data. The chi-square value was not significant, $\chi^2 (df = 29, N = 162) = 30.012, p = .849$, and other fit indices were satisfactory, CFI = 1.000, NFI = .963, IFI = 1.000 and RMSEA = .000 (.000; .032). As in Study 1, this model enabled for the estimation of the total effect of both types of passion on cognitive anxiety as well as its decomposition into direct and indirect effects. The same estimator as in Study 1 was used to test the total, direct, and indirect effects.

First, the results showed that the total effect of HP on cognitive anxiety was negative and significant ($\beta = -.413$; CI = $-.679$ to $-.159, p = .001$). After taking the mediators into account, the direct effect was reduced, but remained significant ($\beta = -.297$; CI = $-.600$ to $-.026, p = .030$). Furthermore, a significant indirect effect provided support for the role of partial mediator of problem-focused coping in the relation between HP and cognitive anxiety ($\beta = -.073$; CI = $-.291$ to $-.009, p = .018$). Moreover, results provided support for an unexpected mediator in the relation between HP and cognitive anxiety. Specifically, a significant indirect effect supported the role of partial mediator of avoidance coping in the relation between HP and cognitive anxiety ($\beta = -.052$; CI = $-.185$ to $-.003, p = .030$).

Regarding OP, the results demonstrated that the total effect of OP on cognitive anxiety was positive and significant ($\beta = .307$; CI = $.008$ to $.555, p = .044$), while the direct effect was not

PFC2, items 3, 4, and 5), emotion-focused coping (EFC1, items 1, 2, 4, and 6; EFC2, items 3, 5, and 7), avoidance coping (AVC1, items 1, and 3; AVC2, items 2, 4, and 5) and cognitive anxiety (ANX1, items 1, 4, and 5; ANX2, items 2, and 3).

significant ($\beta = .241$; CI = $-.059$ to $.499$, $p = .119$). Furthermore, a significant indirect effect provided support for the full mediation of the relation between OP and cognitive anxiety by avoidance coping ($\beta = .057$; CI = $.007$ to $.173$, $p = .024$). Overall, the results provided support for all of our hypotheses. More specifically, the negative relation between HP and cognitive anxiety was partially mediated by problem-focused coping and avoidance coping. Furthermore, avoidance coping fully mediated the positive relation between OP and cognitive anxiety.

General Discussion

Past research has shown that the two types of passion proposed by Vallerand and his colleagues (2003), namely HP and OP, are differently related to various consequences such as anxiety (Carbonneau et al., 2010; Mageau et al., 2005; Ratelle et al., 2004). However, the self-regulatory processes explaining these differential relationships have not been addressed. The aim of the present research was thus to test a model wherein the relationship between passion and anxiety is mediated by coping strategies. Specifically, it was hypothesized that HP leads to the use of approach-based coping strategies while OP leads to the use of avoidance-based coping strategies. In turn, these different coping strategies were hypothesized to differentially lead to anxiety. These hypotheses were upheld in two studies.

A first conclusion of the present findings is that, overall, the hypothesized model was supported in both studies thereby providing empirical evidence for the mediating role of coping strategies in the relation between passion and anxiety. More specifically, the negative relation between HP and anxiety was fully mediated by coping with adversity (Study 1) and partially mediated by problem-focused coping (Study 2). Such coping strategies contribute to the mobilization of cognitive and behavioural resources that help individuals cope directly with the demands of stressful events such as sport competition. Moreover, results of Study 2

showed that the negative relation between HP and cognitive anxiety was also partially mediated by the negative association between HP and avoidance coping. More specifically, not only does HP have a significant positive association with problem-focused coping, it also has a negative association with a type of coping promoting behavioral and cognitive disengagement in the face of stress. These results support past research by showing that HP is associated with self-regulatory processes that help individuals to efficiently deal with the demands of their activity in the face of adversity.

In contrast, the positive relation between OP and anxiety was not mediated by coping with adversity (Study 1). However, results of Study 2 showed that avoidance coping fully mediated the positive relation between OP and cognitive anxiety. This coping strategy drains athletes' energy and resources away from the stressor, thereby reducing their ability to manage the demands of the situation, and thus leading to higher levels of cognitive anxiety. The above findings help us better understand why, in contexts such as sports, some individuals may experience more anxiety than others. Therefore, it seems that OP, compared to HP, is more likely to be associated with worry about performance and peers' judgments. Thus, OP is more likely to lead to the avoidance of directly dealing with the stressor. This difference may be due to the importance of the activity in one's identity. For obsessively passionate athletes, their favorite sport takes an overpowering place in their identity (Vallerand et al., 2003) and is thus attached to pressures and contingencies, such as self-esteem and social acceptance (Mageau et al., 2011). Therefore, obsessively passionate athletes might perceive competition as a self-threatening situation, in which they might make mistakes, perform badly, or even fail. As athletes with an OP cannot let go after they made a mistake, they are more likely to ruminate about it and about what they should have done instead (Carpentier et al., 2012; Ratelle et al., 2004; Vallerand et al., 2003). Furthermore, with

OP, self-esteem is contingent to one's performance in the purview of passionate activity (Mageau et al., 2011), leading individuals with OP to fear failure (Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013a). Thus, future research could look at the mediating role of perceived threat (Jones et al., 2009) in the relation between OP in athletes and the adoption of avoidance coping strategies as a self-regulatory process which, in turn, leads to the experience of higher levels of anxiety in sport.

The results of the present research, along with those of Schellenberg and colleagues (2013), provide further support for the understanding of the self-regulatory processes associated with HP and OP, and thus, help for a better understanding of the generally more adaptive nature of HP over OP in sport. Specifically, the present findings could potentially explain why, through the use of avoidance-oriented coping and the resulting anxiety, OP is associated with reduced goal attainment and increased burnout over a three months period (Schellenberg, et al., 2013). In contrast, athletes with a HP display lower levels of cognitive anxiety through the use of approach-oriented coping strategies, such as task-oriented coping, and the negative association with avoidance coping. Because no contingencies are attached to the passionate activity, individual with HP are less likely to worry about their performance and to avoid stressful situations, such as sport competition. Rather, it could be that athletes with HP perceive competition as a challenge, an opportunity to gain valuable experience in their quest to master their discipline, and are thus more likely to adopt problem-focused coping strategies. However, future research is needed in order to test this hypothesis. The present results suggest that the use of approach-oriented self-regulatory processes, such as coping with adversity, problem-focused coping and task-oriented coping represent a way of reducing athletes' anxiety when facing the demands of sport competition. Thus, HP facilitates the use of active, approach-oriented, ways of directly confronting the source of stress that

subsequently decrease the resulting anxiety. In turn, it is possible that the reduced anxiety helps athletes to progress on their goal attainment over three months (Schellenberg, et al., 2013).

Limitations and Future Research Directions

The present research has some limitations. Although the results of the present studies are consistent with a causal interpretation, the correlational design used prevents such an inference. In future research, it would be important to replicate the present findings using longitudinal or even experimental designs (e.g., see Belanger et al., 2013b, Studies 3 and 4, for examples of experimental manipulations of passion) in order to circumvent the limitations of assessing mediating effects with cross-sectional data (Maxwell & Cole, 2007).

Furthermore, the present research relied exclusively on self-report data. It would be interesting to replicate these studies with physiological and objective measures of anxiety such as an overactivity of the prefrontal cortex (Berkowitz, Coplan, Reddy, & Gorman, 2007), or with measures from informants such as coaches, parents, and teammates. Moreover, anxiety is a multidimensional construct, comprising both cognitive and somatic anxiety (Martens, Vealey, et al., 1990). Since this research focused exclusively on cognitive anxiety, future research should investigate the relation between passion, coping, and somatic anxiety in order to overcome this limit. Such research could prove very interesting as the role of somatic anxiety is oftentimes non-linear in performance-oriented contexts such as sport (Gould, Petlichkoff, Simons, & Vevera, 1987). More specifically, future research should pay attention to the motivational factor, such as passion, providing the ideal psychological conditions for somatic anxiety to lead to optimal functioning in sport.

Future research should also try to investigate other mediating variables that help to better understand the differential relation between the two types of passion and the use of

coping strategies. For example, in both studies OP was either not significantly related to coping (Study 1) or positively related to avoidance-oriented forms of coping strategies (Study 2). One possible explanation may have to do with the fact that OP has been linked to rumination during and after activity engagement (Carpentier et al., 2012; Ratelle et al., 2004; Vallerand et al., 2003, Study 1). Thus, athletes with an OP are more likely to ruminate about their mistakes and performances which, in turn, may lead to higher levels of worry and anxiety. Furthermore, it would be important to test whether the current findings are replicable in different contexts (i.e., individual vs. team sports) and in specific, crucial moments in a season or career, such as immediately before a playoff game versus a practice. Future research should also look at the influence of some contextual variables such as coaches' and parents' interpersonal styles on the type of passion individuals develop and the coping strategies they may come to rely on. Indeed, previous research has shown that by adopting autonomy supportive behaviors, parents and teachers facilitate the development of a HP in athletes, while controlling behaviors result in the development of a more OP toward a given activity (Mageau et al., 2009). Coaches' interpersonal styles may thus influence the type of passion athletes develop and thus, indirectly affect the coping strategies they use and the ensuing anxiety. Future research is needed on this issue.

Creating Bridges Between Motivation and Self-Regulation

Motivational and self-regulatory processes have received plenty of empirical scrutiny. However, scant attention has been paid to the simultaneous study of both types of processes, especially in the sport domain. The present paper, along with analogous research on motivation and self-regulation (e.g., Amiot, Gaudreau, & Blanchard, 2004; Koestner, Otis, Powers, Pelletier, & Gagnon, 2008; Schellenberg, Gaudreau, & Crocker, 2013; Smith, Ntoumanis, Duda, & Vansteenkiste, 2011), suggest that the quality of motivational processes

matters with respect to the type of self-regulatory process employed. In general, the results of these papers suggest that self-determined types of motivational processes (e.g., autonomous motivation, harmonious passion) promote the use of approach-oriented self-regulatory strategies (e.g., task-oriented coping, problem-focused coping, goal-direct effort, approach implementation intentions) which, in turn, lead to more positive outcomes. In contrast, less self-determined types of motivational processes (e.g., controlled motivation, obsessive passion) are typically associated with avoidance-oriented self-regulatory strategies (e.g., disengagement-oriented coping, avoidance coping, avoidance implementation intentions) which, in turn, lead to more negative outcomes. Overall, a first conclusion drawn from these papers is that the quality of motivational processes matters more than the quantity of motivation regarding the quality of self-regulatory strategies used and, subsequently, the quality of the outcomes that follow.

However, very little attention has been paid to the longitudinal effects between motivational and self-regulatory processes. In fact, motivational and self-regulatory processes may have bi-directional effects over time. Specifically, not only does motivation influence the choice of self-regulatory process, but self-regulatory processes may also promote changes in the quality of motivation over time (e.g., Amiot, Blanchard, & Gaudreau, 2008; Thompson & Gaudreau, 2008). Furthermore, this longitudinal effect could be mediated by the consequences associated with self-regulatory processes. For example, with approach-based self-regulatory processes, individuals allocate cognitive or physiological resources directly toward the task at hand. With time, this generally leads to better goal progress or goal attainment. Accordingly, recent research has demonstrated that situational within-person variations in approach-based self-regulatory process (i.e., task-oriented coping) during six rounds of golf led to increases on both subjective and objective performance indicators

(Gaudreau, Nicholls, & Levy, 2010). In turn, goal progress or goal attainment leads to positive consequences such as increases in positive emotions (Amiot et al., 2004) and need satisfaction in the activity (Sheldon & Elliot, 1999). As past research has shown, positive emotions and feelings of competence subsequently lead to a more self-determined motivation (Deci & Ryan, 2000). Opposite relationships can also be obtained between less adaptive self-regulatory and motivational processes such as avoidance-based self-regulation and obsessive passion.

Overall, motivational and self-regulatory processes are strongly tied to one another and have the potential to have recursive effects. Consequently, these two families of processes should be the focus of longitudinal studies aimed at understanding the development or maintenance of optimal functioning of athletes over time.

In summary, the present research underlines the importance of the study of the interplay between motivational and self-regulatory processes in the understanding of the psychological outcomes associated with competition in sport, such as anxiety. Specifically, the present research helps to better understand the self-regulatory processes through which passion affects anxiety in athletes. To our knowledge, the present findings are the first to show that different coping processes mediate the passion-anxiety relationship and explain the different levels of anxiety experienced by athletes with different types of passion. Future research is important in order to test the generalization of these findings and their applicability to a variety of sport settings.

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Table 1

Means, Standard Deviations, and Error-Free Correlation Matrix for all Study 1 Variables (N = 175)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4
1. Harmonious passion (HP)	6.00	0.72	--			
2. Obsessive passion (OP)	4.34	1.46	.452**	--		
3. Coping with adversity (ADV)	4.75	1.17	.650**	.191*	--	
4. Cognitive anxiety (COG)	2.15	0.75	-.231*	.160	-.396**	--

Note. ** $p < .01$; * $p < .05$.

Table 2

Means, Standard Deviations, and Error-Free Correlation Matrix for all Study 2 Variables (N = 162)

Variable	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Harmonious passion (HP)	5.47	0.92	--					
2. Obsessive passion (OP)	3.73	1.45	.522**	--				
3. Problem-focused coping (PFC)	3.63	0.72	.264*	.104	--			
4. Emotion-focused coping (EFC)	3.47	0.78	.197*	.220*	.416**	--		
5. Avoidance coping (AVC)	2.49	1.05	-.075	.165†	.178*	.067	--	
6. Cognitive anxiety (COG)	2.14	0.77	-.253*	.092	-.272*	-.095	.211*	--

Note. ** $p < .01$; * $p < .05$; † $p < .08$.

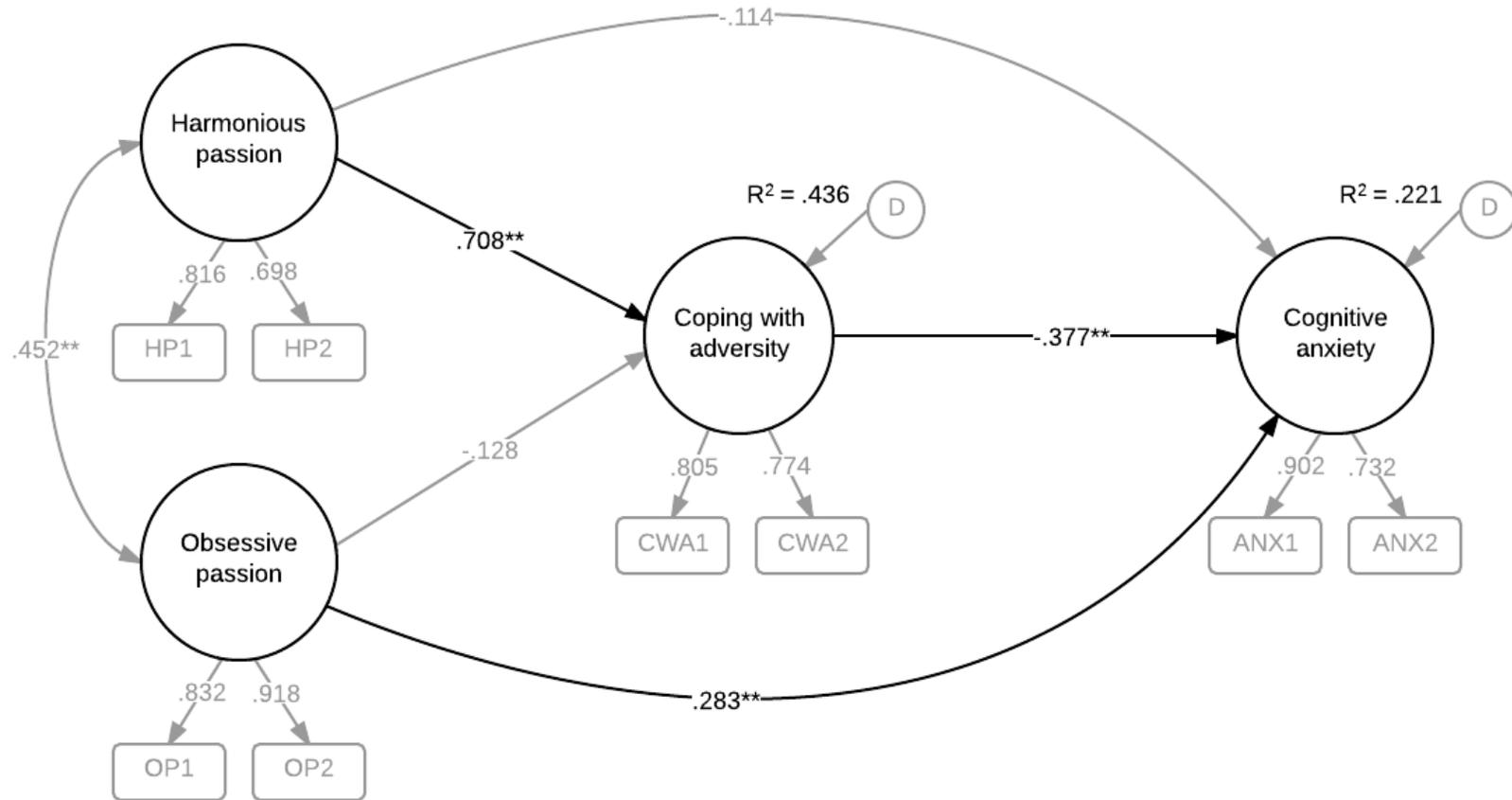


Figure 1. Final model of the relationship involving passion, coping strategies, and cognitive anxiety: Study 1. All parameters were standardized. $** p < .01$; $* p < .05$.

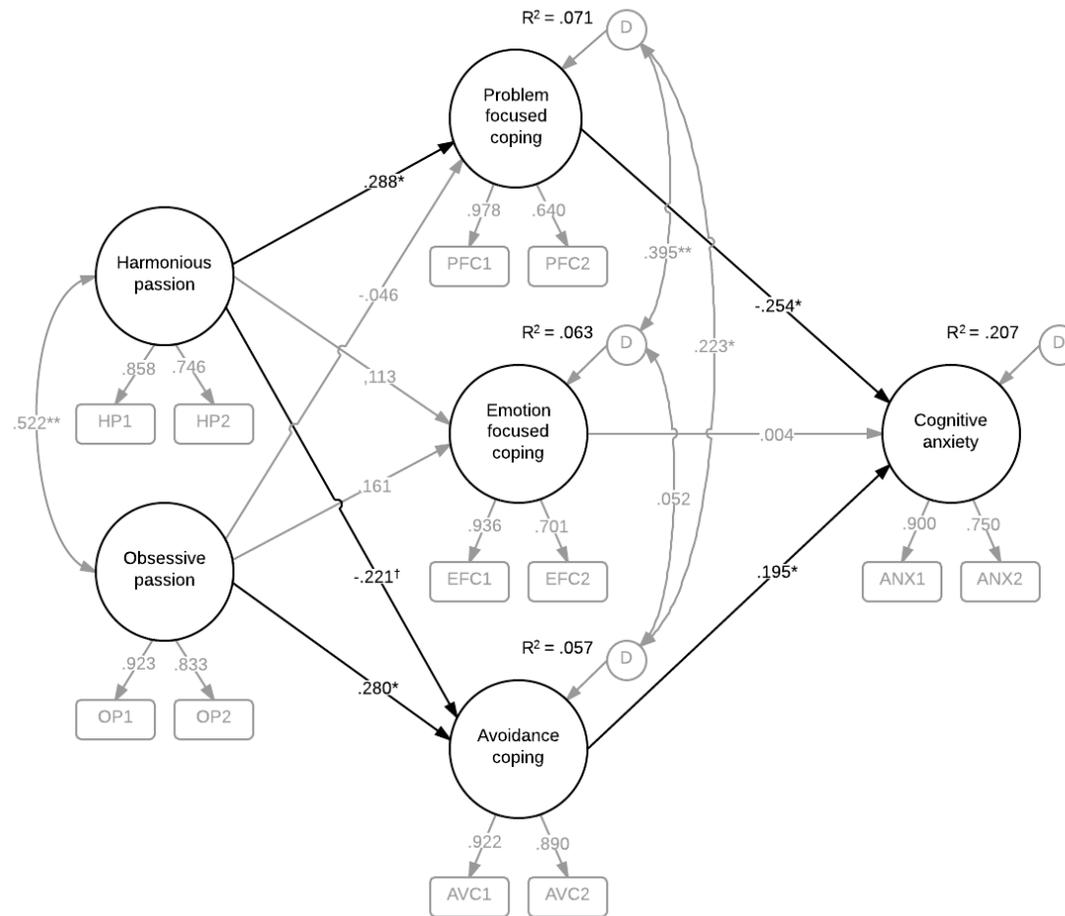


Figure 2. Final model of the relationship involving passion, coping strategies, and cognitive anxiety: Study 2. All parameters were standardized. Although not included in the figure, direct paths of harmonious passion and cognitive anxiety ($\beta = -.297^*$) as well as obsessive passion and cognitive anxiety ($\beta = .240^\dagger$) were included in the model. ** $p < .01$; * $p < .05$; $^\dagger p < .08$.