

Passion in Referees: Examining Their Affective and Cognitive Experiences in Sport Situations

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The present research examined in two studies the role of passion for refereeing in referees' affective and cognitive functioning during games. In line with past research on the dualistic model of passion (Vallerand et al., 2003), Study 1 ($n_1 = 90$ and $n_2 = 148$) revealed that harmonious passion (HP) for refereeing was positively associated with positive emotions and the experience of flow during games. Conversely, obsessive passion (OP) for refereeing was unrelated to positive emotions and flow, but was positively associated with negative emotional experiences during games. Study 2 ($n = 227$) examined referees' affective and cognitive functioning after having committed an important mistake. Results showed that HP was negatively associated with maladaptive affective and cognitive functioning after a bad call, whereas OP was positively associated with such maladaptive functioning, including subsequent poor decision making. In addition, in both studies, most referees reported to be passionate toward refereeing. Finally, results from both studies remained the same after controlling for referees' gender, age, years of experience, and types of sports.

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Athletes have been the focus of thousand of studies in the field of sport psychology. However, remarkably, referees have been sorely neglected. This is surprising because referees are sport participants in their own right, whose behavior can have an important impact on players' behaviors and game outcomes. Furthermore, referees have been found to be highly motivated toward refereeing and to display a strong interest in their sports (Folkesson, Nyberg, Archer, & Norlander, 2002; Wolfson & Neave, 2007). They spend a lot of time on their craft, honing their skills. As such, they would seem to be highly passionate. Is it the case? Can

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referees be passionate about their sport just as athletes are? If so, are the consequences of passion the same as those experienced by athletes? Finally, can passion affect referees' game functioning? The purpose of the present research was to examine these issues.

Although some research has investigated referees' emotional processes and their consequences, such as responses to stress (e.g., Anshel & Weinberg, 1995; Dorsch & Paskevich, 2007; Thatcher, 2005) and uses of coping (e.g., Anshel & Weinberg, 1999; Wolfson & Neave, 2007), little research has empirically examined motivational processes in referees. Past studies that did examine this issue investigated the level of motivation that characterizes referees (e.g., Wolfson & Neave, 2007) or the factors that influence referee's motivation, such as persistence in refereeing (e.g., Folkesson et al., 2002; Gray & Wilson, 2008; Rainey, 1995, 1999). However, to our knowledge, no research has examined the consequences of the motivational processes in referees. These processes appear important as they may lead to important outcomes, including some that may be central for refereeing, such as decision making. We believe that the *dualistic model of passion* may help to further understand these motivational processes and constitute an adequate framework to examine their consequences on referees' experiences during games.

The Dualistic Model of Passion

Recently, Vallerand and his colleagues (Vallerand, 2008; Vallerand et al., 2003; Vallerand & Houliort, 2003; Vallerand & Miquelon, 2007) have formulated a dualistic model in which *passion* is defined as a strong inclination or desire toward a self-defining activity that one likes (or even loves), finds important (high valuation), and in which one invests time and energy. This theoretical model proposes that there exist two types of passion. The first type of passion is harmonious passion (HP), which results from an autonomous internalization of the activity into the person's identity (Vallerand et al., 2003). An autonomous internalization occurs when individuals have freely accepted the activity as important for them without any contingencies attached to it (Deci & Ryan, 2000; Sheldon, 2002; Vallerand, 1997). The activity can thus be integrated in line with the person's other self-structures (Hodgins & Knee, 2002). Consequently, the activity occupies a significant but not overpowering space in the person's identity. The person thus remains in control of the passionate activity. With HP, the individual is capable of a flexible engagement in the activity, which is conducive to a willingness to experience what is occurring at the present moment (Hodgins & Knee, 2002). The person may then better concentrate on the task at hand and experience positive emotions and flow (i.e., the feeling that one is immersed in the activity; see Csikszentmihalyi, 1978; Jackson & Marsh, 1996) while engaging in the activity. Therefore, such a control over the activity should be conducive to a positive and adaptive affective and cognitive functioning during activity engagement.

The second type of passion identified by Vallerand and colleagues (2003) is obsessive passion (OP), which results from a controlled internalization of the activity into one's identity (Vallerand et al., 2003). Such an internalization originates from intra- and/or interpersonal pressure either because certain contingen-

cies are attached to the activity, such as feelings of social acceptance or self-esteem, or because the sense of excitement derived from activity engagement becomes uncontrollable. Therefore, with this type of passion, the activity is not under the person's control, as it comes to occupy an overwhelming space in the person's identity. It is as if the activity controlled the person. It is proposed that with OP, individuals develop ego-invested structures (Hodgins & Knee, 2002), as the person's self-worth comes to be dependent upon engaging in and doing well on the activity. This is eventually conducive to a rigid persistence toward the activity that precludes the experience of volition during activity engagement and leads to negative emotional experiences. Such pressured engagement prevents the person from fully focusing on the task at hand and makes it very difficult for the person to fully disengage from performance thoughts related to the activity—therefore engaging in rumination. Thus, overall, OP should lead to a negative and less adaptive affective and cognitive functioning during activity engagement.

Research has provided support for the dualistic model of passion. First, results of exploratory and confirmatory factor analyses have provided construct evidence of validity for the two-factor structure of the Passion Scale corresponding to harmonious and obsessive passion (Rousseau, Vallerand, Ratelle, Mageau, & Provencher, 2002; Vallerand et al., 2003, Study 1; Vallerand, Rousseau, Grouzet, Dumais, & Grenier, 2006). In addition, both types of passion have been found to correlate positively with measures of activity valuation, time invested in the activity, and activity perseverance (Vallerand et al., 2008, Study 1; Vallerand et al., 2007, Study 1). In addition, both types of passion have been found to correlate positively with a measure of activity inclusion in the self and in identity (Aron, Aron, & Smolan, 1992).

Research has also shown that both types of passion lead to different types of affective outcomes during activity engagement. Indeed, OP has been found to be positively related to negative emotions (e.g., Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Vallerand et al., 2003, 2006, Study 2) and negative self-related emotions (e.g., shame, guilt) (Mageau et al., 2005; Vallerand et al., 2003, Study 1), and to be negatively associated or unrelated to positive emotions during activity engagement (Mageau et al., 2005; Vallerand et al., 2003, 2006, Study 2). In addition, OP has been found to be positively associated with anxiety (Rousseau & Vallerand, 2003) and perceived stress (Blanchard, 1999), and to be unrelated to an experience of flow during activity engagement (Vallerand et al., 2003, Study 1). Conversely, it has been shown that HP was conducive to positive emotions (Mageau & Vallerand, 2007; Mageau et al., 2005; Vallerand et al., 2003, Study 1; Vallerand et al., 2006, Study 2) and to the experience of flow (Vallerand et al., 2003, Study 1), and was either negatively related or unrelated to negative emotions during task engagement (Mageau et al., 2005; Vallerand et al., 2003, Study 1; Vallerand et al., 2006, Study 2) and negatively associated with negative self-related emotions (Vallerand et al., 2003; Study 1).

It has also been shown that both types of passion lead to different types of cognitive outcomes. Past research has found that OP was positively associated with rumination about the activity (Ratelle, Vallerand, Mageau, Rousseau, & Provencher, 2004; Vallerand et al., 2003, Study 1) and negatively associated or unrelated to concentration during task engagement (Ratelle et al., 2004; Vallerand et al., 2003, Study 1). Conversely HP was found to be unrelated to rumination

(Ratelle et al., 2004) and positively associated with concentration during task engagement (Vallerand et al., 2003, Study 1).

Finally, research has shown that OP is characterized by a rigid persistence in the activity due to a lack of control over it. This rigid persistence is particularly striking in conditions where activity engagement should be stopped. For instance, OP has been found to be associated with ill-advised persistence in activity engagement such as winter cycling over icy roads in Quebec (Vallerand et al., 2003, Study 3), persisting in dancing while injured (Rip, Fortin, & Vallerand, 2006), or heavy involvement in gambling activities (Rousseau et al., 2002) that may be conducive to pathological gambling (Philippe & Vallerand, 2007; Ratelle et al., 2004; Vallerand et al., 2003, Study 4). Harmonious passion has been found to be either unrelated or negatively related to such negative behaviors.

The Present Research: Passion for Refereeing

In light of the fact that no research has looked at passion in referees, there were two purposes to the present research. A first purpose was to examine the consequences of passion in referees' affective and cognitive functioning during game conditions. In line with past studies on athletes (e.g., Vallerand et al., 2006), we posited that the two types of passion for refereeing would lead to a better understanding of adaptive and maladaptive affective and cognitive functioning on the part of referees. Because it provides a flexible activity engagement that is conducive to a willingness to experience what is occurring at the present moment, HP should be positively associated with adaptive affective and cognitive functioning while refereeing. Conversely, because OP is characterized by rigid ego-invested structures that limit the experience of volition, it should be positively associated with less adaptive affective and cognitive functioning. The second purpose of the present research was to investigate whether referees can be passionate for refereeing their sports. Although certain research has shown that referees can be highly motivated in refereeing (Folkesson et al., 2002; Wolfson & Neave, 2007), no study to our knowledge has examined whether referees can be passionate for refereeing a sport as much as athletes have been shown to be passionate for their sport (e.g., Vallerand et al., 2006).

Herein, two studies examined these two issues. Study 1 investigated the role of passion in referees' emotional and flow experiences during game conditions. Study 2 examined the role of passion in regulating the most important stress factor in refereeing—making an incorrect decision (Balmer et al., 2007; Kaissidis & Anshel, 1993). Maladaptive affective and cognitive functioning aspects were thus assessed following such a situation and examined in light of the dualistic model of passion. In addition, both studies statistically controlled for the role of referees' age, gender, years of experience, league levels, and type of sports because these descriptive variables have been identified by past research (Dorsch & Paskevich, 2007; Folkesson et al., 2002) as potentially influencing referees' affective or cognitive functioning. Finally, both studies examined whether referees were passionate about refereeing.

Study 1

The purpose of Study 1 was to examine the role of passion in referees' emotional experiences and flow. In line with past research (Mageau et al., 2005; Vallerand et al., 2003, Study 1; Vallerand et al., 2006), it was hypothesized that HP for refereeing would be positively associated with positive emotional experiences during a game, but should be negatively associated or unrelated to negative emotional experiences. In addition, in line with past research (Vallerand et al., 2003, Study 1), it was further hypothesized that HP would be positively associated with the experience of flow during a game. Conversely, it was hypothesized that OP would be positively associated with negative emotional experiences during a game, but should be negatively associated or unrelated to positive emotional experiences. In addition, OP was hypothesized to be negatively associated or unrelated to an experience of flow during a game. Furthermore, it was hypothesized that the above effects would hold even after statistically controlling for referees' age and gender, and the types of sports and league levels in which they refereed. Finally, it was hypothesized that the vast majority of referees would be passionate toward refereeing.

Method

Participants

Two samples of participants were recruited in this study. Sample 1 was composed of 90 referees (82 males, 8 females) of football (soccer) working in national and international level leagues. These are the best football referees in France. Referees were aged between 22 and 45 years ($M = 33.21$ years, $SD = 5.89$ years). They had been refereeing for an average of 16.24 years ($SD = 6.11$ years) and were refereeing between 20 and 60 games per year. Sample 2 was composed of 148 referees (volleyball, $n = 79$; basketball, $n = 69$). They were all refereeing in regional and district level leagues in France. These are nonprofessional levels. Overall, they were 131 males and 17 females and were aged between 20 and 64 years ($M = 37.74$ years, $SD = 11.05$ years).

Measures

The Passion Scale (Samples 1 and 2). The Passion Scale (Vallerand et al., 2003; Vallerand et al., 2006) was administered to assess the type of passion that characterized participants' refereeing. The Passion Scale is composed of two subscales of six items, each assessing a precise type of passion—harmonious (HP) and obsessive (OP) passion. Each item is responded to on a 7-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*completely agree*). A sample item for OP is, "I have difficulties controlling my urge to referee," whereas a sample item for HP is, "My activity is in harmony with other things that are part of me." The scale has systematically displayed adequate factorial structure and internal consistency in different areas (e.g., Rousseau et al., 2002; Vallerand et al., 2003, Study 1),

including sports (Vallerand et al., 2006, Study 1). Alpha coefficients in Samples 1 and 2, respectively, were .77 and .70 for the harmonious subscale and .64 and .91 for the obsessive subscale. Participants were also asked to complete four items assessing Vallerand and colleagues' criteria of passion (Vallerand et al., 2003). These four items were rated on a 7-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*completely agree*), with each measuring one of these four aspects: the extent to which participants invest time in their activity, find it important, value it, and consider their activity as a passion. Alpha coefficients for these four criteria were .64 and .74 in Samples 1 and 2, respectively.

Flow (Sample 1). The French translation (Fournier et al., 2007) of the Flow State Scale (FSS-2; Jackson & Eklund, 2002; Jackson & Marsh, 1996) was used in this study to assess flow as experienced by referees during a game. Two subscales of three items each were used in this study, as these subscales have been shown to relate to the construct of passion (Vallerand et al., 2003). The first subscale assessed *challenge-skill balance*—that is, the feeling of balance between the demands of the situation and one's personal skills (e.g., "My ability allows me to face up to the challenge of the task"). The second subscale assessed one's sense of control during the activity (e.g., "I have a feeling of total control"). Each item was responded to on a 7-point Likert scale (1 = *strongly disagree*, 7 = *strongly agree*). Alpha coefficients in this study were .61 and .72 for the challenge-skill balance and control subscales, respectively.

Positive and Negative Emotions (Sample 2). A total of four positive (determined, active, enthusiastic, and attentive) and four negative (nervous, irritable, guilty, and distressed) emotions derived from the Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988) were used to assess referees' emotional experience during a game. We explicitly selected these emotions because they were more likely to be experienced by referees during a game than some other emotions (e.g., inspired, afraid). Referees were asked to complete the PANAS immediately after a game while referring to how they felt during the game. Each item was responded to on a 7-point Likert scale (1 = *very slightly or not at all*, 7 = *extremely*). An exploratory factor analysis (EFA) with maximum likelihood as the estimation method was chosen to examine the factorial structure of this short scale. An EFA with maximum likelihood was selected because it is a commonly used method of factor extraction that excludes measurement error and that is more likely to yield replicable factor structures (Brown, 2006). (It should be noted that the factor extraction methods of principal axis factoring or of principal components yielded the same results as the maximum likelihood method.) A varimax rotation was applied to the extracted matrix of data because positive and negative emotions were expected to yield orthogonal dimensions. Results from this factorial analysis with the eight emotions presented above yielded two factors with an eigenvalue higher than 1.00, together accounting for 56% of the variance. In addition, results from the scree test clearly indicated that two factors should be retained. Factor loadings ranged between .47 and .77. These results thus suggest that the factorial structure of the original full-scale version was preserved. Finally, based on other published data that used the full PANAS (Philippe, Lecours, &

Beaulieu-Pelletier, 2009), our short positive and negative subscales were correlated at .90 and .91 with the full positive and negative subscales of the PANAS, respectively. Alpha coefficients for this brief version were .79 for the positive emotions subscale and .65 for the negative emotions subscale.

Procedure

Referees of Sample 1 were recruited through the Commission Centrale d'Arbitrage (CCA) in France, an organization in charge of referees' training and sports rules. This organization then selected from their registering base a random sample of 300 referees living in France. Each selected referee received by mail a questionnaire along with a letter explaining the general purpose of the study. Participants were told that the aim of this study was to learn more about referees' emotional experiences. Participants were then told that their participation was anonymous and that their results would remain confidential and would not be sent to the CCA. Referees who accepted to participate signed a consent form and then completed demographic information and the Passion Scale. Afterward, they were instructed to complete the Flow State Scale while referring to their last refereed game (Sample 1). The same procedure was used with referees in Sample 2 (450 were contacted), except that they were instructed to complete the emotions inventory in their locker room immediately after the next game they would be refereeing. All participants of both samples were instructed to send their questionnaire back through mail in a prestamped envelope to the researchers to preserve their anonymity. Responses rate was 30% for Sample 1 and 33% for Sample 2.

Results and Discussion

Preliminary Analyses

Variables of Sample 2 were screened for differences between volleyball and basketball referees. Results of ANOVAs showed that there were no differences on all study variables between these two types of sports. However, results from independent *t* tests showed that elite referees scored higher on HP (Sample 1: $M = 5.92$, $SD = 0.73$) than nonelite referees (Sample 2: $M = 5.26$, $SD = 0.81$), $t(236) = 6.32$, $p < .001$, $d = .82$, but did not differ on OP or on any other variables. Thus, although the type of sports might not change one's refereeing affective experience, the level of competition of the league appears to be important with respect to harmonious passion levels (Folkesson, Nyberg, Archer, & Norlander, 2002; Goldsmith & Williams, 1992). We also examined whether gender and age had significant effects. There were no differences of gender in all study variables in Sample 2. However, in Sample 1, males reported to experience higher challenge-skill balance flow ($M = 5.50$, $SD = 0.74$) than females ($M = 4.75$, $SD = 0.75$), $t(88) = 2.73$, $p < .01$, $d = .58$. Finally, referees' age was positively associated with both subscales of the Flow Scale in Sample 1—that is, challenge-skill balance ($r = .23$, $p < .05$, $r^2 = .05$) and control ($r = .22$, $p < .05$, $r^2 = .05$)—whereas it was positively associated with positive emotions in Sample 2 ($r = .19$, $p < .05$, $r^2 = .04$).

Passion for Refereeing

Items assessing the extent to which refereeing was a passion for the participants were examined. In line with Vallerand and colleagues' (2003), an average score of 4 and up on the four items assessing the passion criteria (these criteria do not include participants' scores on the harmonious and obsessive subscales) indicates that a participant is at least moderately passionate. Results showed that 100% ($n = 90$) and 93% ($n = 137$) of the participants in Samples 1 and 2, respectively, were at least moderately passionate for refereeing. There were no differences of passion as a function of gender in Samples 1 and 2, and as a function of the types of sports or league levels in Sample 2. Finally, in both samples, referees' age and years of experience were unrelated to the level of passion.

Passion and Affect and Flow

Table 1 reports the means, standard deviations, and partial correlations of all study variables for Samples 1 and 2. Study 1 hypotheses stated that HP for refereeing should be positively associated with the experience of flow and with positive emotional experiences while refereeing, but should be negatively associated or unrelated to negative emotional experiences. Results from partial correlations (controlling for OP) confirmed these hypotheses. Indeed, results showed that HP for refereeing was positively associated with the experience of flow while refereeing, as both challenge-skill balance and control were positively associated with HP (see Table 1). In addition, HP was positively associated with the experience of positive emotions during a game, whereas it was unrelated to negative emotions. Finally, as expected, these results remained unchanged after statistically controlling for referees' age and gender (i.e., after the partialization of age and gender from the partial correlations between passion and all Study 1 outcomes).

Conversely, OP was expected to be positively associated with negative emotional experiences while engaging in refereeing, but was predicted to be negatively associated or unrelated to an experience of positive emotions or to a state of flow. Results from partial correlations (controlling for HP) also confirmed these hypotheses. Indeed, results showed that OP for refereeing was positively associated with the experience of negative emotions during a game, whereas it was unrelated to positive emotions. In addition, OP was unrelated to challenge-skill balance and control, thus suggesting that OP does not contribute to the experience of flow while refereeing (see Table 1). These results remained unchanged after statistically controlling for referees' age and gender. All significant results were of small effect sizes, thus suggesting that passion has a significant, but small, effect on referees' affective processes.

Study 2

A first goal of Study 2 was to examine referees' affective functioning during games. However, one modification was to specifically examine referees' affective experiences in a distressing condition. Past research has shown that the most important stress factor in refereeing is to make a bad call (Dorsch & Paskevich, 2007; Kaissidis & Anshel, 1993). Bad calls are mistakes that are inevitable for

Table 1 Means, Standard Deviations, and Partial Correlations Between Passion and Emotions and Flow: Study 1

	<i>M</i>	<i>SD</i>	<i>HP</i>	<i>OP</i>	<i>r</i> ²
Harmonious passion (HP)	5.92 ^a / 5.26 ^b	0.73 ^a / 0.81 ^b	—	—	—
Obsessive passion (OP)	3.24 ^a / 3.10 ^b	1.09 ^a / 1.39 ^b	—	—	—
Flow—Challenge-skill balance ^a	5.43	0.76	.26* (.26*)	.06 (.06)	.07/.00
Flow—Control ^a	5.21	0.93	.28** (.28**)	.03 (.03)	.08/.00
Positive emotions ^b	5.43	1.01	.32*** (.41***)	.10 (.27**)	.10/.01
Negative emotions ^b	1.99	0.85	-.11 (.00)	.27*** (.23**)	.01/.07

Note. Zero-order correlations are shown in parentheses. The *r*² values are calculated from the partial correlations results. Effect sizes for harmonious passion appear before the slash and those for obsessive passion appear after it.

^aSample 1, *n* = 90. Zero-order correlations between harmonious and obsessive passion were *r* = .02, *ns*.

^bSample 2, *n* = 148. Zero-order correlations between harmonious and obsessive passion were *r* = .42, *p* < .001.

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

referees and these errors thus commonly occur during a sports game (Balmer et al., 2007; Sanabria et al., 1998). However, referees' reactions and strategies to deal with their own mistakes have been shown to vary drastically, ranging from rumination over the error and feelings of shame to cognitive suppression of the event (Wolfson & Neave, 2007). Therefore, Study 2 examined the role of passion in referees' affective responses following an important incorrect call. Study 1 examined general negative emotions. In Study 2, negative self-related emotions were investigated along with stress levels experienced following an error. These two negative emotional experiences are usually triggered under self-threat conditions (Lazarus, 1991) and have been shown to be particularly common in refereeing (Dorsch & Paskevich, 2007; Folkesson et al., 2002). A second goal of Study 2 was to investigate referees' cognitive functioning following an error. One of the most important problems in refereeing is that referees can lose their concentration after having one of their calls criticized (e.g., Balmer et al., 2007; Balmer, Nevill, & Williams, 2001; Dorsch & Paskevich, 2007). They may start to ruminate over their error, or even worse, they may try to correct an error they made by advantaging the previously disadvantaged team over the other—a make-up call. Finally, a third goal of Study 2 was to replicate the findings of Study 1 with respect to the proportion of referees who are passionate.

In line with the dualistic model of passion, we suggested that passion might account for the different ways in which referees react after having committed an important error. With HP, the activity is posited to take an important, but not overwhelming, space in the person's identity. This allows the person for a flexible and adaptive task engagement. Therefore, with HP, the person remains fully in control of the activity, as he or she can flexibly adapt to ongoing circumstances. Because with HP the person's self-worth is not contingent upon doing well on the passionate activity, making an error should not lead to a state of emotional and cognitive threat or to a pressuring need to take action in some specific ways. Therefore, it was hypothesized that HP for refereeing should be negatively associated or unrelated to stress, negative self-related emotions, rumination, concentration problems, and making make-up calls following a wrong call. Conversely, with OP, the activity is posited to take an overwhelming space in the person's identity (Vallerand et al., 2003, Study 1) because self-contingencies (e.g., self-esteem) are attached to the passionate activity. The activity thus comes to control the person and to pressure him or her to perform well. Making an error should thus activate ego-invested structures that should be conducive to an emotional state of stress and negative self-related emotions, to maladaptive cognitive functioning involving rumination over the mistake and concentration problems, and to maladaptive strategies, such as make-up call decisions. Therefore, it was hypothesized that OP for refereeing should be positively associated with stress and negative self-related emotions, as well as with rumination, concentration problems, and make-up calls after having made an error. Finally, in line with Study 1, it was hypothesized that the vast majority of referees would be passionate toward refereeing.

Method

Participants

A total of 227 (223 males, 4 females) football referees from France participated in Study 2. They were aged between 14 and 58 years old ($M = 31.98$ years, $SD = 11.85$ years). They were refereeing an average of 30.31 games per year ($SD = 10.42$ years) and had been refereeing for 6.49 years on average ($SD = 5.71$ years). They were refereeing in low to moderate-level football leagues (district and regional level).

Measures

The *Passion Scale* and the four-item passion criteria used in Study 1 were administered again to participants in Study 2. In this study, alpha coefficients were .78, .83, and .84 for the harmonious and obsessive passion subscales and the passion criteria, respectively.

Cognitive and Affective Responses to an Important Error. Different items were devised for the purpose of this study and used to assess participants' reaction following an important error they would have made while refereeing. The questionnaire instructed participants to complete the items following this stem: "*Imagine that you have just made an important error in an important game. Indicate for each item how you would react.*" Seven items devised for the purpose of this study referred to maladaptive cognitive functioning in response to the error. These seven items were submitted to an exploratory factor analysis with maximum likelihood as the method of estimation (see Table 2). Again, using the principal components or principal axis factoring methods virtually led to the same results. A varimax rotation was used, as the factors were not expected to be highly correlated, but an oblimin rotation virtually yielded the same results. This EFA was conducted on the first half of the sample ($n = 113$). Three factors with an eigenvalue higher than 1.00 emerged, accounting together for 71% of the variance. In addition, results from the scree test clearly indicated that three factors should be retained. These three factors were labeled *ruminat*ion (e.g., "I think about the error made"), *concentration problems* (e.g., "I find it hard to keep my concentration"), and *make-up call decisions* (e.g., "I repair it by favoring the team against which I made the error"). A confirmatory factor analysis with maximum likelihood as the estimation method was then conducted on the second half of the sample ($n = 114$) to confirm the factor structure of the scale. Fit indices for the three-factor structure were excellent, $\chi^2(df = 9, n = 114) = 9.42, p = .38, NNFI = .99, CFI = 1.00, RMSEA = .02, GFI = .98, SRMR = .042$ and $NFI = 0.95$, and factor loadings were all above .45. Thus, these results provide construct evidence of validity for the cognitive responses item scale. Finally, maladaptive affective functioning was assessed with five items measuring negative self-related emotions following the

Table 2 Items Measuring Cognitive Reactions to an Important Error and Their Relative Factor Loadings: Study 2

After I have made an important error in a game . . .	<i>M</i>	<i>SD</i>	Rumination	Make-up call decisions	Concentration problems
I think about the error made.	3.63	1.17	.93		
I replay the error in my mind.	4.45	1.91	.69		
I repair it by favoring the team against which I made the error.	1.93	1.44		.59	
I am more severe against the team unjustly advantaged.	1.63	1.09		.54	
I immediately try to become neutral.	5.96	1.57		-.52	
I am disturbed by the booing crowd.	2.30	1.55			.98
I find it hard to keep my concentration.	3.16	1.68			.48

Note. *n* = 227. Only factor loadings higher than .40 are shown.

Table 3 Means, Standard Deviations, Alphas, and Partial Correlations Between Passion and Responses to an Important Error: Study 2

	<i>M</i>	<i>SD</i>	α coefficient	Harmonious passion	Obsessive passion	<i>r</i> ²
Harmonious passion	4.46	1.09	.83	—	—	
Obsessive passion	1.88	0.77	.78	—	—	
Stress	4.06	1.16	.77	-.21** (-.14*)	.22** (.14*)	.04/.05
Negative self-related emotions	2.35	1.10	.77	-.27*** (-.23***)	.15* (.05)	.07/.02
Concentration problems	2.63	1.43	.66	-.20** (-.22**)	.01 (-.05)	.04/.00
Rumination	3.89	1.18	.74	.02 (.08)	.18* (.20**)	.00/.03
Make-up call decisions	2.32	0.99	.61	-.30*** (-.29***)	.19** (.01)	.09/.04

Note. *n* = 227. Zero-order correlations are shown in parentheses. Zero-order correlations between harmonious passion and obsessive passion were $r = .41, p < .001$. The *r*² values are calculated from the partial correlations results. Effect sizes for harmonious passion appear before the slash and those for obsessive passion appear after it.

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

error (e.g., “I feel guilty”) and two items assessing stress following the error (e.g., “I feel anxious”). Alpha coefficients for the three cognitive functioning factors and for the affective reactions (negative self-related emotions and stress) are presented in Table 3.

Procedure

Referees were recruited following the same procedures as those used in Study 1. Participants were told that the purpose of the study was to learn more about referees’ reactions following an error. They were also assured that their participation was anonymous and that their results would remain confidential. Referees who accepted to participate were asked to sign a consent form and to complete the questionnaire at home. The questionnaire consisted of demographic information, the Passion Scale, and items relative to their cognitive and affective reactions following an important error they would have made while refereeing. They were instructed to send the questionnaire and the consent form back through mail in a prestamped return envelope to preserve their anonymity. The questionnaire was sent to 700 referees for a response rate of 32%.

Results and Discussion

Preliminary Analyses

ANOVAs were conducted to examine the difference between district and regional league referees. Although referees in districts were significantly older than those in regional leagues ($M = 32.98$, $SD = 12.35$ vs. $M = 27.76$, $SD = 8.36$, $F[1, 227] = 6.75$, $p < .05$, $d = .50$), they did not differ on any study variables. In addition, there were no differences on any study variables as a function of gender. Correlational analyses were then conducted between age and years of experience in refereeing and all study variables. Results revealed that age was positively associated with HP ($r = .16$, $p < .05$, $r^2 = .03$) and negatively associated with stress following an error ($r = -.17$, $p < .05$, $r^2 = .03$). This latter result is in line with past research, suggesting that older referees feel less stressed than the younger ones following an error (Folkesson et al., 2002; Kaissidis & Anshel, 1993). Finally, years of experience were negatively associated with make-up call decisions ($r = -.16$, $p < .05$, $r^2 = .03$). This latter result is in line with the commonly held belief that more experienced referees make fewer make-up calls.

Passion for Refereeing

It was hypothesized that referees of Study 2 would report to be passionate for refereeing in a similar proportion to those of Study 1. Examination of the four-item criteria of passion revealed that 88% ($n = 200$) of the participants were passionate for refereeing. These results thus replicate those of Study 1, as the vast majority of the referees were at least moderately passionate. As in Study 1, referees’ age, gender, and years of experience were unrelated to the level of passion.

Main Analyses

Results from partial correlations (controlling for OP) showed that HP was negatively associated with negative self-related emotions and stress following an error (see Table 3). In addition, HP was negatively associated with concentration problems and make-up call decisions, but unrelated to rumination following a wrong call. Finally, these results remained unchanged after controlling for referees' age, gender, years of experience, and league levels (district vs. regional). Taken together, these results suggest that HP for refereeing protects one from the negative cognitive and emotional consequences associated with refereeing errors. In light of the effect sizes, this protective effect appears to be small.

Additional partial correlations (controlling for HP) were then conducted to determine the role of OP in maladaptive reactions after having committed an important error. Results revealed that OP was positively associated with stress and negative self-related emotions following a wrong call (see Table 3). In addition, OP was positively associated with rumination and make-up call decisions subsequent to an error, but unrelated to concentration problems. Finally, these results remained unchanged after statistically controlling for referees' age, gender, years of experience, and league level (i.e., after the partialization of these variables from the partial correlations between passion and all Study 2 outcomes). Taken together, these results suggest that OP for refereeing is conducive to the maladaptive cognitive and emotional consequences associated with refereeing errors. In light of the effect sizes, this detrimental effect appears to be small.

General Discussion

The purpose of the present research was to examine the role of passion in refereeing. Results from two studies provided support for a dualistic conception of passion as applied to refereeing. First, Studies 1 and 2 showed that almost all referees were passionate for refereeing. Second, in line with the hypotheses derived from the dualistic model of passion, results showed that each of the two types of passion was associated differently with affective and cognitive outcomes related to refereeing in a modest fashion. Finally, all relationships remained unaltered after controlling for referees' age, gender, years of experience, and league levels. These findings lead to a number of implications.

Passion for Refereeing

Results of Study 1 showed that referees were almost all passionate for refereeing. This finding thus corroborates our hypothesis that referees are just as passionate about their sports as athletes. In addition, descriptive variables such as age, years of experience, gender, or the types of sports were unrelated to the level of passion. However, Study 1 showed that elite referees reported a higher level of HP compared with nonelite referees. Taken together, these findings suggest that referees are highly passionate sport participants and that the league level is related to the strength of this passion. However, it is currently not clear whether refereeing at

higher league levels produces an increase in passion or whether it is a matter of self-selection—highly passionate referees being more inclined to referee at higher league levels—or both. Future research might do well in examining this issue more explicitly.

Passion and Affective Functioning

In line with past research on athletes (e.g., Vallerand et al., 2003, Study 1; Vallerand & Miquelon, 2007; Vallerand et al., 2006), it was predicted that both types of passion should differently lead to distinct affective outcomes. More specifically, as expected, results of Study 1 showed that HP was positively associated with positive emotional experiences and flow during games and unrelated to negative emotional experiences during games. In addition, results of Study 2 showed that HP was negatively associated with stress and negative self-related emotions after having committed an important mistake. Conversely, OP was positively associated with negative emotional experiences and was unrelated to both positive emotions and flow during games (Study 1). In addition, OP was positively associated with stress and negative self-related emotions after having committed an important mistake (Study 2). These results are in line with past research (Mageau et al., 2005; Vallerand et al., 2006, Study 2; Vallerand et al., 2003, Study 1). The present findings thus suggest that referees might have an affective functioning that is similar to that of people passionate for other types of activities, including sports (Vallerand et al., 2006).

One explanation for these consistent results is that, because HP comes from an autonomous internalization of the activity in one's identity with no contingencies attached to it, it is conducive to an eagerness to experience what is occurring at the present moment. It would appear that this openness to intrapersonal experience and to the environment allows one to fully integrate the activity experience (Hodgins & Knee, 2002) and facilitates the experience of positive emotions and flow, while helping to regulate potential negative emotions (Hodgins & Knee, 2002). Conversely, OP comes from a controlled internalization of the activity in one's identity, with contingencies attached to it. The person's self-worth thus depends upon engaging in and doing well on the passionate activity (Crocker & Wolfe, 2001). Therefore, making an error activates the ego-invested structures related to the activity and this activation appears to trigger emotions related to threat, such as negative self-related emotions and stress (Lazarus, 1991), and prevents the experience of positive emotions and flow during activity engagement. Thus, overall, the present findings showed that the type of passion has important consequences for one's affective functioning during task engagement.

Passion and Cognitive Functioning

It was expected that the types of passion one holds for the activity would lead to different cognitive functioning in a specific distressing condition—that is, after having committed an important error. As expected, results showed that HP was negatively associated with concentration problems and make-up calls following an error, but unrelated to rumination. Conversely, OP was found to be positively associated with rumination and make-up calls following an error, but unrelated to

concentration. The present findings thus suggest that each type of passion leads to very different types of cognitive functioning after an important error. Whereas HP appears to protect one from the negative cognitive pressure associated with the fact of making an error, OP seems to be leading to important negative consequences affecting referees' cognitive functioning.

One explanation for these findings pertains to the rigid persistence toward the activity that OP entails. Indeed, after having committed an error, OP will lead to persistent thinking about the error and to rumination about this error. This rumination and the negative self-related affect experienced (as presented above) might lead the person to engage in "repair behaviors" (Izard, 1977), such as make-up calls, to put a stop to the rumination and negative affect. Future research should examine this hypothesis. Finally, because of the flexible engagement in the activity that HP facilitates, the referee can let go of the important error. It is then possible to flexibly regulate this situation without engaging in repair behaviors and to keep concentrating on the task at hand. Future research should examine the nature of coping or emotional regulation strategies used by referees with HP to deal with such stressful situations. These strategies might mediate the relationship between HP and negative emotions and maladaptive cognitive functioning.

Referees and Decision Making

The present findings also have important implications for referees' decision making. Overall, the present research highlights the fact that, depending on the type of passion, one will make different decisions after having committed an error. With HP, referees appear to make neutral decisions after an error, as their affective and cognitive functioning following an error appear to facilitate concentration on the game and prevent disruptive thoughts. However, with OP, referees appear to make imbalance decisions after having committed an error, possibly because they cannot control their affective experience and rumination. In addition, because making make-up calls should increase the probability of committing subsequent errors (e.g., calling an unnecessary penalty), OP might lead referees in a vicious circle of negative emotional experience, rumination, and further biased decisions. Therefore, an OP for refereeing appears to lead to a lower performance with respect to decision making than HP. Future research is needed, however, to further explore this possibility with objective criteria of performance.

Limitations

A certain number of limitations from the present research need to be underscored. First, all results were correlational in nature. Thus, no causality can be inferred from the present findings. Future research should use experimental designs to replicate the present findings. Second, only self-reported affective and cognitive variables were examined in the present research. It would be particularly interesting in future research to have external judges objectively rate referees' performance and mistakes, and make-up call decisions following an error under actual game conditions. Third, the number of female participants was relatively small in both studies. Therefore, future research should examine the issue of gender in passion

for refereeing with a larger sample size of female referees. It might also be important in future research to investigate the role of other moderators, such as culture and types of sports (team vs. individual sports), in the passion-outcome relationship. A fourth limitation is that in Study 1, participants were asked to complete the PANAS immediately after a game. However, because participants completed the questionnaire on their own, it is possible that some participants completed the scale later on through recall. Future research should control for this potential confounder by having experimenters on the field ask referees to complete a scale immediately after a game. Finally, the response rates to the mailed questionnaires were all around 30%. Even though this low response rate is in line with past research (e.g., Diaz de Rada, 2005), it might have introduced a bias to the extent that respondents were different from nonrespondents. Future research should replicate the present findings with a different method of recruitment.

Despite these limitations, the present research offers preliminary support for the role of passion in refereeing. Overall, it would appear that HP for refereeing predicts adaptive affective and cognitive functioning during task engagement. Conversely, OP is related to maladaptive affective and cognitive functioning and biased decisions. Future research on the passion for refereeing would thus appear to be promising.

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