**Fuelled by passion: Obsessive passion amplifies positive and negative feelings throughout a
hockey playoff series**

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Abstract

Previous research has shown that the highs and lows of sports fandom are more extreme for fans with strong levels of obsessive passion (Lafrenière et al., 2012). We tested if this amplification effect applied to how hockey fans felt throughout a National Hockey League (NHL) playoff series. Fans of the Winnipeg Jets ($N = 57$) reported levels of harmonious and obsessive passion prior to the start of the 2019 NHL playoffs, and then reported their feelings the day after each game of the first playoff round. The results supported the amplification hypothesis by showing that the impact of game result on both positive and negative feelings the day after a game was more extreme for fans with high OP. This moderating effect, however, appeared to be driven primarily by responses to losses.

Keywords: dualistic model of passion; emotions; harmonious passion; multilevel modeling; obsessive passion; sports fans

If you want to register a vehicle in the province of Manitoba, Canada, you can obtain a license plate that displays the logo of the local National Hockey League (NHL) franchise, the Winnipeg Jets, along with their team slogan: “Fuelled by passion”. Like many sports fans, Jets fans are *passionate* about supporting their team. The dualistic model of passion defines passion as a strong inclination toward an activity (or object, concept, or person) that one likes, values, spends a great deal of time and energy pursuing, and has incorporated into one’s identity (Vallerand, 2015). The dualistic model, however, makes the critical distinction between two passion varieties: harmonious passion (HP) and obsessive passion (OP). HP emerges when an activity is loved and autonomously internalized into a person’s identity. This results in the activity being pursued in a flexible manner with a sense of control and balance with other life domains. OP also emerges when an activity is loved, but is internalized into a person’s identity in a more controlled way. This results in the activity being rigidly pursued and becoming a dominant component of a person’s identity and life (Vallerand, 2015). Research relying on the dualistic model has consistently shown that HP and OP predict different experiences both within and beyond a passionate activity, with HP usually predicting adaptive outcomes and OP usually predicting more maladaptive outcomes in all types of contexts (e.g., Curran et al., 2015; Vallerand, 2015), including among sports fans (e.g., Vallerand et al., 2008).

Both HP and OP have been shown to be especially important for predicting subjective feelings of well-being in sport; HP tends to predict more positive feelings, whereas OP tends to predict more negative feelings (Schellenberg et al., 2021). But as all passionate sports fans know, feelings can change depending on how one’s team performs. Team wins can lead to more positive feelings, such as happiness and joy, whereas team losses can lead to more negative feelings, such as sadness or even anger (Wann & James, 2019). The rollercoaster of sports

fandom may be especially turbulent when the stakes are high and team performance has a direct impact on a team's chances of winning a championship. An example of such a decisive period is during an NHL playoff series, when a team plays a sequence of games against the same opponent. The team that wins the series continues in the playoffs and still has an opportunity to become the league champion, whereas the team that loses the series is eliminated from the competition. Not only can team performance during a playoff series have an especially strong effect on fan subjective experiences, but changes in feelings may linger and influence how fans feel long after the game has ended (e.g., Jones et al., 2012).

The extent to which team performance influences how fans feel after a game is likely dependent on the extent to which fan passion is obsessive. An OP involves an activity dominating one's life and occupying a disproportionate space in one's identity (Vallerand, 2015). This means that team performance should be of greater significance for the emotional experiences of fans with high OP, with team successes experienced as being especially positive and team losses experienced as being especially negative. In contrast, HP entails a more balanced relationship with an activity, meaning that it should not predict extreme emotional fluctuations. Previous research has supported this amplification hypothesis and shown that OP, and not HP, moderates the extent to which performance in an activity influences the emotional experiences of golfers (Verner-Filion et al., 2018), the state self-esteem of card players (Mageau et al., 2011), and the life satisfaction of hockey fans (Lafrenière et al., 2012). Overall, this literature suggests that the highs and lows of sports fandom are more extreme for fans with strong levels of OP.

In this research, we built on the existing passion literature by testing if the relationship between team performance and subjective feelings the day after a game depended on levels of OP for one's team. To do so, we followed Jets fans over the course of the first round of the 2019

NHL playoffs, in which the Jets played the St. Louis Blues in a best-of-seven series. Prior to conducting this study, we of course did not know what the outcome of the playoffs series would be. In the end, the Jets lost to the Blues in 6 games; the Jets lost the first two games, then won the next two, and then lost in the final two games of the series. This sequence of wins and losses allowed us to test if the way Jets fans felt the day after the games depended on whether the Jets had won or lost the game, and if this effect depended on the obsessive nature of their passion. In this research we were interested in post-game positive and negative feelings in general, including those at various levels of specificity and arousal (see Diener et al., 2010). We predicted that fans would experience more positive feelings after a win compared to after a loss, and more negative feelings after a loss compared to after a win (Hypothesis 1). We also predicted that the relationship between team result and post-game feelings would be moderated by OP, such that positive feelings would be even stronger after wins and negative feeling even stronger after losses for fans with high levels of OP (Hypothesis 2).

Method

Procedure and Participants

One month prior to the start of the 2019 NHL Playoffs, we made announcements in large first- and second-year undergraduate kinesiology and recreation classes inviting Jets fans to provide their email addresses so we could contact them about this study. Approximately two weeks prior to the start of the playoffs, all interested fans were emailed a link to an online survey that included the complete details about the study, a place for fans to provide informed consent, and scales assessing demographic variables and aspects of their fandom (including HP and OP toward being a Jets fan). Fans had access to this initial survey for a two-week period. Once the playoffs began, fans were emailed a link to brief post-game online surveys the morning after

each game. The complete recruitment timeline is outlined in the Supplementary Material.

Fifty-seven Jets fans (35 females, 22 males) completed both the initial survey and at least one post-game survey.¹ Participants ranged from 18 to 30 years old ($M = 20.19$ years, $SD = 2.13$ years), and most identified having a White/European ethnic background (84.2%). Participants reported being a Jets fan for an average of 6.05 years ($SD = 2.39$ years).² Participants received a contribution toward an electronic gift card for each survey that they completed. Institutional ethics approval was obtained before this study began.

Measures

Harmonious and obsessive passion. As part of the initial survey, on a scale ranging from 1 (*not agree at all*) to 7 (*totally agree*), participants answered questions from the Passion Scale (see Vallerand, 2015) assessing levels of HP (e.g., “Being a Winnipeg Jets fan is well integrated in my life”; $M = 4.40$, $SD = 1.00$, $\omega = .83$) and OP (e.g., “I have almost an obsessive feeling for being a Winnipeg Jets fan”; $M = 2.08$, $SD = 1.06$, $\omega = .87$) toward being a Jets fan.

Post-game feelings. As part of each post-game survey, participants reported how they were feeling at the moment by completing the Scale of Positive and Negative Experiences (SPANE; Diener et al., 2010). We opted for this measure because it is designed to assess a range of both positive and negative feelings at different levels of arousal and specificity (see Diener et al., 2010), and has shown good psychometric properties in university samples (e.g., Howell & Buro, 2015). Following the stem “Today I feel...”, participants reported the extent to which they

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¹ The number of fans recruited for this study was determined by feasibility considerations. Quite simply, our goal was to recruit as many fans as we could, knowing that each fan would provide a maximum of between 4 and 7 post-game observations (depending on how many games were played in the playoff series). Note that the combination of Level 1 (post-game observations) and Level 2 (fans) sample sizes is comparable with other intensive longitudinal designs in sport/exercise psychology (Gaudreau et al., 2020).

² It is important to note that the Winnipeg Jets franchise relocated to Winnipeg in 2011, meaning that, at the time of the study, the Winnipeg Jets had only existed for 8 years. Fans indicated the number of years they had been Jets fans on a scale from 1 to 8 years. Most participants (54.4%) selected the maximum number of years (i.e., 8 years).

were feeling six positive (e.g., “Positive”, “Happy”; post-game ranges: $M = 3.54 - 4.85$, $SD = 1.06 - 1.37$, $\omega = .91 - .94$) and six negative (e.g., “Negative”, “Sad”; post-game ranges: $M = 1.66 - 2.70$, $SD = 0.69 - 1.35$, $\omega = .83 - .93$) feelings, once again using a scale ranging from 1 (*not agree at all*) to 7 (*totally agree*).

Results

We used SPSS (version 25) to screen the data and calculate descriptive statistics and correlations, and used HLM (version 8.0; Raudenbush et al., 2019) to conduct multilevel modeling. We removed one participant from the analysis who had an extreme OP score, and the responses of two participants’ post-game surveys because they indicated that they did not answer the survey questions honestly. Game results were coded as -1 for losses and +1 for wins. The Supplementary Material (available online) reports additional information about the analyses, descriptive statistics, correlations, internal consistencies, and formulae. Anonymous data files are available on the Open Science Framework at <https://osf.io/r6em8/>.

We analyzed the data in three steps for predicting both positive and negative feelings (see Woltman et al., 2012). First, we tested *unconstrained (null) models* that contained no predictor variables. This model allowed us to calculate the intra-class correlations to determine the amount of variance in post-game feelings that was at both the within-person (Level 1) and between-person (Level 2) levels (Woltman et al., 2012). The results of these models showed that 39% of the variance in positive feelings was at the between-person level (meaning 61% was at the within-person level), and that 44.5% of the variance in negative feelings was at the between-person level (meaning 55.5% was at the within-person level). Results also showed that there were significant differences in both positive feelings ($\chi^2 [55] = 266.920$, $p < .001$) and negative feelings ($\chi^2 [55] = 320.624$, $p < .001$) between fans, which further supported the use of multi-

level modeling.

Second, we tested *random-intercept models* that included game result as a Level 1 predictor. This model allowed us to test Hypothesis 1 and determine if game result predicted how fans were feeling the day after games. The results from both models showed that game result was a predictor of both positive feelings ($b = 0.466, p < .001$) and negative feelings ($b = -0.416, p < .001$). In support of Hypothesis 1, fans felt more positive feelings the day after a win, and more negative feelings the day after a loss (see Table 1).

Finally, we tested *slopes-as-outcomes* models that included OP as a Level 2 predictor. We also included HP in these models to control for shared variance between the two passion dimensions (Curran et al., 2015). These models allowed us to test Hypothesis 2 and determine if OP moderated the relationship between game result and post-game feelings (see Table 1). The results showed that OP moderated the relationship between game result and both positive feelings ($b = 0.156, p = .047$) and negative feelings ($b = -0.147, p = .049$). Simple intercepts and slopes are plotted in Figure 1.³

Discussion

Sports fans can feel the effects of a big win or devastating loss long after the game has ended (e.g., Jones et al., 2012). In this research, we studied how fans felt the day after a series of important playoff games and found that the impact of team performance on feelings was more pronounced for fans with high levels of OP. Having high OP means that a passionate activity occupies an overwhelming space in one's identity, which should thus amplify the effects of performance outcomes in an activity. Our results support this amplification hypothesis with how fans felt the day after important playoff games.

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³ Plots were created using an online tool developed by Preacher, Curran, and Bauer (2006), available at <http://www.quantpsy.org/interact/hlm2.htm>.

Looking closer at the results, although the observed interactions meant that the effect of game results on post-game feelings depended on OP, the simple slopes suggested that this effect was driven primarily by responses to losses. Negative events are known to be more impactful than positive ones (e.g., Baumeister et al., 2001), and sports fans specifically have shown greater negative reaction to dissatisfying team performances compared to their positive reaction to satisfying ones (Gkorezis et al., 2016). The amplification effect of OP on feelings may therefore be most apparent following negative events, a nuance that warrants additional study.

Previous research with golfers, card players, and hockey fans has shown that the effect of successes and failures on emotions, self-esteem, and life satisfaction is amplified among those with high OP (Lafrenière et al., 2012; Mageau et al., 2011; Verner-Filion et al., 2018). This study contributes to this literature by showing that this amplification effect applies to the way in which hockey fans feel the day after an important game. This finding helps explain the types of sports fans whose well-being is especially impacted by game outcomes, and shows that these effects can linger long after the game has ended. We should note that this research is limited by its reliance on self-report measures, and by its focus on sports fans who are all undergraduates who support the same team. We also needed to remove several responses from the analyses due to extreme and dishonest responding. Future research can continue to study the effects of passion in sports fandom in many ways. For example, focusing on games in which the stakes are even higher (e.g., a championship series), would allow researchers to test if more important games lead to even greater amplification effect among fans with high OP. Also, fans with high OP may be susceptible to having post-game feelings influence outcomes in different life domains, such as work performance or interpersonal relationships (see Gkorezis et al., 2016). Research testing these and other potential spillover effects would reveal the full extent to which game results

affect the lives of passionate sports fans.

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Figure Caption

Relationships between obsessive passion, game result, and both positive feelings (Panel A) and negative feelings (Panel B). Obsessive passion is plotted at low ($-1\ SD$) and high ($+1\ SD$) levels.

Table 1
Results of multi-level analyses

Fixed Effect	Positive Affect			Negative Affect		
	Coefficient	<i>t</i>	<i>p</i>	Coefficient	<i>t</i>	<i>p</i>
Random Intercepts Model						
Intercept (β_{00})	4.315	36.91	<.001	2.115	21.10	<.001
RESULT (β_{10})	0.466	6.26	<.001	-0.416	-6.117	<.001
Slopes as Outcomes Model						
Intercept (β_{00})	4.311	35.77	<.001	2.109	20.82	<.001
RESULT (β_{10})	0.467	6.76	<.001	-0.422	-6.537	<.001
HP (β_{01})	0.189	1.26	.212	-0.059	-0.463	.645
OP (β_{02})	-0.099	-0.72	.477	0.121	1.023	.311
HP $\times$ RESULT (β_{11})	0.109	1.24	.218	-0.013	-0.160	.873
OP $\times$ RESULT (β_{12})	0.156	2.00	.047	-0.147	-1.983	.049

Note. HP = harmonious passion. OP = obsessive passion. RESULT = game result. RESULT was coded as either -1 (loss) or +1 (win). HP and OP were grand-mean centered. Parameters in parentheses correspond to the parameters in the mixed model formulae displayed in the Supplementary Material (available online).

Supplementary Material

Table S1
Data Collection Timeline

Date	Event
March 5 – March 21	Fan recruitment in undergraduate classes
March 26	Initial survey link emailed to interested fans
April 6	Last day to complete initial survey
April 10	Winnipeg Jets lose to the St-Louis Blues (1-2)
April 11	Link to post-game survey #1 emailed to participants
April 12	Winnipeg Jets lose to the St-Louis Blues (3-4)
April 13	Link to post-game survey #2 emailed to participants
April 14	Winnipeg Jets defeat the St-Louis Blues (6-3)
April 15	Link to post-game survey #3 emailed to participants
April 16	Winnipeg Jets defeat the St-Louis Blues (2-1)
April 17	Link to post-game survey #4 emailed to participants
April 18	Winnipeg Jets lose to the St-Louis Blues (2-3)
April 19	Link to post-game survey #5 emailed to participants
April 20	Winnipeg Jets lose to the St-Louis Blues (2-3)
April 21	Link to post-game survey #6 emailed to participants

Note. Data collection took place throughout the 2019 National Hockey League regular season and playoffs. Links to all post-game surveys were emailed to the participants in the mornings (prior to 9:00 AM local time).

Table S2
Descriptive statistics, internal consistencies, and correlations

	<i>M</i>	<i>SD</i>	ω	1	2	3	4	5	6	7	8	9	10	11	12	13
1. HP	4.40	1.00	.83													
2. OP	2.08	1.06	.87	.58**												
3. POS-G1	4.15	1.16	.92	.08	-.15											
4. NEG-G1	2.25	0.99	.87	.10	.27	-.44**										
5. POS-G2	3.79	1.17	.94	-.17	-.15	.42**	-.38*									
6. NEG-G2	2.53	1.15	.91	.10	.21	-.20	.71**	-.63**								
7. POS-G3	4.85	1.08	.91	.17	.22	.28	.07	.45**	.13							
8. NEG-G3	1.68	0.69	.83	.05	.02	-.01	.35*	-.25	.45**	-.35*						
9. POS-G4	4.70	1.06	.91	.37*	.11	.30*	.11	.21	.25	.80*	-.18					
10. NEG-G4	1.66	0.72	.88	-.25	-.14	.17	.28	.06	.26	-.31*	.76**	-.34*				
11. POS-G5	3.54	1.07	.92	-.05	-.28	.45**	-.31	.65	-.37*	.35*	-.14	.33*	-.08			
12. NEG-G5	2.70	1.32	.93	.12	.24	-.04	.60**	-.48	.69**	.09	.46**	.23	.31*	-.57**		
13. POS-G6	3.61	1.37	.94	-.19	-.18	.43**	-.38*	.66**	-.50**	.34*	-.14	.19	-.03	.77**	-.48**	
14. NEG-G6	2.66	1.34	.93	.14	.17	-.20	.63**	-.46**	.72**	.15	.29	.29	.22	-.53**	.87**	-.62**

Note. HP = harmonious passion. OP = obsessive passion. POS = positive feelings. NEG = negative feelings. G1-G6 = Game 1-Game 6. We report McDonald's omega (ω) as an indicator of internal consistency, which was calculated using a macro for SPSS developed by Hayes and Coutts (2020).

* $p \leq .05$ ** $p \leq .01$

Formulae

Formulae Notes

Below are the formulae for unconstrained, random-intercepts, and slopes-as-outcomes models, using the notation from HLM 8.0 for longitudinal designs (i.e., observations within people). Note that the mixed model formulae combine the formulae for Level 1 and Level 2. We present the formulae for both Level 1 and Level 2 separately simply for clarity. Separate models were tested for both positive feelings and negative feelings (FEELINGS). Game result (RESULT) was coded as either -1 (losses) or +1 (wins). Both harmonious passion and obsessive passion were grand-mean centered.

Unconstrained (null) Model

Level 1

$$\text{FEELINGS}_{ii} = \pi_{0i} + e_{ii}$$

Level 2

$$\pi_{0i} = \beta_{00} + r_{0i}$$

Mixed Model

$$\text{FEELINGS}_{ii} = \beta_{00} + r_{0i} + e_{ii}$$

Random-intercepts Model

Level 1

$$\text{FEELINGS}_{ii} = \pi_{0i} + \pi_{1i} (\text{RESULT}_{ii}) + e_{ii}$$

Level 2

$$\pi_{0i} = \beta_{00} + r_{0i}$$

$$\pi_{1i} = \beta_{10} + r_{1i}$$

Mixed Model

$$\text{FEELINGS}_{ii} = \beta_{00} + \beta_{10} (\text{RESULT}_{ii}) + r_{0i} + r_{1i} (\text{RESULT}_{ii}) + e_{ii}$$

Slopes-as-outcomes Model

Level 1

$$\text{FEELINGS}_{it} = \pi_{0i} + \pi_{1i} (\text{RESULT}_{it}) + e_{it}$$

Level 2

$$\pi_{0i} = \beta_{00} + \beta_{01} (\text{HARMONIOUS PASSION}_i) + \beta_{02} (\text{OBSESSIVE PASSION}_i) + r_{0i}$$

$$\pi_{1i} = \beta_{10} + \beta_{11} (\text{HARMONIOUS PASSION}_i) + \beta_{12} (\text{OBSESSIVE PASSION}_i) + r_{1i}$$

Mixed Model

$$\begin{aligned} \text{FEELINGS}_{it} = & \beta_{00} + \beta_{01} (\text{HARMONIOUS PASSION}_i) + \beta_{02} (\text{OBSESSIVE PASSION}_i) \\ & + \beta_{10} (\text{RESULT}_{it}) + \beta_{11} (\text{HARMONIOUS PASSION}_i)(\text{RESULT}_{it}) \\ & + \beta_{12} (\text{OBSESSIVE PASSION}_i)(\text{RESULT}_{it}) + r_{0i} + r_{1i} (\text{RESULT}_{it}) + e_{it} \end{aligned}$$

Additional Analysis Notes

We removed one participant from the analysis who had an extreme OP score, as identified by histograms, Z-scores ($Z = 3.92$) and Mahalanobis distance values ($\chi^2 = 16.20$, $p < .001$). The final analysis was therefore based on 56 participants, each providing up to 6 post-game observations.

All participants completed all questions of the initial survey and reported that they answered the questions honestly. However, although the majority of participants ($n = 33$, 58.9%) completed all six post-game surveys, each post-game survey was not completed by between 4 (7.1%; post-game survey #1) and 11 (19.6%; post-game survey #6) participants. We also excluded the responses of two participants' post-game surveys because they indicated that they did not answer the survey questions honestly. Overall, of the potential 336 post-game observations, 15% were missing. Participants who completed each post-game survey ($n = 33$) did not differ from those who were missing at least one post-game survey ($n = 23$) on levels of HP,

OP, or post-game feelings (all $ps > .05$). Missing data were handled using the default imputations procedure (50 imputations were specified) in HLM (Raudenbush et al., 2019).

Game results were coded as -1 for losses and +1 for wins. All models were estimated using restricted maximum likelihood. We ran additional models that included the $HP \times OP$ interaction effect, but in all cases the interaction effect was not significant.