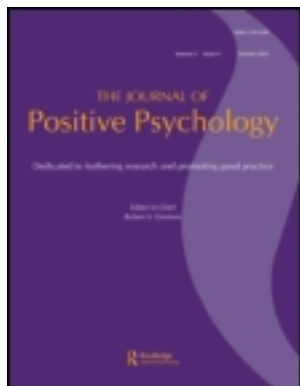


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Is the practice of yoga associated with positive outcomes? The role of passion

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Is the practice of yoga associated with positive outcomes? The role of passion

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Using the dualistic model of passion [Vallerand, R.J., Blanchard, C.M., Mageau, G.A., Koestner, R., Ratelle, C.F., Léonard, M., . . . Marsolais, J. (2003). Les passions de l'âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, 85, 756–767], this research represents an initial attempt to examine whether an activity that is generally recognized to have widespread benefits, namely yoga, can still relate differently to outcomes as a function of the type of activity involvement (i.e., passion). Vallerand et al. (2003) distinguish two types of passion: harmonious passion, characterized by a volitional engagement in a beloved activity, and obsessive passion, which entails an uncontrollable urge to partake in the activity. Study 1 ($n = 75$) revealed that harmonious passion for yoga was more positively associated with positive psychological outcomes than obsessive passion. In Study 2 ($n = 89$), these findings were replicated and extended using a 3-month prospective design. Although preliminary, the results of this research suggest that the type of passion one has for a 'positive' activity makes a difference for one's psychological and physical well-being.

Keywords: passion; yoga; emotions; state anxiety; physical symptoms

Introduction

Certain activities would appear to consistently lead to positive outcomes. Exercising and engaging in sports represent such activities. Indeed, engagement in such activities would appear to be conducive to very adaptive physical and psychological outcomes. However, recent research has shown that the type of engagement also matters as a form of over engagement (i.e., obsessive passion) can lead to negative physical outcomes, such as injuries in activities like dancing and exercising (Rip, Fortin, & Vallerand, 2006; Stephan, Deroche, Brewer, Caudroit, & Le Scannff, 2009). In this research, we address this issue by assessing the role of passion in psychological and health outcomes experienced through engagement in an activity generally accepted as being highly positive, namely yoga. Does the type of involvement make a difference or do the benefits invariably come about as long as people engage in that type of activity? The purpose of this research was to investigate these questions using Vallerand et al.'s (2003) model of passion.

A dualistic model of passion

On two types of passion

Vallerand and Colleagues (2003) and Vallerand (2008, 2010) define passion as a strong inclination or desire

toward a self-defining activity that one likes (or loves), finds important, and in which one invests time and energy. Two types of passion are distinguished: harmonious and obsessive passions. It is posited that activities can be internalized in one's identity by two different processes, each of them leading to a specific type of passion. Harmonious passion results from an autonomous internalization (Deci & Ryan, 2000; Vallerand, 1997) of the activity into one's identity. Such internalization comes from an intrinsic tendency of the self (Deci & Ryan, 1985, 2000; Ryan & Deci, 2003) and produces a motivational force that leads one to engage in his/her activity willingly (Vallerand, 1997; Vallerand, Fortier, & Guay, 1997). Thus, individuals who have a harmonious passion toward an activity do not feel an uncontrollable urge to engage in their passionate activity, but rather, freely choose to do so. No contingencies are attached to the passionate activity such that activity engagement is personally endorsed. When it comes to harmonious passion, behavioral engagement is flexible and thus, people are able to decide when to and when not to engage in their activity. Individuals with this type of passion can thus fully concentrate on the task at hand and experience positive outcomes both during and after activity engagement. Moreover, when prevented from taking part in their passionate activity, they should be able to focus their attention and energy on other tasks,

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without constantly thinking about their passionate activity.

Obsessive passion derives from a controlled internalization (Deci & Ryan, 2000) of the activity into one's identity. This type of internalization originates from intra and/or interpersonal pressure either because certain contingencies (e.g., self-worth) are attached to the activity or because the sense of excitement derived from activity engagement has become uncontrollable. People who have an obsessive passion are controlled by their activity, as if they could not help but to engage in it. Because the activity becomes out of one's control, it can take disproportionate space in a person's life and lead one to neglect other areas of his/her life, thereby resulting in conflict in one's life. Thus, even though individuals with an obsessive passion may derive pleasure from their involvement in the passionate activity, they are also at risk of experiencing negative cognitive, affective, and behavioral consequences.

Research has provided empirical support for several aspects of the passion conceptualization (see Vallerand, 2008, 2010, for reviews). First, results from exploratory and confirmatory factor analyses with the Passion Scale (Vallerand et al., 2003, Study 1; Vallerand, Rousseau, Grouzet, Dumais, & Grenier, 2006, Study 1) supported the existence of two constructs, corresponding to harmonious and obsessive passions. Second, partial correlations (controlling for the correlation between the two types of passion) revealed that both harmonious and obsessive passions were positively associated with measures of activity valuation and measures of the activity being perceived as a passion, thereby providing support for the definition of passion. Finally, empirical evidence has also shown that the two types of passion differently predict various outcomes. More specifically, harmonious passion has been associated with greater positive emotions both during and after engagement in the passionate activity (Vallerand et al., 2003, Study 1; Vallerand et al., 2006, Studies 2 and 3), better concentration, absorption, and flow during activity engagement (Forest, Mageau, Sarrazin, & Morin, in press; Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Vallerand et al., 2003, Study 1), as well as subjective well-being (Philippe, Vallerand, & Lavigne, 2009; Rousseau & Vallerand, 2003, 2008; Vallerand et al., 2007, Studies 1 and 2; Vallerand et al., 2008, Study 2). Additionally, harmonious passion has been negatively associated with negative emotions (Lafrenière, Vallerand, Donahue, & Lavigne, 2009; Mageau et al., 2005; Philippe, Vallerand, Houffort, Lavigne, & Donahue, 2010; Vallerand et al., 2003, Study 1), and with conflict with other activities (Séguin-Levesque, Laliberté, Pelletier, Blanchard, & Vallerand, 2003; Vallerand et al., 2003, Study 1).

Conversely, obsessive passion has been positively related to negative emotions (Mageau et al., 2005;

Vallerand et al., 2003, Study 1), poor concentration (Vallerand et al., 2003, Study 1), increased rumination with the activity (Ratelle, Vallerand, Mageau, Rousseau, & Provencher, 2004; Vallerand et al., 2003, Study 1), and a rigid task engagement (Rip et al., 2006; Vallerand et al., 2003, Studies 3 and 4) that can lead to physical symptoms (Lafrenière et al., 2009) and injuries (Rip et al., 2006; Stephan et al., 2009) and even pathological gambling (Ratelle et al., 2004; Rousseau, Vallerand, Ratelle, Mageau, & Provencher, 2002). Finally, when prevented from engaging in the passionate activity, obsessive passion has been associated with rumination and negative affect (Ratelle et al., 2004; Vallerand et al., 2003, Study 1).

Finally, because passion is so intrinsically tied with people's lives, research by our research group and others has been conducted in a number of real-life contexts, including work (Forest et al., in press; Vallerand & Houffort, 2003), education (Carbonneau, Vallerand, Fernet, & Guay, 2008), sports (Philippe et al., 2010; Stephan et al., 2009; Vallerand et al., 2006), leisure (Stenseng, 2008), the Internet (Tosun & Lajunen, 2009), gaming (Wang & Chu, 2007), online shopping addiction (Wang & Yang, 2007), gambling (Castelda, Mattson, MacKillop, Anderson, & Donovan, 2007; MacKillop, Anderson, Castelda, Mattson, & Donovan, 2006), and others looking at a variety of activities, settings, participants, and outcomes.

Construct specificity

The constructs of harmonious and obsessive passions display a high level of construct specificity. First, because passion is seen as an interface between the individual and a specific activity, passion should show only low relationships to broad personality constructs, such as those of the Big 5 (Costa & McCrae, 1992). Research supports this assumption. For instance, in a study with 203 university students (Vallerand & Philippe, 2010), it was found that extraversion and conscientiousness were unrelated to both types of passion. While neuroticism was positively ($r=0.26$) and negatively ($r=-0.28$) related to obsessive and harmonious passions, respectively, these correlations were rather low. Finally, openness to experience correlated significantly with harmonious passion ($r=0.19$) but not with obsessive passion, while agreeableness correlated negatively ($r=-0.23$) with obsessive passion but not with harmonious passion. Other research on passion and the Big 5 (Balon, Lecoq, & Rimé, 2010) also obtained similar results. Finally, it was found that the relationships between passion and outcomes were upheld while controlling for extraversion (Philippe et al., 2010, Study 2).

Passion can also be seen as different from other broad individual difference constructs. For instance, the construct of 'grit' (Duckworth, Peterson, Matthews, & Kelly, 2007) is defined as perseverance and passion for long-term goals. Thus, grit implies that passion always leads to persistence. However, as past research has shown, there are conditions under which passion may not lead to persistence. This is especially the case for harmonious passion when persistence is not conducive to adaptive outcomes (Vallerand et al., 2003, Studies 3 and 4). Thus, the constructs of passion and grit are not equivalent. Other research on the relationship between passion and other constructs has established the relative independence of the passion construct. For instance, both types of passion were unrelated to social desirability and to the construct of obsessivity–compulsivity (Vallerand & Philippe, 2010). On the other hand, the construct of self-control (Tangney, Baumeister, & Boone, 2004) was found to be negatively correlated with obsessive passion ($r = -0.25$) but unrelated to harmonious passion ($r = -0.08$).

The concept of passion also shows construct specificity at the contextual level of generality (i.e., as pertains to a specific activity as performed in general; see Vallerand, 1997). For instance, work commitment (Meyer & Allen, 1997) pertains to one's attachment to one's job performed in a given organization. As such, one could be attached to one's work without loving it (as one may love the organization, but not the work itself). Thus, the relationship between passion and commitment should be moderate at best. Research supports this analysis. In a study in the work domain, Houliort et al. (2010, Study 1) showed that harmonious and obsessive passions for work were unrelated to continuance commitment (being committed because one has no other alternatives but this particular work), weakly related (r 's = 0.20 and 0.23, respectively) with normative commitment (being committed because the norms are to be involved in this type of work), and moderately related to affective commitment (or the attachment to the organization; r 's = 0.51 and 0.22, respectively). Furthermore, Houliort et al. also showed that the constructs of work compulsivity, work excessivity, and overwork (Taris, Schaufeli, & Verhoeven, 2005) are unrelated to harmonious passion but only moderately so to obsessive passion for work (r 's from 0.25 to 0.43).

Although related to a degree, passion and intrinsic motivation are also conceptually different. Indeed, while both constructs involve a love for the activity, intrinsically motivated activities are typically not seen as being internalized in the person's identity (Deci & Ryan, 1985) and are best seen as emerging from the person–task interaction at the short-term level (Koestner & Losier, 2002). On the other hand, internalization of the passionate activity in identity is a defining characteristic of passion. Furthermore,

extrinsic motivation (even those forms that are more self-determined in nature, such as identified regulation) does not entail performing the activity out of enjoyment, but rather for external reasons (e.g., because of external or internal pressure). A fundamental difference between extrinsic motivation and passion is thus the lack of liking for the activity. The distinction between passion and intrinsic and extrinsic motivation has been supported by research (Vallerand et al., 2003, Study 2) revealing that the relationship between the two types of passion and outcomes (i.e., positive and negative affect, behavioral intentions) is independent of intrinsic and extrinsic motivation. Furthermore, Mageau et al. (2009) found that expert and novice music students who were passionate about music had equally high levels of intrinsic motivation (love for the activity), although the experts were significantly more passionate than the novices. The main differences between the two groups were on the other components of passion, where the experts had higher levels of value and activity involvement in music.

Passion also has some ties with the concept of flow, affect, and vitality. These three concepts can be seen as consequences of passion. Indeed, one's type of involvement in the activity (i.e., harmonious *vs.* obsessive passion) should lead one to experience flow, affect, and vitality to different degrees, with harmonious passion leading to more flow, positive affect, and vitality than obsessive passion. Research empirically supports this assumption with flow (Forest et al., in press; Lavigne, Forest, & Crevier-Braud, 2010; Vallerand et al., 2003, Study 1). Similarly, harmonious passion is typically positively associated with positive affect and obsessive passion with negative affect (Philippe et al., 2010; Vallerand et al., 2003, Study 1; Vallerand et al., 2006, Studies 2 and 3). It should also be underscored that emotion has been found to serve as a mediator of the relationship between passion and outcomes, such as psychological well-being (Rousseau & Vallerand, 2008) and quality of relationships (Philippe et al., 2010). Finally, harmonious passion has been found to be positively associated with vitality, while obsessive passion has shown no relationship (Rousseau & Vallerand, 2003).

This research

As seen above, much support already exists for the dualistic model of passion pertaining to both construct specificity and construct validity. More importantly, the model would appear to represent a useful framework to examine the question posed in the Introduction, that is whether an activity that is assumed to have widespread benefits can still be associated with more or less positive outcomes as a function of one's type of involvement in it. Let us take

the case of yoga. Yoga is a discipline that focuses on the development and maintenance of the natural balance between mind, body, and soul. The benefits of yoga have been known for centuries and are being increasingly corroborated by scientific research. Notably, research reveals that yoga practice can enhance muscular strength and body flexibility, promote respiratory and cardiovascular function, and enhance psychological well-being (Collins, 1998). The practice of yoga has also been shown to diminish anxiety (Gupta, Khera, Vempati, Sharma, & Bijlani, 2006; Michalsen et al., 2005) as well as to increase positive affect and decrease negative affect (Impett, Daubenmier, & Hirschman, 2006; Raghavendra et al., 2009). But what if someone was obsessively passionate about yoga? That is, what if someone constantly thinks about yoga and comes to derive his/her sense of self-worth from the yoga practice? What if obsessive passion for yoga leads people to push themselves to the point where they end up trying to execute dangerous yoga postures that are out of their range of physical ability? Would such involvement prevent people from experiencing the psychological and physical benefits yoga has to offer? This research specifically aimed at examining these questions.

The main purpose of this research was to examine, in two studies, whether harmonious and obsessive passions for yoga might be differentially associated with psychological and physical outcomes. Specifically, this study is aimed at testing whether obsessive passion for yoga is associated with less positive outcomes than harmonious passion for this activity. One can wonder whether individuals could really be obsessively passionate about such a relaxing and anti-stress activity as yoga. However, a look at websites promoting yoga competitions (which, for many, would appear in contradiction with some very core ideals of yoga – selflessness and humility, for example) and yoga boot camps where ‘you are going to see and feel results immediately’ (Wowk, 2008) suggests that at least for some individuals, yoga may have become an obsessive passion. In Study 1, using a cross-sectional design, we assessed the relationships between the two types of passion and both positive and negative emotions when engaged in yoga. Study 2 aimed at further testing the relationships between passion and outcomes, while using a 3-month prospective design and including physical symptoms (Berne, 1995) as an additional outcome. Overall, it was expected that harmonious passion would be associated with more adaptive outcomes than obsessive passion.

Study 1

The purpose of Study 1 was to examine how harmonious and obsessive passions toward yoga relate to

psychological outcomes. In line with previous research (Lafrenière et al., 2009; Mageau & Vallerand, 2007; Philippe et al., 2010; Rousseau & Vallerand, 2008; Vallerand et al., 2003, Study 1), harmonious passion for yoga was expected to have more adaptive relationships with the three outcomes than obsessive passion for yoga. Specifically, harmonious passion was expected to be positively related to positive emotions and negatively related to both negative emotions and state anxiety, and these correlations were expected to be significantly stronger than those between obsessive passion for yoga and the same outcomes.

Method

Participants and procedure

Participants were 75 French-Canadian citizens (58 females and 17 males) reporting practicing yoga regularly; age ranged from 19 to 60 years ($M = 34.32$ years, standard deviation (SD) = 10.48 years). Participants were recruited through advertisements displayed in yoga schools in the Montreal city area. Participants who were interested in taking part in the study were invited to go to a website that contained the questionnaire. All measures were completed via the Internet. Participants reported engaging in yoga for an average of 5.77 h (SD = 8.24 h) per week. In average, they had been practicing yoga for 5.14 years (SD = 6.69 years).

Instruments

Demographic variables. Participants completed a demographic information section that included questions on gender, age, and mother tongue as well as questions on their yoga involvement (e.g., the number of weekly hours spent practicing yoga).

Passion for yoga. The Passion Scale (Vallerand et al., 2003) was used to assess passion for yoga. This scale is composed of two six-item subscales assessing harmonious and obsessive passions toward an activity (here yoga). A sample item for harmonious passion is: ‘Doing yoga is in harmony with the other activities in my life’; and for obsessive passion: ‘I have almost an obsessive feeling for yoga’. Past research has repeatedly supported the bi-factorial structure of the Passion Scale (Vallerand, 2008, 2010; Vallerand et al., 2003). In this study, the Cronbach alpha values for the harmonious and obsessive passion subscales were respectively 0.75 and 0.85. Responses to all items were scored on a 7-point Likert scale, ranging from (1) ‘Do not agree at all’ to (7) ‘Very strongly agree’.

Table 1. Means and standard deviations for each subscale in Studies 1 and 2.

Subscales	Study 1		Study 2			
	M	SD	Time 1		Time 2	
			M	SD	M	SD
Harmonious passion	5.80	0.77	5.31	0.95	–	–
Obsessive passion	2.26	1.23	1.99	1.08	–	–
Positive emotions	3.81	0.64	5.13	0.98	5.12	0.96
Negative emotions	1.24	0.31	1.40	0.72	1.39	0.56
State anxiety	1.29	0.29	2.85	0.34	2.85	0.32
Physical symptoms	–	–	2.61	0.98	2.73	0.98

Notes: Means and SDs come from Likert type scales ranging from 1 (*Do not agree at all*) to 7 (*Very strongly agree*) for harmonious and obsessive passions (Studies 1 and 2) as well as for positive and negative emotions (Study 2); ranging from 1 (*Very slightly*) to 5 (*Extremely*) for positive and negative emotions (Study 1); ranging from 1 (*Not at all*) to 4 (*Very much so*) for state anxiety (Studies 1 and 2); and ranging from 1 (*Never*) to 7 (*Almost always*) for physical symptoms (Study 2).

Positive and negative emotions. Positive and negative emotions were assessed using respectively five and seven items from the Positive and Negative Affect Scales (PANAS; Watson, Clark, & Tellegen, 1988) relevant to the yoga practice. A sample item for positive emotions is: '(In general, when I am doing yoga, I feel. . .) determined'. A sample item for negative emotions is: '(In general, when I am doing yoga, I feel. . .) irritated'. All items were measured on a 7-point Likert scale, ranging from (1) 'Very slightly' to (5) 'Extremely'. The Cronbach alpha values for positive and negative emotions were respectively 0.79 and 0.76.

State anxiety. State anxiety was assessed using 12 items from the state scale of the State-Trait Anxiety Inventory (STAI-Y1; Spielberger, 1983). A sample item is: '(In general, when I am doing yoga. . .) I worry over possible misfortunes'. The items were measured on a 4-point Likert scale, ranging from (1) 'Not at all' to (4) 'Very much so'. The Cronbach alpha value was 0.79.

Results

Preliminary analyses

Means and SDs of the different variables are given in Table 1. Because the two types of passion were marginally correlated with one another ($r=0.22$, $p=0.054$), partial correlations were conducted to control for the common variance between the two types of passion. For correlations involving obsessive passion, the number of hours of yoga practice per week was also controlled for because this variable was marginally associated with obsessive passion. Similarly, because both participants' age ($r=-0.22$, $p=0.056$) and number of years of involvement in yoga

Table 2. Results of partial correlations between the two types of passion for yoga and psychological outcomes: Study 1.

	Harmonious passion (controlling for obsessive passion)	Obsessive passion ^a (controlling for harmonious passion)
Positive emotions	0.38**	0.09
Negative emotions ^b	-0.29*	0.03
State anxiety	-0.44***	0.12

Notes: ^aFor correlations involving obsessive passion, the number of hours of yoga practice per week was also controlled for.

^bFor correlations involving negative emotions, participants' age and the number of years of involvement in yoga were also controlled for.

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, and $n = 75$.

($r = -0.23$, $p = 0.045$) were at least marginally associated with negative emotions, these two variables were controlled for in analyses involving negative emotions.

Relationships between the two types of passion and psychological well-being

As shown in Table 2, the results demonstrated that controlling for obsessive passion, harmonious passion was positively related to positive emotions (partial $r = 0.38$, $p = 0.001$) and negatively related to state anxiety (partial $r = -0.44$, $p = 0.000$). In addition, controlling for obsessive passion, participants' age and number of years of involvement in yoga, harmonious passion was negatively related to negative emotions (partial $r = -0.29$, $p = 0.013$). Conversely, controlling for harmonious passion and the number of hours of yoga practice per week, obsessive passion was

not significantly related to any of these variables. We also verified whether gender affected the results by running all analyses again while controlling for this variable. The pattern of results remained unchanged. Finally, we calculated whether the correlations between each type of passion and the outcomes were significantly different from one another (see Chen & Popovich, 2002, for procedures). The correlations between harmonious passion and each outcome were all significantly stronger than those between obsessive passion and the same outcomes, all p 's < 0.001.

Discussion

The results of Study 1 provided initial support for the hypotheses. As posited, the higher the harmonious passion toward yoga, the more likely participants were to experience benefits from their yoga involvement. Specifically, results from partial correlations (controlling for obsessive passion) revealed that harmonious passion was positively related to adaptive outcomes (i.e., positive emotions) as well as negatively related to less desirable outcomes (i.e., negative emotions and state anxiety). Results further revealed that controlling for harmonious passion, obsessive passion was not significantly related to these three outcomes. Overall, results suggest that the practice of yoga is accompanied by the experience of psychological well-being but only to the extent that involvement is fueled by harmonious passion.

Study 2

The purpose of Study 2 was threefold. First, this study aimed at replicating the results of Study 1 using a 3-month prospective design. Using such a design would allow us to look at changes in outcomes derived from yoga involvement. A second purpose of Study 2 was to investigate how the two types of passion toward yoga would relate to a negative indicator of physical well-being, namely physical symptoms. A third and final purpose was to generalize research to the Canadian population and not simply to Montreal residents. In line with Study 1 and with previous research (Rip et al., 2006; Rousseau & Vallerand, 2008; Stephan et al., 2009; Vallerand et al., 2007, Studies 1 and 2; Vallerand et al., 2008, Study 2), we hypothesized that harmonious passion toward yoga would be associated with greater psychological and physical benefits than obsessive passion for this activity. Specifically, we hypothesized that harmonious passion would predict increases in positive emotions and decreases in negative emotions, state anxiety, and physical symptoms. On the other hand, we expected obsessive passion to either predict changes in the opposite direction than

harmonious passion or to not significantly predict changes in outcomes.

Method

Participants

Participants were 89 Canadians (77 females and 12 males) practicing yoga; age ranged from 18 to 62 years ($M = 35.57$ years, $SD = 10.40$ years). Most participants (95.5%) had English as their first language and most of them (83.1%) were Caucasians. They were currently living in Ontario (53.4%), British-Columbia (15.9%), Alberta (11.4%), Quebec (6.8%), or in another Canadian province (12.5%). Participants reported engaging in yoga for an average of 4.71 h ($SD = 2.79$ h) per week. In average, they had been practicing yoga for 6.21 years ($SD = 7.56$ years). A total of 220 participants completed the first questionnaire, accepted to be contacted again for the follow-up study, and provided a valid email address. These participants were contacted by email 3 months later and 41% ($n = 89$) of them completed the follow-up questionnaire.

Procedure

Participants were recruited through an advertisement targeting Canadians fond of yoga on the Facebook website. People who were interested in participating in the study were directed to an online survey website that contained the questionnaire. All measures were completed via the Internet. Participants who were interested in taking part in a follow-up study were invited to provide their email address. These participants were contacted again 3 months later and were directed to an online survey website containing the follow-up questionnaire. The same outcomes contained in the Time 1 questionnaire (i.e., positive and negative emotions, state anxiety, and physical symptoms) were found in the Time 2 questionnaire.

Instruments

Demographic variables. At Time 1, participants completed a demographic information section that included questions on gender, age, and mother tongue as well as questions on their activity (e.g., the number of weekly hours they spent doing yoga).

Passion for yoga. The Passion Scale (Vallerand et al., 2003) used in Study 1 was used again in Study 2 to assess passion for yoga. The alpha values for harmonious and obsessive passions were 0.81 and 0.82, respectively.

Positive and negative emotions. Positive and negative emotions were assessed using the same items from the PANAS (Watson et al., 1988) that were used in Study 1. Responses were scored using a 7-point Likert scale, ranging from (1) 'Not agree at all' to (7) 'Very strongly agree'. The Cronbach alpha values for positive emotions were 0.77 and 0.81 at Times 1 and 2, respectively. For negative emotions, the Cronbach alpha values were 0.89 and 0.85 at Times 1 and 2, respectively.

State anxiety. State anxiety was assessed using the same 12 items from the state scale of the STAI-Y1 (Spielberger, 1983) that were used in Study 1. The Cronbach alpha values were 0.80 and 0.76, at Times 1 and 2, respectively.

Physical symptoms. Physical symptoms were assessed using a symptom checklist composed of 7 items adapted from an instrument developed by Berne (1995). Participants were asked how often they had experienced certain symptoms (e.g., headaches, dizziness, and sleep disorders) over the past month using a 7-point Likert scale, ranging from (1) 'Never' to (7) 'Almost always'. The Cronbach alpha values were 0.80 and 0.77 at Times 1 and 2, respectively.

Results

Preliminary analyses

Analyses revealed no significant differences between participants who completed both the Time 1 and

Time 2 questionnaires and those who only completed the Time 1 questionnaire on harmonious passion ($F[1, 219]=0.12$, $p=0.73$), negative emotions ($F[1, 219]=0.51$, $p=0.48$), state anxiety ($F[1, 219]=0.24$, $p=0.63$), physical symptoms ($F[1, 219]=1.27$, $p=0.26$), number of hours of yoga practice per week ($F[1, 219]=1.68$, $p=0.20$), and number of years of involvement in yoga ($F[1, 219]=0.16$, $p=0.69$), as well as gender ($F[1, 219]=1.24$, $p=0.27$) and age ($F[1, 219]=2.58$, $p=0.11$) of participants at Time 1. However, participants who completed both the Time 1 and Time 2 questionnaires had lower levels of obsessive passion for yoga ($M=1.99$), $F(1, 219)=9.02$, $p=0.00$, and reported experiencing less positive emotions ($M=5.13$) during yoga at Time 1, $F(1, 219)=5.39$, $p=0.02$, than participants who completed only the Time 1 questionnaire ($M=2.47$ and $M=5.44$, respectively).

Structural equation modeling analyses

The means and SDs of all study variables are given in Table 1 while their correlations are given in Table 3. We performed all structural equation modeling analyses on a raw data file using maximum likelihood estimation procedure (EQS version 6.1; Bentler, 1993). The model tested in this study was composed of nine exogenous variables (i.e., number of years of involvement in yoga, number of weekly hours spent doing yoga, age of participants, harmonious passion, obsessive passion, positive emotions, negative emotions, state anxiety, and physical symptoms at Time 1) and four endogenous variables (i.e., positive emotions,

Table 3. Correlations of the model variables: Study 2.

	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)
Number of years (1)	0.08	0.35**	-0.15	-0.15	-0.22*	0.07	0.14	0.14	-0.25*	0.09	0.15	0.12
Hours/week (2)		0.14	0.29**	0.39***	0.02	0.07	0.01	-0.20	0.08	0.08	-0.03	-0.12
Age (3)			-0.11	-0.13	-0.25*	-0.12	-0.00	-0.06	-0.27	-0.03	0.10	-0.05
Harmonious passion (4)				0.24*	0.45***	-0.00	-0.31**	-0.23*	0.49***	-0.11	-0.40***	-0.31**
Obsessive passion (5)					0.35**	0.10	-0.04	-0.04	0.30**	0.19	-0.01	-0.03
Positive emotions Time 1 (6)						0.15	-0.41***	-0.19	0.76***	0.09	-0.29**	-0.14
Negative emotions Time 1 (7)							0.51***	-0.00	0.00	0.79***	0.50***	-0.02
State anxiety Time 1 (8)								0.06	-0.44***	0.52***	0.74***	0.12
Physical symptoms Time 1 (9)									-0.28**	0.09	0.11	0.69***
Positive emotions Time 2 (10)										0.03	-0.43***	-0.20
Negative emotions Time 2 (11)											0.58***	0.15
State anxiety Time 2 (12)												0.19
Physical symptoms Time 2 (13)												

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$, and $n = 89$.

Table 4. Goodness-of-fit indices of the models: Study 2.

Model	χ^2	df	NFI	NNFI	CFI	GFI	SRMR	RMSEA	AIC
1	44.36	18	0.92	0.75	0.94	0.94	0.04	0.13 (0.08–0.18)	8.36
2	44.47	34	0.92	0.95	0.98	0.94	0.04	0.06 (0.00–0.10)	–23.54

Notes: NFI=normed fit index; NNFI=non-normed fit index; CFI=comparative fit index; GFI=goodness-of-fit index; SRMR=standardized root mean square; RMSEA=root mean square error of approximation; and AIC=Akaike's information criterion.

negative emotions, state anxiety, and physical symptoms at Time 2).

To test the hypothesized model, a path analysis was conducted using the following strategy. First, in order to test for stability effects, paths between each outcome at Time 1 and its equivalent at Time 2 were specified. Second, in order to control for demographic variables (i.e., number of years of involvement in yoga, number of weekly hours spent doing yoga, and age of participants), paths between these latter and each outcome at Time 2 were specified. Finally, in order to assess the relationships between the two types of passion and outcomes while controlling the variables previously mentioned, paths were specified between each type of passion and the outcomes at Time 2. Nine of these 24 paths were found to be significant. As can be seen in Table 4 (see Model 1), the fit indices – especially the non-normed fit index (NNFI) and the confidence intervals – of this first model were not satisfactory. We thus conducted a Lagrange multiplier (LM) test, which identifies paths not included in the model that would significantly improve the model fit, and a Wald test, which identifies paths included in the model that can be dropped without reducing model fit. On the basis of these two tests, a path was added (i.e., from negative emotions at Time 1 to state anxiety at Time 2) and two covariances between exogenous variables were dropped (i.e., between harmonious passion and negative emotions, and between negative emotions and physical symptoms). We thus conducted the analyses again with these changes and while omitting the paths that were previously found to be non-significant. This model had a very satisfactory fit to the data (see Model 2, in Table 4). The chi-square value was non-significant, χ^2 (df = 34, $N = 89$) = 44.47, $p = 0.11$, and other fit indices were excellent: normed fit index (NFI) = 0.92, NNFI = 0.95, comparative fit index (CFI) = 0.98, GFI = 0.94, standardized root mean square (SRMR) = 0.04, and root mean square error of approximation (RMSEA) = 0.06 [0.00; 0.10]. In addition, as can be seen in Table 4, Model 2 had a lower Akaike's information criterion (AIC) than Model 1, suggesting that it is more parsimonious and should thus be preferred over Model 1 (Kline, 2005). In light of the prospective design used and the fact that all possible paths from the exogenous to the

endogenous variables were already tested, alternative models could not be tested.

The standardized solutions of the final model are given in Figure 1. First, as can be seen, each of the four outcome variables (i.e., positive emotions, negative emotions, state anxiety, and physical symptoms) at Time 1 was strongly and positively associated with its equivalent at Time 2 (β 's ranging from 0.55 to 0.78), suggesting that the constructs are relatively stable over time. Second, in spite of these stability effects, a significant part of the variance of those outcomes was nevertheless explained by either harmonious (for positive emotions, state anxiety, and physical symptoms) or both harmonious and obsessive passions (for negative emotions) at Time 1. Specifically, harmonious passion was associated with significant increases in positive emotions ($\beta = 0.19$) and decreases in negative emotions ($\beta = -0.15$), state anxiety ($\beta = -0.23$), and physical symptoms ($\beta = -0.16$) over a 3-month period. In addition, obsessive passion was associated with significant increases in negative emotions ($\beta = 0.15$) from Time 1 to Time 2. The three demographic variables were not found to significantly predict any of the outcome variables at Time 2.

Discussion

The results of Study 2 supported the hypotheses and demonstrated the capacity of harmonious passion for yoga to predict more adaptive changes in psychological and health outcomes over a 3-month period than obsessive passion. Specifically, controlling for number of years and weekly hours of yoga involvement and participants' age, harmonious passion for yoga at Time 1 was shown to be associated with an increase in positive emotions and to decreases in negative emotions, state anxiety, and physical symptoms over a 3-month period. Conversely, controlling for the same demographic variables, obsessive passion for yoga was shown to be associated with an increase in negative emotions from Time 1 to Time 2. In addition, the results of Study 2 extended those of Study 1 by showing that these results were not limited to a specific population (i.e., Montreal residents) but were

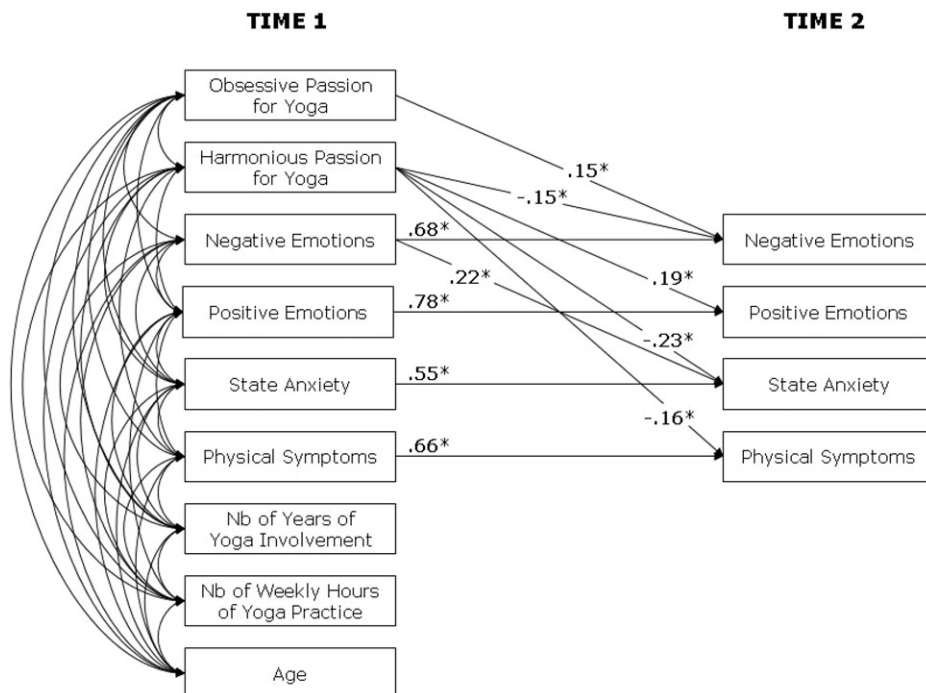


Figure 1. Results of the structural equation modeling analyses. Notes: Standardized path coefficients are presented. For clarity concerns, coefficients of covariances between exogenous variables are omitted. These can be obtained from the first author. $*p < 0.05$ and $n = 89$.

replicated with a broader population of Canadians practicing yoga.

General discussion

The general purpose of this research was to examine whether one's involvement in an activity that is largely recognized as providing psychological and health benefits (namely yoga) can still be differently associated with well-being as a function of one's type of passion toward this activity. Specifically, Study 1 looked at how the two types of passion for yoga were related to three indices of psychological well-being (i.e., positive emotions, negative emotions, and state anxiety) whereas Study 2 sought to shed light on the role of harmonious and obsessive passions in the prediction of changes in both emotional and physical outcomes over a 3-month period. Globally, harmonious passion for yoga was expected to be associated with more adaptive psychological and physical outcomes than obsessive passion. Overall, these hypotheses were supported and lead to important implications.

On passion for yoga and psychological well-being

A first implication is that one's passion for a given activity, even one as positive as yoga, would appear to

matter in terms of the outcomes that one comes to experience within the purview of the activity. Indeed, findings from two studies, including one using a prospective design, show that while harmonious passion is associated with emotional and physical benefits, obsessive passion is not. In fact, obsessive passion even predicts increases in negative emotions while practicing yoga. Thus, it would appear that obsessive passion leads people to behave in such a way that the positive virtues of yoga are thwarted. Because with obsessive passion people derive a sense of self-esteem from their performance on the activity (Carpentier, Mageau, & Vallerand, 2010), it is possible that individuals with a predominant obsessive passion engage in social comparisons with fellow yoga exercisers. While such comparisons can provide useful information regarding how to perform the yoga postures more adequately, they can also lead individuals to make upward comparisons (Festinger, 1954; Taylor & Lobel, 1989), or counterfactuals (Epstude & Roese, 2008; Roese & Olson, 1997) which have precisely been shown to lead to the experience of negative emotions (Klein, 1997; Mandel, 2003; Tesser, Millar, & Moore, 1988). Thus, an interesting avenue for future research would be to test the presence of an 'obsessive passion – upward social comparisons (or counterfactuals) – negative emotions' sequence.

Other constructs typically studied in positive psychology may also serve as mediators between passion

and well-being. Hope, or the belief that one can find pathways to the goals and has the motivation to use those pathways (Snyder, 1996, 1998), represents such a construct. Research reveals that hope is positively associated with positive emotions and negatively associated with negative emotions (Snyder et al., 1991) and anxiety (Arnau, Rosen, Finch, Rhudy, & Fortunato, 2007). These results parallel those obtained with harmonious passion in this series of studies, thereby suggesting that hope may mediate the relationship between harmonious passion and psychological well-being. The same hypotheses can be formulated for the similar construct of optimism, which has also been associated with psychological and physical well-being (Scheier & Carver, 1992). Finally, the construct of gratitude (or the experience of thankfulness and appreciation for life) also deserves consideration. Research reveals that gratitude is positively associated with happiness (Emmons & Shelton, 2002). It is thus possible that involvement in one key activity in one's life out of harmonious passion may trigger the experience of gratitude and, in turn, its positive effects. Research on the linkages between passion, potential positive psychology mediating constructs, and outcomes would appear important from both conceptual and applied perspectives.

Implications for the dualistic model of passion

A second implication from this research pertains to the support it provides for the dualistic model of passion. The present findings provide additional evidence for the differential relationships between harmonious and obsessive passions on the one hand and outcomes on the other. This was especially the case in Study 2 that showed that obsessive passion for yoga was associated with an increase in negative emotions over a 3-month period, while harmonious passion was related to adaptive changes in all outcomes over the same period. Although past research had documented the predictive role of passion in changes of affect over time (Vallerand et al., 2003, Study 2), the results of Study 2 are the first to show that harmonious passion is associated with reductions in negative physical symptoms that take place over time.

Of additional interest is that the present findings suggest that engaging in an activity out of harmonious passion is positively associated with benefits both within the purview of the activity (e.g., more positive and less negative affect during the yoga practice) as well as outside the activity as the decreases in physical symptoms, for example, can obviously have a positive impact on other spheres of one's life. It is thus possible that the benefits associated with engagement in one's favourite activity out of harmonious passion are not simply experienced during or after activity engagement

but are actually long lasting and can accumulate over time. Future research should examine changes in other positive outcomes that take place over time in one's life in general as a function of passion.

Future research is needed, however, to identify the nature of the processes through which harmonious passion for yoga is negatively related, while obsessive passion is unrelated, to the occurrence of negative physical symptoms over time. One plausible mechanism may have to do with the types of persistence that are promoted by the two types of passion. Past research has documented that harmonious passion seems to be conducive to a flexible persistence in the activity while obsessive passion would appear to lead individuals to persist rigidly in the passionate activity (Vallerand, 2010). Thus, individuals with a predominant obsessive passion for yoga may engage in this activity even when it would be advisable not to (e.g., when they are sick, tired, or even injured), which might precisely prevent the physical benefits of the practice. Conversely, harmonious passion may foster a more flexible persistence where one can wait before returning to full health before reengaging in yoga. Thus, a rigid versus flexible persistence in the activity might be worth examining as a potential mediator of the relationship between the two types of passion and physical well-being. More research is definitely needed on this issue.

Future research might also do well to assess the role of positive psychology constructs as determinants of passion. One such construct is that of strengths (Peterson & Seligman, 2004). Past research in positive psychology has shown that the regular use of strengths leads to positive benefits for the individual (Lopez, Janowski, & Wells, 2005). One area where people can use their strengths is when engaging the passionate activity. Thus, encouraging people to use their strengths (or competencies) should lead them to sustain and perhaps even increase engagement and passion for the activity. Research by Forest, Benabou, Crevier-Braud, Bergeron, and Mageau (2010) provided support for this hypothesis. Specifically, they showed that an intervention where participants increase the use of signature strengths led to an increase in harmonious passion over time (obsessive passion was not assessed). Of additional interest is that an increase in harmonious passion also led to an increase in psychological well-being over time.

One reason why the regular use of strengths should promote harmonious passion is that using one's strengths may promote the fundamental psychological need of competence (Deci & Ryan, 2000). Indeed, engaging in one's strengths should lead one to experiencing feelings of competence that, in turn, may encourage further engagement in the activity, and eventually passion for it. Future research is needed in order to test this hypothesis. Furthermore,

research should also assess the role of the other two psychological needs of autonomy and relatedness proposed by self-determination theory (Deci & Ryan, 2000) as determinants of passion. Because with harmonious passion activity engagement is more self-determined in nature than with obsessive passion, it is hypothesized that the relationships between the three psychological needs experienced during involvement in the passionate activity and harmonious passion should be stronger than those with obsessive passion. Future research on this issue would appear promising.

Limitations

A number of limitations need to be underscored when interpreting the present findings. First, the two studies were correlational in nature, and therefore causality cannot be inferred from this research. Although a path analysis was used in conjunction with a prospective design in Study 2, the inverse model to the one proposed nevertheless remains possible. Indeed, it is possible that an increase in the positive emotions and decrease in the negative emotions and state anxiety experienced during yoga might lead one to become more harmoniously passionate toward this activity over time. However, previous research (Carbonneau et al., 2008) examining the bidirectional relationships between passion and outcomes using a cross-lag panel model revealed that over-time changes in passion led to changes in outcomes but not the reverse. These findings suggest that the 'passion→outcomes' sequence postulated in this research may be appropriate. Nevertheless, future research using an experimental design is definitely needed in order to more firmly establish causality. Second, self-report data were used in both studies. Future research should seek to replicate the present findings with more objective measures, such as physiological measures of emotions and medical records of injuries, and even with informant reports, such as from the yoga teacher. A third limitation of this research deals with the low number of participants in both studies. Clearly, the results of this research should be viewed as exploratory until they are replicated with larger samples. Finally, the small magnitude of the effects should be underscored. Indeed, although statistically significant, coefficients of change in Study 2 were quite low (β 's ranging from -0.23 to 0.19). These small effects might be due to a number of reasons and future research is needed in order to more clearly determine the level of importance of passion in psychological and physical outcomes.

Conclusion

In sum, this research represents an initial attempt to document the role of passion for yoga in the experience

of psychological and physical benefits. Even if the practice of yoga can help many people improve their physical health and their psychological well-being, the findings of this study suggest that the benefits are not automatic and the type of involvement still matters. Indeed, only harmonious passion was found to be positively associated with the psychological and physical benefits from one's engagement in yoga. It should be kept in mind that these differential relationships were obtained while controlling for a number of variables, such as gender and the number of years and weekly hours spent doing yoga. Thus, it would appear that the quality of one's involvement (i.e., the type of passion) in yoga matters more than the quantity (i.e., time spent doing yoga). In conclusion, to get the most psychological and physical benefits out of a positive activity such as yoga, it would appear that the passion one has toward this activity should be harmonious.

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