

# Driven by Fear: The Effect of Success and Failure Information on Passionate Individuals' Performance

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Four studies investigated the impact of success and failure information on passionate individuals' performance. Obsessive passion, characterized by a rigid and defensive mode of functioning, predicted greater performance in domains both related and unrelated to the passionate activity in response to exposure to failure information. Conversely, harmonious passion, characterized by a flexible, nondefensive mode of functioning, was found to be unaffected by success or failure information. These performance effects were deeply ingrained, did not require conscious thought, and were automatically activated after unconscious exposure to failure-related words. In addition, the present research evinced that following failure information, obsessive passion predicted increases of performance through its effect on fear of failure. However, performance augmented only when the performance task was framed in such a way that failure would entail important negative consequences for the self and not when framed as inconsequential.

**Keywords:** passion, failure, achievement motives, performance

Ambition is the last refuge of failure. —Oscar Wilde

Instances of success and failure are inevitable parts of life and can affect us in more than one way. Of particular interest is the impact of success and failure information on subsequent performance. Much research conducted under controlled laboratory settings has shown that success leads to improved performance, while failure tends to undermine subsequent performance (e.g., Bandura, 1986, 1991; Diener & Dweck, 1978; Mikulincer, 1989; Seligman, 1975; Vroom, 1964). However, success and failure may be experienced differently as a function of the activity and what it means for the participants. For instance, much of past research on the effects of success and failure on performance has been conducted with laboratory tasks that may have little meaning for participants. Such instances of success and failure may thus be considered as inconsequential life episodes. It is then unsurprising that one will perform well after success and give up and perform poorly following failure information.

However, success and failure can also take place in self-defining domains where people care deeply about the activity and are highly committed. In such instances, success with regards to an important activity may suggest that all is well and may have little or no bearing on the subsequent behavior of highly committed individuals. Failure, on the other hand, may pose a threat to the self and instill a state of insecurity that motivates behavior aimed at correcting the situation and thus improve subsequent performance. Consider a statement made by boxing great Muhammad Ali: "Only a man who knows what it is like to be defeated can reach down to the bottom of his soul and come up with the extra ounce of power it takes to win when the match is even." According to this perspective, the prospect of failing is a potent catalyst for high performance. Research has provided some support for this assumption. Specifically, whereas success information on self-defining tasks has little effect on performance, failure leads to an increase in subsequent performance (see Brunstein, 2000; Brunstein & Gollwitzer, 1996; Peters, Greenberg, Williams, & Schneider, 2005).

However, here again, some variability in how people experience and react to failure is to be expected. This is because past research on the effects of success and failure on the performance of highly committed individuals has considered only the "quantity" dimension of commitment where people are seen as either high or low on the commitment dimension. However, recent research on one type of high commitment, namely, passion for an activity (e.g., Vallerand, 2010; Vallerand et al., 2003), has shown that people also vary in the "quality" of their commitment toward the activity. Whereas one type of passion (i.e., obsessive) reflects a sense of insecurity that may lead one to perceive failure information as threatening and to expand energy to improve performance, another

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type of passion (i.e., harmonious) reflects a secured sense of self, leading one to accept failure information as what it is, information, and then engage in the beloved task as usual. Therefore, increases in performance following failure among highly committed individuals may not necessarily be as inevitable as the evidence suggests (see Brunstein, 2000; Brunstein & Gollwitzer, 1996). It should depend on the quality of one's commitment (or passion) and what the task means to the individual.

In the present article, we address the above issues. Specifically, using the dualistic model of passion (Vallerand, 2010; Vallerand et al., 2003) and achievement motivation theory (Elliot, 1997; McClelland, Atkinson, Clark, & Lowell, 1953; Murray, 1938) as guiding frameworks, we report research specifically aimed at testing the moderating role of the two types of passion in the success/failure information–performance relationship.

### The Dualistic Model of Passion

The dualistic model of passion (Vallerand, 2010; Vallerand et al., 2003) defines passion as a strong inclination toward a self-defining activity that one loves, finds important, and in which one invests a significant amount of time and energy. A passion can be oriented toward an activity (e.g., playing the piano), a person (e.g., a romantic partner), or an object (e.g., a card collection). This model suggests that individuals can be highly committed to the same extent toward an activity and yet pursue their activity in qualitatively different ways, with a variety of different consequences (Vallerand, 2010; Vallerand et al., 2003). In line with this notion, two distinct types of passion are proposed, harmonious and obsessive, which can be differentiated in terms of how the passionate activity is regulated and integrated with other life domains.

Harmonious passion refers to a strong desire to freely engage in the activity, wherein the person regards the activity as a significant—but not overwhelming—part of their identity. With harmonious passion, the person is in control of the activity and may decide whether or not to engage and pursue it. Because of this control over the activity, harmonious passion leads one to experience his or her activity as being coherent and well-integrated with other life domains (Séguin-Lévesque, Laliberté, Pelletier, Vallerand, & Blanchard, 2003; Vallerand, 2010; Vallerand et al., 2003). Accordingly, the person feels free to engage in the activity, instead of feeling pressured, either internally or externally, to do so (Mageau et al., 2009; Vallerand et al., 2003). Over time, such activity engagement shapes one's identity in ways that secure it against self-threat (Mageau, Carpentier, & Vallerand, 2011; Steele, 1988; Steele, Spencer, & Aronson, 2002).

The second type of passion, obsessive passion, also refers to a strong desire to engage in an activity. However, in contrast to harmonious passion, obsessive passion overwhelms one's attention and identity. The activity is beyond one's control and the individual feels pressured to pursue it continuously. This type of engagement creates a rigid participation in the activity (Ratelle, Vallerand, Mageau, Rousseau, & Provencher, 2004; Vallerand et al., 2003). As a consequence, obsessive passion leads to several self-regulatory challenges: (a) Conflicts and tensions arise with other life domains, which increase one's vigilance, and (b) because "all the eggs are in the same basket," everything revolves around the activity (self-esteem, social acceptance), and obsessive passion is associated with defensiveness and susceptibility to threat (Do-

nahue, Rip, & Vallerand, 2009; Lafrenière, Bélanger, Sedikides, & Vallerand, 2011).

Empirical findings have been consistent with the foregoing conceptualization of passion (see Vallerand, 2010, for a review). Indeed, where both harmonious and obsessive passion predict similar commitment to the activity and are perceived as part of people's identity, the two types of passion have been found to be differentially associated with various outcomes (Carbonneau, Vallerand, Fernet, & Guay, 2008; Philippe, Vallerand, Houffort, Lavigne, & Donahue, 2010; Vallerand et al., 2003). Additionally, the two types of passion are relatively independent from one another. As such, at any given moment, both can be high or low, or one can be high and the other low.

There is considerable evidence that harmonious passion is positively, whereas obsessive passion is either unrelated or negatively, related with psychological adjustment indices (Philippe, Vallerand, & Lavigne, 2009; Rousseau & Vallerand, 2008; Vallerand et al., 2003, Study 2; Vallerand et al., 2007), success emotions, and flow during activity engagement (Lafrenière, Jowett, Vallerand, Donahue, & Lorimer, 2008, Study 2; Vallerand et al., 2003, Study 1; Vallerand, Rousseau, Grouzet, Dumais, & Grenier, 2006, Study 2). Harmonious passion is also negatively related, whereas obsessive passion is positively related, to experiences of conflict between one's passion and other life domains (Caudroit, Boiché, Stephan, Le Scanff, & Trouilloud, 2011; Vallerand et al., 2003, Study 1; Vallerand, Paquet, Philippe, & Charest, 2010). Additionally, harmonious passion has been shown to be positively related to explicit self-esteem, whereas obsessive passion has been positively associated with low implicit self-esteem (Lafrenière, Bélanger, et al., 2011). Obsessive passion (as opposed to harmonious passion) has also been evinced as positively related to signs of self-threat sensitivity such as aggressive and retributive behavior under conditions of identity threat (Donahue et al., 2009; Rip, Vallerand, & Lafrenière, 2012) and self-worth contingencies to activity-related events (Lafrenière, St-Louis, Vallerand, & Donahue, 2011; Mageau et al., 2011). Finally, obsessive passion, but not harmonious passion, has been found repeatedly to predict formulating goals related to avoiding failure such as performance-avoidance goals (Bonneville-Roussy, Lavigne, & Vallerand, 2011; Vallerand, Mageau, et al., 2007, Study 2; Vallerand et al., 2008, Study 2).

### Achievement Motives

Achievement motivation has been one of the most discussed topics in psychology, starting with William James in the late 19th century. Elliot (1999) defined achievement motivation as the "energization and direction of competence-based affect, cognition, and behavior" (p. 169). Researchers generally agree that achievement behaviors are driven by either approach or avoidance tendencies, which were originally described by Lewin, Dembo, Festinger, and Sears (1944) as reflecting the goal of approaching success or avoiding failure. Classic psychological motivation theories have posited that these goals are impacted by success or failure feedback: Success feedback increases outcome expectancies and thus induces approach motivation, whereas failure feedback decreases outcome expectancies and this induces avoidance motivation (Atkinson, 1964; Lewin, 1935; McClelland et al., 1953). It has been theorized that under approach-achievement motives, individuals are driven to maximize their chances of

succeeding, whereas under avoidance-achievement motives individuals aim at reducing the chances of failing at a given task (Pang, 2010). Traditionally, the distinction between approach and avoidance achievement motives has been discussed in terms of *hope of success* (HS) and *fear of failure* (FF), respectively (Atkinson, 1957; Heckhausen, 1991; cf. Heckhausen, Schmalt, & Schneider, 1985), which differ in terms of “how strongly success or failure is incentive” (Heckhausen, 2000, p. 89). We described them in turn.

Hope of success is defined as an approach-achievement motive involving the belief to succeed, the anticipation of reward, and the feeling of positive emotions upon the demonstration of competence in a given task (McClelland et al., 1953). Brunstein and Heckhausen (2006) have described individuals motivated by HS to be invested in behavior geared toward self-improvement such as gaining new skills and enhancing their efficiency. This conceptualization mirrors Cooper and Howell's (1961) idea that HS is associated with growth motives. When driven by HS, individuals want to do well on task because they associate successful mastery of challenges with pleasure (Heckhausen, 1963; Pang, Villacorta, Chin, & Morrison, 2009).

In contrast, fear of failure is described as the motive of avoiding failure in achievement settings because of the shame associated with failing (Atkinson, 1957; McGregor & Elliot, 2005; Murray, 1938). Fear of failure is triggered when one is confronted with the possibility of failing at a given task (Elliot, 1997). Under these circumstances, individuals become concerned about the aversive consequences of failing (disappointing oneself and significant others; Elliot, McGregor, & Thrash, 2002; Elliot & Thrash, 2004) and experiencing negative emotions (Rice et al., 2009). When entertaining the thought of failing, Covington (1992) and others (Elliot, 1999; Elliot & Church, 1997) have argued that failure-motivated individuals are likely seek to protect the self from failure by either quitting (physically or mentally) the achievement task or by striving to attain success. These self-regulatory attempts are aimed at reducing self-worth pressure (Heckhausen, 1963). Evidence supporting the link between FF and self-protective behaviors abound in the literature; FF has repeatedly been associated with self-handicapping strategies, defensive pessimism, strategic withdrawal of effort, and procrastination (Covington & Omelich, 1979; Elliot & Church, 2003; Rhodewalt, 1990; Rothblum, 1990).

Recent research has assessed the relationship between passion and achievement goals (Elliot, 1997) of high performers in settings such as sports, music, and academia (e.g., Bonneville-Roussy et al., 2011; Vallerand, Mageau, et al., 2008; Vallerand et al., 2007). Two clear achievement patterns emerge as a function of each type of passion. With harmonious passion, passionate individuals care only about mastering the task and improving (i.e., mastery goals). With obsessive passion, individuals also show some interest in mastering the task. However, they show marked interest in trying to beat other participants (i.e., performance approach goals) but mostly in trying to avoid failing relative to others (i.e., performance avoidance goals). Of additional interest are the findings that individuals with an obsessive passion make use of self-enhancing strategies to protect and enhance the self while those with a harmonious passion do not (Lafrenière, Vallerand, & Sedikides, in press). Overall, these findings underscore the fact that individuals characterized with an obsessive passion seem particularly inclined to seek to avoid failure in order to protect the self. However, such does not seem to be the case for those with a harmonious passion

who would appear to be able to handle (positive or negative) task information head on.

## Overview of the Present Studies

The aim of this research was to explore the effect of success and failure information on the performance of individuals with different types of high goal commitment for an activity (herein defined as harmonious and obsessive passion). The first query we aim to answer is what is the effect of success and failure information on passionate individuals' performance? We started with the proposition that when exposed to (or reflecting upon) success information relevant to a self-defining domain (i.e., passionate activity), obsessive passion and harmonious passion should not be associated with any change in performance because no threat needs to be addressed. However, when exposed to (or reflecting upon) failure information, different patterns of performance should emerge. Obsessive passion being characterized by defensiveness (primarily because everything revolves around the passionate activity), failure information with regards to one's core activity should be perceived as a threat that needs to be alleviated. Thus, we hypothesized that when exposed to failure information, obsessive passion should predict greater task performance. In contrast to this hypothesis, we predicted that because harmonious passion is related to a secured sense of self, failure information should not impact performance.

The present research also aims to document whether performance in response to failure information could also extend to domains unrelated to the passionate activity. Research on self-affirmation theory (Aronson, Blanton, & Cooper, 1995; Steele, 1988) suggests that individuals under threat can maintain their self-integrity by affirming their value in domains unrelated to the domain of threat. While such a strategy would be expected to be used by individuals with an obsessive passion, it should not take place with harmoniously passionate individuals because no self-threat should be experienced, and therefore there should be no need to redeem oneself on some other activity. We thus investigated whether performance after being exposed to failure information would also augment in domains unrelated to individuals' passionate activity as a function of one's type of passion.

A third component of our research was to explore whether responses to failure information are automatic and if they can be instigated unconsciously. We propose that if obsessive passion for an activity predisposes one to experience threat following exposure to failure information (and to respond with greater performance), one may have overlearned this response and the mere exposure to failure words may automatically activate defensive reactions. In line with this proposition, we made the prediction that failure information, even if unconsciously presented, would propel individuals with high levels of obsessive passion to greater performance.

Last, we explore the underlying mechanism responsible for the positive effects of obsessive passion on performance after exposure to failure information. Specifically, we investigated whether performance after exposure to failure information is due to approach or avoidance motives. Previous research has repeatedly linked avoidances motives with defensiveness. We thus hypothesized that one factor that may explain why obsessive passion predicts greater performance after exposure to failure information

is fear of failure. Thus, a mediation model is proposed whereby under failure (but not success) conditions, obsessive passion predicts greater task performance through its effect on fear of failure. In addition, we predicted that when experiencing fear of failure, increases in performance should occur only if the performance task entails important consequences for the self if failed. In other words, if the task is not instrumental to the goal of avoiding failure, obsessive passion should not be associated with performance.

In the four studies that follow, we subjected the foregoing hypotheses to empirical scrutiny. Study 1 examined whether dispositional measures of obsessive and harmonious passion would predict performance after passionate individuals reflected upon either succeeding or failing at their passionate activity. To that end, Study 1 was conducted in a field setting where performance was measured via a physical strength task related to participants' passion for exercise. Studies 2 attempted to replicate and extend Study 1 by exploring how passionate individuals would perform on a task unrelated to their passionate activity after thinking about either succeeding or failing at their passionate activity. Study 3 attempted to replicate Study 2 using unconscious presentation of success- or failure-related words. Study 4 investigated the boundary conditions and the mechanism underlying increases of performance associated with obsessive passion after exposure to failure information by (a) manipulating the importance of the consequences attached to failing the performance task and (b) examining the mediating role of achievement motives (hope of success and fear of failure) in explaining the passion–performance relationship.

## Study 1

The purpose of Study 1 was to provide initial support for the notion that the type of passion one holds for an activity can predict task performance when individuals are thinking about either succeeding or failing at their passionate activity. Specifically, because obsessive passion is associated with a defensive mode of functioning (Donahue et al., 2009; Lafrenière, Bélanger, et al., 2011; Mageau et al., 2011; Rip et al., 2012), we predicted that obsessive passion would predict greater performance when individuals are thinking about failing, but not when thinking about succeeding at their passionate activity. In contrast, because harmonious passion is characterized by a secure sense of self (Donahue et al., 2009; Lafrenière, Bélanger, et al., 2011; Mageau et al., 2011; Rip et al., 2012), no interaction between levels of harmonious passion and type of information was expected. We tested these hypotheses on a performance task related to participants' passionate activity.

## Method

**Participants.** Eighty-seven participants (32 women and 55 men;  $M_{\text{age}} = 27.05$ ,  $SD_{\text{age}} = 7.90$ ), either university employees or students, were recruited at the entrance of the university fitness center prior to a daily workout. All participants were unpaid volunteers.<sup>1</sup>

**Procedure.** Participants were informed that the researchers were interested in knowing more about the attitudes and behaviors of people attending the fitness center, that their participation was voluntary, and that their responses would remain confidential. The experimenter was blind to conditions and testing occurred individually. First, participants' strength (performance) was initially as-

sessed using a handgrip dynamometer (HD; Peters et al., 2005) to evaluate a baseline. Second, participants completed a questionnaire that contained assessments of harmonious and obsessive passion toward physical training. They were then randomly assigned an experimental manipulation of success and failure. Finally, their physical performance was assessed once more using the HD.

### Materials.

**Passion for physical training.** Harmonious and obsessive passion toward physical training was measured using the Passion Scale (Vallerand et al., 2003). The Passion Scale was slightly adapted to physical training by changing the word "activity" to "physical training." This scale consists of six harmonious passion items (e.g., "Physical training is in harmony with the other activities in my life";  $M = 5.17$ ,  $SD = 0.83$ ,  $\alpha = .76$ ) and six obsessive passion items (e.g., "I have almost an obsessive feeling for physical training";  $M = 2.93$ ,  $SD = 0.83$ ,  $\alpha = .88$ ) and was completed on a 7-point Likert scale ranging from 1 (*not agree at all*) to 7 (*very strongly agree*). The Passion Scale has displayed high levels of validity and reliability with respect to a variety of activities (Vallerand et al., 2003, Study 1) and contexts (e.g., Bonneville-Roussy et al., 2011; Carbonneau et al., 2008; Castelda, Mattson, MacKillop, Anderson, & Donovick, 2007; Vallerand & Houlfort, 2003).

**Manipulations of success and failure.** Participants were randomly assigned to one of two writing tasks. In the success condition ( $n = 45$ ), participants were asked to describe two personal strengths, whereas participants in the failure condition ( $n = 42$ ) described two personal weaknesses within the purview of their passionate activity. Subsequently, participants were asked the following four questions: (a) What positive (negative) implications do these two personal strengths (weaknesses) have on your activity? (b) How do your strengths (weaknesses) help (impede) you from achieving your objectives? (c) How do these two strengths (weaknesses) help (thwart) your personal growth? (d) What positive (negative) outcomes would occur if these two strengths (weaknesses) were to improve (worsen) suddenly?

**Handgrip dynamometer (performance).** As a dependent variable, the JAMAR handgrip dynamometer (HD) was used to assess isometric strength. The HD permits multiple hand squeezes, but the needle that monitors strength of the squeezes records only the highest rating until reset. It ranges from 0 kg to 90 kg ( $M = 38.75$ ,  $SD = 10.74$ ). The HD was modified to include a panel that prevented the participants from seeing their performance. Three independent measures of HD performance were taken each time and subsequently averaged in a single score.

## Results

Multiple regression analyses were conducted to examine the effects of information conditions (success vs. failure) and passion on final HD performance while controlling for initial HD perfor-

<sup>1</sup> There were no gender effects on any of the variables; therefore, gender is not discussed further.



mance.<sup>2</sup> For the purpose of the study, experimental conditions were dummy coded with a score of 1 in the success condition and a score of 0 attributed in the failure condition. Following Aiken and West's (1991) procedures, independent variables (i.e., baseline HD performance, information conditions, harmonious and obsessive passion) were centered before calculating the interaction products.

Results showed that only baseline HD performance ( $\beta = .95$ ,  $p = .001$ ) and the Experimental Condition  $\times$  Obsessive Passion interaction ( $\beta = .07$ ,  $p = .03$ ) significantly predicted HD performance (see Table 1). Further analyses revealed that obsessive passion significantly predicted HD performance in the failure condition,  $\beta = .10$ ,  $t(40) = 2.02$ ,  $p = .05$ , but not in the success condition,  $\beta = -.06$ ,  $t(43) = -1.30$ ,  $p = .20$ . Moreover, this significant interaction term was graphed with high and low scores at 1 *SD* above and below the mean on obsessive passion (see Figure 1 for a visual representation). In contrast, harmonious passion was unrelated to HD performance in general ( $\beta = .02$ ,  $p = .58$ ), and this relationship did not vary as a function of experimental conditions ( $\beta = -.04$ ,  $p = .13$ ).

## Discussion

The results of Study 1 provide initial support for our hypotheses: Highly committed individuals for a given activity (in this case physical exercise) perform differently depending on their levels of harmonious and obsessive passion after thinking about either succeeding or failing at their passionate activity. Specifically, results indicate that when reflecting upon their personal shortcomings (as opposed to their personal strengths), individuals' task performance augments as a function of their level of obsessive passion toward their activity. In contrast, harmonious passion was shown not to predict any performance change after thinking about either failing or succeeding at their passionate activity. These results are consistent with our theoretical analysis that obsessive passion is associated with self-concept vulnerability, which influences individuals to perceive failure information as threatening, whereas harmonious passion is associated with having a secure self-concept and being unaffected by similar negative information. Study 1 thus establishes that, contrary to past research (see Brunstein, 2000), not all highly committed individuals respond to threat with an increase in performance. Our results demonstrate that increases in performance following failure depend on individuals' type of

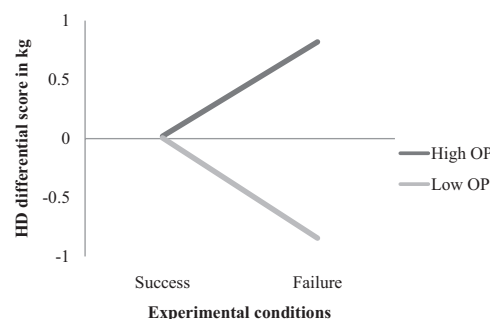


Figure 1. Handgrip dynamometer (HD) differential score of participants with high and low obsessive passion (OP) in success and failure conditions (Study 1;  $N = 87$ ).

passion, which determines how failure-related thoughts are likely to be experienced.

## Study 2

The main purpose of Study 2 was to replicate and extend the findings of Study 1 by exploring whether increases in performance after thinking of succeeding or failing at the passionate activity could also be observed in domains unrelated to the source of threat (i.e., the passionate activity). Research on self-affirmation theory (Aronson et al., 1995; Steele, 1988) proposes that when experiencing self-threat, individuals can maintain their self-integrity by affirming other important parts of the self in domains unrelated to the source of threat. If this is true for passionate individuals, then, when individuals are thinking about failing, obsessive passion should predict greater performance in an activity that is unrelated to their passionate activity. However, it could be that no change in performance will be observed in unrelated tasks because individuals' passionate activity is so important that actions aimed at alleviating the threat need to specifically target it. We explored the present question and hypothesized that obsessive passion would positively predict performance even if the performance task is unrelated to the source of threat when individuals are thinking about failing at their passionate activity, but not when thinking of succeeding at it. Similar to our previous predictions, we hypothesized that harmonious passion would not be related to any change in performance after either thinking of succeeding or failing at their passionate activity.

In addition to these hypotheses, we addressed two potential alternative explanations to our analysis. One such alternative explanation is that obsessive passion is confounded with activity importance. Specifically, it could be argued that obsessive passion predicts greater performance after failure-related thoughts, not because it is associated with more defensiveness (as we have argued), but because it is associated with greater activity importance than harmonious passion. Therefore, individuals with high levels of obsessive passion could be more strongly inclined to respond to failure thoughts because they are more concerned about

Table 1

Results of the Hierarchical Linear Regression Analysis Predicting HD Performance From Experimental Conditions and Harmonious and Obsessive Passion (Study 1)

Predictor	HD performance
Baseline HD performance	.95*
Experimental conditions <sup>a</sup>	.00
Harmonious passion	.02
Obsessive passion	.01
Experimental Conditions $\times$ Harmonious Passion	-.04
Experimental Conditions $\times$ Obsessive Passion	.07*

Note. HD = handgrip dynamometer.

<sup>a</sup> 0 = failure condition, 1 = success condition.

\*  $p < .05$ .

<sup>2</sup> The Harmonious  $\times$  Obsessive Passion interaction term was tested in all studies. Results indicated that this interaction term was not significant. Therefore, it is not discussed further.

the passionate activity than individuals with high levels of harmonious passion. To address this alternative explanation, we measured participants' activity importance and included it as a covariate in our analyses. We expected that both harmonious and obsessive passion would be positively associated with activity importance and that it would not affect the previously stated hypotheses.

A second potential rival explanation of our paradigm is regulatory fit theory (Higgins & Spiegel, 2004). Regulatory fit theory suggests that motivation may intensify as a result of a match between the manner in which a person pursues a goal and his or her goal orientation.

That is, people experience fit when they adopt goal-pursuit strategies or engage in activities that sustain their regulatory orientation (Avnet & Higgins, 2006). One could thus argue that obsessive passion, being related to a defensive style of functioning, may be related to a prevention regulatory focus, whereas harmonious passion, operating in a nondefensive mode of functioning, could be associated with a promotion focus. In addition, one could hypothesize that thinking about failing at a task may signal potential loss, which would fit with prevention-focused people (presumably people with high levels of obsessive passion), which would intensify their motivation for the performance task, and thus increase their performance (see Higgins, Shah, & Friedman, 1997). However, the same prediction could be made for harmonious passion under success conditions. Thinking of succeeding at a given task may signal potential gain, which would create a situation of fit for promotion-focused people (presumably people with high levels of harmonious passion), which would translate into greater motivation and therefore greater performance on the performance task. One will recall that in Study 1, harmonious passion did not affect performance. Thus, these findings would go against regulatory fit theory. While our theoretical framework does not hypothesize that harmonious passion should predict performance after thinking of succeeding, we nevertheless, attempted to rule out any effect of promotion and prevention foci by including them as control variables in our analyses. We predicted no influence from these variables in our analyses.

## Method

**Participants.** One-hundred and sixty-eight undergraduate students (100 women and 68 men;  $M_{\text{age}} = 24.01$ ,  $SD_{\text{age}} = 6.04$ ) were recruited in classrooms. All participants were unpaid volunteers. Participants had been involved in their passionate activity for an average of 8.61 years ( $SD = 6.67$ ) and were currently devoting an average of 12.82 hr ( $SD = 13.32$ ) per week to it.

**Procedure.** Participants were informed that the researchers were interested in knowing more about students' leisure activities as well as their linguistic aptitudes. They were informed that their participation was voluntary and their responses would remain confidential. The experimenter was blind to conditions, and testing occurred in classrooms. First, participants completed a questionnaire that contained assessments of harmonious and obsessive passion, promotion and prevention foci, and activity importance. Second, they were randomly assigned to a success, failure, or control information condition. Finally, they completed an anagram

task for 5 min. Questionnaires were collected immediately after the 5-min period.

### Materials.

**Passion for an activity.** Participants thought of an activity "that is very dear to your heart." Next, they listed their activity (e.g., yoga, music, academics) and completed the Passion Scale (Vallerand et al., 2003) in reference to their activity. This scale consisted of six harmonious passion items (e.g., "My activity is in harmony with the other activities in my life";  $M = 5.65$ ,  $SD = 0.82$ ,  $\alpha = .76$ ) and six obsessive passion items (e.g., "I have almost an obsessive feeling for my activity";  $M = 2.91$ ,  $SD = 1.10$ ,  $\alpha = .89$ ) and was completed on a 7-point Likert scale ranging from 1 (*not agree at all*) to 7 (*very strongly agree*).

**Activity importance.** Participants' perceived importance for their passionate activity was assessed using a single item ("My activity is important for me";  $M = 6.23$ ,  $SD = 0.84$ ) rated on a 7-point Likert scale ranging from 1 (*not agree at all*) to 7 (*very strongly agree*).

**Regulatory focus.** Promotion and prevention foci were assessed using the Regulatory Focus Questionnaire (Higgins et al., 2001). This scale consisted of six promotion items (e.g., "I frequently imagine how I will achieve my hopes and aspirations";  $M = 5.20$ ,  $SD = 0.69$ ,  $\alpha = .62$ ) and five prevention items (e.g., "I frequently think about how I can prevent failures in my life";  $M = 4.90$ ,  $SD = 1.04$ ,  $\alpha = .76$ ) and was completed on a 7-point Likert scale ranging from 1 (*not at all true of me*) to 7 (*very true of me*).

**Manipulations of success and failure.** The experimental conditions (success condition;  $n = 57$ ; failure condition;  $n = 59$ ) were the same as those used in Study 1, with one exception: We included a control condition ( $n = 52$ ). Participants in the control condition were asked "to describe ordering pizza at your neighborhood's restaurant." This task was the same length as the two other experimental manipulations.

**Anagrams (performance).** Our dependent variable of performance was an anagram task that consisted of a list of 50 four-letters anagrams ( $M = 18.57$ ,  $SD = 6.94$ ). All anagrams had only one possible solution. Participants were instructed that they would have 5 min to solve as many anagrams as possible.

## Results

Hierarchical multiple regression analyses were conducted to examine the effects of the experimental conditions and passion on the number of solved anagrams while controlling for activity importance and regulatory focus. For the purpose of the study, experimental conditions were integrated to the analysis using two dummy variables. The success condition was dummy coded as 1 on the first dummy coding (success vs. control conditions), the failure condition was dummy coded as 1 on the second dummy coding (failure vs. control conditions), leaving the control condition as the reference group in the analysis. According to Aiken and West's (1991) procedures, independent variables (experimental conditions, harmonious and obsessive passion, promotion and prevention foci, and activity importance) were centered before calculating the interaction products. As expected, both harmonious,  $r(166) = .52$ ,  $p < .001$ , and obsessive,  $r(166) = .29$ ,  $p < .001$ , passion were positively related to activity importance.

Results showed that only the Failure Versus Control Conditions  $\times$  Obsessive Passion ( $\beta = .28$ ,  $p = .03$ ) interaction term

significantly predicted the number of solved anagrams (see Table 2). Further analyses revealed that obsessive passion marginally predicted anagram performance in the failure condition,  $\beta = .24$ ,  $t(56) = 1.72$ ,  $p = .09$ , but not in the control,  $\beta = .02$ ,  $t(49) = 0.15$ ,  $p = .88$ , or success,  $\beta = -.13$ ,  $t(54) = -0.85$ ,  $p = .40$ , conditions. In addition, this significant interaction term was graphed with high and low scores at 1 *SD* above and below the mean on obsessive passion (see Figure 2 for a visual representation). The Success Versus Control Conditions  $\times$  Obsessive Passion interaction term was unrelated to the number of solved anagrams ( $\beta = -.15$ ,  $p = .26$ ). Furthermore, harmonious passion, promotion and prevention foci, and activity importance were unrelated to anagram performance in general, and this relationship did not vary as a function of experimental conditions (all  $p$ s  $> .05$ ).<sup>3</sup>

## Discussion

The results of Study 2 successfully replicate and extend the results from Study 1 by demonstrating that when thinking of failing (as opposed to succeeding) at their passionate activity, obsessive passion is associated with performance in a domain unrelated to the source of threat. Contrasting these results, harmonious passion did not relate to performance in any of the experimental conditions. This suggests that when failure looms large, highly committed (passionate) individuals can choose alternative means to address the threat at hand, even if those means are unrelated to the focal domain of threat. These findings are consonant with the existent literature on self-defense (e.g., self-affirmation theory) that supports the idea that threatened individuals can reaffirm their personal value in domains unrelated to the threat itself (Aronson et al., 1995; for a review see Sherman & Cohen, 2006).

Of importance are the results that show that the present findings cannot be accounted for by a difference in the sheer magnitude of goal importance or differences in regulatory focus. All these variables were shown to be unrelated to performance. Rather, the results support the hypothesis that what distinguishes obsessive from harmonious passion is the proclivity to experience personal

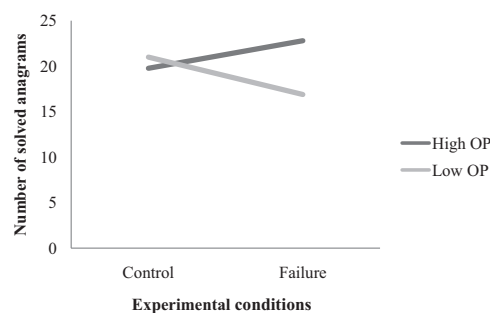


Figure 2. Anagram performance of participants with high and low obsessive passion (OP) in control and failure conditions (Study 2;  $N = 168$ ).

threat after thinking about failing at their passionate activity. We next focus on whether this proclivity to respond to personal threat with performance is the result of an internalized and automatic process in response to threat.

## Study 3

The purpose of Study 3 was to investigate passionate individuals' automatic responses to success and failure information on an IQ performance task. Rather than having participants consciously generate self-relevant success or failure information, we subliminally presented participants with stimuli related to success and failure, respectively. In comparison to the manipulation of success and failure used in Studies 1 and 2, this approach has the advantage of standardizing the information presented. We propose that if obsessive passion for an activity predisposes one to experience threat following exposure to failure information (and to respond with greater performance), one may have overlearned this response and the mere exposure to failure words may automatically activate defensive reactions even out of awareness. In consonance with this reasoning, we expected that higher levels of obsessive passion would predict greater performance following unconscious exposure to failure-related words, but not to success-related words. In contrast, because harmonious passion is related to a secure sense of self (Vallerand, 2010), we hypothesized that it would be unrelated to any change in performance following exposure to either success- or failure-related words. Akin to Study 2, the performance task was unrelated to participants' passionate activity, and thus we examined whether obsessive passion would predict performance in a domain outside the passionate activity after exposure to failure information.

## Method

**Participants.** Fifty-three undergraduate students (31 women and 22 men;  $M_{\text{age}} = 20.01$ ,  $SD_{\text{age}} = 1.19$ ) participated and received partial credit toward fulfillment of a course requirement. Participants had been involved in their passionate activity for an

Table 2

Results of the Hierarchical Linear Regression Analysis Predicting Anagram Performance From Experimental Conditions and Harmonious and Obsessive Passion (Study 2)

Predictor	Anagram performance
Harmonious passion	.08
Obsessive passion	.26
Activity importance	.02
Promotion focus	.11
Prevention focus	.12
Success vs. control conditions <sup>a</sup>	-.02
Failure vs. control conditions <sup>b</sup>	.02
Success vs. Control Conditions $\times$ Harmonious Passion	.06
Failure vs. Control Conditions $\times$ Harmonious Passion	.01
Success vs. Control Conditions $\times$ Obsessive Passion	-.15
Failure vs. Control Conditions $\times$ Obsessive Passion	.28*

<sup>a</sup> 0 = control condition, 1 = success condition. <sup>b</sup> 0 = control condition, 1 = failure condition.

\*  $p < .05$ .

<sup>3</sup> Although not presented, the interaction terms composed of (a) promotion focus and the experimental conditions and (b) prevention focus and the experimental conditions were not significant predictors of anagram performance.

average of 6.07 years ( $SD = 2.84$ ) and were currently devoting an average of 13.16 hr ( $SD = 10.10$ ) per week to it.

**Procedure.** Participants were informed that the researchers were interested in knowing more about the attitudes and behaviors of students toward leisure activities as well as their linguistic aptitudes. They were told that their participation was voluntary and their responses would remain confidential. The experimenter was blind to conditions and testing occurred in the laboratory. All questionnaires and tasks were computerized. First, participants completed a questionnaire that contained assessments of harmonious and obsessive passion. Second, they engaged in a lexical decision task, ostensibly to measure verbal abilities, and were randomly assigned to one of three priming conditions (success, failure, or control prime conditions). Finally, participants' performance was measured using a puzzle-solving task (Raven's Progressive Matrices Set II; Raven, 1962). A funneled debriefing procedure (Chartrand & Bargh, 1996) was used at the end of the experiment to assess whether participants had guessed the nature of the study or whether they had seen the subliminal primes. No participant reported any suspicion about the study nor reported seeing the primes after having been told that they were presented on the screen.

#### Materials.

**Passion for an activity.** Like in Study 2, participants listed an activity "dear to your heart" and completed the Passion Scale (Vallerand et al., 2003) toward this activity. Harmonious ( $M = 5.07$ ,  $SD = 1.07$ ,  $\alpha = .81$ ) and obsessive passion ( $M = 2.42$ ,  $SD = 1.12$ ,  $\alpha = .79$ ) were shown to be reliable measures.

**Manipulation of success and failure.** On a computer, participants were given a lexical decision task in which they were asked to judge whether different strings of letters represented a word or a nonword. Participants were instructed to do this as quickly as possible. Unbeknownst to participants, prior to the presentation of the target a subliminal prime word was presented for a period of 17 ms. Participants were randomly assigned to one of three priming conditions: a neutral (*table, chair, wheel, floor, wall*;  $n = 16$ ), a success (*success, victory, win, triumph, winner*;  $n = 19$ ), or a failure prime (*failure, fail, lose, defeat, loser*;  $n = 18$ ) condition. The primes appeared in the center of the screen and were backward masked by a letter string (e.g., "xxxxxxxxxxxxxx") that was at least equal in length to the primes to ensure that it did not reach the threshold of conscious awareness (Rayner, 1978). Eighty trials were presented to the participants. Similar procedures have been successfully used in the past for unconscious goal priming (e.g., Bargh, Gollwitzer, Lee-Chai, Barndollar, & Trötschel, 2001; Dijksterhuis, Aarts, Bargh, & van Knippenberg, 2000; Kawakami, Dovidio, & Dijksterhuis, 2003; Shah & Kruglanski, 2003).

**Raven's Progressive Matrices Test (performance).** Our dependent variable consisted of 10 problems taken from the Advanced Raven's Progressive Matrices Set II (Raven, 1962;  $M = 7.21$ ,  $SD = 1.97$ ). Each problem consists of a  $3 \times 3$  matrix including various abstract figures organized according to various rules. The bottom right cell of this matrix is blank, and participants were instructed to determine the correct missing figure that best fit the matrix from eight possible choices. Participants were instructed that they would have 45 s to solve each problem.

## Results

Hierarchical multiple regression analyses were conducted to examine the effects of the experimental conditions and passion on the number of solved Raven matrices. For the purpose of the study, experimental conditions were integrated into the analysis using two dummy variables. The success condition was dummy coded as 1 on the first dummy coding (success vs. control conditions), and the failure condition was dummy coded as 1 on the second dummy coding (failure vs. control conditions), leaving the control condition as the reference group in the analysis. According to Aiken and West's (1991) procedures, independent variables (experimental conditions and harmonious and obsessive passion) were centered before calculating the interaction products.

Results showed that only the success versus control conditions ( $\beta = -.41$ ,  $p = .01$ ) dummy variable and the Failure Versus Control Conditions  $\times$  Obsessive Passion interaction ( $\beta = .37$ ,  $p = .02$ ) significantly predicted the number of solved Raven matrices problems (see Table 3). Further analyses revealed that obsessive passion significantly predicted Raven's Progressive Matrices performance in the failure condition,  $\beta = .56$ ,  $t(16) = 2.40$ ,  $p = .03$ , but not in the control,  $\beta = .14$ ,  $t(14) = 0.52$ ,  $p = .61$ , or success,  $\beta = -.12$ ,  $t(17) = -0.45$ ,  $p = .66$ , conditions. In addition, this significant interaction term was graphed with high and low scores at 1  $SD$  above and below the mean on obsessive passion (see Figure 3 for a visual representation). The Success Versus Control Conditions  $\times$  Obsessive Passion predictor was unrelated to the number of solved Raven matrices problems ( $\beta = -.10$ ,  $p = .55$ ). Furthermore, harmonious passion was unrelated to Raven's matrices performance in general ( $\beta = .09$ ,  $p = .67$ ), and this relationship did not vary as a function of experimental conditions (all  $ps > .05$ ).

## Discussion

The results of Study 3 supported our predictions: Obsessive passion predicted performance after subliminal exposure to failure-related words, but not following exposure to success-related words. On the other hand, harmonious passion was not related to any change of performance following subliminal expo-

Table 3

*Results of the Hierarchical Linear Regression Analysis Predicting Raven Matrices Performance From Experimental Conditions and Harmonious and Obsessive Passion (Study 3)*

Predictor	Raven matrices performance
Harmonious passion	.09
Obsessive passion	.06
Success vs. control conditions <sup>a</sup>	-.41*
Failure vs. control conditions <sup>b</sup>	-.17
Success vs. Control Conditions $\times$ Harmonious Passion	-.03
Failure vs. Control Conditions $\times$ Harmonious Passion	.01
Success vs. Control Conditions $\times$ Obsessive Passion	-.10
Failure vs. Control Conditions $\times$ Obsessive Passion	.37*

<sup>a</sup> 0 = control condition, 1 = success condition. <sup>b</sup> 0 = control condition, 1 = failure condition.

\*  $p < .05$ .



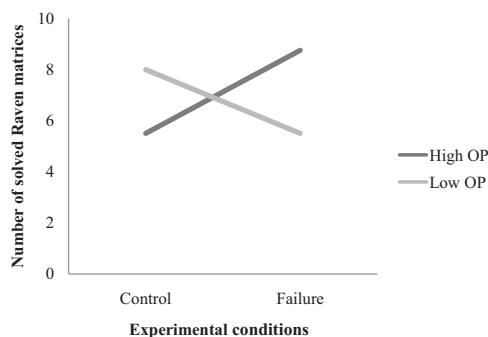


Figure 3. Raven matrices performance of participants with high and low obsessive passion (OP) in control and failure conditions (Study 3;  $N = 53$ ).

sure to either success- or failure-related words. Considering that individuals were exposed to the exact same failure- or success-related words, the present results suggest that the greater the magnitude of obsessive passion for an activity, the greater the sensitivity to failure-related words. For individuals with high levels of obsessive passion, failure-related words are threatening (even when subliminally presented) and motivate them to exert greater effort on a performance task. The findings of Study 3 support the hypothesis that obsessive passion is related to defensiveness and self-concept vulnerability (Donahue et al., 2009; Lafrenière, Bélanger, et al., 2011; Mageau et al., 2011). Furthermore, the present results also extend past findings by demonstrating the consequences associated with having a vulnerable self-concept, namely, unconscious and automatic response to threat. These results also replicate the findings of Study 2 by showing that obsessive passion can predict performance in a task irrelevant to the passionate activity after exposure to failure information in line with self-affirmation theory's (Aronson et al., 1995; Steele, 1988) proposition that individuals can alleviate personal threat by affirming value in another, but self-related, domain.

### Study 4

The results of our first three studies yielded important information on the functioning of passionate people following exposure to self-relevant information. Study 4 aimed to replicate and extend these findings by investigating (a) the mechanism underlying the increases in performance associated with obsessive passion when exposed to failure information and (b) the boundary conditions of such a phenomenon. Our first aim was thus to empirically document that obsessive passion predicts greater performance after exposure to failure information because it is related to self-concept vulnerability and defensiveness (Donahue et al., 2009; Lafrenière, Bélanger, et al., 2011; Mageau et al., 2011). We hypothesized that following exposure to failure information, obsessive passion would predict greater fear of failure. It has been argued that fear of failure can energize behavior and be a potent catalyst of achievement behavior (Elliot, 1999; Elliot & Church, 1997). We thus proposed that fear of failure is the driving force that explains increases of performance associated with obsessive passion. The construct of fear of failure has been originally represented as a stable individual difference (Atkinson, 1957). However, fear of failure could well be instigated situationally. Indeed, theorists have

proposed and adduced evidence that the concept of personality is simply "one source of variability in the functioning of psychological principles that also varies across momentary situations" (Higgins, 2008, p. 612); thus, psychological constructs are dynamic and can be operationalized in terms of both individual differences and short-lived situations (for review and discussion, see Kruglanski & Sheveland, in press).

If fear of failure is the mechanism at play, then this raises the question of whether individuals who fear failure are always susceptible to invest greater effort in any task. Research in social cognition suggests that goals have the capacity to cognitively activate their respective means of attainment, which then mobilize individuals to select and engage in those means (Kruglanski et al., 2002; Shah & Kruglanski, 2000). As a consequence, if the goal of avoiding failure is activated, individuals will be more attuned to means likely to fulfill it. Following this reasoning, we hypothesized that following exposure to failure-related words (as opposed to success-related ones), obsessive passion would predict increases in performance only when the performance task entailed important negative consequences if one fails at it. If the task does not include any serious consequences, one would not need to mobilize significant effort to avoid failing at the task.

To summarize, following failure (as opposed to success) information, we predicted that obsessive passion would predict greater performance through its effect on fear of failure. This mediation model was expected to hold only when important negative consequences are attached to failing and not when they are trivial to the self. When consequences are trivial, obsessive passion should also be associated with fear of failure (because individuals have been exposed to failure words). However, under these circumstances obsessive passion and fear of failure should not predict performance. Consistent with Studies 1, 2, and 3, we also predicted that harmonious passion would not be affected by success- or failure-related information regardless of whether the performance task entails negative consequences. We also predicted that harmonious passion should not be related to fear of failure. Study 4 used a performance task within the purview of individuals' passionate activity.

### Method

**Participants.** One hundred and fifty-five undergraduate students (87 women and 68 men;  $M_{\text{age}} = 20.41$ ,  $SD_{\text{age}} = 1.06$ ) participated and received partial credit toward fulfillment of a course requirement. Participants had been involved in their passionate activity for an average of 6.07 years ( $SD = 2.84$ ) and were currently devoting an average of 18.86 hr ( $SD = 11.63$ ) per week to their academics.

**Procedure.** The procedure used in Study 4 was identical to Study 3 with two modifications. First, participants' achievement motives (fear of failure and hope of success motives) were measured after the manipulation of success and failure. Second, the Raven matrices test was framed either as "puzzles used by researchers to diagnose IQ levels" (IQ condition;  $n = 72$ ) or as "fun and famous puzzles" (fun condition;  $n = 83$ ). A funneled debriefing procedure (Chartrand & Bargh, 1996) was used at the end of the experiment to assess whether participants had guessed the nature of the study or whether they had seen the subliminal primes. No participant reported any suspicion about the study nor reported

seeing the primes after having been told that they were presented on the screen.

### Materials.

**Passion for academics.** The Passion Scale (Vallerand et al., 2003) was used to assess harmonious and obsessive passion toward academics. The Passion Scale was slightly adapted to academics by changing the word “activity” to “academics.” This scale consists of six harmonious passion items (e.g., “My academics are in harmony with the other activities in my life”;  $M = 4.85$ ,  $SD = 0.95$ ,  $\alpha = .82$ ) and six obsessive passion items (e.g., “I have almost an obsessive feeling for my academics”;  $M = 2.57$ ,  $SD = 0.98$ ,  $\alpha = .70$ ) and was completed on a 7-point Likert scale ranging from 1 (*not agree at all*) to 7 (*very strongly agree*).

**Manipulation of success and failure.** Similarly to in Study 3, participants completed a lexical decision task and were randomly assigned to a success ( $n = 50$ ), failure ( $n = 48$ ), or neutral ( $n = 57$ ) prime condition.

**Achievement Motives Scale.** The Revised Achievement Motives Scale (Lang & Fries, 2006) was used to measure participants’ hope of success and fear of failure. Each subscale was composed of five Likert scale items. The Hope of Success subscale included items such as “I like situations in which I can find out how capable I am” and “when I am confronted with a problem which I can possibly solve, I am enticed to start working on it” ( $M = 3.59$ ,  $SD = 1.11$ ,  $\alpha = .70$ ). Sample items from the Fear of Failure subscale include “I am afraid of failing in somewhat difficult situations when a lot depends on me” and “I feel uneasy to do something if I am not sure of succeeding” ( $M = 4.03$ ,  $SD = 1.10$ ,  $\alpha = .72$ ).

**Raven’s Progressive Matrices Test (performance).** As in Study 3, our measure of performance consisted of the number of correctly solved puzzles taken from the Raven Progressive Matrices Set II (Raven, 1962;  $M = 10.34$ ,  $SD = 3.53$ ). To increase the

variability of the measure, participants were given 15 problems instead of 10. The puzzles given to each participant were the same except that they were framed as having either important consequences (“puzzles used by researchers to diagnose IQ levels”) or nonimportant consequences (“fun and famous puzzles”) if failed.

### Results

Hierarchical multiple regression analyses were conducted to examine the effects of the experimental conditions and passion on the number of solved Raven matrices. For the purpose of the study, prime conditions were integrated into the analysis using two dummy variables. The success condition was dummy coded as 1 on the first dummy coding (success vs. control conditions), and the failure condition was dummy coded as 1 on the second dummy coding (failure vs. control conditions), leaving the control condition as the reference group in the analysis. Moreover, Raven conditions were dummy coded with a score of 1 attributed to the IQ condition and a score of 0 attributed to the fun condition. According to Aiken and West’s (1991) procedures, independent variables (experimental conditions and harmonious and obsessive passion) were centered before calculating the interaction products.

Results showed that only the failure versus control conditions dummy variable ( $\beta = -.27$ ,  $p = .01$ ) and the Failure Versus Control Conditions  $\times$  Raven Conditions  $\times$  Obsessive Passion interaction ( $\beta = .23$ ,  $p < .05$ ) significantly predicted the number of solved Raven matrices (see Table 4). Further analyses revealed that, in the IQ condition, the Failure Versus Control Conditions  $\times$  Obsessive Passion interaction ( $\beta = .42$ ,  $p = .02$ ) significantly predicted the number of solved Raven matrices. Specifically, in the IQ condition, obsessive passion significantly predicted Raven’s Progressive Matrices performance in the failure condition,  $\beta = .47$ ,  $t(23) = 2.30$ ,  $p = .03$ , but not in the control condition,  $\beta =$

Table 4

*Results of the Hierarchical Linear Regression Analysis Predicting Raven Matrices Performance From Experimental Conditions and Harmonious and Obsessive Passion (Study 4)*

Predictor	Raven matrices performance
Harmonious passion	-.02
Obsessive passion	.10
Success vs. control conditions <sup>a</sup>	-.09
Failure vs. control conditions <sup>b</sup>	-.27*
IQ vs. fun conditions <sup>c</sup>	-.01
Success vs. Control Conditions $\times$ Harmonious Passion	.01
Failure vs. Control Conditions $\times$ Harmonious Passion	.02
IQ vs. Fun Conditions $\times$ Harmonious Passion	-.19
Success vs. Control Conditions $\times$ Obsessive Passion	.14
Failure vs. Control Conditions $\times$ Obsessive Passion	-.01
IQ vs. Fun Conditions $\times$ Obsessive Passion	-.10
IQ vs. Fun Conditions $\times$ Success vs. Control Conditions	.16
IQ vs. Fun Conditions $\times$ Failure vs. Control Conditions	-.07
Success vs. Control Conditions $\times$ IQ vs. Fun Conditions $\times$ Harmonious Passion	.01
Failure vs. Control Conditions $\times$ IQ vs. Fun Conditions $\times$ Harmonious Passion	.03
Success vs. Control Conditions $\times$ IQ vs. Fun Conditions $\times$ Obsessive Passion	.05
Failure vs. Control Conditions $\times$ IQ vs. Fun Conditions $\times$ Obsessive Passion	.23*

<sup>a</sup> 0 = control condition, 1 = success condition. <sup>b</sup> 0 = control condition, 1 = failure condition. <sup>c</sup> 0 = fun condition, 1 = IQ condition.

\*  $p < .05$ .

$-.01, t(29) = -0.05, p = .96$ . These results basically replicate the findings obtained in the other three studies. Moreover, as expected, in the fun condition, the Failure Versus Control Conditions  $\times$  Obsessive Passion interaction did not significantly predict the number of solved Raven matrices ( $\beta = .11, p = .63$ ), and obsessive passion was unrelated to the Raven's matrices performance across all prime conditions (all  $ps > .05$ ). The Success Versus Control Conditions  $\times$  Obsessive Passion predictor was also unrelated to the number of solved Raven matrices in both the IQ and fun conditions. Furthermore, harmonious passion was unrelated to Raven's matrices performance in general ( $\beta = -.02, p = .89$ ), and this relationship did not vary as a function of experimental conditions (all  $ps > .05$ ).

Mediation analyses were then conducted to test whether fear of failure mediates the relationship between obsessive passion and fear of failure. First, we regressed harmonious and obsessive passion, experimental conditions, and their interactions on fear of failure. Results showed that only the Failure Versus Control Conditions  $\times$  Raven Conditions  $\times$  Obsessive Passion interaction ( $\beta = .29, p = .01$ ) significantly predicted fear of failure. Further analyses revealed that, in the IQ condition, the Failure Versus Control Conditions  $\times$  Obsessive Passion interaction ( $\beta = .45, p = .01$ ) significantly predicted fear of failure. Specifically, in the IQ condition, obsessive passion significantly predicted fear of failure in the failure condition,  $\beta = .50, t(23) = 2.70, p = .01$ , and in the control,  $\beta = .48, t(29) = 2.25, p = .04$ , condition but not in the success,  $\beta = -.05, t(25) = -0.22, p = .83$ , condition. Moreover, in the fun condition, the Failure Versus Control Conditions  $\times$  Obsessive Passion interaction ( $\beta = .10, p = .58$ ) did not predict fear of failure. Specifically, in the fun condition, obsessive passion significantly predicted fear of failure in the failure condition,  $\beta = .52, t(21) = 2.71, p = .01$ , but not in the control,  $\beta = -.28, t(26) = -1.46, p = .16$ , and success,  $\beta = -.28, t(24) = -1.42, p = .17$ , conditions. However, as suggested by the nonsignificant Failure Versus Control Conditions  $\times$  Obsessive Passion interaction, obsessive passion was equally related to fear of failure across all prime conditions.

Second, we regressed fear of failure, hope of success, experimental conditions, and their interactions on Raven matrices performance. Results showed that only the failure versus control conditions ( $\beta = -.23, p = .01$ ) dummy variable and the Failure Versus Control Conditions  $\times$  Fear of Failure interaction ( $\beta = .44, p = .00$ ) significantly predicted the number of solved Raven matrices. Further analyses revealed that, in the IQ condition, the Failure Versus Control Conditions  $\times$  Fear of Failure interaction ( $\beta = .65, p = .00$ ) significantly predicted the number of solved Raven matrices. Specifically, in the IQ condition, fear of failure predicted Raven matrices performance in the failure condition,  $\beta = .73, t(23) = 4.40, p = .00$ , but not in the control,  $\beta = -.21, t(29) = -0.99, p = .33$ , and success,  $\beta = -.13, t(25) = -0.52, p = .61$ , conditions. Moreover, in the fun condition, the Failure Versus Control Conditions  $\times$  Fear of Failure interaction ( $\beta = .24, p = .09$ ) marginally predicted the number of solved Raven matrices. Specifically, in the fun condition, fear of failure significantly predicted fear of failure in the success condition,  $\beta = .40, t(24) = 2.10, p = .05$ , but not in the control,  $\beta = -.02, t(26) = -0.09, p = .93$ , and failure,  $\beta = .40, t(21) = -1.97, p = .06$ , conditions.

Third, given that only in the failure condition when the task was presented as an IQ test did both obsessive passion and fear of

failure positively and significantly predict Raven matrices performance, we conducted mediation analyses for that condition only (see Figure 4). Mediation analyses were tested using the bootstrapping method with bias-corrected confidence estimates, which is suggested when working with small samples (MacKinnon, Lockwood, & Williams, 2004; Preacher & Hayes, 2004). In the present study, the 95% confidence interval of the indirect effects was obtained with 5,000 bootstrap resamples (Preacher & Hayes, 2008). Results of the mediation analyses confirmed the mediating role of fear of failure between obsessive passion and Raven matrices performance ( $\beta = .28$ ; CI [.03, .66]) in the failure condition when the task was presented as an IQ test. In addition, results indicated that the direct effect of obsessive passion on Raven matrices performance became nonsignificant,  $\beta = .19, t(23) = 1.08, p = .28$ , when taking into account the mediating role of fear of failure, thus suggesting full mediation. It should be noted that further analyses revealed that consistent with our predictions, mediation analyses in all other experimental conditions yielded nonsignificant indirect effects.

## Discussion

The results of Study 4 replicate the findings of Studies 1, 2, and 3 by demonstrating that obsessive passion is associated with increased performance after exposure to failure information. We extend these findings by illuminating the underlying mechanism that leads to greater performance. Specifically, we found that under threat, obsessive passion predicts greater fear of failure, which in turn leads to greater performance. We also found that these effects were conditional upon the severity of the consequences associated with failing at the task: If failing at the task entails important consequences such as having a poor IQ, fear of failure predicts greater performance; if failing at the task is relatively inconsequential (a fun task), increased performance is not observed. Furthermore, in line with our hypotheses, we found that harmonious passion is unrelated to performance following exposure to success and failure information. Overall, Study 4 provides empirical support for the hypothesis that performance after exposure to failure information is a self-regulatory strategy driven by specific achievement motives, namely, fear of failure.

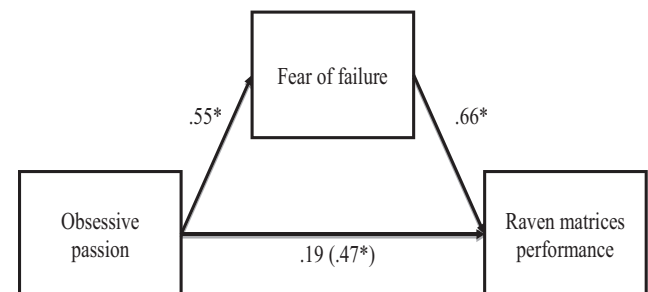


Figure 4. Indirect effect of obsessive passion on Raven matrices performance through fear of failure when the Raven's test was framed as an IQ test in the failure condition, while controlling for harmonious passion and hope of success (Study 4;  $N = 23$ ). To simplify the presentation, the coefficients relating all the variables in the model to harmonious passion and hope of success are omitted. \*  $p < .05$ .

## General Discussion

The major goal of the present research was to explore the effect of success and failure information on the performance of individuals with different types of high goal commitment (passion) for an activity. The results of four studies found converging evidence for the hypothesis that high goal commitment for a given activity does not necessarily equate with greater performance following exposure to failure information. Rather, the type of passion one holds for an activity determines how one will respond to failure information. Specifically, our results revealed that when exposed to failure information (vs. success or control information), obsessive passion was associated with fear of failure, which translated into greater performance. In contrast, harmonious passion did not predict performance following either failure or success information (nor was it related to fear of failure). These performance effects were obtained on a variety of performance tasks in physical (handgrip dynamometer) and intellectual (anagrams, IQ test) domains that were either related (Studies 1 and 4) or unrelated (Studies 2 and 3) to individuals' passionate activity. In addition, increases in performance associated with obsessive passion occurred unconsciously and automatically following subliminal exposure to failure information (Studies 3 and 4). Study 4 evidenced the boundary conditions of this effect by demonstrating that performance took place only when the performance task was framed as having important negative consequences for the self if one failed. These findings suggest that when experiencing fear of failure, individuals only invest energy in means instrumental to their goal of avoiding failure that has negative connotations for the self. These results support our hypotheses and carry several implications.

## Two Modes of Functioning in Passionate Individuals

A first implication of the present research is that it provides evidence for two modes of functioning in equally high committed (passionate) individuals. The first, more harmonious, mode of functioning is related to a secure sense of self (Donahue et al., 2009; Lafrenière, Bélanger, et al., 2011); individuals are fully in control of their core activity and it does not take an overwhelming proportion of their identity. Under this mode of functioning, the activity is well integrated with other life domains and the pleasure drawn from it is purely derived from activity engagement. Therefore individuals do not have to engage in self-protection or defensive behavior to fulfill or comply with external demands. The second, more obsessive, mode of functioning is based on defensiveness and a contingent sense of self (Donahue et al., 2009; Lafrenière, Bélanger, et al., 2011; Mageau et al., 2011; Rip et al., 2012). Under this mode of functioning, vigilance and the perception of conflicts between the impassioned activity and other life domains leads to engagement in the passionate activity in a reactive and defensive way conducive to self-protection.

Whereas very little research has investigated the moderating role of goal commitment in performance, previous research that did investigate its moderating effect was limited to high versus low involvement. Typically, such research reveals that there is no increase in performance under success, but under failure, highly committed individuals for a given goal tend to show an increase in performance on a task pertinent to that for which feedback was

given (Brunstein, 2000; Brunstein & Gollwitzer, 1996). What the present findings show is that these performance effects are more complex than reported previously: Both types of passion were found to be positively related to activity importance (Study 2), yet they yielded different results when facing failure information. Interestingly, despite not differentiating between types of passion, past research appears to have correctly captured the functioning associated with obsessive passion. This could be due to the fact that such research has typically induced insecurity and fear in participants' identity, which may have set in motion defensive functioning (Brunstein, 2000).

Nonetheless, our results demonstrate that harmonious passion is not associated with increases (or decreases) in performance following failure information. These results reveal that the magnitude of goal importance does not fully explain when individuals will react to failure information. It appears that the quality of goal engagement (herein defined as harmonious and obsessive passion) is a key variable in predicting performance after exposure to failure information. Indeed, as illustrated in Study 2, controlling for activity importance did not change the results. Similarly, the absence of impact of promotion and prevention foci in our analyses lead us to conclude that the present results cannot be explained by different regulatory foci nor by the regulatory fit hypothesis suggested by regulatory fit theory (Higgins & Spiegel, 2004). Rather, the type of passion one holds for the activity in interaction with the success/failure information explains the present findings. Consequently, the present research underscores that qualitative differences exist in the type of high goal commitment an individual may display.

## On Support for the Dualistic Model of Passion

A second implication of the present findings is that they provide support for the dualistic model of passion (Vallerand, 2008; Vallerand et al., 2003) in at least three ways. First, whereas most self/identity theories posit that activities (Csikszentmihalyi, Rathunde, & Whalen, 1993), groups (Tajfel & Turner, 1986), or individuals (Aron, Aron, & Smollan, 1992) are either internalized or not, the present findings highlight the importance of going above and beyond this distinction to take into consideration the way in which the object of interest (e.g., passionate activity) is regulated and integrated with other life domains. The dualistic model of passion posits that activities that are well integrated with other life domains and pursued with flexibility lead to harmonious passion, whereas activities that conflict with other life domains and are pursued rigidly lead to obsessive passion (Mageau et al., 2009; Vallerand et al., 2006). These two types of passion thus create different modes of functioning that interact with self-relevant information. Thus, in order to make more refined predictions regarding the performance of highly committed individuals, one needs to take into consideration the type of information being presented (i.e., success and failure information) as well as the type of passion one holds for the activity.

Second, the present results provide additional information on the role of passion in performance. Past research on passion has primarily investigated long-term performance (Vallerand, Mageau, et al., 2008; Vallerand et al., 2007). Results from these studies revealed that there are two paths to performance. The harmonious path focuses on the goal of mastering the activity and engaging in



deliberate practice for years in order to achieve proficiency. The second, more obsessive road to performance involves some mastering attempts but focuses mostly on the goal of beating others and of avoiding failure (Bonneville-Roussy et al., 2011; Vallerand et al., 2007). Future research is warranted in order to determine if achievement goals (Elliot, 1997) mediate the short-term performance effects in a manner consistent with the findings obtained with long-term performance.

A final contribution of the present findings to the literature on passion is that the performance effects associated with obsessive passion after exposure to failure information occurred unconsciously and automatically. These results demonstrate how defensiveness associated with obsessive passion is deeply ingrained in the self and provokes automatic reactions directed at avoiding failure. Future research needs to address if these defenses can be curbed by securing the self. For instance, individuals may be less likely to respond to threat if given the chance to self-affirm alternative self-resources (Sherman & Cohen, 2006; Steele, 1988).

### On Achievement Motives

The current research demonstrates that performance motivated by fear of failure can be channeled in tasks relevant or irrelevant to the source of threat. In other words, the energization of behavior geared toward avoiding failure is not constrained specifically to aspects of the self directly under threat. On the contrary, it can spill over to domains untargeted by failure information. This was particularly displayed in Study 2, where participants demonstrated greater performance in an anagram task even though they reflected upon their weaknesses (or strengths) within the purview of their passionate activity. Study 3 showed that even subliminal exposure to failure-related words was sufficient to motivate performance in a task unrelated to people's passionate activity, namely, an academic task. These results parallel previous findings derived from self-affirmation theory (Sherman & Cohen, 2006; Steele, 1988), in which individuals may attempt to self-affirm themselves in domains unrelated to the threat. In addition to these findings, we believe that for passionate individuals, the ability to perform within the purview of their activity may not only represent an acceptable way to reduce the fear of failure but could well be their number one option. If such an opportunity does not exist, however, then performance on an alternative activity can serve as a substitute. Clearly future research is needed to test this hypothesis.

The present research also contributes by providing evidence that not all tasks are created equal when avoiding failure is a concern. In fact, when experiencing fear of failure, our results demonstrate that individuals exerted effort to perform only when the task entailed important negative consequences for the self if one failed and refrained from investing effort on a task that was not instrumental to their goal. Therefore, these results provide initial evidence for an important dimension of achievement motives that has been unexplored thus far. As much recent research in social cognition suggests (see Bargh & Morsella, 2008; Fishbach & Ferguson, 2007; Kruglanski & Köpetz, 2009), the subjective value of means afforded by various contexts is dynamic and unstable, depending on the totality of goals evoked in a given situation and the number of means available to attain these goals (Zhang, Fishbach, & Kruglanski, 2007). Accordingly, though an individual may pursue the same focal goal (e.g., avoiding failure), means to

that goal may fluctuate across contexts as a function of other alternative goals that happen to be activated (Kruglanski et al., 2002) and the means available at that moment. Therefore, if instrumentality of the task to avoiding failure plays a vital role in predicting performance, future research on this topic needs to integrate how the goal of avoiding failure relates to other activated goals and the presence of alternative means at one's disposition. This would allow one to predict when effort will be exerted and which means will be selected in the pursuit of avoiding failure.

### Conclusion

Failure information can have different consequences on subsequent performance of individuals sharing equally high levels of activity commitment. The type of passion, obsessive or harmonious, predicts whether performance will be elicited in response to fear of failure instigated by failure information. Obsessive passion, associated with defensiveness, predicts performance aimed at avoiding failure, whereas harmonious passion, associated with a secure self-concept, predicts stable performance. Future research on these issues is encouraged, as it could lead to important theoretical and applied advances in the fields of sport, education, and several other domains in which performance is assessed.

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### Retraction of Stapel and Van der Zee (2006)

The following article from the February 2006 issue is being retracted: Stapel, D. A., & Van der Zee, K. I. (2006). The self salience model of other-to-self effects: Integrating principles of self-enhancement, complementarity, and imitation. *Journal of Personality and Social Psychology*, 90, 258–271. doi: 10.1037/0022-3514.90.2.258

This retraction follows the results of an investigation into the work of Diederik A. Stapel (further information on the investigation can be found here: <https://www.commissielevelt.nl/>). The Noort Committee has determined data supplied by Diederik A. Stapel to be fraudulent. His co-author was unaware of his actions and was not involved in the collection of the fraudulent data.

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