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A Successful Creative Process: The Role of Passion and Emotions

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The creative process refers a sequence of thoughts and actions leading to a novel, adaptive production (Lubart, 2000). It demands love, time, and devotion, and, therefore, creators are passionate toward their creative work. The Dualistic Model of Passion (Vallerand et al., 2003) defines passion as a strong inclination for a self-defining activity that people love and find important, and in which they invest a significant amount of time and energy. Two types of passion are proposed, where harmoniously passionate (HP) individuals engage in the passionate activity with free choice, and obsessively passionate (OP) individuals feel an uncontrollable urge to partake in the activity, leading to positive and negative consequences respectively. This research explored the role of emotions and passion during a successful creative process. Study 1 ($N=82$) looked at positive emotions experienced by passionate artists at each phase of their creative process. Study 2 ($N=114$) replicated Study 1 and also assessed negative emotions. Results revealed that positive emotions facilitate creativity and that moderate and high levels of activation of positive emotions serve different functions. Negative emotions were relatively absent of the successful creative process. Finally, HP artists presented an emotional experience that was more positive than OP artists.

Emotions are not only predominant during the conception of creative work, but also appear to be useful and essential for creation. In fact, artists frequently report how their emotions guide them or inspire them through the development of a successful creative product. Although much research has focused on the effects of emotions in creativity, few studies have addressed the source of these emotions and their role during a successful creative process. Findings from a recent study with professional painters (Lafrenière, St-Louis, Vallerand, & Donahue, 2012, Study 1) revealed that they are highly passionate for their craft. In addition, being passionate entails being emotionally charged toward an activity, and research has shown

that the experience of emotions is intensified during and after engaging in the passionate activity (see Vallerand, 2008, 2010, *in press* for reviews). Therefore, emotions seem to be embedded in the creative process because artists are passionate for their art and, thus, passion seems to play an important role in the emotional experience of artists during the creative process. This research focuses on the role of passion and emotions in the creative process.

THE DUALISTIC MODEL OF PASSION

The Dualistic Model of Passion (DMP; Vallerand, 2008, 2010, *in press*; Vallerand et al., 2003) defines passion as a strong inclination toward a self-defining activity that one loves and finds important, and in which one invests a significant amount of time and energy. Two distinct types of passion are proposed: harmonious and obsessive. With harmonious passion (HP), individuals commit to an activity with free choice and,

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thus, the activity becomes part of their identity without any contingencies attached to it. This type of passion results from an autonomous internalization of the activity into the identity (Deci & Ryan, 2000), which then produces a motivational force to pursue the activity that one loves. With HP, even if the passionate activity takes a significant place in their lives, it does not create conflicts with other important aspects of life, such as family or work (Vallerand et al., 2003; Vallerand, 2008; 2010, *in press*; Vallerand, Paquet, Philippe, & Charest, 2010). In fact, HP facilitates a flexible engagement in the passionate activity, allowing people to remain in control and to maintain a good balance between the passionate activity and other important activities. Moreover, such flexible engagement produces positive outcomes during, as well as outside of, the passionate activity. For example, past research has shown that HP individuals experience positive emotions and flow, they have good relationships quality, they are satisfied with their life, etc. (Lafrenière, Donahue, & Vallerand, 2008; Philippe, Vallerand, Houlfort, Lavigne, & Donahue, 2010; Philippe, Vallerand, & Lavigne, 2009; Rousseau & Vallerand, 2008; Vallerand et al., 2003; Vallerand, Rousseau, Grouzet, Dumais, & Grenier, 2006; Vallerand et al., 2007).

Conversely, with obsessive passionate (OP) individuals experience an uncontrollable urge to partake in the beloved activity. This is a consequence of a controlled internalization of the activity into one's identity where contingencies such as social acceptance and self-esteem are attached to the activity. Previous studies have revealed that, as opposed to HP people, OP individuals experience mostly negative consequences during and after engaging in the passionate activity, such as conflicts with other important aspects of life, negative emotions, rumination, poor relationships quality, physical symptoms, etc. (Lafrenière et al., 2008; Philippe et al., 2010; Philippe et al., 2009; Rousseau & Vallerand, 2008; Vallerand et al., 2003; Vallerand et al., 2006; Vallerand et al., 2007; Vallerand, Paquet, Philippe, & Charest, 2010). Thus, even though HP and OP individuals share the same love and commitment for their passionate activity, HP people experience more positive outcomes than OP individuals.

Although passion and intrinsic and extrinsic motivation share a conceptual similarity in terms of the interest and the liking of an activity, they are different constructs. First, intrinsically motivated activities are not considered to be internalized in the person's identity, as opposed to passion (Vallerand, 2010). Rather, intrinsically motivated activities emerge, at the short-term level, from the person-task interaction (Koestner & Lossier, 2002). Second, intrinsic motivation only leads to adaptive outcomes (Deci & Ryan, 2002), as opposed to the duality of passion where positive, as well as negative, consequences are experienced (see

Vallerand 2008, 2010, *in press*, for reviews). Third, although some forms of extrinsic motivation, such as identified and integrated regulation, entail some internalization, the goal of the activity is not engagement for the activity itself or for the love of it, but to do so to obtain something separate from the activity. Thus, a fundamental difference between extrinsic motivation and passion pertains to the love of the activity as the main reason for task engagement. Finally, research has, indeed, shown that controlling for intrinsic and extrinsic motivation does not change the role of harmonious and obsessive passion in the prediction of outcomes such as positive and negative affect (Vallerand et al., 2003).

THE PRESENT RESEARCH

The purpose of the present research was twofold. First, it addressed the role of passion in the emotional experience of artists throughout a successful creative process. Second, it explored the role of emotions during a successful creative process. Thus, this research is unique in that it investigated the differences in both positive and negative emotions of moderate and high levels of activation at each phase of a successful creative process. In addition, it assessed, for the first time, the differences in the emotional experience of artists at each phase of a successful creative process according to one's predominant type of passion (HP vs. OP).

Passionate individuals are known for experiencing numerous emotions during the passionate activity (Vallerand et al., 2003; see Vallerand, 2008, 2010, *in press*, for reviews). Past research in various settings has shown that the emotional experience is different according to HP or OP (Mageau & Vallerand, 2007; Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Philippe et al., 2009; Philippe et al., 2010; Vallerand et al., 2003; Vallerand et al., 2006; Vallerand, 2008, 2010, *in press*). Specifically, research reveals that HP facilitates positive emotions relative to OP during and after engaging in the passionate activity, whereas OP fosters negative emotions during and after activity engagement, but HP does not. In addition, findings from Lafrenière et al. (2008) uncovered that HP has a greater positive relation with moderate levels of activation of positive emotions than high levels, whereas OP has a greater positive association with high levels of activation of positive emotions than moderate.

As mentioned previously, emotions are present during the creative process and they are necessary for creation (Baas, DeBru, & Nijstad 2008; Isen, Daubmann,

& Nowicki, 1987; Russ, 1993, 1999; Russ, Robin, & Christiano, 1999; Russ & Kaugars, 2001; Russ & Schafer, 2006; Shaw 1994). Empirical evidence from the creativity–emotion literature revealed that emotions affect creative performance (Amabile, 1996; Fernandez-Abascal & Diaz, 2013; Gasper, 2004; George & Zhou, 2002; Hirt, Devers, & McCrae, 2008; Hutton & Sundar, 2010; Isen et al., 1987; Kaufman, 2003; Kaufman & Vosburg, 2002; Lubart & Getz, 1997; Vosburg, 1998). In sum, a recent meta-analysis from Baas and colleagues underscored that positive emotions facilitate creativity compared to emotion-neutral controls, but they do not produce more creativity than negative emotions. In addition, negative emotions of low and moderate activation do not produce less creativity than emotion-neutral controls, but when negative emotions of high activation are experienced, they can impair creativity compared to emotion-neutral controls. Thus, research suggests that creators experience emotions during their creative process and that their creative performance varies as a function of the valence and activation components of these emotions. However, the literature has neglected to address the role of these emotions throughout a successful creative process, as well as their source. This is the main goal of this research.

The creative process is divided in different phases or stages, traditionally identified as Preparation, Incubation, Illumination, and Verification (Wallas, 1926). Since then, many theorists have proposed new conceptions of the model for different settings (Amabile, 1996; Csikszentmihalyi, 1996; Dodds, Smith, & Ward, 2002; Doyle, 1998; Guilford, 1967; Lubart, 2000; Mace & Ward, 2010; Mumford, Mobley, Reiter-Palmon, Uhlman, & Doares, 1991; Runco & Chand, 1995; Sapp, 1992). Based on original models of the creative process, four crucial phases were selected for this research and adapted to be applicable specifically to artwork: (a) Preparation, (b) Idea Generation, (c) Production, and (d) Completion. The Preparation phase is when artists gather relevant information and resources in the environment or from their own knowledge to stimulate the apparition of a creative idea. The Idea Generation phase refers to the moment when artists generate their idea of creation. The Production phase is when artists make or produce their art. Finally, the Completion phase pertains to when artists finalize and validate their creation. In Study 1, moderate and high levels of activation of positive emotions experienced by HP and OP artists were assessed during these four phases. In Study 2, the role of passion in the experience of moderate and high levels of activation of both positive and negative emotions was also assessed during a successful creative process.

STUDY 1

The aim of Study 1 was to explore positive emotions experienced by passionate artists within four phases of a successful creative process. Our goal was specifically to test the differences between moderate levels of activation of positive emotions (MPOS) and high levels of activation of positive emotions (HPOS) throughout the creative process, as a function of type of passion (harmoniously or obsessively passionate artists). Four main hypotheses were proposed. First, because art-making is not typically considered very physically activating or of high levels of arousal (as compared to other activities such as most sports, for example), it was hypothesized that:

H1a: across all four phases, artists would experience MPOS more frequently than HPOS.

Second, it was expected that:

H2a: this gap between MPOS and HPOS would be different across phases. More precisely, it was hypothesized that, in comparison to other phases, (2) the difference between MPOS and HPOS would be more prominent during the Preparation phase (Phase 1), where individuals would experience an important frequency of MPOS, but much less HPOS.

Phase 1 is about gathering relevant information and resources to generate a creative idea (Amabile, 1996; Lubart, 2000). Past research has demonstrated that high levels of activation of emotions reduce the capacity to perceive, process, and evaluate information; lower levels of activation of positive emotions lead to cognitive flexibility (De Dreu, Baas, & Nijstad, 2008). Thus, it seems that experiencing higher frequency of MPOS over HPOS would be more adaptative for artists during Phase 1.

The third and fourth hypotheses were formulated in line with the literature on the DMP (Vallerand et al., 2003; Vallerand, 2008; Vallerand et al., 2010). As mentioned, HP and OP individuals experience emotions in a different way. Past research has explored the association between passion and MPOS and HPOS (Lafrenière et al., 2008). Overall, results showed that HP had a greater positive association with MPOS than HPOS, whereas OP was positively associated only with HPOS (Study 1) or with both MPOS and HPOS (Study 2), but with a greater positive association with HPOS than MPOS. Thus, it was hypothesized that:

H3a: across all four phases, HP artists would experience MPOS more often than HPOS, whereas OP artists would experience HPOS more often frequently than MPOS.

Finally, it was hypothesized that:

- H4a: HP artists would experience MPOS more frequently than OP artists, whereas HPOS would be experienced more frequently by OP artists than HP artists.

Method

Participants

Participants were 82 French Canadian artists (65 women and 17 men). Age ranged from 18 to 65 years ($M = 32.73$ years, $SD = 10.89$ years). On average, artists had 8.73 years of experience in making art ($SD = 6.84$ years) and were making art for 23.16 hr per week ($SD = 19.85$ hr). Moreover, participants reported that in the past year, they have created, on average, 38 art pieces ($SD = 86$ art pieces); they have sold on average 7 art pieces ($SD = 28$ art pieces), and they have participated in 1 art show ($SD = 3$ art shows). A variety of artistic activities were listed by artists, portraying our sample as followed: painting (36.6%), design (29.3%), scrapbooking (14.6%), drawing (6.1%), photography (3.7%), sculpture (2.4%), music (1.2%), and others (6.1%).

Procedure

A call for participation was sent via e-mail to undergraduate students in the Arts and Design departments at Université du Québec à Montréal ($N = 36$). Ads were also posted on artists' Facebook page ($N = 46$). Artists were invited to fill out an online questionnaire regarding their last successful creative process. Information concerning their art was asked, as well as questions to assess their passion for their artistic activity. Then, artists were asked to write about their last significant successful artistic creation. Finally, moderate and high levels of activation of positive emotions were assessed at each of the four phases of their creative process.

Measures

Passion for an artistic activity. Passion for an artistic activity was measured using the Passion Scale (Vallerand et al., 2003). Two six-item subscales assess harmonious passion (sample item: "This artistic activity is in harmony with the other activities in my life," $\alpha = .68$) and obsessive passion (sample item: "I have difficulties controlling my urge to do my artistic activity," $\alpha = .79$). Furthermore, the scale contains a five-item subscale assessing passion criteria: "I like this artistic activity"; "I spend a lot of time doing this artistic activity"; "This

artistic activity is important for me"; "This artistic activity is a passion for me"; "This artistic activity is part of who I am" ($\alpha = .70$). It is assessed on a 7-point Likert scale ranging from 1 (*do not agree at all*) to 7 (*very strongly agree*). The Passion Scale has been used in several studies and has shown high levels of validity and reliability (see Carbonneau, Vallerand, Fernet, & Guay, 2008; Donahue, Rip, & Vallerand, 2009; Marsh et al., 2013; Vallerand, 2008; Vallerand et al., 2003, 2006, 2007).

Positive emotions. MPOS and HPOS experienced by artists were measured at each phase of the creative process and were inspired by Barrett and Russell's model of affect (1998). MPOS were a grouping of "feeling happy," "feeling in a good mood," and "feeling joyful" (α for each phase ranged from .84 to .94). HPOS were a combination of the following three items: "having a blast," "feeling on a high," and "feeling positively excited" (α for each phase ranged from .82 to .86). Artists were asked to rate from 1 (*never*) to 7 (*almost always*) how often they felt the emotions at each phase.

Results

Preliminary Analyses

Passionate artists were identified by selecting individuals with a mean score equal or greater than four on the passion criteria subscale. Based on these criteria, all participants in this study were classified as passionate artists ($M = 6.25$, $SD = .64$). Next, the sample was divided into two groups: HP and OP artists (Amiot, Vallerand, & Blanchard, 2006; Donahue et al., 2009; Philippe et al., 2009; Vallerand & Houliort, 2003). To do so, HP and OP variables were transformed into z scores. Individuals with an HP z score greater than an OP z score were labeled as HP artists, whereas persons with an OP z score greater than an HP z score were categorized as OP artists. Consequently, 39 participants were identified as HP artists and 41 as OP artists, for a total sample of 80 artists. Missing values on the Passion Scale excluded two individuals of further analyses because they filled out less than 4 out of 6 items on the subscales.

Preliminary analyses were performed to verify statistical assumptions. First, no univariate outlier was identified (data screening revealed no value higher than three standard deviations from the mean). Second, using the Mahalanobis distance, no participant exceeded the critical chi-square value, $\chi^2(8) = 26.13$, $p < .001$. Third, Log transformations were made on all emotion variables for each phase to correct for abnormal distributions (skewness after transformation ranged from .02 to .37). However, for an easier interpretation of results, means and standard deviations are presented without the transformations in the main analyses section. HP

and OP were distributed normally (skewness for HP = $-.43$ and OP = $-.23$). Fourth, homogeneity of variance was examined using the Levene test, which was nonsignificant on all variables. Finally, the assumption of sphericity, assessed using the Mauchly's test, was violated ($p < 0.05$). Therefore, multivariate tests of significance (Pillai's, Wilks', Hotelling's, and Roy's) were interpreted in the main analyses (Ho, 2006). Note that gender, age, and artistic activities were excluded from the results below because preliminary analyses produced no effect involving these variables.

Main Analyses

To examine the levels of activation of positive emotions experienced by passionate artists across the four phases of a successful creative process, a 2 (HP and OP) \times 2 (MPOS and HPOS) \times 4 (Phases 1, 2, 3, 4) mixed-design ANOVA with repeated measures on the last two factors, was performed (see Table 1 for means). Results confirmed our initial hypothesis (H1a): MPOS ($M = 5.79$, $SD = .87$) were more frequently experienced by artists than HPOS ($M = 5.52$, $SD = 1.02$) across the four phases. This was revealed by a significant main effect of levels of activation of positive emotions across phases, $F(1, 78) = 8.80$, $p < .001$, $\eta^2 = .10$.

The second hypothesis (H2a) was that the difference in MPOS and HPOS would be greater in Phase 1 compared to Phases 2, 3, and 4. Thus, although the Phase main effect was significant, $F(3, 76) = 11.87$, $p < .001$, $\eta^2 = .32$, it was superseded by a significant Phases \times Levels of Activation interaction of emotions, $F(3, 76) = 4.67$, $p < .01$, $\eta^2 = .16$ (see Figure 1). Specifically, single main effects revealed that the difference between MPOS ($M = 5.65$, $SD = 1.00$) and HPOS ($M = 5.12$, $SD = 1.21$) was greater in Phase 1 than in Phases 2 (MPOS: $M = 5.89$, $SD = .95$; HPOS: $M = 5.75$, $SD = 1.14$), 3 (MPOS: $M = 5.72$, $SD = 1.09$; HPOS: $M = 5.47$, $SD = 1.18$), and 4 (MPOS: $M = 5.94$, $SD = .97$; HPOS: $M = 5.75$, $SD = 1.14$). All other contrasts were nonsignificant ($p > .05$).

Moreover, results revealed a significant Passion \times Levels of Activation interaction, $F(1, 78) = 12.43$, $p < .001$, $\eta^2 = .14$ (see Figure 2). Contrasts showed that our third hypothesis (H3a) was confirmed for HP, but not for OP. Specifically, across all four phases, HP artists experienced MPOS ($M = 5.96$, $SD = .93$) more often than HPOS ($M = 5.37$, $SD = 1.15$). However, results indicated that across all four phases, OP artists experienced a similar occurrence of MPOS ($M = 5.64$, $SD = .80$) and HPOS ($M = 5.67$, $SD = .88$). Finally, contrasts revealed that the fourth hypothesis (H4a) was confirmed, but only for HP. That is, HP artists, overall, experienced MPOS more often than OP artists ($M = 5.96$, $SD = .93$ for HP compared to $M = 5.64$, $SD = .80$ for OP). As for OP artists, even if, overall, they experienced HPOS more often than HP artists ($M = 5.67$, $SD = .88$ for OP in comparison to $M = 5.37$, $SD = 1.15$ for HP), this difference was not significant ($p > .05$). No other significant effects were found ($ps > .05$).

In sum, results uncovered that (H1a) across phases, MPOS were experienced more often than HPOS by passionate artists. Moreover, (H2a) in comparison to other phases, the Preparation phase (Phase 1) showed a significant difference between MPOS and HPOS, where MPOS was much more frequently experienced by passionate artists than HPOS. In regards to passion across phases, (H3a) HP artists experienced MPOS more often than HPOS, whereas a similar amount of MPOS and HPOS were experienced by OP artists. Finally, (H4a) HP artists experienced MPOS more frequently than OP artists, but no difference was found for HPOS.

STUDY 2

Study 1 looked at positive emotions experienced by passionate artists within a successful creative process. However, negative emotions were not assessed. Past research has shown that negative emotions are experienced by

TABLE 1
Means and Standard-Deviations of Moderate and High Activation of Positive Emotions During the Four Phases of the Creative Process for HP and OP Artists (Study 1)

Emotions	Phase 1		Phase 2		Phase 3		Phase 4		Total											
	HP		OP		HP		OP		HP		OP		HP		OP					
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD						
MPOS	5.86	1.04	5.45	.93	6.07	.98	5.72	.91	5.85	1.16	5.59	1.03	6.07	.94	5.81	.98	5.96	.93	5.64	.80
HPOS	5.00	1.30	5.24	1.12	5.60	1.27	5.89	.99	5.29	1.32	5.63	1.02	5.60	1.27	5.89	.99	5.37	1.15	5.67	.88

Note. MPOS = moderate levels of activation of positive emotions; HPOS = high levels of activation of positive emotions; HP = harmoniously passionate artists; OP = obsessively passionate artists.

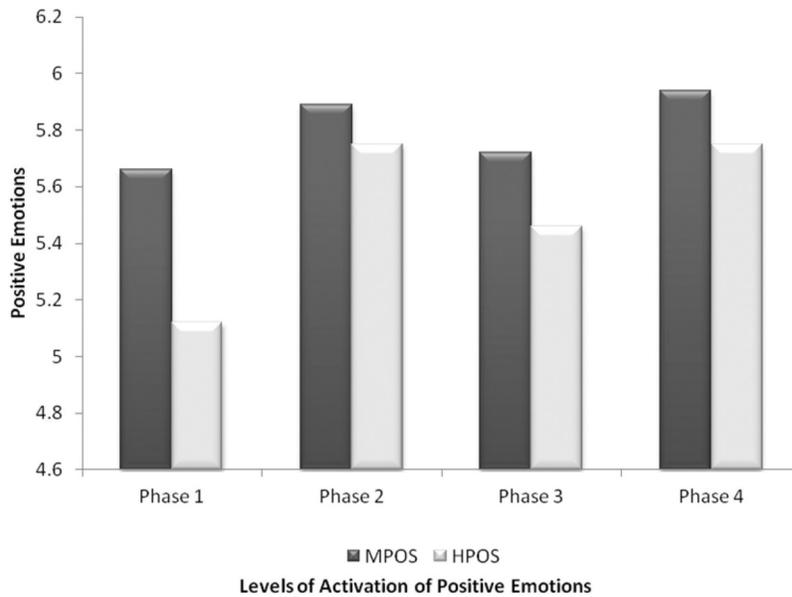


FIGURE 1 Moderate and high levels of activation of positive emotions experienced by passionate artists during their creative process. MPOS = moderate levels of activation of positive emotions; HPOS = high levels of activation of positive emotions.

artists during the creative process and that their impact on creativity can either be positive or negative (Baas, De Breu, and Nijtas, 2011; Botella, Zenasni, & Lubart 2011; Henderson, 2004; Kaufmann, 2003; Larson, 1989; Russ, 1993; Shaw & Runco, 1994). Indeed, negative emotions can sometimes lead to greater creativity but when they are of high levels of activation, they can impair the final creative product. Study 2 had two main objectives: (1)

Replicate results from Study 1 and (2) assess the experience of moderate levels of activation of negative emotions (MNEG) and high levels of activation of negative emotions (HNEG) with passionate artists at each phase of a successful creative process. Hypotheses concerning positive emotions (H1a to H4a) were the same as those proposed in Study 1 except for those involving OP artists and HPOS. Based on results from

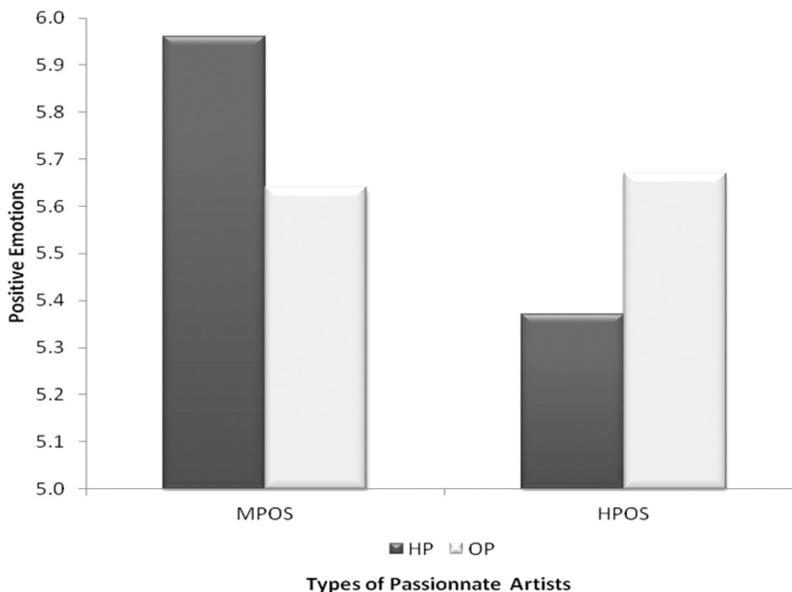


FIGURE 2 Overall differences in moderate and high levels of activation of positive emotions experienced by HP versus OP artists during their creative process. HP = harmoniously passionate artists, OP = obsessively passionate artists, MPOS = moderate levels of activation of positive emotions; HPOS = high levels of activation of positive emotions.

Study 1, it was hypothesized that across phases, OP artists would experience a similar occurrence of MPOS and HPOS, and that no significant difference would be found between HP and OP on the frequency of HPOS experienced.

Five new hypotheses were posited with regards to negative emotions. To begin with, because this research focused on a successful creative process, it was hypothesized that (H1b) across all four phases, negative emotions would not be frequently experienced by passionate artists in comparison to positive emotions. Next, because the creative work of passionate artists is of great importance, is even part of their identity, and because they are highly committed to it, it was hypothesized that (H2b) HNEG would be more recurrent than MNEG in the overall creative process. In regards to each phase of the creative process, it was hypothesized that (H3b) the differences between MNEG and HNEG would be greater in Phase 1, compared to other phases. As revealed by Botella et al. (2011), negative emotions can appear during any phase of the creative process, but it seems that the uncertainty pertaining to finding an idea of creation (Phase 1) would generate HNEG more frequently than MNEG compared to the other phases. As for passion, past research has shown that OP individuals are more likely to experience negative emotions during and after engaging in the passionate activity than HP people (Lafrenière et al., 2008; Mageau & Vallerand, 2007; Mageau et al., 2005; Philippe et al., 2010; Philippe et al., 2009; Vallerand et al., 2003; Vallerand et al., 2006, Vallerand et al., 2008, Vallerand et al., 2010). Therefore, it was hypothesized that:

H4b: across all phases, HP artists would experience MNEG more often than HNEG, whereas OP artists would experience HNEG more frequently than MNEG.

Finally:

H5b: OP artists would experience MNEG as well as HNEG more often than HP artists.

Method

Participants

Participants were 114 French Canadian artists (99 women and 15 men), all different from Study 1, with ages ranging from 18 to 73 years ($M = 38.82$ years, $SD = 12.35$ years). On average, artists had 9.77 years of experience in making art ($SD = 10.33$ years) and were making art for 13.92 hr per week ($SD = 13.0$ hr). In addition, participants reported that in the past year,

they have created on average 29 art pieces ($SD = 56$ art pieces), they have sold on average 6 art pieces ($SD = 26$ art pieces) and they have participated in 1 art show ($SD = 2$ art show). Different types of art were used by artists in our sample, such as scrapbooking (37.7%), painting (35.1%), design (17.5%), photography (4.4%), drawing (2.6%), sculpture (0.9%), and music (1.8%).

Procedure

The procedure used was the same as in Study 1, except that participants were recruited only through Facebook ads and that MNEG and HNEG were included at each phase of the creative process in the online questionnaire.

Measures

Passion for an artistic activity. Passion for an artistic activity was measured again using the Passion Scale (Vallerand et al., 2003). Cronbach's alpha for each subscale were good (α for HP = .83; α for OP = .81; α for passion criteria = .76).

Positive emotions. MPOS and HPOS were the same as in Study 1. Alphas for moderate levels of activation of positive emotions across phases ranged from .86 to .89 and from .74 to .79 for high levels of activation of positive emotions.

Negative emotions. MNEG and HNEG were measured by asking artists to rate how often they felt the emotion, ranging from 1 (*never*) to 7 (*almost always*), for each specific phase. Inspired by Barrett and Russell's measure of affect (1998), MNEG were a combination of 3 items: "feeling troubled," "feeling miserable," and "feeling unhappy" (α for each phase ranged from .67 to .79). HNEG were assessed by grouping the following 3 items: "feeling nervous," "feeling irritable," and "feeling afraid" (α across phases ranged from .72 to .80).

Results

Preliminary Analyses

All participants were passionate artists, as they all had a mean score equal or greater than four on the passion criteria subscale ($M = 5.94$, $SD = .77$). Groups were created using the same method as explained above in Study 1. Missing values on some emotion scales led to the exclusion of 13 participants from further analyses because they filled out less than 3 items. Thus, the total

sample for Study 2 was 101 participants with 57 individuals rated as HP artists and 44 as OP artists.

Preliminary analyses were executed in order to verify statistical assumptions. First, data screening showed no value higher than three standard deviations from the mean. Thus, no univariate outlier was found. Second, no multivariate outlier was identify (Malhanobis distance), $\chi^2(18)=42.31, p < .001$. Third, Log transformations were performed on all positive and negative emotion variables to correct for abnormal distributions (skewness after transformation ranged from .03 to .73). Once again, to make interpretation of results easier, means and standard-deviations are presented without transformation. Harmonious and obsessive passions were distributed normally (skewness for HP = -.60 and OP = .15). Third, homogeneity of variance was inspected using the Levene test and was non significant on all variables. Finally, Mauchly's test was significant ($p < 0.05$), indicating that the assumption of sphericity was violated. Consequently, multivariate tests of significance (Pillai's, Wilks', Hotelling's, and Roy's) were interpreted in the main analyses (Ho, 2006). Note that gender, age, and artistic activities were excluded from the results below since preliminary analyses revealed no effect involving these variables.

Main Analyses

A 2 (HP and OP) × 2 (moderate and high levels of activation) × 2 (positive and negative emotions) × 4 (Phases 1, 2, 3, and 4) mixed-design ANOVA with repeated measures on the last three factors was performed (see Table 2 for means). First, a significant main effect of the Valence of Emotions (positive and negative) across phases supported hypothesis H1b, $F(1, 99) = 14.67, p < .05, \eta^2 = .13$. Overall, negative emotions ($M = 1.87, SD = .71$) were experienced significantly less frequently than positive emotions ($M = 5.73, SD = .80$).

Second, MPOS ($M = 6.01, SD = .74$) were overall experienced more often than HPOS ($M = 5.45,$

$SD = 1.01$) and HNEG ($M = 2.07, SD = .87$) were experienced more frequently than MNEG ($M = 1.66, SD = .65$) across phases, $F(1, 99) = 1.14, p < .001, \eta^2 = .54$. These results replicate Study 1 with positive emotions (H1a) and confirms hypothesis H2b for negative emotions.

Third, in addition to the Valence of Emotions and Levels of Activation main effects, results showed a significant main effect for the variable Phases, $F(3, 97) = 20.21, p < .001, \eta^2 = .39$. These three main effects were superseded by a Valence of Emotions × Phases interaction, $F(3, 97) = 12.83, p < .01, \eta^2 = .12$, and by a Levels of Activation × Phases interaction, $F(3, 97) = 4.33, p < .01, \eta^2 = .12$, respectively. More important, the two preceding two-way interactions were superseded by a significant Valence of Emotions × Levels of Activation × Phases three-way interaction, $F(3, 97) = 2.83, p < .05, \eta^2 = .08$ (see Figure 3). Specifically, for positive emotions, contrasts revealed that differences between MPOS and HPOS were greater in Phase 1 (MPOS: $M = 5.89, SD = .87$; HPOS: $M = 4.98, SD = 1.09$) compared to Phases 2 (MPOS: $M = 6.08, SD = .85$; HPOS: $M = 5.57, SD = 1.11$), 3 (MPOS: $M = 6.01, SD = .86$; HPOS: $M = 5.67, SD = 1.07$), and 4 (MPOS: $M = 6.07, SD = .81$; HPOS: $M = 5.57, SD = 1.11$). Thus, these results from Study 1 were replicated (H2a). Regarding negative emotions, contrasts partially confirmed the third hypothesis (H3b) by revealing that the differences between MNEG and HNEG were greater in Phase 1 (MNEG: $M = 1.79, SD = .76$; HNEG: $M = 2.26, SD = 1.04$) compared to Phase 2 (MNEG: $M = 1.63, SD = .80$; HNEG: $M = 1.95, SD = .94$) and Phase 4 (MNEG: $M = 1.65, SD = .82$; HNEG: $M = 2.01, SD = 1.10$), but not Phase 3. All other contrasts were nonsignificant ($ps > .05$).

Fourth, concerning the Passion variable, results from Study 1 were replicated for positive emotions (H3a and H4a) where HP artists experienced MPOS ($M = 5.96, SD = .93$) more frequently than HPOS ($M = 5.37,$

TABLE 2
Means and Standard-Deviations of Moderate and High Activation of Positive and Negative Emotions During the Four Phases of the Creative Process for HP and OP Artists (Study 2)

Emotions	Phase 1		Phase 2				Phase 3				Phase 4				TOTAL					
	HP		OP		HP		OP		HP		OP		HP		OP		HP		OP	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
MPOS	6.01	.87	5.73	.87	6.18	.86	5.94	.83	6.13	.91	5.87	.77	6.22	.78	5.88	.82	6.14	.75	5.85	.71
HPOS	4.87	1.15	5.14	1.01	5.60	1.16	5.53	1.06	5.66	1.12	5.68	1.02	5.60	1.16	5.53	1.06	5.43	1.06	5.47	.95
MNEG	1.60	.67	2.04	.81	1.40	.70	1.92	.84	1.34	.61	1.86	.81	1.49	.68	1.86	.95	1.46	.55	1.91	.69
HNEG	2.08	1.00	2.51	1.06	1.69	.86	2.28	.96	1.83	.98	2.39	.98	1.76	.94	2.33	1.21	1.84	.80	2.38	.86

Note. MPOS = moderate levels of activation of positive emotions; HPOS = high levels of activation of positive emotions; MNEG = moderate levels of activation of negative emotions; HPOS = high levels of activation of negative emotions; HP = harmoniously passionate artists; OP = obsessively passionate artists.

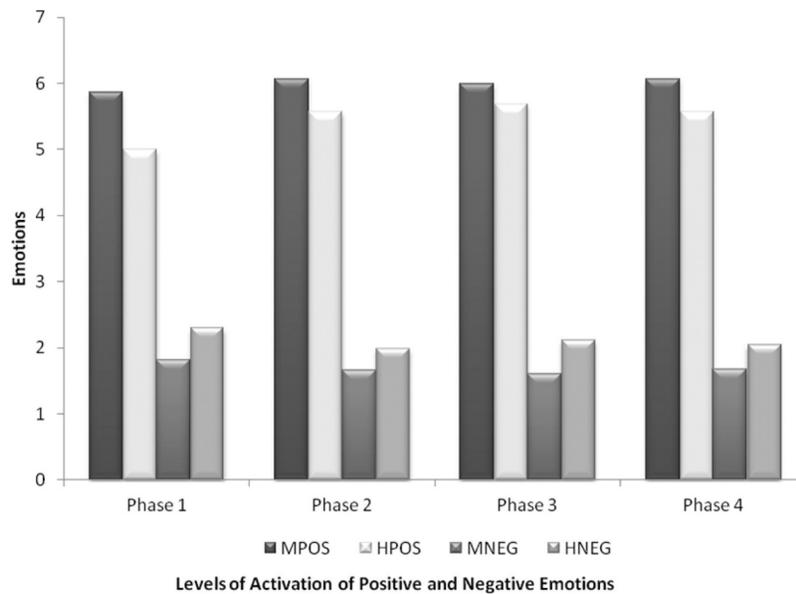


FIGURE 3 Moderate and high levels of activation of positive and negative emotions experienced by passionate artists during their creative process. MPOS = moderate levels of activation of positive emotions; HPOS = high levels activation of positive emotions; MNEG = moderate levels activation of negative emotions; HNEG = high levels activation of negative emotions.

$SD = 1.15$), whereas OP artists experienced a similar frequency of MPOS ($M = 5.64, SD = .80$) and HPOS ($M = 5.66, SD = .88$). Furthermore, HP artists experienced MPOS more frequently ($M = 5.96, SD = .93$) than OP artists ($M = 5.64, SD = .80$). No significant difference was found between HP ($M = 5.43, SD = .13$) and

OP ($M = 5.47, SD = .15$) artists in the frequency of HPOS experienced during the creative process.

Fifth, a marginally significant Passion \times Levels of Activation \times Valence of Emotions three-way interaction, $F(1, 99) = 2.77, p = .10, \eta^2 = .03$ (see Figure 4) was discovered. Note that this significant three-way

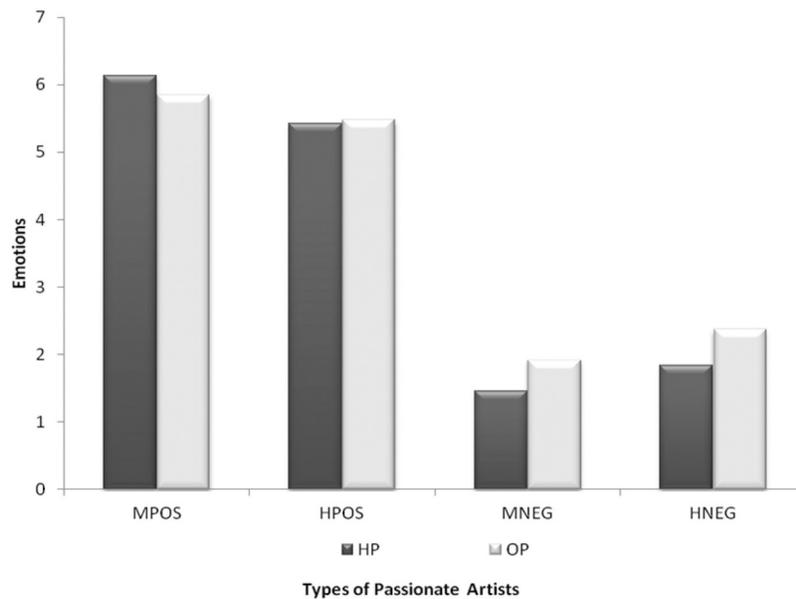


FIGURE 4 Overall differences in moderate and high levels of activation of positive and negative emotions experienced by HP versus OP artists during their creative process. HP = harmoniously passionate artists, OP = obsessively passionate artists, MPOS = moderate levels of activation of positive emotions; HPOS = high levels of activation of positive emotions; MNEG = moderate levels of activation of negative emotions; HNEG = high levels of activation of negative emotions.

interaction superseded the significant Passion \times Levels of Activation interaction, $F(1, 99) = 3.34$, $p < .05$, $\eta^2 = .04$, and the marginally significant Passion \times Valence of Emotions interaction, $F(1, 99) = 3.34$, $p = .07$, $\eta^2 = .03$. Results partially confirmed hypothesis H4b because, across all four phases, both HP and OP artists experienced HNEG more frequently than MNEG (for HP: HNEG $M = 1.84$, $SD = .80$ vs. MNEG $M = 1.45$, $SD = .55$; for OP HNEG $M = 2.38$, $SD = .86$ vs. MNEG $M = 1.91$, $SD = .69$). Moreover, hypothesis H5b was supported from results showing that OP experienced both MNEG and HNEG more frequently than HP (see above means). No other significant effects were uncovered ($ps > .05$).

To summarize, results from Study 2 replicated those from Study 1 regarding positive emotions. Specifically, across phases (H1a), passionate artists experienced MPOS more frequently than HPOS. Moreover, this difference (H2a) was greater in Phase 1 compared to other phases. In regards to passion, results showed that across phases (H3a), HP artists experienced MPOS more often than HPOS, whereas a similar amount of MPOS and HPOS were experienced by OP artists. Finally, H4a artists experienced MPOS more frequently than OP artists, but no difference was found for HPOS. No other significant effects were found.

As for negative emotions, results revealed that regardless of the levels of activation of emotions, (H1b) passionate artists experienced negative emotions less frequently than positive emotions throughout a successful creative process. Additionally, (H2b) passionate artists experienced HNEG more often than MNEG across all phases. Moreover, (H3b) regardless of the type of passion, the difference between MNEG and HNEG was greater in the Preparation Phase (Phase 1) compared to Phases 2 and 4, but not Phase 3. Finally, (H4b) both HP and OP artists experienced HNEG more frequently than MNEG, and (H5b) OP artists experienced MNEG and HNEG more often than HP across phases.

DISCUSSION

This research examined emotions experienced by passionate artists during a successful creative process. Specifically, positive and negative emotions were assessed in four important phases of the creative process of HP and OP artists. Study 1 focused on the frequency of moderate levels of activation of positive emotions (MPOS) and high levels of activation of positive emotions (HPOS) experienced by passionate artists at each phase of their creative process. Study 2 sought to replicate results from Study 1 for positive emotions and also assessed moderate levels of activation of negative

emotions (MNEG) and high levels of activation of negative emotions (HNEG). In sum, results uncovered that across phases, passionate artists experienced MPOS more frequently than HPOS. This difference was significantly greater in the Preparation phase (Phase 1). Moreover, HP artists experienced MPOS more often than HPOS across phases and they experienced MPOS more frequently than OP artists. As for negative emotions, results showed that they were experienced less often than positive emotions throughout the creative process. However, HNEG were experienced more frequently than MNEG across phases and this was the case for both HP and OP artists. This difference was more prominent in Phase 1. Finally, OP artists experienced negative emotions, both MNEG and HNEG, more frequently than HP artists across phases. These results lead to important implications for creativity and for passion.

The Role of Emotions during the Creative Process

A first implication deals with the role of positive emotions in creativity. Past research focused mainly on the impact of emotions on the creative product. This research sheds light on the emotional experience of artists during a successful creative process and our results uncovered that positive emotions seem to be conducive to creativity and that MPOS and HPOS would serve different functions throughout the creative process.

Previous research underscored the facilitative role of positive emotions in creativity because they increase cognitive flexibility (Amabile 1996; Baas et al., 2008; Fredrickson, 2001, Fredrickson & Branigan, 2003; Hirt et al., 2008; Isen et al., 1987; Kaufman, 2003; Lubart & Getz, 1997). However, these findings suggest that it may be important to make a distinction between positive emotions of moderate and high levels of activation. Although positive emotions of lower levels of activation have been found to lead to the opening-up effect, past research has shown that high levels of activation of emotions reduce the capacity to perceive, process, and evaluate information (De Breu et al, 2008). Instead, it has been posited that such emotions serve to provide energy to facilitate one's progression in the activity throughout the whole process (e.g., Carver, 2001, 2006; Carver & Scheier, 2008; Russell, 2003). Thus, it seems that MPOS would have a function of increasing cognitive flexibility during the creative process, whereas HPOS would provide artists with energy to persist throughout the creative process, until completion of the artwork.

Moreover, MPOS would appear important across all phases, but especially during the first phase where artists are searching for the creative idea by collecting relevant information and resources for the art project. During this phase, they need to open up to have access to their

complete cognitive repertoire and MPOS seem to enhance this process. Also, at this point (first phase), HPOS are less useful compared to subsequent phases. When artists have found their creative idea, HPOS become more important and coexist with those of moderate level of activation. Previous research revealed that HPOS help individuals to get into action and attain their goals (Carver, 2001, 2006; Carver & Scheier, 2008; Russell, 2003). HPOS are thus important because they ensure that high levels of energy are mobilized, allowing one to move through all phases of the creative process (including completion) while letting creative ideas emerge. In short, it seems that MPOS help artists to stay focus on the task and gain more cognitive flexibility in order to develop a creative idea, whereas HPOS give them energy to persist throughout the creative process until the artwork is completed.

A second implication is that negative emotions are not highly involved in a successful creative process. In fact, negative emotions, both MNEG and HNEG, were found to be of low frequency and, thus, were relatively absent of the successful creative process. These findings are in line with the literature on the role of negative emotions in creativity showing that they, especially those of high activation level, can impair the creative performance (Baas et al., 2008). Thus, it seems that negative emotions have to be relatively nonexistent to excel creatively. However, even if negative emotions were not very much involved during a successful creative process, results showed that across phases, HNEG were experienced more often by passionate artists than MNEG and that this difference was even more significant in the first phase (before the creative idea is found). Passionate individuals love their activity, they invest a significant amount of time in it, the activity is very important to them, and it even becomes a part of who they are (DMP; Vallerand, 2008, 2010; Vallerand et al., 2003). Given the place that the passionate activity takes in one's life, when passionate artists experience negative emotions, they are more inclined to be of high levels of activation than moderate, especially when artists are in a phase of uncertainty (Phase 1) that is, before the creative idea emerges.

In sum, this discussion suggests that both the valence and the levels of activation of emotions are important to consider in creativity. It seems that although positive emotions of moderate levels of activation play a key role in opening up the cognitive repertoire, positive emotions with higher levels of arousal should especially serve the purpose of helping artists sustain the energy required to go through the creativity process from beginning to end. On the other hand, negative emotions and especially those with higher levels of activation should prove disruptive and not much involved in a successful creative process. An interesting avenue for future research would

be to look at the role of emotions during an unsuccessful creative process.

The Role of Passion during the Creative Process

A third conclusion of this research pertains to the implication of the DMP in creativity (Vallerand, 2008, 2010; Vallerand et al., 2003). These findings suggest that HP artists have an emotional experience that is more positive than OP artists during a successful creative process. Indeed, our results showed that across phases, HP artists experienced positive emotions, especially those of moderate activation, more frequently than OP artists and that OP artists experienced negative emotions more often than HP artists. Our results provide additional evidence in regards to differences in the emotional experience of HP and OP individuals and they are in line with past research on passion and emotions where it has been shown that harmonious passion is more conducive to positive emotions during and after engaging in the passionate activity than obsessive passion (Lafrenière et al. 2008; Mageau & Vallerand, 2007; Mageau et al., 2005; Philippe et al., 2010; Philippe et al., 2009; Vallerand et al., 2003; 2006; Vallerand et al., 2008; Vallerand et al., 2010). Although positive emotions provide greater cognitive flexibility and energy, leading to more creativity and persistence in the creative process, respectively, the frequent experience of negative emotions, especially those of high activation, are particularly toxic for the creative process and can impair creativity (Baas et al., 2008). Thus, it would appear that OP artists may experience lower levels of creativity than HP artists through the high levels of activation of negative emotions that are engendered. Clearly, future research is needed to determine the relative role of positive and negative emotions and how passion influences the two types of emotions during an unsuccessful creative process.

Limitations

Our research could be improved in several ways. First, a correlational design was used in both studies where participants were asked to recall a significant artwork that they completed to assess their emotional experience at each phase of their creative process. Thus, our results do not permit any causal inferences. Future research using an experimental design is needed to establish causality. Second, only self-report measures were used and, thus, future research would benefit in using more objective measures, such as physiological measure for emotions or informant reports. Experience sampling would also be a great tool because it does not rely on recall of memories. Finally, this research did not include outcomes relevant to the experience of emotions during

the creative process. Future research could integrate creative achievement, creative performance, as well as well-being measures to test the impact of positive and negative emotions of different levels of activation at each phase of the creative process on these outcomes.

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