

Making the Final Shot: The Role of Passion and Integrated Temporal Positivity in Last-Second Sport Performance

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The new construct of integrated temporal positivity—defined as the positive, adaptive, and dynamic use of the past, the present, and the future—is posited to promote optimal functioning. Based on the dualistic model of passion, the present research sought to test the hypothesis that harmonious passion, more than obsessive passion, triggers a higher use of integrated temporal positivity that, in turn, leads to one crucial type of sport performance, namely last-second performance. The results of 3 studies conducted with team-sport athletes (Study 1, $n = 625$; Study 2, $n = 285$; and Study 3, $n = 263$) provided clear support for the hypothesis. The results pave the way for future research focusing on the role of adaptive temporal processes in support of sport performance.

Keywords: dualistic model of passion, expert performance, harmonious passion, obsessive passion, optimal functioning

Time traveling. If only we could do it. But we do . . . in our minds (Suddendorf & Corballis, 2007). This is especially the case for athletes; indeed, either by reflecting on one's past performance, visualizing a future outcome, or focusing on the task at hand in the present moment, athletes are so passionate about their sport that they travel from one temporal perspective to the next on a regular basis. For instance, a hockey player about to make a shot on a breakaway thinks about how the goalie reacted to his last shot (past), tries to anticipate where the goalie expects the shot to go this time (future), and quickly evaluates the present situation to decide where to shoot the puck right at that moment, and whether he can make the shot. All three temporal perspectives come into play in determining the player's performance.

Surprisingly, little research has looked at integrated time perspectives in sport psychology. As will be seen, we posit that the adaptive use of all temporal perspectives is essential in sport performance. Further, passionate individuals should be more likely to make use of such a temporal analysis as they care deeply about their performance and thus should spend time to make such a temporal analysis, in an attempt to produce more favorable performance. However, as has been shown in much sport research (e.g., Vallerand & Vermer-Filion, 2013b), not all passions are created equal, and one type of passion—harmonious passion (HP)—has been found to be more adaptive than another passion—obsessive passion (OP; Vallerand et al., 2003). Thus, although passion should help determine the adaptive use of the three temporal perspectives, one would expect HP to do so more effectively than OP. Testing this hypothesis represents one of the main goals of this research.

The Psychology of Time

Philosophers have long tried to describe the essence of time. Although the objective concept of time is fairly straightforward, its subjective experience is much more difficult to grasp. Some

authors such as Immanuel Kant (1724–1804) went as far as saying that only people's experience of time truly exists. Starting in the mid-1950s, psychologists have pondered the impact of time on social behavior (e.g., Carstensen, Isaacowitz, & Charles, 1999; Lewin, 1951; Nutin, 1964, 1985), suggesting that the ways in which we analyze temporal features have an impact on our well-being (Nutin, 1964, 1985), goal prioritization (Carstensen et al., 1999), and adaptive functioning (e.g., Trope & Liberman, 1996, 2003; Wilson & Ross, 2003), as well as a variety of additional affective, motivational, and behavioral consequences (e.g., Weiner, 1985).

Most contemporary analyses of time have been limited to one temporal perspective. For instance, the work on resilience (e.g., Smith et al., 2008); self-compassion (e.g., Neff, 2003); rumination (e.g., Nolen-Hoeksema, Wisco, & Lyubomirsky, 2008); nostalgia (Sedikides & Wildschut, 2018); and even attributions (Weiner, 1985) focused on the past and its impact on psychological outcomes. Conversely, theories dealing with mindfulness (e.g., Brown & Ryan, 2003); savoring (Bryant, 2003); and flow (e.g., Nakamura & Csikszentmihalyi, 2014) highlight the positive influence of being fully in the present. Finally, the work on optimism (Scheier, Carver, & Bridges, 1994) and hope (Snyder et al., 1991) suggests that a positive outlook on the future produces important positive outcomes.

It is only recently that the three temporal perspectives have been integrated into one theoretical framework (Zimbardo & Boyd, 1999). In this light, Zimbardo and Boyd's (1999) work is fundamental as these authors were the first to recognize the importance of combining all three temporal perspectives into the same framework. These authors proposed the existence of individual differences with respect to the temporal perspectives, with some people placing more emphasis on the present and others on the past or on the future. They suggested that people's preference for a temporal perspective, or their individual temporal pattern, could have a differential influence on their psychological well-being. Much of the research based on this theoretical perspective has used the Zimbardo Time Perspective Inventory (Zimbardo & Boyd, 1999) and has attempted to identify different temporal patterns among individuals. However, no such clear patterns have been identified to date (see Worrell et al., 2018).

Another issue of importance is identifying the determinants of temporal patterns. Very little empirical attention has focused on

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this issue to date. Based on the dualistic model of passion (DMP; Vallerand, 2008, 2010, 2012, 2015; Vallerand et al., 2003), it is proposed that when people are passionate about an activity, they care a great deal about their past, present, and future performance in that activity. Consequently, they often think about it, reflect on past experiences within their passionate activity, are fully involved in the present when engaging in it, and try to anticipate future outcomes, including performance. Thus, it is proposed that passion for an activity increases activity-related time travel between the past, present, and future. To better understand the role of passion in these temporal perspectives, we focus next on the construct of passion.

The DMP

The DMP (Vallerand, 2008, 2010, 2015; Vallerand et al., 2003; Vallerand & Houffort, 2019) defines passion as a strong inclination toward an activity that is deemed important, loved (or strongly liked), in which a significant amount of time and energy are invested (Vallerand et al., 2003), and that is part of one's identity. Indeed, the activity, like playing basketball, is self-defining for the passionate individual as it represents a central part of his or her identity. Thus, the passionate individual does not simply play basketball; he or she *is* a basketball player. One important contribution of the DMP is the distinction between the two types of passion: HP and OP. The two types of passion differ in terms of how the passionate activity has been internalized into the person's identity or self. HP results from an autonomous internalization of the activity into the self, which occurs when the activity is accepted as important without any contingencies attached to it (Mageau, Carpentier, & Vallerand, 2011; Vallerand et al., 2003). This internalization of the activity leads one to willingly engage in the passionate activity with a sense of volition and personal endorsement. With HP, the activity occupies a significant but not overpowering space in one's identity, and it is in harmony with other aspects of the person's life. The DMP thus posits that HP leads to a number of positive cognitive, affective, and behavioral outcomes because it leads to the use of adaptive self-processes.

Conversely, OP results from a controlled internalization of the activity in the self. Even though the activity is loved, its internalization in the self originates from intra- and/or interpersonal pressure, which limits access to the optimal self-processes (Vallerand, 2015; Vallerand et al., 2003). This internalization of the loved activity leads one to feel an uncontrollable urge to partake in it. Consequently, the individual is at risk of experiencing a number of negative consequences during and after engaging in the passionate activity, especially because OP provides limited access to adaptive self-processes and promotes ego-involvement processes instead.

In the past 15 years or so, a large body of research has emerged supporting the validity of the DMP. For instance, not only does research support the existence of the two types of passion, but it also reveals that they lead to different types of personal outcomes. Specifically, HP leads to higher levels of adaptive intra- and interpersonal outcomes (e.g., well-being, concentration, flow, mindfulness) than OP (see Curran, Hill, Appleton, Vallerand, & Standage, 2015; Vallerand, 2010, 2015 for reviews). Conversely, OP has been repeatedly found to predict less adaptive and at times maladaptive outcomes (e.g., rumination, conflict, rigid performance), while HP has generally been found to be unrelated or negatively related to negative outcomes (see Curran et al., 2015 for a meta-analysis). Finally, research in the sport domain has shown that the DMP applies well to athletes, coaches, referees, and fans (see Vallerand & Verner-Filion, 2013a, 2013b for reviews). Thus,

because the passion one has toward the passionate activity dictates the processes and outcomes experienced during and after activity engagement, it is possible that passion shapes reflections on the three temporal perspectives. That is, one may reflect positively or negatively on the past, present, and future; and both the temporal focus and the valence of the reflection may vary as a function of the type of passion at play.

Passion and Integrated Temporal Positivity

Past research on the three perspectives on time has typically focused on assessing the general tendencies toward reflecting on the positive versus negative aspects of the present, past, and future time orientations (e.g., Zimbardo & Boyd, 1999). However, such research has not attempted to integrate these perspectives in a dynamic manner by evaluating the use of all three positive temporal dimensions in a given situation. This gap is addressed by the concept of integrated temporal positivity (ITP), which refers to being fully and positively anchored in the present moment, having a constructive, positive, and resolved perspective on the past, while also holding an optimistic outlook on the future (Vallerand & St-Louis, 2019). ITP should lead to an adaptive temporal outlook in any given situation. Although effectively using one temporal perspective may be conducive to positive outcomes, we suggest that it is the use of all three positive temporal outlooks that should be the most adaptive for the individual. Furthermore, depending on the situation or the person, the prevalence of one temporal perspective (e.g., the present) may be more important than the other two perspectives (e.g., the past and future).

As previously suggested, being passionate for one's activity should lead one to think quite a bit about this activity along the lines of the three temporal perspectives. In the case of athletes, passion for a sport should facilitate regular reflection on past performance to inform present and future activity engagement, deep concentration on the present while engaging in the activity, and constant anticipation of future outcomes within the passionate activity. Thus, passionate athletes should be more likely to reflect on time than those who are less passionate. Furthermore, HP and OP should differentially influence how one accesses the three temporal perspectives. Specifically, because it provides access to the more adaptive self-processes, HP should predict more positive use of the past, present, or future temporal perspectives than OP. Some recent research has begun to evaluate the role of passion in the discrete use of a single temporal perspective. Starting with the present perspective, much research has shown that HP positively predicts flow (Nakamura & Csikszentmihalyi, 2014), which is the experience of being completely absorbed in what one is currently doing and being fully present in the moment, while OP typically only weakly relates to flow (for reviews, see Curran et al., 2015; Vallerand, 2015, chapter 6). In addition, some research has shown that HP facilitates full concentration on the passionate activity while engaging in it, whereas OP undermines it (see Curran et al., 2015; Vallerand, 2015, chapter 6 for reviews). Finally, the state of mindfulness, a cognitive state where one has an open and receptive awareness of the present moment (Bishop, 2002; Brown & Ryan, 2003; Kabat-Zinn, 1990), has been recently found to be positively predicted by HP but negatively predicted by OP (St-Louis, Verner-Filion, Bergeron, & Vallerand, 2018).

The relationship between passion and the adaptive use of the past temporal perspective has also been studied. For instance, Schellenberg, Bailis, and Mosewich (2016) have reported that

HP positively, whereas OP negatively, predicted self-compassion (a positive form of forgiving for one's less than perfect past behavior) when coping with one's past mistakes and failures in the sphere of the passionate activity. Rumination is a less adaptive use of the past temporal perspective, which has been shown to be predicted by OP while being unrelated to HP (Curran et al., 2015). This relationship between OP and rumination about the past has been found when people were prevented from engaging in their passionate activity (Vallerand et al., 2003, Study 1), as well as following a negative outcome experienced during activity engagement (Philippe, Vallerand, & Lavigne, 2009, Study 2).

Finally, some scientists have begun to explore the role of passion in the use of future temporal processes, such as affective forecasting. Wilson and Gilbert (2003) defined affective forecasting as the ability to predict how one will feel in a future situation. Their research has shown that people tend to overestimate how happy or unhappy future events will make them feel (e.g., Wilson & Gilbert, 2003, 2005). In a study with soccer fans, Verner-Filion, Lafrenière, and Vallerand (2012) showed that HP for soccer was associated with greater affective forecasting accuracy, while OP was unrelated to accuracy. Thus, HP allows one to accurately predict how one will feel in the future while OP does not.

Although very informative, the previous studies suggest that passion plays a role in shaping one temporal perspective at a time. Recently, Sverdlik et al. (2019) have tested some of the ideas proposed by Vallerand and St-Louis (2019) by looking at the role of HP and OP in predicting all three temporal perspectives simultaneously and, in turn, the role of ITP in predicting one type of adaptive outcome, namely psychological well-being. For instance, in one of their studies, Sverdlik et al. (2019) had North American full-time workers ($n = 342$) complete an online questionnaire assessing passion toward work (the Passion Scale; Marsh et al., 2013; Vallerand et al., 2003); positive perspectives on the past (the Positive Past subscale from the Zimbardo Inventory; Zimbardo & Boyd, 1999), present (the Mindfulness Scale—Cognitive and Affective Mindfulness Scale-Revised; Feldman, Hayes, Kumar, Greeson, & Laurenceau, 2007), and future (the Hope Scale; Snyder et al., 1991); and psychological well-being (the Brief Inventory of Thriving; Su, Tay, & Diener, 2014). Results from a path analysis strongly supported the hypothesized model: HP positively predicted ITP, while OP was negatively related to it. In turn, ITP positively predicted psychological well-being. Overall, these results suggest that passion plays a role in ITP that, in turn, seems to positively contribute to psychological well-being. These findings were further replicated in two other studies, including one with a prospective design (Sverdlik et al., 2019).

The Present Research

The previously reviewed research (e.g., Sverdlik et al., 2019) focused on the roles of passion and ITP in psychological well-being. Another important dimension of optimal functioning that is highly relevant to the DMP is performance (see Vallerand, 2015, chapter 10). As the passionate activity becomes an integral part of one's identity, one seeks to perform well when engaging in that activity, as it is deemed highly important. Passion has been indeed found to lead to expert-level performance in a variety of domains including music (e.g., Bonneville-Roussy, Lavigne, & Vallerand, 2011), arts (Vallerand et al., 2007, Study 1), and sports (Vallerand et al., 2008, Studies 1 and 2; Verner-Filion, Vallerand, Amiot, & Mocanu, 2017). Such research has typically examined long-term performance and found that both types of passion lead to expert

performance through prolonged involvement in deliberate practice. However, no research to date to the best of our knowledge has explored the role of passion and temporal reflection in more immediate, short-term performance outcomes. Although this is not a widely studied outcome, previous sport research had investigated observed last-second performance under names such as “buzzer beater” (e.g., Baker, 2008; Fontanella, 2006) and “penalty shot” (e.g., Geisler & Leith, 1997; Plessner, Unkelbach, Memmert, Baltes, & Kolb, 2009; Smith, 2004; Wilson, Wood, & Vine, 2009) to explore the determinants and correlates of this important athletic performance. This type of performance is often instrumental in winning high-stakes games, such as Michael Jordan's famous 1989 last-second shot against the Cleveland Cavaliers, and more recently, Kawhi Leonard's last-second shot in Game 7 against the Philadelphia 76ers that led the Toronto Raptors to win the Eastern Conference championship and to go on and win their first-ever NBA (National Basketball Association) championship. In an analysis of notable last-second plays published in the *National Post*, a player who is capable of such performance was described as “not pre-living or re-living,” but rather as fully anchored in the present moment, focusing his or her entire energy and attention on the shot at play (Jenkins, 2018).

Thus, in the present research, it was hypothesized that passion should also affect this type of short-term performance through ITP. Specifically, being fully and positively anchored in the present within the purview of the passionate activity, while having a positive and resolved outlook on the past and an optimistic view of the future, should help enhance performance via adaptive decision-making. In the present research, we explicitly focused on “last-second performance.” Doing so allowed us to ensure that participants would focus on the performance at hand while taking into consideration the three temporal elements in performance. Finally, focusing on last-second performance should allow us to tease out the relative advantages of one type of passion over the other. Because it has been found to lead to the adaptive use of each of the three temporal perspectives (see Sverdlik et al., 2019), HP should represent an important determinant of all three temporal elements of ITP considered simultaneously. In turn, ITP should lead to enhanced last-second performance. On the other hand, OP has been found to predict one dimension of the past temporal perspective, namely the past temporal element. Thus, OP is predicted to influence last-second performance mainly through its relationship with the past temporal dimension. Three studies were conducted to test the above hypotheses. In Study 1, we examined the role of passion in predicting ITP and the ways in which ITP shapes last-second performance in general. In Study 2, we distinguished between positive and negative temporal past, and refined our procedures by asking athletes to recollect a recent last-second play they had engaged in. We then assessed the role of ITP in that last-second play situation. Finally, Study 3 sought to replicate the results of Study 2 with a more elaborate measure of the positive past.

Study 1

The purpose of Study 1 was to test the role of passion and ITP in sport performance. Specifically, the following model was tested. It was hypothesized that HP would positively predict the positive experience of the present moment in one's sport (in this case, flow), as well as a positive reflection on the future and on the past. Conversely, it was expected that OP would be largely unrelated to the present and future temporal perspectives. However, in light of past research that shows OP to predict past rumination (e.g., Marsh et al., 2013;

Vallerand et al., 2003, Study 1), it was hypothesized that OP would positively predict the past temporal perspective. Finally, it was expected that all three temporal perspectives would positively predict perceived last-second performance.

Study 1 Method

Participants and Procedure

Participants were 625 adult athletes (53.3% male), with the mean age of 33.33 years ($SD = 10.60$). All participants provided informed consent prior to study participation. Participants engaged in their sport activity for an average of 5.21 hr per week and have been engaging in their sport activity for an average of 14.95 years at the time of the study. Participants reported specializing in one of a variety of sports, including basketball (25.2%), football (8.7%), soccer (8.1%), and tennis (6.1%), and their skill levels ranged from amateur (e.g., amateur level leagues, amateur tournaments) to expert (e.g., national championships, second-degree black belt). Participants were recruited via Amazon Mechanical Turk with a Turk-Prime invitation. They completed an online questionnaire assessing their attitudes and behaviors toward their favorite sport (see scales below). Every participant provided informed consent before completing the questionnaire. All study protocols were approved by the ethics board of the first author's institution prior to data collection.

Measures

Passion. Participants completed the Passion Scale (Marsh et al., 2013; Vallerand et al., 2003) while referring to their favorite sport. General HP and OP for their favorite sport were each assessed with a six-item subscale. Sample items include "Playing my favorite sport is in harmony with the other activities in my life" for HP ($\alpha = .89$) and "I have difficulties controlling my urge to play my favorite sport" for OP ($\alpha = .89$). All items were answered on a 7-point scale ranging from 1 (*I do not agree at all*) to 7 (*I very strongly agree*). The Passion Scale has been fully validated in more than 20 studies that provided support through confirmatory factor analysis and findings in line with the DMP (see Vallerand, 2015, chapter 4), as well as invariance as a function of gender, language, and activities (Marsh et al., 2013).

Integrated Temporal Positivity. The three temporal perspectives were assessed by three scales evaluating their positive present, past, and future elements. The positive present temporal perspective was assessed with the four-item Challenge subscale from the Flow State Scale (Jackson & Marsh, 1996). For example, participants were asked to respond to statements such as "I feel I am competent enough to meet the high demands of the situation" ($\alpha = .76$; 1 [*strongly disagree*] to 7 [*strongly agree*]). The positive

past was assessed through six items informed by the Rumination Scale (Conway, Csank, Holm, & Blake, 2000), reflecting useful past play reflection, such as "I continually analyze and think about a recent play during the game" ($\alpha = .93$). Items were answered on a 7-point scale ranging from 1 (*I do not agree at all*) to 7 (*I very strongly agree*). Finally, the positive future was assessed with three items informed by studies on Affective Forecasting (Wilson & Gilbert, 2003), reflecting adaptive future play prediction (Vallerand, 2015) such as "I feel like I can predict the actions of others before they happen" ($\alpha = .68$; 1 [*never*] to 7 [*always*]).

Last-Second Performance. Last-second performance was measured with five items focusing on the extent to which participants perceived that they generally can successfully make a last-second play when playing their favorite sport. Sample items include "I believe that it's always possible to make a final play even when there's little time left on the clock" ($\alpha = .85$). Items were answered on a 7-point scale ranging from 1 (*I do not agree at all*) to 7 (*I very strongly agree*).

Data Analysis

Descriptive statistics were analyzed with SPSS (version 20.0; Chicago, IL) software (IBM Corp., 2011). Means, standard deviations, and bivariate correlations are presented in Table 1. Structural equations modeling analysis was conducted using AMOS (version 24; Chicago, IL; Arbuckle, 2014) using a full measurement model. The following fit indices were given priority to evaluate the fit of the model to the data: the comparative fit index (CFI), Tucker–Lewis index (TLI), and the root mean square error of approximation (RMSEA). To indicate satisfactory fit to the data, the CFI and the TLI should be .95 or higher, while the RMSEA should be .07 or lower (Kline, 2011; Tabachnick & Fidell, 2007).

Study 1 Results

Preliminary Analyses

The various measures in this research were specifically prepared to pertain to one's passionate activity. Thus, the measures of temporal reflections (e.g., ITP, negative past) were adapted in terms of their wording, while other measures (i.e., last-second performance; positive past, Study 3) were developed for the purpose of the present research. Replication was conducted across all three studies to ensure the reliability of the measures. Furthermore, exploratory factor analyses (EFA) and confirmatory factor analyses (CFA) were conducted on all mediating and outcome variables to ensure the validity of each measure. All EFAs revealed each scale to measure a single factor and to display

Table 1 Descriptive Statistics and Bivariate Correlations—Study 1 ($N = 625$)

	<i>M</i>	<i>SD</i>	1	2	3	4	5
1. Harmonious passion	4.85	1.18	1				
2. Obsessive passion	2.99	1.50	.39**	1			
3. Positive present	3.78	0.63	.49**	.12*	1		
4. Positive past	3.44	1.53	.30**	.63**	.14**	1	
5. Positive future	4.46	0.94	.40**	.13**	.50**	.18**	1
6. Last-second performance	5.00	1.23	.37**	.18**	.44**	.26**	.36**

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

acceptable scale reliability. Finally, results from CFAs provided further support for the validity of all measures used in Studies 1–3, with all ITP and last-second performance measures yielding CFI and TLI > .95 and RMSEA < .07 (see Table 2 for the last-second performance variables). Thus, overall, these findings provide support for the reliability and validity of the various measures used in the three studies.

Main Analysis

Results provided support for the hypothesized model. The model had adequate fit to the data: $\chi^2 (df=346, N=625)=943.782, p < .001, CFI = .945, TLI = .935, RMSEA = .052 [.048, .056]$. As shown in Figure 1, HP positively predicted the positive present ($\beta = 0.61, p < .001$) and future ($\beta = 0.46, p < .001$), but not the past, while OP positively predicted the positive past ($\beta = 0.63, p < .001$) and future perspectives ($\beta = 0.21, p < .001$), but negatively predicted the positive present perspective ($\beta = -0.12, p = .019$). Finally, all three temporal perspectives were found to positively predict last-second performance (positive present: $\beta = 0.38, p < .001$; past: $\beta = 0.18, p < .001$; and future: $\beta = 0.19, p = .020$).

Study 1 Brief Discussion

Results of Study 1 were mostly in line with our hypotheses as they provided empirical support for the positive relationships between HP and ITP and, in turn, ITP and perceived last-second performance. Specifically, HP was found to positively predict the positive

present and future temporal perspectives that, in turn, were conducive to last-second performance. Conversely, OP was found to positively predict the positive past and future and to negatively predict the positive present temporal perspective (perceptions of flow). Surprisingly, the strongest path for OP was with the positive past, while HP was unrelated to it. Also noteworthy is that the strongest path to performance came from the positive present temporal perspective. Thus, overall, the results of Study 1 provided preliminary support for the role of ITP in short-term performance, as well as that of HP, and to a lesser extent OP, in facilitating ITP.

Study 2

Study 2 had two main objectives. First, the main purpose was to replicate the results of Study 1 with another measure of expert performance. In Study 1, we asked participants to respond to a scale assessing their general perceptions of being able to perform a last-second play during the last few moments of a game. In Study 2, we assessed participants' evaluations of their most recent last-second performance during an actual game that recently took place. Second, in Study 2, we sought to further understand the role of the past temporal perspective in its relationship with performance by introducing a more clearly defined valence to the past perspective. Specifically, we aimed to investigate the distinction between the positive and negative dimensions of past reflections. Past research (see Nolen-Hoeksema et al., 2008) has shown that rumination about the past may fall along both negative (i.e., brooding) and positive (e.g., pondering) lines. In line with

Table 2 Confirmatory Factor Analyses for the Last-Second Performance Variable—Studies 1–3

	α	No. of items	CFI	TLI	RMSEA (90% CI)	df	χ^2	p value
Study 1	.85	5	.991	.967	.063 [.029, .101]	4	3.066	.007*
Study 2	.95	5	.994	.979	.065 [.003, .119]	4	9.517	.049*
Study 3	.95	5	.998	.994	.046 [.000, .110]	4	6.399	.171

Note. CFI = comparative-fit index; TLI = Tucker–Lewis index; RMSEA = root-mean-square error of approximation; CI = confidence interval. * $p < .05$.

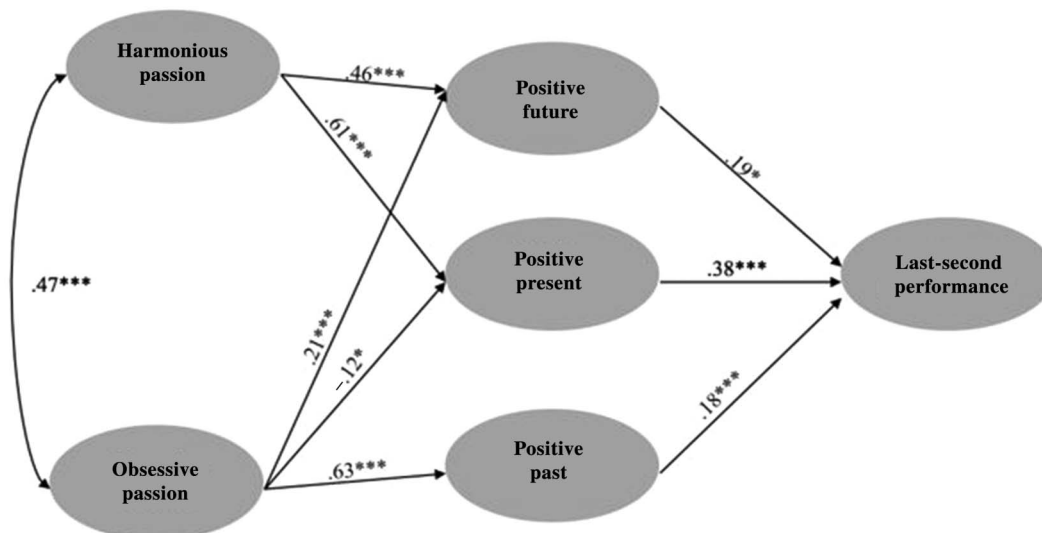


Figure 1 — Results from the structural equation modeling analysis: Study 1. Standardized path coefficients are presented. * $p < .05$, *** $p < .001$. Analysis conducted with measurement model.

such research, we sought to reexamine the relationship between HP and OP and past play reflection, and more specifically to identify the more and less adaptive elements of this past perspective. While the same basic model as in Study 1 was tested, the present model included both positive and negative elements of past play reflection. HP was once again hypothesized to positively predict the positive future and positive present perspectives, while OP should negatively predict, or be unrelated to, positive present. In addition, in line with Study 1, we hypothesized OP to positively predict the positive future perspective. Furthermore, we hypothesized that OP would positively predict the negative element of the past, whereas HP would negatively predict it or be unrelated to it. Conversely, HP should positively predict the positive past, whereas OP should be unrelated to it. Finally, positive future, present, and past temporal elements were hypothesized to positively predict last-second performance, while negative past should negatively predict it.

Study 2 Method

Participants and Procedure

Participants were 285 adults (56.1% male), with the mean age of 31.32 years ($SD = 10.20$). All participants provided informed consent prior to study participation. Participants reported spending an average of 5.15 hr per week playing their favorite sport and have been practicing it for an average of 13.88 years. Participants reported playing one of a variety of sports, including basketball (14.1%), football (10.2%), and soccer (9.9%), and their skill levels ranged from amateur (e.g., recreational league, casual play) to expert (e.g., state championship, college team). Participants were recruited via Amazon Mechanical Turk with a TurkPrime invitation. They completed an online survey assessing their attitudes and behaviors toward their favorite sport. All participants were different from those of Study 1.

Participants first completed the Passion Scale, and then, they were asked to remember a recent situation in which they were in a position to make a final play to help their team win. Last-second play was described as a last-second moment during a game when they had to choose whether to make a play or not, and this decision could have influenced the issue of the game. They were provided with the following example:

You are playing with a basketball team and you are playing your last game of the season. During that game, your team is losing by one point and there are five seconds left to the game. At that point in time during the game, you are in the position to make a last-second shot to help your team win the game. Irrespective of if you were successful or not, please describe this moment or situation you are referring to in as much details as possible.

Participants were then asked to write down this situation in detail. This procedure aimed at facilitating vivid reflection of a recent last-second play situation that happened while participants engaged in their sport. All ITP measures as well as the last-second play perception of success measures were assessed following this procedure.

Measures

Passion. Participants completed the same Passion Scale (Marsh et al., 2013, Vallerand et al., 2003) adapted to their sport as described in Study 1 (HP: $\alpha = .91$; OP: $\alpha = .88$).

Integrated Temporal Positivity. The different scales used to assess ITP were worded to refer specifically to the recalled situation when participants had to make a last-second play. The same scales as in Study 1 were used to assess the positive present (i.e., flow, $\alpha = .83$). Negative past was assessed with four items used in Study 1 focusing on rumination on unfavorable past events, such as “It was hard for me to stop thinking about a recent mistake during the game” ($\alpha = .81$), while positive past was assessed with a single item, “I remembered times when I was successful.” All items were answered on a 7-point scale ranging from 1 (*I do not agree at all*) to 7 (*I very strongly agree*). Finally, the positive future was assessed with a 3-item adaptive future play prediction scale that included items such as “I felt like I could predict what I needed to do to be effective” (1 [*never*] to 7 [*always*]; $\alpha = .81$).

Last-Second Performance. Last-second performance was measured with two sets of items and specifically referred to the situation described by participants. Four items focused on the extent to which participants felt they were successful during the recalled last-second play (1 [*I do not agree at all*] to 7 [*I very strongly agree*]). Sample items are “I believe I took the right decision” and “I believe I did what needed to be done.” The final question asked participants to indicate on an 11-point scale the extent to which they felt that they had achieved success or failure in that situation. This item ranged from -5 (complete failure) to $+5$ (complete success). The five items were transformed into z scores and summed ($\alpha = .95$).

Data Analysis

Descriptive statistics were conducted with SPSS (version 20.0; IBM Corp., 2011). Means, SD s and bivariate correlations are presented in Table 3. A structural equation modeling analysis was conducted using AMOS (version 24; Arbuckle, 2014) using a full measurement model. The same fit indices as in Study 1 were used to evaluate the fit of the model to the data.

Table 3 Descriptive Statistics and Bivariate Correlations—Study 2 ($N = 285$)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Harmonious passion	4.74	1.31	1					
2. Obsessive passion	2.94	1.47	.48**	1				
3. Positive present	3.86	0.71	.27**	.10	1			
4. Negative past	3.43	1.57	.21**	.45**	.01	1		
5. Positive past	4.47	1.74	.27**	.21**	.30**	.45**	1	
6. Positive future	4.32	1.04	.28**	.21**	.44**	.17**	.25**	1
7. Last-second performance	5.71	1.33	.35**	.09	.63**	-.02	.26**	.40**

** $p < .01$.

Study 2 Results

Figure 2 displays all the paths that are statistically significant at the $p < .05$ level. The model had adequate fit to the data: $\chi^2 (df=340, N=285)=575.443, p < .001, CFI=.959, TLI=.951, RMSEA=.046 [.039; .052]$. Results revealed that HP was positively related to all three positive temporal perspectives (positive past: $\beta=0.21, p < .001$; present: $\beta=0.31, p < .001$; and future: $\beta=0.19, p = .011$). Conversely, OP positively predicted both the negative past ($\beta=0.51, p < .001$) and the positive future perspectives ($\beta=0.27, p < .001$). Finally, all three positive temporal perspectives were found to positively predict participants' last-second performance: positive present ($\beta=0.50, p < .001$); past ($\beta=0.15, p = .011$); and future ($\beta=0.17, p = .008$), while the negative past negatively predicted last-second performance ($\beta=-0.21, p = .003$).

Study 2 Brief Discussion

Overall, the results of Study 2 replicated the findings of Study 1 as it pertains to the role of passion in ITP. In line with results from Study 1, both HP and OP positively predicted the positive future perspective, while only HP positively predicted positive present. In addition, the present findings demonstrated that all three positive temporal perspectives positively predicted performance. Findings from Study 2 further extended the findings of Study 1 in two ways. First, instead of a measure of general perceptions of situational performance, Study 2 focused on the recall of an actual last-second sport event and assessed both performance and ITP elements in that specific situation. Second, the present study demonstrated that the past temporal perspective was indeed made up of two dimensions: positive and negative. OP was a strong positive predictor of the negative past, while HP was unrelated to it. This last result is in line with past research on the role of OP in ruminations (e.g., Curran et al., 2015; Marsh et al., 2013; Vallerand et al., 2003). Not surprisingly, a negative reflection on the past was found to be a negative predictor of performance. As expected, only the positive

past was predicted by HP, and this positive reflection on the past positively predicted performance. These findings thus help clarify the link between passion and the past temporal element obtained in Study 1. Although both types of passion predict past reflection, the results of Study 2 suggest that OP was a strong predictor of negative reflection, while HP predicted the positive perspective of the past.

Study 3

Findings from Study 2 provided valuable insight into the interplay between passion and ITP by replicating and extending the results of Study 1. However, one major limitation of Study 2 was that the measure of positive past reflection was assessed with one item only. Thus, the main purpose of Study 3 was to replicate the results of Study 2 with a more elaborate measure of positive past reflection. The following model was tested: HP was again hypothesized to positively predict the positive present, positive future, and positive past temporal perspectives, while negatively predicting, or being unrelated to, the negative past. Conversely, OP was hypothesized to positively predict the positive future and negative past, while negatively predicting or being unrelated to the positive present and positive past perspectives. As in the first two studies, all three positive temporal elements were expected to positively predict last-second performance, whereas the negative past was expected to negatively predict performance.

Study 3 Method

Participants and Procedure

Participants were 263 adults (67.3% male) who were participating in a team sport in a summer league. All participants provided informed consent prior to study participation. The mean age of participants was 31.45 years ($SD=9.37$ years), and participants reported spending an average of 6.51 hr per week playing their favorite sport and

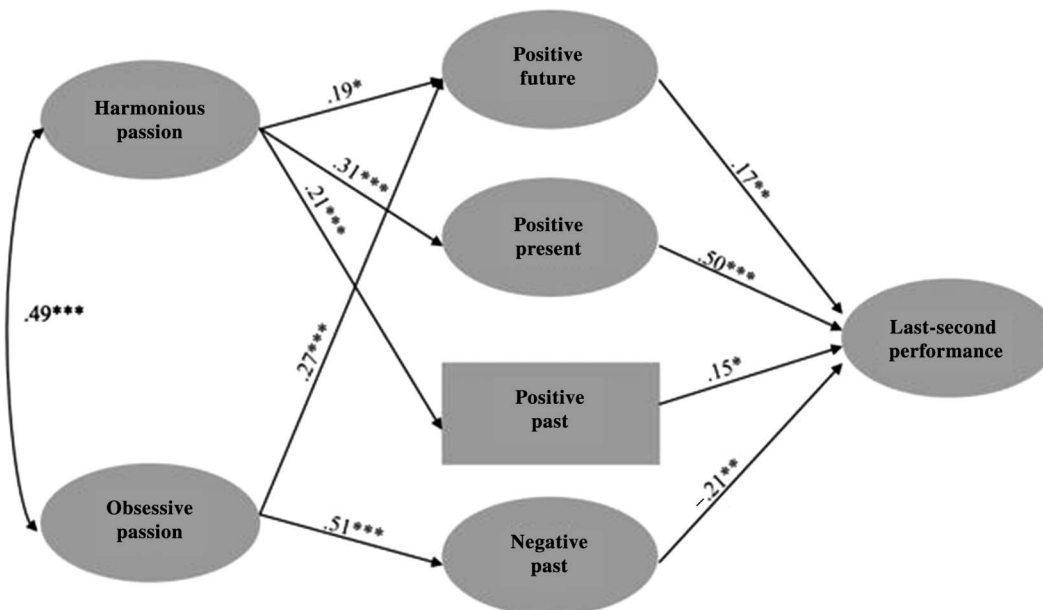


Figure 2 — Results from the structural equation modeling analysis: Study 2. Standardized path coefficients are presented. * $p < .05$, ** $p < .01$, *** $p < .001$. Analysis conducted with measurement model.

have been practicing it for an average of 10.99 years. Participants reported playing one of a variety of sports (including basketball, softball, soccer), and their skill levels ranged from amateur (e.g., recreational play, beginner) to expert (e.g., semi-pro). Participants were recruited via Amazon Mechanical Turk with a Turk-Prime invitation to individuals who play their favorite team sport in a summer league. They completed an online survey assessing their attitudes and behaviors toward their favorite sport. The same recall procedure as in Study 2 was used in this study. Once more, all participants were different from those of the first two studies.

Measures

Passion. Participants completed the same Passion Scale (Marsh et al., 2013; Vallerand et al., 2003) for their favorite sport as described in Study 1 (HP: $\alpha = .88$; OP: $\alpha = .90$).

Integrated Temporal Positivity. All ITP items were worded to refer specifically to participants' experience when playing their sport. The same scales as in Studies 1 and 2 were used to assess the positive present temporal perspective (i.e., flow, $\alpha = .79$). The negative past was assessed with the same four items as in Study 2 ($\alpha = .78$). Finally, the positive past was assessed with 12 items developed for the purpose of the present study reflecting an adaptive outlook on past events surrounding the passionate activity ($\alpha = .94$). Sample items are "I remembered times when I was successful" and "I remember things I learned that applied to this situation." Items were answered to on a 7-point scale ranging from 1 (*I do not agree at all*) to 7 (*I very strongly agree*). Lastly, the positive future ($\alpha = .89$) was assessed with the same three items as in Study 2.

Last-Second Performance. Last-second performance was measured with the same five items as in Study 2 ($\alpha = .95$) and again assessed on a 7-point scale (1 [*I do not agree at all*] to 7 [*I very strongly agree*]).

Data Analysis

Descriptive statistics were analyzed with SPSS (version 20.0; IBM Corp., 2011). Means, SDs and bivariate correlations are presented in Table 4. A structural equations modeling analysis was conducted using AMOS (version 24; Arbuckle, 2014) using a full measurement model. The same fit indices as in the previous two studies were used to evaluate the fit of the model to the data.

Study 3 Results

Figure 3 presents the final model. The model had adequate fit to the data: χ^2 ($df = 662, N = 263$) = 1,046.560, $p < .001$, CFI = 950,

TLI = .944, RMSEA = .046 [.040, .051]. Results revealed that HP was positively related to the three positive temporal perspectives (positive past: $\beta = 0.73, p < .001$; present, $\beta = 0.69, p < .001$; and future, $\beta = 0.35, p < .001$), while being negatively related to the negative past ($\beta = -0.16, p = .020$). OP was positively related to the negative past ($\beta = 0.73, p < .001$) and to the positive future perspective ($\beta = 0.16, p = .003$), while being negatively related to both the positive past ($\beta = -0.17, p = .005$) and positive present perspectives ($\beta = -0.21, p = .004$). Finally, all temporal perspectives were found to relate to participants' last-second performance (positive past, $\beta = 0.26, p < .001$; present, $\beta = 0.15, p = .034$; and future, $\beta = 0.13, p = .009$; negative past, $\beta = -0.19, p = .003$).

Study 3 Brief Discussion

Overall, the results of Study 3 were in line with the results of Studies 1 and 2. HP was once again found to be a significant predictor of all three positive temporal perspectives, which were, in turn, found to be positive predictors of players' performance in an actual last-second play. HP was also found to be a negative predictor of the negative past perspective, which was negatively related to last-second performance. Finally, OP was found to be a strong and significant predictor of the negative past, and to a lesser extent, of the positive future, while being a negative predictor of the positive past and present (i.e., flow) temporal perspectives.

General Discussion

The present research aimed to examine the relationships between passion (Vallerand, 2008, 2010, 2015; Vallerand et al., 2003), and a new construct, ITP, in predicting sports performance. ITP is the positive, adaptive, and dynamic use of the three temporal perspectives that include the past, present, and future. Based on past research with each temporal perspective individually, as well as preliminary analyses of the ITP model with respect to psychological well-being (Sverdlik et al., 2019), we posited that ITP would be conducive to performance. We also suggested that passionate individuals would be more likely to reflect on the past, be fully engaged in the present, and think about the future when it came to their passionate activity. Furthermore, in line with past research (see Vallerand, 2008, 2010, 2015 for reviews), which has shown that HP was generally related to adaptive behaviors and self-processes, we also posited that HP would be a better predictor of ITP than OP.

The results of the present research provided support for these hypotheses. First, results from all three studies revealed that HP was a moderate to strong predictor of all three positive temporal

Table 4 Descriptive Statistics and Bivariate Correlations—Study 3 (N = 263)

	<i>M</i>	<i>SD</i>	1	2	3	4	5	6
1. Harmonious passion	4.85	1.09	1					
2. Obsessive passion	2.89	1.49	.32**	1				
3. Positive present	3.86	.061	.50**	.09	1			
4. Negative past	3.27	1.36	.11	.57**	-.04	1		
5. Positive past	4.90	1.08	.59**	.14*	.52**	.19**	1	
6. Positive future	4.14	0.93	.38**	.39**	.23**	.41**	.42**	1
7. Last-second performance	5.57	1.57	.27**	-.02	.32**	-.04	.34**	.20**

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

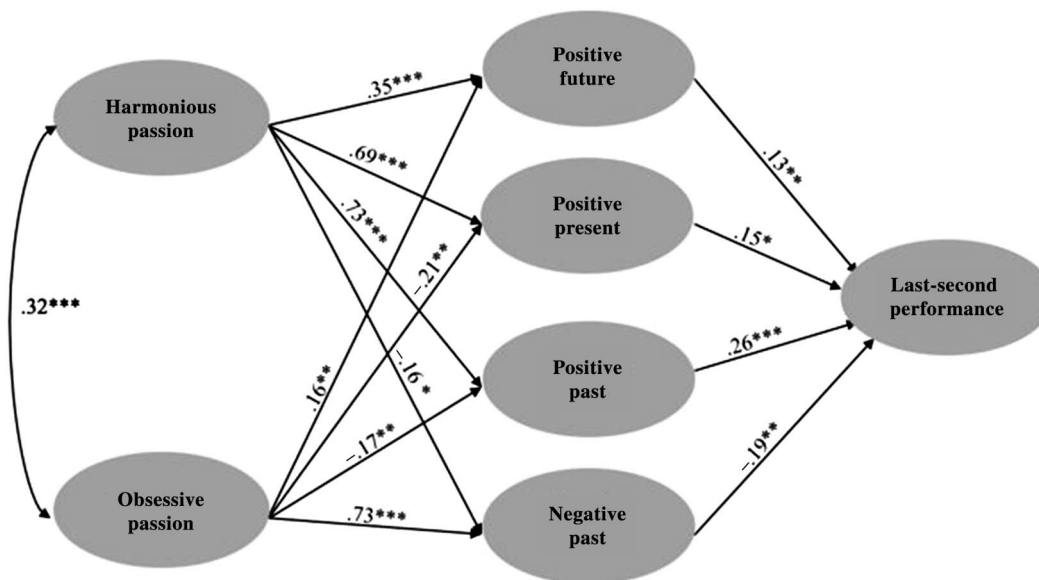


Figure 3 — Results from the structural equation modeling analysis: Study 3. Standardized path coefficients are presented. * $p < .05$, ** $p < .01$, *** $p < .001$. Analysis conducted with measurement model.

perspectives, with the strongest relationship being found between HP and the positive present temporal perspective in Studies 1 and 2, and additionally with the positive past perspective in Study 3. Conversely, OP was negatively related (Studies 1 and 3) or unrelated (Study 2) to the experience of a positive present, moderately and positively related to the negative past, and negatively related to the positive past (Study 3), while also being positively and consistently related to the positive future temporal perspective. Second, as expected, ITP proved to be an important predictor of sport performance. Although all three temporal perspectives were significant predictors of one's perceived ability to make a last-second play, the positive present was the most important predictor in Studies 1 and 2, with the positive past perspective being the most important predictor in Study 3. Finally, the results of Studies 2 and 3 also showed that the past temporal perspective could be differentiated into reflecting on positive and negative aspects of the past. While HP positively predicted the positive past (Studies 2 and 3) and negatively predicted the negative past (Study 3), the opposite pattern was found for OP where it positively predicted the negative past (Studies 2 and 3) and negatively predicted the more positive reflection on the past (Study 3). The present results lead to a number of implications.

ITP as a Determinant of Sport Performance

A first implication is that all three studies provide evidence of the association between the three temporal perspectives and an important dimension of optimal functioning, namely last-second performance. Much research and theorizing had previously underscored the important separate contribution of either the present, past, or future temporal perspective. However, little research has proposed that all three elements have to be simultaneously combined to maximize adaptive outcomes. The results of the present research are the first to empirically show that all three temporal perspectives independently contribute to sport performance. Thus, although a positive present as measured by a state of flow in the present moment proved to be the overall most important predictor of

performance across the three studies, it should be underscored that the other two temporal elements also contributed to sport performance. Thus, in line with past theory and research, having a positive present perspective such as flow (e.g., Jackson & Eklund, 2002) and mindfulness (e.g., Bishop, 2002) is indeed important. However, to be able to optimally perform, one needs to adaptively reflect on the past and future temporal perspectives as well, such as in practicing savoring and optimism (Scheier & Carver, 1992). It is important to note that it is possible that the three elements of ITP interact among themselves. For instance, being mindful in the moment in a given situation may render some past elements more readily accessible in a positive way and being optimistic about the immediate future may allow one to deal more positively with the present moment, even under harsh conditions. Future research is thus necessary to empirically explore these intricate interactions among the three temporal elements.

Finally, one is reminded that it is the *positive* aspect of time that matters with respect to performance. It was seen in Studies 2 and 3 that a negative past temporal perspective negatively predicted performance, whereas a positive past positively predicted performance. These findings suggest that it may be the positivity associated with temporality that matters, rather than the temporality as such that makes a difference with respect to performance. However, it is important to note that only the positive and negative dimensions of past reflection were assessed in the present research, suggesting that there is a need for future research to test whether the negative dimensions of the present and future temporal perspectives would undermine performance in the same way as the negative past did.

Passion as a Determinant of ITP

A second important implication of the present research is that passion matters in shaping access to ITP. The present studies highlighted the influence of HP in facilitating positive reflections on the past, present, and future temporal elements of ITP. A number of adaptive outcomes have been associated with HP in the past

(see Vallerand, 2015), such as positive emotions, flow, and mindfulness, and it now appears that HP is also highly important in triggering ITP. OP does not seem to lead to the same adaptive use of the three temporal perspectives, as it was found to be either unrelated or negatively related to the measures of positive past and present, while still being positively related to the positive future perspective. This is perhaps because OP, like HP, leads to deliberate practice with one's passionate activity and contributes to the development of expertise in that activity (Vallerand, 2015). Such expertise, in turn, can facilitate one's ability to predict how to effectively play in the future. Furthermore, although it was strongly associated with the past, results from Studies 2 and 3 revealed that OP was mainly related to the negative past and that was, in turn, negatively related to performance. These findings are in line with past research showing a strong relationship between OP and rumination about the activity (e.g., Curran et al., 2015; Philippe et al., 2009; Vallerand et al., 2003) and the negative contributory function of rumination in adaptive outcomes (see Vallerand, 2015).

Overall, the present findings provide support for the DMP and add to a large body of evidence, which suggest that passion for sports matters with respect to important outcomes such as performance. Furthermore, the type of passion one is experiencing (harmonious vs. obsessive) leads to differential effects on performance outcomes; specifically, being harmoniously passionate about one's sport appears to lead to the highest levels of performance, as it facilitates adaptive self-processes such as ITP. Conversely, individuals with an OP often miss out on the experience of such adaptive self-processes, which could hinder the attainment of optimal performance (see Vallerand, 2008, 2010, 2015 for reviews).

Limitations and Future Research

One is reminded that although these findings were obtained in three studies, future research is necessary to replicate these findings as they include some limitations. First, all three studies used a cross-sectional correlational design. Future research should use experimental designs to induce passion, as was successfully done in previous experimental studies (e.g., Bélanger, Lafrenière, Vallerand, & Kruglanski, 2013; Lafrenière, Vallerand, & Sedikides, 2013) to confirm the causal relationships between passion, ITP, and performance. Second, all three studies used self-report measures. Future research using objective indices of performance is therefore important to more accurately evaluate the relationship between the constructs presented in this research (ITP and passion) and sports performance. Third, it should be kept in mind that temporal processes are also involved when completing scales. Thus, the Passion Scale was completed regarding how one generally feels in the present (and not how one felt in the past or will feel in the future) toward one's sport. Similarly, the last-second performance was measured as pertains to a past performance-related event. Such temporal inconsistency does not seem to have influenced the findings of the present studies. (If it did, then the positive past would have had more potent effects on performance than the present or future temporal perspectives, which was not the case.) Nevertheless, future research is necessary to replicate the present findings using different time frames when completing the Passion Scale, as well as the Performance Scale.

In addition, it is important to remember that the measure of performance in the present research focused only on last-second performance. Thus, the role of ITP in other types of sport performance such as one that takes place over a whole game or a

complete season needs to be investigated. Such research should allow us to determine if the positive present temporal perspective is always more adaptive for optimal performance than the positive past or future temporal perspectives. Indeed, one should keep in mind that the remaining two positive temporal elements were also found to positively predict performance, thus further implying that the past and future temporal elements play an important role in shaping expert performance. Future research on the temporal perspectives' differential roles in expert performance is therefore warranted. Furthermore, results from the present three studies found the three temporal perspectives to covary. Future research is necessary to determine whether, and in what ways, these temporal perspectives interact and influence one another. Such research appears to be important to enhance understanding of the dynamic interplay among the three temporal elements of ITP. Finally, future research should also assess whether ITP is involved in sport outcomes other than sport performance (e.g., physical well-being).

Conclusion

The present research thus suggests that we do indeed engage in time travel when we participate in a sport that we are passionate about. Furthermore, having a HP toward such an activity leads to a positive outlook on the past, present, and future, which, in turn, leads to better performance. Conversely, having an OP toward an activity leads to a less positive use of all three temporal perspectives, as well as to a more negative reflection on the past, which seems detrimental to last-second performance. Research exploring the relationship between passion, ITP, and outcomes is still in its infancy. However, in light of *past* research on passion and the *present* findings, it would appear to have a promising *future*.

References

- Arbuckle, J.L. (2014). Amos (Version 23.0) [computer program]. Chicago, IL: IBM SPSS.
- Baker, C. (2008). *Why she plays: The world of women's basketball*. Lincoln, UK: University of Nebraska Press.
- Bélanger, J.J., Lafrenière, M.A.K., Vallerand, R.J., & Kruglanski, A.W. (2013). Driven by fear: The effect of success and failure information on passionate individuals' performance. *Journal of Personality and Social Psychology, 104*, 180–195. doi:10.1037/a0029585
- Bishop, S.R. (2002). What do we really know about mindfulness-based stress reduction? *Psychosomatic Medicine, 64*(1), 71–83. PubMed ID: 11818588 doi:10.1097/00006842-200201000-00010
- Bonneville-Roussy, A., Lavigne, G.L., & Vallerand, R.J. (2015). When passion leads to excellence: The case of musicians. *Psychology of Music, 39*(1), 123–138. doi:10.1177/0305735609352441
- Brown, K.W., & Ryan, R.M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology, 84*, 822–848. PubMed ID: 12703651 doi:10.1037/0022-3514.84.4.822
- Bryant, F. (2003). Savoring Beliefs Inventory (SBI): A scale for measuring beliefs about savouring. *Journal of Mental Health, 12*(2), 175–196. doi:10.1080/0963823031000103489
- Carstensen, L.L., Isaacowitz, D.M., & Charles, S.T. (1999). Taking time seriously: A theory of socioemotional selectivity. *American Psychologist, 54*(3), 165–181. PubMed ID: 10199217. doi:10.1037/0003-066X.54.3.165

- Conway, M., Csank, P.A., Holm, S.L., & Blake, C.K. (2010). On assessing individual differences in rumination on sadness. *Journal of Personality Assessment, 75*(3), 404–425. doi:10.1207/S15327752JPA7503_04
- Curran, T., Hill, A.P., Appleton, P.R., Vallerand, R.J., & Standage, M. (2015). The psychology of passion: A meta-analytical review of a decade of research on intrapersonal outcomes. *Motivation and Emotion, 39*(5), 631–655. doi:10.1007/s11031-015-9503-0
- Feldman, G., Hayes, A., Kumar, S., Greeson, J., & Laurenceau, J.P. (2007). Mindfulness and emotion regulation: The development and initial validation of the Cognitive and Affective Mindfulness Scale-Revised (CAMS-R). *Journal of Psychopathology and Behavioral Assessment, 29*(3), 177. doi:10.1007/s10862-006-9035-8
- Fontanella, J.J. (2006). *The physics of basketball*. Baltimore, MD: Johns Hopkins University Press.
- Geisler, G.W., & Leith, L.M. (1997). The effects of self-esteem, self efficacy, and audience presence on soccer penalty shot performance. *Journal of Sport Behavior, 20*(3), 322–337.
- Jackson, S.A., & Eklund, R.C. (2002). Assessing flow in physical activity: The flow state scale-2 and dispositional flow scale-2. *Journal of Sport and Exercise Psychology, 24*(2), 133–150. doi:10.1123/jsep.24.2.133
- Jackson, S.A., & Marsh, H.W. (1996). Development and validation of a scale to measure optimal experience: The flow state scale. *Journal of Sport and Exercise Psychology, 18*(1), 17–35. doi:10.1123/jsep.18.1.17
- Jenkins, S. (2018, March 22). The psychology of victory: How to nail a buzzer-beater in the thick of March Madness. *National Post*. Retrieved from <https://nationalpost.com/sports/basketball/ncaa/the-psychology-of-victory-how-to-hit-a-buzzer-beater-in-march-madness>
- Kabat-Zinn, J. (1990). *Full catastrophe living: Using the wisdom of your body and mind to face stress, pain, and illness*. New York, NY: Delacourt.
- Kline, R.B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York, NY: Guilford Press.
- Lafrenière, M.A.K., Vallerand, R.J., & Sedikides, C. (2013). On the relation between self-enhancement and life satisfaction: The moderating role of passion. *Self and Identity, 12*, 597–609. doi:10.1080/15298868.2012.713558
- Lewin, K. (1951). *Field theory in social science: Selected theoretical papers*. Oxford, England: Harpers.
- Mageau, G., Carpentier, J., & Vallerand, R.J. (2011). The role of self-esteem contingencies in the distinction between obsessive and harmonious passion. *European Journal of Social Psychology, 41*(6), 720–729. doi:10.1002/ejsp.798
- Marsh, H.W., Vallerand, R.J., Lafrenière, M.-A.K., Parker, P., Morin, A.J.S., Carbonneau, N., . . . Paquet, Y. (2013). Passion: Does one scale fit all? Construct validity of two-factor passion scale and psychometric invariance over different activities and languages. *Psychological Assessment, 25*, 796–809. PubMed ID: 23647035 doi:10.1037/a0032573
- Nakamura, J., & Csikszentmihalyi, M. (2014). The concept of flow. In *Flow and the foundations of positive psychology* (pp. 239–263). Dordrecht, the Netherlands: Springer.
- Neff, K.D. (2003). The development and validation of a scale to measure self-compassion. *Self and Identity, 2*(3), 223–250. doi:10.1080/15298860309027
- Nolen-Hoeksema, S., Wisco, B.E., & Lyubomirsky, S. (2008). Rethinking rumination. *Perspectives on Psychological Science, 3*(5), 400–424. PubMed ID: 26158958 doi:10.1111/j.1745-6924.2008.00088.x
- Nutin, J. (1964). The future time perspective in human motivation and learning. *Acta Psychologica, 23*, 60–82. doi:10.1016/0001-6918(64)90075-7
- Nutin, J. (1985). *Future time perspective and motivation: Theory and research method*. Hillsdale, NJ: Erlbaum.
- Philippe, F.L., Vallerand, R.J., & Lavigne, G.L. (2009). Passion does make a difference in people's lives: A look at well-being in passionate and non-passionate individuals. *Applied Psychology: Health and Well-Being, 1*, 3–22. doi:10.1111/j.1758-0854.2008.01003.x
- Plessner, H., Unkelbach, C., Memmert, D., Baltes, A., & Kolb, A. (2009). Regulatory fit as a determinant of sport performance: How to succeed in a soccer penalty-shooting. *Psychology of Sport and Exercise, 10*(1), 108–115. doi:10.1016/j.psychsport.2008.02.001
- Scheier, M.F., & Carver, C.S. (1992). Effects of optimism on psychological and physical well-being: Theoretical overview and empirical update. *Cognitive Therapy and Research, 16*(2), 201–228. Retrieved from <https://link.springer.com/content/pdf/10.1007%2F01173489.pdf>.
- Scheier, M.F., Carver, C.S., & Bridges, M.W. (1994). Distinguishing optimism from neuroticism (and trait anxiety, self-mastery, and self-esteem): A reevaluation of the Life Orientation Test. *Journal of Personality and Social Psychology, 67*(6), 1063–1078. PubMed ID: 7815302 doi:10.1037/0022-3514.67.6.1063
- Schellenberg, B.J., Bailis, D.S., & Mosewich, A.D. (2016). You have passion, but do you have self-compassion? Harmonious passion, obsessive passion, and responses to passion-related failure. *Personality and Individual Differences, 99*, 278–285. doi:10.1016/j.paid.2016.05.003
- Sedikides, C.S., & Wildschut, T. (2018). Finding meaning in nostalgia. *Review of General Psychology, 22*, 48–61. doi:10.1037/gpr0000109
- Smith, B.W., Dalen, J., Wiggins, K., Tooley, E., Christopher, P., & Bernard, J. (2008). The brief resilience scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine, 15*(3), 194–200. PubMed ID: 18696313 doi:10.1080/10705500802222972
- Smith, H.K. (2004). Penalty shot importance, success and game context in international water polo. *Journal of Science and Medicine in Sport, 7*(2), 221–225. PubMed ID: 15362318 doi:10.1016/S1440-2440(04)80012-4
- Snyder, C.R., Harris, C., Anderson, J.R., Holleran, S.A., Irving, L.M., Sigmon, S.T., . . . Harney, P. (1991). The will and the ways: Development and validation of an individual differences measure of hope. *Journal of Personality and Social Psychology, 60*(4), 570–585. PubMed ID: 2037968 doi:10.1037/0022-3514.60.4.570
- St-Louis, A.C., Verner-Filion, J., Bergeron, C.M., & Vallerand, R.J. (2018). Passion and mindfulness: Accessing adaptive processes. *The Journal of Positive Psychology, 13*(2), 155–164. doi:10.1080/17439760.2016.1245771
- Su, R., Tay, L., & Diener, E. (2014). The development and validation of the Comprehensive Inventory of Thriving (CIT) and the Brief Inventory of Thriving (BIT). *Applied Psychology: Health and Well-Being, 6*(3), 251–279. PubMed ID: 31522330 doi:10.1111/aphw.12027
- Suddendorf, T., & Corballis, M.C. (2007). The evolution of foresight: What is mental time travel, and is it unique to humans? *Behavioral and Brain Sciences, 30*(3), 299–313. doi:10.1017/S0140525X07001975
- Sverdlik, A., Vallerand, R.J., St-Louis, A.C., Verner-Filion, J., Krafft, A., Fenouillet, F., . . . Martin-Krumm, C. (2019). The role of passion in integrated temporal positivity and psychological well-being. [Manuscript submitted for publication].
- Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed.). New York, NY: Allyn & Bacon.
- Trope, Y., & Liberman, A. (1996). Social hypothesis testing: Cognitive and motivational mechanisms. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social psychology: Handbook of basic principles* (pp. 239–270). New York, NY: Guilford Press.

- Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review*, *110*, 403–421. PubMed ID: 12885109 doi:10.1037/0033-295X.110.3.403
- Vallerand, R.J. (2008). On the psychology of passion: In search of what makes people's lives most worth living. *Canadian Psychology*, *49*, 1–13. doi:10.1037/0708-5591.49.1.1
- Vallerand, R.J. (2010). On passion for life activities: The dualistic model of passion. *Advances in Experimental Social Psychology*, *42*, 97–193. doi:10.1016/S0065-2601(10)42003-1
- Vallerand, R.J. (2012). From motivation to passion: In search of the motivational processes involved in a meaningful life. *Canadian Psychology* *53*(1), 42–52. doi:10.1037/a0026377
- Vallerand, R.J. (2015). *The psychology of passion: A dualistic model*. New York, NY: Oxford University Press.
- Vallerand, R.J., Blanchard, C., Mageau, G.A., Koestner, R., Ratelle, C., Leonard, M., . . . Marsolais, J. (2003). Les passions de l'Âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*, 756–767. PubMed ID: 14561128 doi:10.1037/0022-3514.85.4.756
- Vallerand, R.J., & Houffort, N. (Eds.). (2019). *Passion for work: Theory and research*. New York, NY: Oxford University Press.
- Vallerand, R.J., Mageau, G.A., Elliot, A.J., Dumais, A., Demers, M.-A., & Rousseau, F.L. (2008). Passion and performance attainment in sport. *Psychology of Sport and Exercise*, *9*, 373–392. doi:10.1016/j.psychsport.2007.05.003
- Vallerand, R.J., Salvy, S.J., Mageau, G.A., Elliot, A.J., Denis, P., Grouzet, F.M.E., & Blanchard, C.M. (2007). On the role of passion in performance. *Journal of Personality*, *75*, 505–534. PubMed ID: 17489890 doi:10.1111/j.1467-6494.2007.00447.x
- Vallerand, R.J., & St-Louis, A.C. (2019). The role of passion in integrated temporal positivity: Implications for optimal functioning. In F. Grouzet (Ed.), *The Handbook of the psychology of time*. New York, NY: Oxford University Press.
- Vallerand, R.J., & Verner-Filion, J. (2013a). Making people's life most worth living: On the importance of passion for positive psychology. *Terapia Psicológica*, *31*(1), 35–48. Retrieved from <https://www.redalyc.org/pdf/785/78525710004.pdf>.
- Vallerand, R.J., & Verner-Filion, J. (2013b). Theory and research in passion for sport and exercise. In G. Tenenbaum & R. Eklund (Eds.), *Handbook of sport psychology* (4th ed., pp. 216–229). New York, NY: Wiley.
- Verner-Filion, J., Lafrenière, M.A.K., & Vallerand, R.J. (2012). On the accuracy of affective forecasting: The moderating role of passion. *Personality and Individual Differences*, *52*(7), 849–854. doi:10.1016/j.paid.2012.01.014
- Verner-Filion, J., Vallerand, R.J., Amiot, C.E., & Mocanu, I. (2017). The two roads from passion to sport performance and psychological well-being: The mediating role of need satisfaction, deliberate practice, and achievement goals. *Psychology of Sport and Exercise*, *30*, 19–29. doi:10.1016/j.psychsport.2017.01.009
- Weiner, B. (1985). An attributional theory of achievement motivation and emotion. *Psychological Review*, *92*(4), 548–573. PubMed ID: 3903815 doi:10.1037/0033-295X.92.4.548
- Wilson, A., & Ross, M. (2003). The identity function of autobiographical memory: Time is on our side. *Memory*, *11*(2), 137–149. PubMed ID: 12820827 doi:10.1080/741938210
- Wilson, M.R., Wood, G., & Vine, S.J. (2009). Anxiety, attentional control, and performance impairment in penalty kicks. *Journal of Sport and Exercise Psychology*, *31*(6), 761–775. PubMed ID: 20384011 doi:10.1123/jsep.31.6.761
- Wilson, T.D., & Gilbert, D.T. (2003). Affective forecasting. *Advances in Experimental Social Psychology*, *35*(35), 345–411. Retrieved from [http://www.danielgilbert.com/Wilson%20&%20Gilbert%20\(Advances\).pdf](http://www.danielgilbert.com/Wilson%20&%20Gilbert%20(Advances).pdf)
- Wilson, T.D., & Gilbert, D.T. (2005). Affective forecasting: Knowing what to want. *Current Directions in Psychological Science*, *14*(3), 131–134. doi:10.1111/j.0963-7214.2005.00355.x
- Worrell, F.C., Temple, E.C., McKay, M.T., Živković, U., Perry, J.L., Mello, Z.R., . . . Cole, J.C. (2018). A theoretical approach to resolving the psychometric problems associated with the Zimbardo time perspective inventory. *European Journal of Psychological Assessment*, *34*(1), 41–51. doi:10.1027/1015-5759/a000313
- Zimbardo, P.G., & Boyd, J.N. (1999). Putting time in perspective: A valid, reliable individual differences metric. *Journal of Personality and Social Psychology*, *77*(6), 1271–1288. doi:10.1037/0022-3514.77.6.1271