

The Two Faces of Persistence: How Harmonious and Obsessive Passion Shape Goal Pursuit

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Persistence is generally viewed a unitary construct measuring the extent to which people pursue a goal often in the face of adversity. Here, we propose two different forms of persistence, rigid and flexible, that take origins in different determinants and lead to different activity and life outcomes. Based on the Dualistic Model of Passion (Vallerand, 2015), we propose two types of persistence—flexible and rigid—that are specific to the activity that one is passionate about. Flexible persistence takes origins in harmonious passion for an activity and entails pursuing activity goals with an open and broad focus that allows one to attend to other life goals. It enables people to pursue the desired activity goals while experiencing positive activity outcomes and attaining other life outcomes. Conversely, rigid persistence takes roots primarily in obsessive passion and entails pursuing activity goals with a narrower focus that facilitates reaching some activity goals and outcomes, but not outcomes outside of the activity in one’s life. Results from six studies involving over 3,000 participants from different populations using correlational, prospective, and experimental research designs provide support for this new perspective on persistence.

Keywords: harmonious passion, obsessive passion, rigid persistence, flexible persistence

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Consider two researchers interested in applying for a research grant in the next 3 months. Both being passionate for research, they are likely to devote a significant amount of time toward achieving this scientific goal; however, they may use vastly different strategies to succeed. The first scientist may persist toward this goal rigidly while focusing almost exclusively on the grant and neglecting other life goals in the process. This scientist may experience some sense of satisfaction for writing the grant, but this narrow focus may prevent the experience of other important life outcomes such as spending quality time with family and friends. The second scientist, on the other hand, may persist toward the grant submission goal in a more flexible manner, making it possible to pursue other important goals. This broader focus should result in positive experiences that are not limited to professional activities, but also in other domains, such as family and leisure activities.

Although this example is intuitive, this is not how psychological science conceives of persistence. Persistence is typically operationalized as a unitary construct that determines how long an individual will continue to perform a given task in order to reach activity goals sometimes despite challenges (i.e., the *quantity* aspect of persistence). This conception implies that high persistence is a desirable feature in goal

pursuit. However, it has an important blind spot; it fails to distinguish between the single-track-minded person who focuses exclusively on a goal at the expense of other considerations (rigid persistence) and the more balanced goal pursuit that allows people to spread their focus and thus benefit from achieving multiple goals (flexible persistence). With this more nuanced conceptualization of persistence, high levels of persistence do not necessarily produce desirable outcomes. The *quality* of persistence (flexible vs. rigid) must also be taken into account. As we elucidate in the next section, we propose a new perspective which distinguishes between rigid and flexible persistence and addresses their determinants and outcomes.

On Persistence

From the start, conceptions of persistence in psychology have been seen as reflecting some sustained engagement toward a goal. For example, McDougall (1908) viewed persistence as an objective feature of purposive behavior, whereas Fernald (1912) stated that persistence dealt with striving for the sake of achievement, in spite of discouragement. More recently, persistence has been defined, at least in part, as the continuation of effortful action despite failures, impediments, threats (Gimeno et al., 1997), obstacles (Baum & Locke, 2004), or even fear (Norton & Weiss, 2009), allowing one to “withstand (or remain standing), resist, or hold up under pressure or difficulty” (Osborn, 2004, p. 319), ultimately leading to success.

The role of motivational processes in persistence is an issue that has a long-standing history. For example, early animal research has shown that hungry rats will show high levels of persistence in order to find food at the end of the maze (e.g., Lana, 1960). While similar drives were proposed to explain human behavior (Hull, 1943), it did not

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take long, however, before research with humans showed that motivational processes were much more complex than those involving animals. For example, research has also shown that individuals who are rewarded to engage in an interesting activity are *less* likely to persist than those who are not rewarded (Deci et al., 1999). In addition, research on achievement motivation has revealed that high achievers are more likely to persist under moderately challenging conditions, while for low achievers such is the case under easy and very difficult conditions (Atkinson, 1957; McClelland et al., 1953).

More recently, one construct that has attracted a lot of attention with respect to persistence is “grit” (Duckworth et al., 2007). Grit is defined as a trait involving the combination of two factors: perseverance of effort (or the *persistence* part) and consistency of interest over time (what the authors call passion—the *motivational* part). As such, grit represents a trait to persist and strive toward any kind of goals one seeks to pursue. Much research has provided support for grit’s ability to predict performance and other outcomes (Duckworth et al., 2007). Of interest is recent research that shows that grit is positively related to conscientiousness, one of the Big Five traits (Ivcevic & Brackett, 2014). Furthermore, when controlling for conscientiousness, grit’s relationship to outcomes was found to significantly diminish (Ivcevic & Brackett, 2014). Thus, the role of traits such as grit and conscientiousness in persistence deserves attention.

Conceptualizations on persistence (like the above on grit) have typically focused on the level of intensity as the main construct characteristic. Implicitly assumed is that high intensity is key to successfully reaching the desired goal. High levels of persistence intensity are seen as more desirable than low levels as intensity is generally assumed to allow one to overcome obstacles and lead to success. Interestingly, very little attention has been paid to the different types of persistence that may exist and how these may lead to different outcomes. In other words, although much research has been conducted on the *quantity* aspect of persistence, much less research has focused on its *quality*.

A limited number of researchers have posited that some qualitative differences may take place with respect to the persistence process. For instance, Brandtstädter and Renner (1990) posited that persisting toward goals could be done in one of two ways, depending on whether goal persistence resulted from assimilative or accommodative processes. For these authors (see Brandtstädter, 2009), assimilative processes entail engaging in goal pursuit in which striving for goals is done with commitment and determination, as one feels that he or she can modify the environment and produce the necessary changes to ensure successfully reaching the desired goal. Conversely, accommodative processes entail accepting to modify one’s goal and even letting go of it if necessary if one feels that he or she cannot fully affect the environment to reach the initial goal. Thus, accommodative processes eventually lead to the rescaling of goals and at times even to stop pursuing goals to adapt to the reality of the environment.

Other researchers have suggested that we may at times put a goal aside by momentarily “freezing” (Davydenko et al., 2019) or “shelving” (Mayer & Freund, 2022) the goal. Other authors (Monshontz & Hoyle, 2021) have proposed different processes in episodic goal pursuit such as resisting giving up on persisting, recognizing opportunities for goal pursuit, and returning to goal pursuit. Finally, Wrosch et al. (2003) went further by positing that in addition to goal engagement, one can also follow a total disengagement path. Research using lifespan developmental and aging perspectives has indeed shown that letting go of unattainable goals either through accommodative processes (see Brandtstädter, 2002) or total disengagement of

goals can indeed yield adaptive benefits (Heckhausen et al., 2019). However, while we do not question the importance of such strategies and processes, it nevertheless remains that they do not address how one goes about doing so. Here, we propose that there is a *qualitative* difference in how one keeps persisting toward a given goal, namely flexibly or rigidly.

Persistence in Light of the Dualistic Model of Passion

Persistence has long been known to be important for people who are committed to a goal. In this light, one would assume that being passionate for a given activity should facilitate persistence toward this activity. The dualistic model of passion (DMP; Vallerand, 2010, 2015; Vallerand et al., 2003; Vallerand & Houliort, 2019) defines passion as a strong inclination toward a self-defining activity that one loves, values, and invests a significant time and energy in. This definition underscores the fact that passion is highly specific toward a given activity. Furthermore, the DMP posits the existence of two distinct types of passion, harmonious and obsessive, that differ in terms of how the passionate activity comes to define and connect with the individual’s identity and how they influence cognitions, affect, and behavior.

With a harmonious passion (HP), the activity that one loves and finds important is coherent with identity (Bouzigarene et al., 2018) and other activities in one’s life. The activity thus occupies an important space in the person’s self-structure, while remaining under the person’s control and is in harmony with other elements of the self and of the person’s life. Consequently, with HP, there is a strong desire to *freely* engage in the beloved activity while being mindful and open to experience (St-Louis et al., 2018). Furthermore, the absence of conflict with other life activity goals allows the person to persist flexibly in the activity while fully focusing on it. Such a flexible perspective allows the person to experience positive activity outcomes. In addition, because one’s passion for the activity allows the latter to be harmoniously intertwined with other life activities (e.g., Philippe et al., 2017) and be free from conflict, it becomes possible to persist in the activity without neglecting other life goals (e.g., Bélanger et al., 2019). Research has shown that HP has been found to allow the person to mindfully engage in the activity (St-Louis et al., 2018), thereby ensuring a number of positive outcomes during task engagement, such as flow, concentration, and positive affect, better relationships, and higher levels of performance (e.g., Bonneville-Roussy et al., 2011). With HP, intensive engagement in a passionate activity can be achieved without neglecting other life pursuits. As such, flexibility should allow one to ensure reaching activity goals as well as other life goals. Indeed, research reveals that HP leads to important outcomes in the rest of the person’s life such as increased health and psychological well-being and positive romantic relationships (see Curran et al., 2015; Vallerand, 2015; Vallerand & Houliort, 2019 for reviews).

Conversely, with obsessive passion (OP), the activity that one loves and finds important is in conflict with other aspects of the person’s identity and life. One experiences external and internal pressures to engage in the beloved activity such as feelings of social acceptance and self-esteem contingencies (Mageau et al., 2011). Therefore, engaging in the beloved activity is associated with ego-invested self-structures and lower levels of mindfulness, as well as conflict with other identity elements (Bouzigarene et al., 2018) and other elements in the person’s life (e.g., Vallerand,

2015). Past research has shown that OP leads to less adaptive psychological outcomes within the activity such as negative affect, guilt, and frustration (Ratelle et al., 2004; Vallerand et al., 2003, Study 1), anxiety (Verner-Filion et al., 2014), and rumination (Carpentier et al., 2012). Furthermore, OP leads to conflict between the passionate activity and other life goals, thereby leading to negative outcomes in other life realms such as personal relationships (Vallerand et al., 2008), low psychological well-being (Philippe et al., 2009), and burnout (Vallerand et al., 2010). Of particular interest, OP leads to persisting in the activity even when important costs are incurred such as chronic injuries in dancers (Rip et al., 2006), posttraumatic stress disorder and low physical health in humanitarian helpers (St-Louis et al., 2016), exercise addiction (Paradis et al., 2013), and even pathological gambling (Philippe & Vallerand, 2007; Vallerand et al., 2003, Study 4). Persisting in the activity one is obsessively passionate about when such persistence leads to suffering, which is characteristic of a rigid mode of functioning.

In light of the above, it would appear that being passionate for a given activity can lead not only to high levels of persistence, but also to two different types of persistence depending on the type of passion underlying the persistence, namely flexible and rigid persistence. Furthermore, because the two types of persistence take roots in passion for a specific activity, persistence does not reflect a trait. Rather it is specific to the activity itself. Flexible persistence is hypothesized to take origins in HP and not from OP and entails pursuing an activity goal with an open and malleable focus that should allow one to reach a desired activity goal while experiencing positive activity outcomes and pursuing and attaining other life goals and outcomes. As flexibility provides one with adaptive processes and experiences (Kashdan & Rottenberg, 2010), one would expect OP to undermine it (Vallerand, 2015). Furthermore, flexible persistence should generally lead to more adaptive *activity* outcomes than rigid persistence within the activity. The advantages of flexible persistence should be especially notable with respect to experiential outcomes (e.g., affect, flow) and not as much for behavioral outcomes that may be obtained through continued activity engagement. Furthermore, because flexible persistence also allows one to pursue engagement in the passionate activity while pursuing involvement in other life activities, it should also lead to adaptive outcomes *outside* of the activity one is passionate about, in the person's life.

Conversely, rigid persistence is expected to stem mostly from OP. It entails pursuing an activity goal with a narrower focus that seeks to facilitate reaching the activity goal with some positive experiences within the activity, while other life goals outside the activity are neglected. People engaging in their activity with a rigid persistence should continue engaging their activity even when they experience negative outcomes within the activity or in other life domains. Thus, while rigid persistence should typically lead the person to reach the desired goal and some positive outcomes within the activity, such persistence may also come at some costs both within and outside the passionate activity, especially experiential outcomes where the quality of task engagement matters. We submit, however, that HP may at times also contribute to rigid persistence, especially when the situation demands it, such as completing an important assignment under some tight deadline. However, such contribution from HP to rigid persistence should be much less than OP and that of HP's contribution to flexible persistence.

The foregoing perspective provides some new insights into the nature, determinants, and consequences of persistence. First, in

addition to past theory and research that underscored the intensity dimension of persistence (low or high), the present perspective suggests that persistence may also vary in terms of its quality: flexible and rigid. While both types of persistence may have high intensity, the distinction between the two types of persistence lies in its flexible versus rigid quality. Second, the two types of persistence do not reflect a trait but are specific to a given activity. This particular point is in direct contrast with constructs such as grit and conscientiousness that posit a trait perspective on persistence. Third, we also posit that in order to display persistence over long time periods (hours, weeks, months, or even years) in a given activity, one has to be passionate (or at least highly motivated) about the activity. Finally, the present perspective makes novel predictions with respect to outcomes. Specifically, both types of persistence should allow experiencing some adaptive outcomes within the activity sphere such as reaching activity goals and experiencing a sense of satisfaction. However, the present perspective makes two additional predictions. First, flexible persistence should lead to more adaptive experiential outcomes than rigid persistence within the activity, as flexibility provides one with adaptive processes and experiences (Kashdan & Rottenberg, 2010) when engaging in the activity that one is passionate about. Second, only flexible persistence should allow people to experience adaptive outcomes *outside* the activity because it originates from HP that is free from rumination about the activity and conflict with other life goals (Vallerand et al., 2003). Furthermore, flexible persistence allows for new goals (or momentarily important ones) to emerge without being shielded or shelved. Thus, the present perspective on persistence makes a number of important novel predictions about the conceptualization, determinants, and outcomes of persistence that warrant empirical scrutiny.

Using preliminary persistence scales, recent studies provided preliminary support for some of the hypotheses presented above. First, using a Portuguese version of the Rigid/Flexible Persistence Scale, Peixoto et al. (2023) found that HP and OP were positively related to flexible and rigid persistence, respectively, in a sample of Brazilian workers. Two other cross-sectional studies were conducted in education (Chichekian & Vallerand, 2022, Studies 1 and 2) and yielded support for some of the above hypotheses. First, HP was found to mainly predict flexible persistence and OP rigid persistence. Second, both HP and OP were positively correlated with one desirable educational outcome, self-reported grades in science, that in turned positively predicted intentions and actual applications to university science programs. Finally, only flexible persistence was positively associated with psychological well-being. Thus, there exist some preliminary empirical evidence regarding the existence of the flexible/rigid nature of persistence. However, much more research is necessary to firmly establish the present conceptualization on rigid and flexible persistence.

The Present Research

There were four goals to this research. The first goal was to fully validate a scale that measures both rigid and flexible persistence in order to test the existence of both constructs and their relations to determinants and outcomes. Overall, although some recent studies provided preliminary support for the rigid/flexible nature of persistence (Chichekian & Vallerand, 2022; Peixoto et al., 2023), the scales used in these studies contained different items and were preliminary in nature. In addition, a full validation of the flexible and

rigid persistence constructs was not performed, especially through at test of their convergent and divergent validity. In the present research we did so. Such validation procedures included both exploratory factor analysis (EFA) and confirmatory factor analysis (CFA), as well as their convergent and divergent validity. Second, although previous studies (Chichekian & Vallerand, 2022; Peixoto et al., 2023) have linked HP and OP to flexible and rigid persistence, respectively, a full confirmation of the determinants and outcomes of the two types of persistence was not performed. Specifically, only cross-sectional designs were used with a very limited number of outcomes. In the present research, we wanted to test the predominant role of HP and OP in predicting flexible and rigid persistence, respectively, in a variety of contexts and designs, including longitudinal, online, and experimental designs allowing us to test the causal role of passion in persistence. Third, we wanted to test if both types of persistence predicted a number of adaptive outcomes within the confines of one's passionate activity. Finally, fourth, we tested the additional hypothesis that flexible (but not rigid) persistence predicts adaptive outcomes *outside* of one's passionate activity.

The above goals were tested in six studies conducted across different settings such as leisure, work, and education. Study 1 focused on validating the Flexible and Rigid Persistence Scale, using both EFA and CFA and convergent and divergent validity analyses. In addition, in this study, as well as in all subsequent studies, we tested a model in which HP positively, and OP negatively, predicts flexible persistence, whereas OP (and HP to a lesser extent) positively predicts rigid persistence. In Study 2, we used an experimental design to test the *causal* effects of HP and OP on flexible and rigid persistence, respectively. In Study 3, we examined the relationships between passion, persistence, and positive outcomes within the confines of a passionate activity while statistically controlling for two related constructs: grit and conscientiousness. In Study 4, using a sample of dancers, we tested the hypothesis that both types of persistence enable one to overcome obstacles to rule out the idea that rigid (but not flexible) persistence is more effective for goal pursuit. In addition, we tested the key hypothesis that flexible (but not rigid) persistence leads to positive life outcomes. In order to go beyond self-report measures, Study 5 sought to replicate the previous findings using objective *behavioral* measures of involvement in both the activity one is passionate about and other tasks akin to life activities. Finally, in Study 6, we sought to replicate the findings of the other studies while using a prospective design allowing us to examine how these variables are dynamically related across time.

Overall, it was hypothesized that a definitive and fully validated Rigid and Flexible Persistence Scale would be validated. Furthermore, across all six studies, we expected OP to be positively associated with rigid persistence and negatively so with flexible persistence and HP to positively predict flexible persistence and to a lesser extent, rigid persistence. In turn, we expected both types of persistence to lead to adaptive outcomes within the activity but only flexible persistence to lead to adaptive outcomes outside of the passionate activity.

Study 1

The first goal of Study 1 was to develop and validate the Flexible and Rigid Persistence Scale. We created several items reflecting flexible and rigid persistence and tested the scale bifactorial nature with EFA and CFA. Moreover, we tested the scale's convergent and

divergent validity by correlating it with three types of measures: (a) scales measuring general persistence, (b) scales measuring lack of persistence, and (c) scales that should theoretically be differentially correlated to rigid and flexible persistence. The scales measuring general persistence included persistence despite difficulty and fear (Howard & Crayne, 2019), grit (Duckworth et al., 2007), goal reengagement once a new goal has been selected (Wrosch et al., 2003), and tenacious pursuit and flexible adjustment (Brandstädter & Renner, 1990). Although the name of the latter scale seems to suggest some distinction similar to rigid and flexible persistence, a closer look at the items reveals that both subscales measure general persistence. We hypothesized that both flexible and rigid persistence would be positively and similarly related to all of the above scales. Regarding scales that measure lack of persistence, we included: goal disengagement (Wrosch et al., 2003) and lack of perseverance and premeditation (both in Whiteside et al., 2005). Both flexible and rigid persistence were expected to be negatively related to all of these scales (but more so for rigid persistence and the Goal Disengagement Scale). Finally, we measured scales assessing constructs that should be related to either flexible or rigid persistence: psychological flexibility (McCracken et al., 2015) and inappropriate persistence (Howard & Crayne, 2019). Flexible and rigid persistence were expected to be positively and negatively related to psychological flexibility, respectively. Conversely, because inappropriate persistence (Howard & Crayne, 2019) implies persisting when one should not, we expected rigid persistence to be positively, and flexible persistence to be negatively, related to it.

The second purpose of Study 1 was to ascertain the role of harmonious and OP in flexible and rigid persistence. We expected OP to be positively associated with rigid persistence and negatively with flexible persistence, whereas HP was expected to positively correlate with flexible persistence and, to a lesser extent, with rigid persistence.¹

Method

Participants and Procedures

There were three samples in Study 1. A total of 1,018 participants were recruited on MTurk and randomly assigned to two groups (Samples 1A and 1B) to assess the factor structure of the scale. *Sample 1A* included 506 individuals from various occupations (274 women, 214 men, 18 unspecified, $M_{\text{age}} = 34.98$ years, $SD_{\text{age}} = 11.05$ years). On average, participants had been working in their organization for 7.71 years ($SD = 7.12$ years) and worked 37.69 hr per week ($SD = 10.36$ hr). *Sample 1B* was very similar to that of Sample 1A with 512 different workers from various occupations (275 women, 218 men, 19 unspecified, $M_{\text{age}} = 35.10$ years, $SD_{\text{age}} = 11.09$ years). Participants had been working on average for 7.78 years ($SD = 7.20$ years) in their current position at an average of 37.71 hr per week ($SD = 10.35$ hr). *Sample 1C* included 497 participants. They were recruited on MTurk and invited to participate in an online study about their attitudes toward goals in general. There were (184 women, 194 men, 119 unspecified, $M_{\text{age}} = 40.09$ years, $SD_{\text{age}} = 11.53$ years). They completed the Persistence Scale and

¹ The research reported in this article has been approved by the ethics review board of the Université du Québec à Montréal (research program on motivational processes and optimal functioning-2018-1538).

measures serving to test the scale convergent and divergent validity. The vast majority of the participants (95%) spoke English as their primary language. All participants were from the United States.

Measures—Samples 1A and 1B

The questionnaire contained scales assessing passion and persistence for work. As in all studies, scales ranged from 1 (*do not agree at all*) to 7 (*very strongly agree*), unless otherwise indicated.

The Rigid and Flexible Persistence Scale. We first created a total of 16 items to measure rigid and flexible persistence for a given activity. Six of these items came from the [Chicheckian and Vallerand \(2022\)](#) Persistence Scale. These items all reflected the concept of persistence. In addition, the qualitative nature of rigidity or flexibility in pursuing activity goals was also made clear in the items. These items were presented to a panel of experts of the passion and persistence literatures (Robert J. Vallerand, Tanya Chicheckian, and Jérémie Verner-Filion), and 10 items were chosen based on their face validity and applicability to a variety of contexts. There were five items for each of the two subscales. As Study 1 focused on persistence at work, the scale items pertained to persisting at work goals (e.g., rigid persistence: “it is OK for me to focus only on work goals in order to succeed” and flexible persistence: “I work hard at my work goals, but other things matter as well”). The reliability indices of the two subscales are reported in the Results section.

Passion. Participants completed the Passion Scale for their work ([Marsh et al., 2013](#); [Vallerand & Rahimi, 2022](#)). The Passion Scale has high levels of validity and reliability and includes two subscales assessing HP and OP. The scale bifactorial structure has been supported in over 20 studies and there is invariance as a function of gender, types of activities, and language. The HP subscale (six items) included items such as “my work is in harmony with the other activities in my life.” The OP subscale (six items) included items such as “I have almost an obsessive feeling for my work.” Cronbach α s for Sample 1A were .89 for OP and .91 for HP and .92 for HP and .87 for OP for Sample 1B.

Measures—Sample 1C Only

The questionnaire contained the Rigid and Flexible Persistence Scale and three types of scales, namely (a) those expected to positive relate to both rigid and flexible persistence, (b) scales expected to correlate negatively with the two types of persistence, and (c) scales expected to relate differently with Rigid and Persistence Scales. These various instruments are briefly described below in the prescribed order. In all studies, scales ranged from 1 (*do not agree at all*) to 7 (*very strongly agree*), unless otherwise indicated.

The Rigid and Flexible Persistence Scale. The eight-item scale developed in Study 1 to assess rigid ($\alpha = .75$) and flexible persistence ($\alpha = .80$) was used in this study.

1. Scales expected to positively relate to both rigid and flexible persistence.

The Multidimensional Persistence Scale (Howard & Crayne, 2019). Two subscales of this scale were used in this study: the *persistence despite difficulty* subscale ($\alpha = .90$) contains five items (e.g., “I keep on going when the going gets tough”), and the

persistence despite fear subscale ($\alpha = .95$) contains also five items (“I tend to face my fears”).

The Grit Scale (Duckworth et al., 2007). Here we used only the *consistency of perseverance* subscale (e.g., “I have overcome setbacks to conquer an important challenge”; $\alpha = .84$) because the other subscale (*consistency of interest*) does not reflect persistence as such. It was assessed on a 5-point scale (1 = *not like me at all*, 5 = *very much like me*).

Tenacious Goal Pursuit and Flexible Goal Adjustment (Brandtstädter & Renner, 1990). The two subscales of five items assess *tenacious pursuit* ($\alpha = .77$; “even when things seem hopeless, I keep on fighting to reach my goals”) and *flexible adjustment* ($\alpha = .79$; “if I do not get something I want, I take it with patience”). As one can see the items of both scales reflect persistence. Thus, we expected both of them to correlate similarly with the two persistence subscales.

The *goal reengagement* subscale from the Goals Adjustment Scale ([Wrosch et al., 2003](#)) contains six items: People are presented the following header and asked to complete the following items: “If I have to stop pursuing an important goal in my life...” One sample item is: “I start working on other new goals” ($\alpha = .91$).

2. Scales expected to negatively relate to both rigid and flexible persistence.

The Impulsive Behavior Scale (Lynam et al., 2006). Two subscales were used: the *lack of premeditation* subscale ($\alpha = .84$) with six items (“I like to stop and think things over before I do them”; recode) and the *lack of perseverance* subscale ($\alpha = .59$) with three items (“unfinished tasks really bother me”; recode).

The Goal Disengagement Subscale (From the Goal Adjustment Scale; Wrosch et al., 2003). It has four items (“it’s easy for me to stop thinking about a goal and let it go”; $\alpha = .67$). Although both types of persistence were expected to be negatively related to this scale, we expected that it would be even more so for the Rigid Persistence Scale.

3. Scales expected to relate differently with rigid and flexible persistence.

The Committed Action Questionnaire-8 (McCracken et al., 2015). This scale was used to assess *psychological flexibility*. It has eight items (e.g., “when a goal is difficult to reach, I am able to take small steps to reach it”; $\alpha = .85$).

The *inappropriate persistence* subscale ($\alpha = .89$) from the Multidimensional Persistence Scale ([Howard & Crayne, 2019](#)) was used. It contains three items “sometimes I find myself continuing to do something even when there is no point in carrying on” ($\alpha = .89$).

Results and Discussion

Prior to analyses, all variables were examined for accuracy of data entry and fit between their distributions and the assumptions underlying maximum likelihood procedures ([Tabachnick & Fidell, 2007](#)). All EFA, CFA, and path analyses were conducted using R Version 3.1.2 (package 0.7.1 for network analyses) with robust full information maximum likelihood estimation. The EFA was conducted with Sample 1A, the CFA with Sample 1B, and the path analysis while using all participants from Samples 1A and 1B. Convergent/

divergent validity correlations were conducted with participants from Sample 1C.

The Rigid and Flexible Persistence Scale: EFA

We used an EFA with varimax rotation with Sample 1A to test the factor structure of the 10 persistence items (five rigid and five flexible). Results of a first EFA yielded a coherent picture of two factors, rigid and flexible persistence, while indicating that one item (Item 10) did not load on the appropriate factor and the other item (Item 5) loaded on the two factors with loadings greater than .30 (see [Table S1 in the online supplemental materials](#)). A second EFA with the remaining eight items was performed and yielded two factors with appropriate loadings and eigenvalues for rigid persistence and flexible persistence of 3.20 and 2.29, respectively. Factor loadings ranged from .67 to .86 for rigid persistence and .62 to .84 for flexible persistence (see [Table 1](#)). Furthermore, acceptable Cronbach α s were found for both rigid ($\alpha = .85$) and flexible persistence ($\alpha = .76$) with a positive but low correlation between the two subscales ($r = .17$).

Passion and Persistence: CFA

A CFA was conducted with Sample 1B to test the factorial validity of the Persistence Scale. Thus, the eight items from the Rigid and Flexible Persistence Scale obtained with Sample 1A were used as indicators for the two latent variables of rigid persistence and flexible persistence. Results (see [Figure 1](#)) yielded an acceptable fit to the data, $\chi^2(df=164) = 47.324$, $p < .001$, comparative fit index (CFI) = .977, Tucker–Lewis index (TLI) = .964, root-mean-square error of approximation (RMSEA) = .062 (.041, .084), standardized root-mean-square residual (SRMR) = .049. This model included a correlated residual within the Rigid Persistence factor (Cole et al., 2007). The standardized factor loadings ranged from .57 to .90. A second CFA was also conducted this time postulating a one-factor solution. Results yielded a poor fit to the data, $\chi^2(df=20) = 811.456$, $p < .001$, CFI = .619, TLI = .465, RMSEA = .233 (.220, .246), SRMR = .164, thus further confirming the proposed two-factor model. Overall, these findings support the factorial validity of the Rigid ($\alpha = .86$) and Flexible ($\alpha = .79$) Persistence Scale.

Convergent and Divergent Validity

Sample 1C was used to assess the convergent and divergent validity of the Persistence Scale. [Table 2](#) presents the means, *SD*s, and correlations involving Rigid and Flexible Persistence subscales and the other constructs. Overall, there is impressive support for the hypotheses. Thus, both the Rigid and Flexible Persistence subscales correlated moderately with persistence despite difficulty, persistence despite fear, grit perseverance, goal reengagement, and tenacious and flexible pursuit. Correlations ranged from .20 (rigid persistence with goal reengagement) to .46 (flexible persistence with grit). Scales expected to negatively relate to both rigid and flexible persistence did so. This was the case lack of perseverance, lack of premeditation, and goal disengagement. Correlations ranged from $-.41$ to $-.03$. Also as expected, correlations were typically stronger with flexible persistence ranging from $-.14$ to $-.41$. In addition, as hypothesized, psychological flexibility correlated more strongly with flexible persistence ($r = .47$) than with rigid persistence ($r = .14$), whereas Inappropriate persistence (which denotes persisting when one should not) correlated more strongly with rigid persistence ($r = .25$) than with flexible persistence ($r = -.08$). In sum, these findings provide strong support for the convergent and divergent validity of the rigid and flexible persistence constructs. Correlations reflect that the two types of persistence convey persistence without being redundant with existing constructs. In addition, the distinction between flexible and rigid persistence was supported by appropriate correlations with scales assessing either flexibility or ill-advised persistence that conveys some rigidity.

Passion and Persistence: Path Analysis

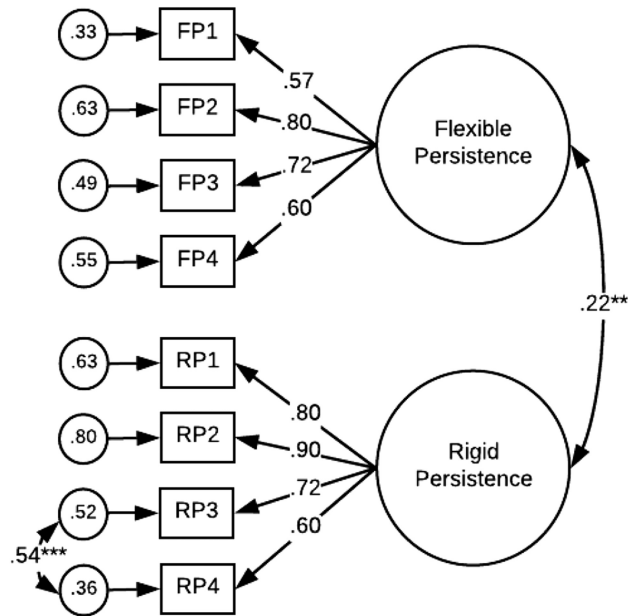
Finally, using participants of Samples 1A and 1B, we conducted a structural model that tested the four hypothesized paths with covariances between the two types of passion and persistence (see [Figure 2](#)). The bivariate correlations and descriptive statistics among the model variables appear in [Table S2 in the online supplemental materials](#). The hypothesized model posited that HP would be positively associated with flexible persistence and to a lesser extent, with rigid persistence, while OP was expected to be positively associated with rigid persistence and negatively with flexible persistence. The results provided support for the hypothesized model. As expected, OP was significantly and positively related to rigid

Table 1
Exploratory Factor Analysis Results of the Persistence Scale From Sample 1A

Items	<i>M</i>	<i>SD</i>	Factor loadings	
			Flexible persistence	Rigid persistence
1. I work hard at my work goals, but other things matter as well.	5.60	1.41	.84	-.05
2. I work hard to achieve a work goal, but can stop if necessary.	5.32	1.33	.75	.13
3. I really focus on my work when it's time to do it.	5.39	1.40	.69	.28
4. I try to reach my work goals but not at the expense of other life goals.	5.23	1.46	.62	.05
5. I am willing to do anything to reach the top at work.	3.40	1.83	.07	.86
6. When it comes to reaching my goals at work, nothing else matters.	3.86	1.74	.13	.80
7. It is OK for me to focus only on work goals in order to succeed.	3.68	1.83	.08	.78
8. I am willing to let go of some things in life in order to excel at work.	3.54	1.73	.08	.67

Note. The items were adapted for the work domain but can be written for any type of activity.

Figure 1
Results of CFA on the Persistence Scale (Study 1—Sample 1B)



Note. CFA = confirmatory factor analysis.
** $p < .01$. *** $p < .001$.

persistence ($\beta = .54, p < .001$) and negatively to flexible persistence ($\beta = -.30, p < .001$), whereas HP was significantly and positively related to flexible persistence ($\beta = .51, p < .001$) and to a much lesser extent, to rigid persistence ($\beta = .13, p = .005$). This was a saturated model. Thus, no fit indices are reported.

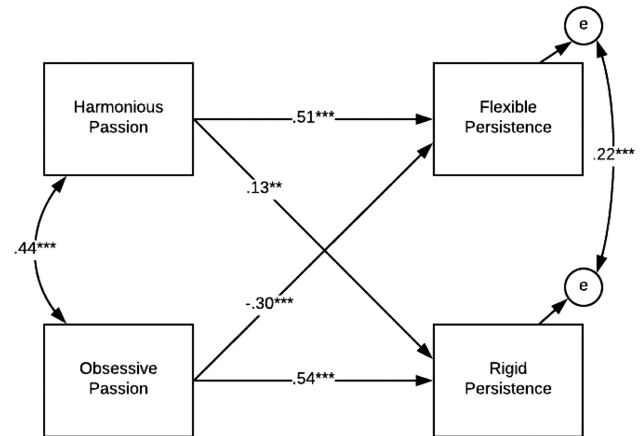
Overall, the results of the EFA and CFA in Study 1 provided initial evidence for the existence of rigid and flexible persistence. In addition, correlations between the Persistence Scale and other constructs provided support for the convergent and divergent validity

Table 2
Convergent and Divergent Validity of the Rigid and Flexible Persistence Scale (Study 1—Sample 1C)

Persistence scales	M	SD	Correlations with	
			FP	RP
Flexible persistence	5.48	1.10	—	.35**
Rigid persistence	3.95	1.31	.35**	—
Persistence despite difficulty	5.04	1.36	.40**	.38**
Persistence despite fear	4.81	1.47	.30**	.33**
Grit (consistency of effort)	3.06	1.48	.46**	.44**
Tenacious pursuit	4.77	1.21	.45**	.39**
Flexible adjustment	4.35	1.27	.31**	.29**
Goal reengagement	4.49	1.25	.31**	.21**
Goal disengagement	3.76	1.21	-.14**	-.24**
Lack of perseverance	2.72	1.19	-.41**	-.24**
Lack of premeditation	3.02	1.12	-.37**	-.16**
Psychological flexibility	5.10	1.30	.47**	.14**
Inappropriate persistence	3.54	1.66	-.08	.25**

Note. FP = flexible persistence; RP = rigid persistence.
** $p < .01$.

Figure 2
Results of SEM Analyses of Study 1 With Both Samples 1A and 1B



Note. SEM = structural equation modeling.
** $p < .01$. *** $p < .001$.

of the scale. Finally, the results of a path analysis provided support for the hypothesized relationships between passion and persistence. Specifically, OP was significantly and positively related to rigid persistence and negatively to flexible persistence, whereas HP, as hypothesized, was significantly and positively associated with flexible persistence and to a lesser extent with rigid persistence. Overall, Study 1 provided preliminary evidence for the two types of persistence (rigid and flexible) and how the two forms of passion play a differentiated role in the type of persistence that is displayed.

Study 2

The results of Study 1 provided support for the existence of two types of persistence, namely flexible and rigid persistence. In addition, the results of Study 1 showed that HP and OP represented key determinants of flexible and rigid persistence, respectively. In Study 2, we aimed to demonstrate the causal influence of passion on persistence. To achieve that goal, we used a validated procedure to experimentally induce either a harmonious or OP mindset (e.g., Bélanger et al., 2013a, 2019). We predicted that the OP condition would lead to higher levels of rigid persistence than the HP condition. Furthermore, we predicted that participants in the HP condition would report greater flexible persistence than participants randomly assigned to the OP condition.

Method

Participants

Four hundred and twenty-five participants were recruited on MTurk. All participants were from the United States. Ten participants were removed from the analysis because they did not complete the experimental manipulation. Furthermore, because HP and OP can only be induced if passion is already present in the individual, in line with past passion manipulation procedures (see Valleraud, 2015), we retained only participants who were passionate for their activity (i.e., work) and currently employed. Thus, participants who obtained a mean score lower than 4 on the passion criterion

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subscale of the Passion Scale (Marsh et al., 2013) and who were not currently employed were excluded, leaving 315 participants (126 women, 188 men, one missing; $M_{\text{age}} = 37.03$ years, $SD_{\text{age}} = 10.67$ years) in the analysis. Participants were working in various sectors (management = 53%, services = 11.4%, sales and office = 14.9%, farming, fishing, and forestry = 1.6%, construction and maintenance = 2.9%, production, transportation, and material moving = 5.1%, government = 2.2% and others 8.9%). Finally, 50.6% of the sample had been involved in their line of work for 7 years or more.

Procedure and Measures

As in prior research (Bélanger et al., 2013a), participants randomly assigned to the HP condition ($N = 159$) were instructed to:

Please write about a time when your work was in harmony with other activities in your life and your work allowed you to live a variety of experiences. Recall and describe that time with as many details as possible—the whole story.

Participants in the OP condition ($N = 156$) were instructed to:

Please write about a time when you almost had an obsessive feeling for your work and you had difficulties controlling your urge to do your work. Recall and describe that time with as many details as possible—the whole story.

After the experimental manipulation, participants completed a manipulation check that included the Passion Scale measuring harmonious ($\alpha = .84$) and obsessive ($\alpha = .89$) passion for work and the measure of rigid ($\alpha = .89$) and flexible persistence ($\alpha = .70$).

Results and Discussion

Manipulation Checks

A multivariate analysis of variance (MANOVA) was conducted on the scores of HP and OP and revealed a significant multivariate effect, Wilks' lambda = .94, $F(2, 312) = 9.64$, $p < .001$. Results indicated that participants reported greater HP in the HP ($M = 5.33$, $SD = 1.05$) than in the OP ($M = 5.03$, $SD = 1.09$) conditions, $F(1, 313) = 5.96$, $p = .01$, $d = .28$. Likewise, participants reported greater OP in the OP ($M = 3.47$, $SD = 1.48$) than in the HP ($M = 2.89$, $SD = 1.58$) conditions, $F(1, 313) = 12.02$, $p = .001$, $d = .37$.

Main Analyses

A MANOVA was performed on the scores of rigid and flexible persistence and revealed a significant effect, Wilks' lambda = .97, $F(2, 312) = 4.75$, $p = .009$. In line with our predictions, participants in the OP condition ($M = 4.36$, $SD = 1.47$) reported greater rigid persistence than participants in the HP condition ($M = 3.95$, $SD = 1.63$), $F(1, 313) = 5.62$, $p = .01$, $d = .26$. Conversely, participants in the HP condition ($M = 5.69$, $SD = .89$) reported greater flexible persistence than participants in the OP condition ($M = 5.46$, $SD = 1.02$), $F(1, 313) = 4.52$, $p = .03$, $d = .24$. As hypothesized, the results of Study 2 suggest that HP and OP had causal effects on flexible and rigid persistence, respectively.

Study 3

Study 3 sought to extend the findings of Studies 1 and 2 in three major ways. First, in Study 3, we sought to replicate the findings of

Studies 1 and 2 with respect to the role of passion in differentially predicting the two types of persistence while using a leisure activity (instead of work as in Studies 1 and 2). Second, we assessed the predictive validity of persistence with respect to outcomes within the confines of the activity. We hypothesized that both rigid and flexible persistence would be positively related to adaptive outcomes experienced within the passionate activity, namely flow and activity satisfaction. We also hypothesized that flexible persistence would correlate more strongly with the experiential outcomes than rigid persistence. Lastly, given that traits such as grit (e.g., Duckworth et al., 2007) and conscientiousness (Ivcevic & Brackett, 2014) also reflect some levels of persistence we tested whether the relationships involving passion, persistence, and outcomes would remain over and beyond those involving grit and conscientiousness.

Method

Participants and Procedures

Participants were 373 individuals (203 women, 165 men, and five unspecified; $M_{\text{age}} = 35.73$ years, $SD_{\text{age}} = 14.34$ years) recruited online through MTurk and came from the United States. Participants were asked to name their favorite leisure activity. Activities included reading, playing video games, working out, running, and hiking. Participants had been involved in the activity for a mean of 8.43 ($SD = 6.70$) years and were devoting a mean of 13.82 ($SD = 14.89$) hours weekly.

Measures

Passion. Participants were asked to think about their favorite activity and completed the HP ($\alpha = .83$) and OP ($\alpha = .84$) subscales.

Persistence. Flexible persistence ($\alpha = .82$) and rigid persistence ($\alpha = .84$) for participants' favorite activity were assessed with the eight-item scale developed in Study 1.

Grit. The 12-item Grit Scale (Duckworth et al., 2007) measuring consistency of interest and perseverance on a 5-point scale (1 = *not like me at all*, 5 = *very much like me*) was used to assess participants' favorite activity using ($\alpha = .84$ for the overall Grit Scale).

Conscientiousness. This six-item scale (Costa & McCrae, 1992) measuring conscientiousness ($\alpha = .87$) was used to assess one of the Big Five personality traits.

Satisfaction With the Activity. We assessed satisfaction with the activity using five items of a modified version of the "Satisfaction with Life" scale (Diener et al., 1985), adapted to focus on the activity (e.g., "in most ways my activity is close to my ideal"; $\alpha = .85$).

Flow Within the Activity. The flow experiences while engaged in the passionate activity were measured with the Short Flow Scale (Jackson & Marsh, 1996). This scale measures the various components of flow experience with 10 items (e.g., "I am totally absorbed in what I am doing.") during the activity ($\alpha = .89$).

Results and Discussion

Means, SD s, and correlations of all constructs are presented in Table S3 in the online supplemental materials. It can be seen that although conscientiousness and grit were strongly related ($r = .78$) together, both displayed much lower correlations with rigid persistence and flexible persistence. The model tested with a path analysis

was composed of eight variables: three exogenous variables (i.e., HP, OP, and conscientiousness) and five endogenous variables (i.e., rigid and flexible persistence, grit, satisfaction, and flow within the activity). The hypothesized model predicted that HP would lead to flexible and to a lesser degree to rigid persistence and that OP would positively lead to rigid, and negatively to flexible, persistence. In turn, it was predicted that both rigid and flexible persistence would be positively related to flow and satisfaction with the activity. It was also hypothesized that conscientiousness would predict grit that, in turn, would predict both outcomes but less so than the two types of persistence.

The proposed model (see Figure 3) had a good fit to the data: $\chi^2(df=7) = 9.529, p = .217, CFI = .998, TLI = .993, RMSEA = .031 (.000, .075), SRMR = .025$. Results revealed that HP was positively associated with flexible ($\beta = .45, p < .001$) and less so with rigid persistence ($\beta = .09, p = .017$) whereas OP was positively associated with rigid ($\beta = .64, p < .001$) but negatively with flexible persistence ($\beta = -.15, p = .002$). In turn, both flexible and rigid persistence were respectively positively related to satisfaction, $\beta = .25, p < .001, 95\%$ confidence interval (CI) [0.151, 0.324] and $\beta = .10, p = .012, [0.011, 0.118]$, and flow, $\beta = .31, p < .001, [0.202, 0.380]$ and $\beta = .10, p = .027, [0.005, 0.121]$, within the activity. It should be noted that the standardized beta weights for flexible persistence were significantly higher than those involving rigid persistence given that their CIs did not overlap (Cumming, 2009). Additionally, conscientiousness $\beta = .75, p < .001$ and HP $\beta = .08, p = .012$ were associated with grit, which in turn was also positively related to flow $\beta = .16, p < .001$ in the activity. Finally, direct relationships between HP and satisfaction in the activity ($\beta = .40, p < .001$), between HP and flow in activity ($\beta = .36, p < .001$), as well as between conscientiousness and satisfaction in activity ($\beta = .24, p < .001$) were also obtained.

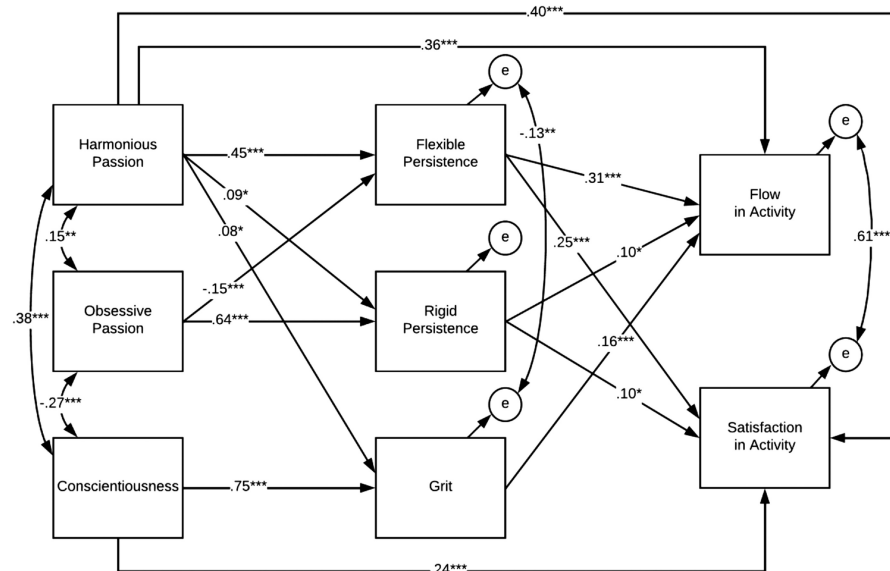
Indirect effects underscored the role of rigid and flexible persistence and grit in the relation between both types of passion and conscientiousness with the associated outcomes within a specific activity (see Table S4 in the online supplemental materials). First, the results of indirect effects provided support for the mediating role of flexible persistence in the relation between HP and satisfaction with the activity, between HP and flow, and between OP and satisfaction with the activity. Results also indicated a significant indirect effect with rigid persistence mediating the relation between OP and satisfaction with the activity, between OP and flow, between HP and satisfaction, as well as between HP and flow. Finally, two indirect effects were also observed with grit as a mediator. Notwithstanding, the combined indirect effects were significant ($\beta = .540, p < .001, 95\%$ CI [.365–.758]) as was the total effect ($\beta = 1.539, p < .001, [1.467–1.898]$).

The findings of Study 3 provided strong support for all hypotheses. Specifically, results revealed that flexible persistence was positively predicted by HP and negatively by OP, whereas rigid persistence was positively predicted by OP and less so by HP. In turn, both types of persistence were positively associated with satisfaction and flow within the beloved activity. Finally, these findings were obtained while controlling for grit and conscientiousness.

Study 4

One of the purposes of Study 4 was to replicate the previous findings on the differential role of OP and HP in the prediction of rigid and flexible persistence. A second purpose of Study 4 was to examine another important activity outcome, namely overcoming *obstacles*. Overcoming obstacles is often mentioned as one of the main outcomes of persistence. It is thus important to test whether both rigid and flexible persistence allow one to overcome obstacles

Figure 3
Results of SEM Analyses of Study 3



Note. SEM = structural equation modeling.
* $p < .05$. ** $p < .01$. *** $p < .001$.

(Mageau et al., 2011). We did so in Study 4 within the confines of a different activity, namely dancing, because dancers often mention that they have to overcome obstacles in order to keep on dancing (see Rip et al., 2008). Finally, the way passionate individuals navigate through these obstacles, however, should depend on the nature of persistence. As the results of Study 3 have shown, both flexible and rigid persistence are expected to yield adaptive *activity* outcomes. This was expected to take place once more as it pertained to overcoming obstacles. The DMP makes the additional hypothesis that flexible persistence should also allow one to derive adaptive outcomes *outside* of the passionate activity. Thus, a third goal of Study 4 was to test this hypothesis where only flexible persistence was expected to positively predict an important life outcome, namely vitality in life (Ryan & Frederick, 1997). In sum, we predicted that HP would positively (and OP negatively) predict flexible persistence, whereas OP (and to a lesser extent HP) would positively predict rigid persistence. In turn, both types of persistence were expected to predict overcoming obstacles within the passionate activity. However, only flexible persistence was expected to positively predict vitality in one's life.

Method

Participants and Procedures

Participants were 158 dancers (109 females, 48 males, and one unknown; $M_{\text{age}} = 36$ years, $SD_{\text{age}} = 13.08$ years) with a mean age of 36 years ($SD = 13.08$ years). All participants were from Canada. They were practicing different types of dance: swing (64.6%), hip hop and house (8.9%), classical ballet (7.6%), Latina dances (5.1%), ballroom dancing (3.8%), and other dances (10.2%). Participants were dancing on average 8.27 ($SD = 9.06$) hours per week and had been doing so for an average of 10.46 ($SD = 9.55$) years.

Participants were recruited on the Internet from social media pages such as Facebook and other forums that catered to those who were passionate about specific dance styles. They were asked questions regarding their attitudes and behaviors toward their dancing.

Measures

Passion. Participants were asked to think about the type of dance they engaged in the most and completed the Passion Scale toward this type of dance (HP, $\alpha = .86$ and OP, $\alpha = .88$).

Flexible and Rigid Persistence. Persistence for dancing was assessed with the Rigid ($\alpha = .87$) and Flexible ($\alpha = .76$) Persistence Scale used in Studies 1 and 2.

Obstacles. The Obstacle scale ($\alpha = .90$) was composed of 13 items assessing a number of obstacles the participant had overcome in order to continue dancing (e.g., "having to work long hours to master difficult dance moves," "having to work with difficult dance teachers," and "having to regularly travel long distances to practice dancing" (from Krause et al., 2020).

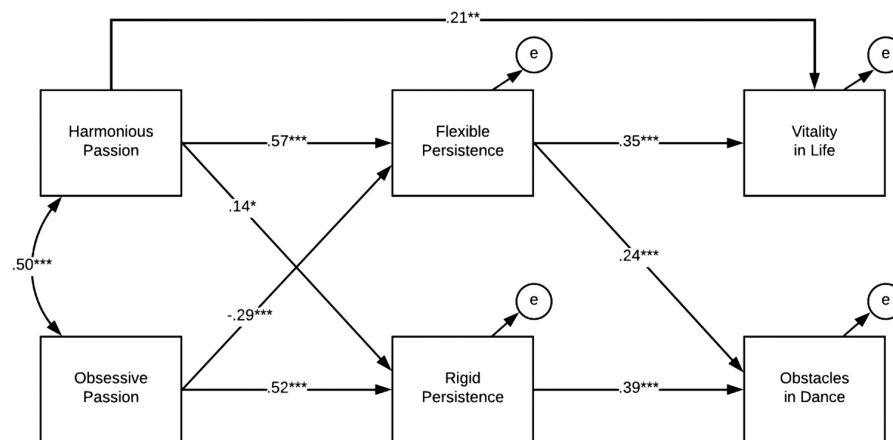
Vitality in Life. The level of energy experienced outside the passionate activity, in one's life was measured using the Vitality scale developed by Ryan and Frederick (1997). This scale measured positive feelings of aliveness and energy (Ryan & Frederick, 1997) in their life in general and used a five-item scale, such as "I feel alive and vital" and "I feel energized" ($\alpha = .90$).

Results and Discussion

A path analysis tested the model that included two predictors (HP and OP), two mediators (rigid and flexible persistence), and two outcomes (obstacles in dance and vitality). Means, *SDs*, and bivariate correlations are presented in Table S5 in the online supplemental materials. The model predicted that HP would positively (and OP negatively) predict flexible persistence, while OP (and HP less so) would positively predict rigid persistence. In turn, both types of persistence were expected to predict overcoming obstacles within the passionate activity. However, only flexible persistence was expected to positively predict vitality in life.

The results showed that the hypothesized model had a good fit to the data, $\chi^2(df = 4) = 6.763$, $p = .149$, CFI = .987, TLI = .952, SRMR = .034, RMSEA = .067, 95% CI [.000, .157]. As shown in Figure 4, HP positively predicted flexible persistence ($\beta = .57$, $p < .001$) and less so rigid persistence ($\beta = .14$, $p = .027$), whereas

Figure 4
Results of SEM Analyses of Study 4



Note. SEM = structural equation modeling.
* $p < .05$. ** $p < .01$. *** $p < .001$.

OP positively predicted rigid persistence ($\beta = .52, p < .001$), but negatively predicted flexible persistence ($\beta = -.29, p < .001$). Both rigid ($\beta = .39, p < .001$) and flexible persistence ($\beta = .24, p < .001$) positively predicted overcoming obstacles in dancing, but only flexible persistence positively predicted vitality in life ($\beta = .35, p < .001$). A significant direct effect was also observed between HP and vitality in life ($\beta = .21, p = .003$).

Indirect effects (see Table S6 in the online supplemental materials) provided support for flexible persistence as a mediator in the relation between HP and vitality in life ($\beta = 0.20, p < .001, 95\% \text{ CI } [0.120, 0.348]$), as well as between HP and overcoming obstacles ($\beta = 0.11, p = .011, [0.030, 0.232]$). Results also showed the existence of a positive indirect effect with rigid persistence mediating the relation between OP and obstacles ($\beta = 0.19, p < .001, 95\% \text{ CI } [0.078, 0.231]$). The indirect effect between HP and obstacles was nonsignificant ($\beta = 0.05, p = .057, 95\% \text{ CI } [-0.002, 0.128]$) but in the expected direction. Furthermore, a negative indirect effect was observed with flexible persistence in the relation between OP and obstacles ($\beta = -0.06, p = .019, 95\% \text{ CI } [-0.085, -0.008]$) as well as between OP and vitality in life ($\beta = -0.10, p = .005, [-0.140, -0.024]$). In sum, a total of six significant indirect effects were observed with both types of persistence playing a mediating role in the relationship between passion and obstacles with flexible persistence also as a mediator between HP and vitality in life generally.

The results of Study 4 replicated and extended the findings from previous studies in several ways. First, as found in Studies 1 and 3, HP positively predicted flexible and less so, rigid persistence, whereas OP positively predicted rigid and negatively flexible persistence. Second, both types of persistence were found to play a role in leading one to overcome obstacles. Thus, as one would expect, the present findings show not only rigid persistence, but also flexible persistence to allow one to overcome obstacles within the passionate activity. Third and final, as predicted, only flexible persistence allowed one to experience vitality in one's life *outside* the purview of the activity. Such was not the case with rigid persistence. This finding suggests that persisting rigidly in the passionate activity while conducive to positive activity outcomes, limits the experience of a broader range of adaptive life outcomes.

Study 5

The studies reported so far provided support for the role of persistence in a variety of outcomes. However, it should be noted that these outcomes were all assessed with self-report measures. Thus, a major goal of Study 5 was to replicate the findings of the prior studies while using objective outcome measures. This goal was achieved by having participants complete an online computerized task presented as "a slice of life." This task simulates a typical day in the life of students in which they are asked to engage in an academic task while also having the opportunity to engage in other life tasks such as exercise, leisure, relationships with friends, and chores. HP for one's studies should allow people to flexibly persist toward educational goals and thus to reach academic goals, while allowing them to engage as well in other life tasks. Conversely, with OP, students should rigidly persist toward their educational goals and refrain from engaging in other life tasks. As we recorded whether participants actually engaged or not in the various tasks, we were able to test these hypotheses with objective measures of performance in the academic task, as well as behavioral indices of engagement in

the other activities outside of education (leisure, relationships, etc.). We hypothesized that HP would be positively (and OP negatively) associated with flexible persistence whereas OP (and HP less so) would be positively associated with rigid persistence. We also expected flexible persistence to be positively associated with performance on the academic task and engagement in the other life tasks. Conversely, it was hypothesized that rigid persistence would be positively associated with performance on the education task, but unrelated to engaging in other life activities.

Method

Participants

One hundred and seventy students were recruited on MTurk. All participants were from the United States and 100% were full-time students at the university. Some had a high school degree = 7.6%, some undergraduate university education = 49.6%, a bachelor's degree = 27.5%, some graduate university education = 7.6%, a master's degree = 6.1%, or even a doctorate degree = 1.5%. Five participants were removed because they did not complete the educational task. In line with Vallerand (2015), only participants who scored above 4 on the passion criteria were kept in the study, leaving 131 participants (62 females, 68 males, one unknown; $M_{\text{age}} = 23.64$ years, $SD_{\text{age}} = 3.03$ years) in the analysis.

Procedures

Participants first completed a survey measuring their passion for academic activities, as well as their rigid and flexible persistence in their studies. Then participants engaged in a computerized task presented as a "slice of life." This task was developed for the purpose of the present study. It simulates a typical day in a student's life which includes engaging in a main educational task while having the opportunity to also engage in other life tasks they typically engage in such as exercise, leisure, relationships, and chores (vacuum cleaning the apartment). Participants were told that their goal was to complete 10 academic puzzles (or matrices). These were presented on the left-hand side of the screen. This task, the Raven matrices (Raven, 1962), is well known in education and has been used extensively (see Bélanger et al., 2013b). The 10 matrices were taken from Bélanger et al. (2013b, Study 2). Participants were also told that other tasks would appear on the right side of the screen from time to time and they were told that they could also engage in these other activities, if they chose to explore them.

While completing the academic puzzles, popups representing the other "life" activities appeared on the right-hand side of the screen every 15 s. There were four such activities: (a) a "relationship task" (writing an email to a close friend), (b) an exercise task which involved clicking on a sprint button as many times as possible for a timed period of 10 s, (c) a leisure activity in which participants could read up to 10 jokes, and (d) a cleaning task in which participants were instructed to drag a vacuum cleaner to collect dust particles.

Measures

Passion. Participants were asked to complete the Passion Scale for their studies. Both subscales were reliable: HP ($\alpha = .85$) and OP ($\alpha = .82$).

Flexible and Rigid Persistence. Persistence in academic studies was assessed with the Rigid ($\alpha = .69$) and Flexible Persistence ($\alpha = .76$) Scale.

Academic Performance Task. The Academic performance task was measured with the Raven matrices. In these figures, participants are presented a series of configurations and are asked to choose among options which one is to follow the sequence. There were 10 matrices. We measured the proportion of raven matrices that participants successfully completed. Scores were calculated in %.

Life Tasks. We measured the number of “life” tasks mentioned above that participants engaged in—a score of 0 was given to participants who did not engage in any additional tasks and a score of 4 if participants engaged in all four noneducational life tasks.

Results and Discussion

The model tested with a path analysis included two exogenous (i.e., HP and OP) and four endogenous variables (i.e., rigid and flexible persistence, life tasks, and performance on the puzzles). Means, *SDs*, and bivariate correlations are presented in Table S7 in the online supplemental materials. The results showed that the hypothesized model had a good fit to the data, $\chi^2(df = 7) = 13.226$, $p = .067$, CFI = .953, TLI = .900, RMSEA = .083 (.000, .150), SRMR = .056. As shown in Figure 5, HP was positively associated with flexible persistence ($\beta = .44$, $p < .001$) and less so with rigid persistence ($\beta = .24$, $p < .001$), whereas OP was positively associated with rigid persistence ($\beta = .56$, $p < .001$). Rigid persistence ($\beta = -.30$, $p < .001$) was negatively related to performance, whereas flexible persistence was positively related to both performance ($\beta = .26$, $p = .002$) and engaging in life tasks ($\beta = .21$, $p = .01$).

Four indirect effects were tested and showed in Table S8 in the online supplemental materials. Results of indirect effects provided support for the mediating role of flexible persistence in the relation between HP and academic task performance, as well as in the

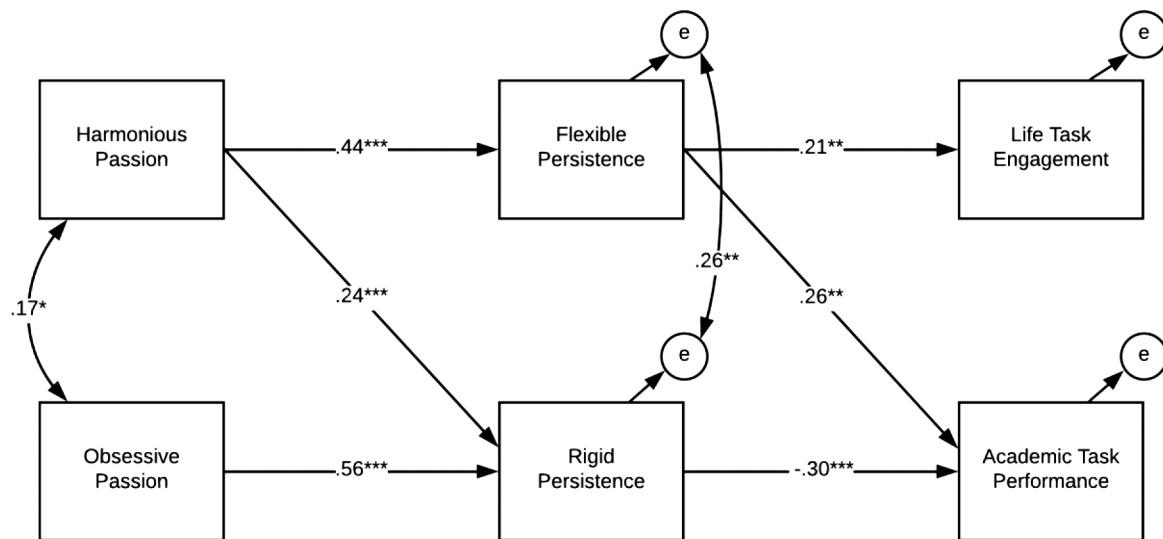
relation between HP and life task engagement. The analyses also revealed a significant indirect effect between HP, rigid persistence, and academic task performance. Last, results indicated a significant indirect effect with rigid persistence mediating the relation between OP and academic performance.

The results of Study 5 replicated and extended the findings from the other studies using behavioral outcomes. Specifically, using a controlled set up approximating real-life tasks, HP was positively associated with flexible, and less so with rigid, persistence whereas OP was positively associated with rigid, and negatively with flexible persistence. In turn, flexible persistence positively predicted both objective performance on the education task as well as engaging in other activities representative of relationships, leisure, exercise, and even chores. Conversely, rigid persistence was unrelated to outcomes in other life domains, but was *negatively* related to activity performance. Such a distinction between the findings of this study and those of Studies 3 and 4 as pertains to activity outcomes suggests that rigid persistence may have some limits regarding the type of positive activity outcomes that one may attain such as performance. Furthermore, flexible, but not rigid, persistence leads to experiencing adaptive outcomes in other life contexts suggesting having a fuller life.

Study 6

The purpose of Study 6 was to replicate and extend the results from the previous studies in two ways. First, we sought to improve on the other studies by looking at *changes* in persistence and outcomes over time. Thus, by introducing a lengthy time interval of 6 months between the two time points, it became possible to examine how these variables are dynamically related across time. In addition, instead of using change scores, regression residuals were used to assess changes in the variables of interest over the 6-month period. Second, we sought to replicate the findings of previous studies while using different outcomes both within as well as outside the

Figure 5
Results of SEM Analyses of Study 5



Note. SEM = structural equation modeling.
* $p < .05$. ** $p < .01$. *** $p < .001$.

passionate activity. Overall, it was hypothesized that HP would be positively associated with increases in flexible persistence and to a lesser degree in rigid persistence, while OP was expected to be positively associated with rigid persistence increases and negatively with flexible persistence. In turn, rigid and flexible persistence were expected to positively predict increases in the activity-related outcome, namely performance. Finally, only flexible persistence were hypothesized to positively predict *increases* in psychological well-being in one's life (i.e., thriving in life).

Method

Participants and Procedures

There were 580 participants at Time 1 recruited on MTurk and came from the United States. Of these, 272 participants also completed the Time 2 questionnaire for a 46.89% retention rate. A MANOVA was performed on the scores of all variables for the two groups. Results revealed a significant multivariate effect, Wilks' lambda = .92, $F(6, 583) = 8.25, p < .001$. Specifically, participants who only completed the Time 1 questionnaire reported greater OP ($M = 3.30, SD = 1.47$) than participants who completed both Times 1 and 2 questionnaires ($M = 2.94, SD = 1.43$), $F(1, 588) = 9.26, p = .002, d = .25$. Conversely, participants who completed the Times 1 and 2 questionnaires reported greater rigid persistence ($M = 4.47, SD = 1.18$) and thriving ($M = 4.11, SD = 0.62$) compared to participants in Time 1 only ($M = 4.22, SD = 1.46$ and $M = 3.84, SD = 0.86$), $F(1, 588) = 4.14, p = .024, d = .19$ and $F(1, 588) = 17.80, p < .001, d = .35$, respectively.

The age of participants ranged from 18 to 76 years ($M = 38.90$ years, $SD = 12.60$ years). Participants were asked to name their favorite activity. The five most popular activities in descending order were reading, playing video games, hiking, writing, and photography. They had been involved in the activity for a mean of 18.84 ($SD = 13.31$) years and were devoting a mean of 11.30 ($SD = 9.70$) hours to it per week. Passion was assessed at Time 1 only, while persistence and outcomes were measured at Times 1 and 2.

Measures

Passion. Participants were asked to think about their favorite activity and to complete the Passion Scale. Cronbach α s of .83 were obtained for HP and .88 for OP at Time 1.

Persistence. We used the same Persistence Scale as in the previous studies (α at Times 1 and 2 ranged from .72 to .79).

Performance in Activity. Activity performance was measured by the four items of the performance subscale of the Optimal Functioning in Society Scale (Chénard-Poirier et al., 2023). Items include *I perform at a very high level in my favorite activity*. This scale has been found to be related to objective performance assessments (Chénard-Poirier et al., 2023; $\alpha = .91, .92$ for Times 1 and 2).

Thriving in Life. The Brief Inventory of Thriving is a 10-item scale, which serves to assess the psychological well-being of individuals (Su et al., 2014). Participants were asked to rate their agreement on a 5-point Likert scale on items such as "in most activities I do, I feel energized" and "what I do in life is valuable and worthwhile." The Cronbach α was $\alpha = .93$ for Time 1 and $\alpha = .94$ for Time 2.

To assess changes in persistence and outcomes over the course of 6 months, the *manifest residuals* from the regression analyses (from Times 1 to 2) were used (Crocker et al., 2003; Gunnell

et al., 2017). Each residual for rigid and flexible persistence, as well as for performance and thriving was obtained by conducting a regression analysis with the T2 measurement entered as the dependent variable and the T1 measurement entered as the independent variable. The residual values from this analysis represented changes in the variable that were not predicted from the initial value of the variable.

Results and Discussion

Main Analyses

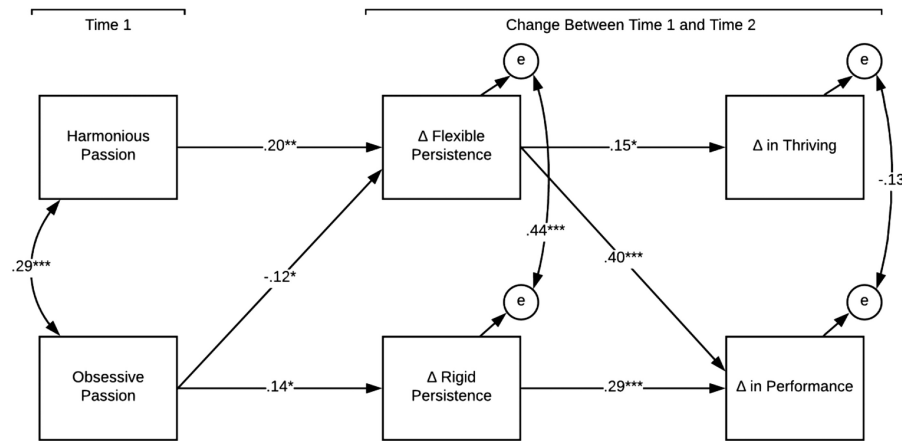
Means, *SD*s, and bivariate correlations are presented in Table S9 in the online supplemental materials. A path analysis was conducted to test a model using a prospective design with HP and OP at Time 1 predicting *regression residuals* in flexible and rigid persistence, which, in turn predicted the *residuals* in performance and thriving. The following four hypotheses were tested: (a) HP at Time 1 would positively predict increases in flexible persistence and minimally to (or not at all) in rigid persistence given that this association was relatively weaker in the previous studies; (b) OP at Time 1 was expected to positively predict increases in rigid persistence and to predict decreases in flexible persistence; (c) increases in both rigid and flexible persistence were expected to positively predict *increases* in activity performance; and (d) only increases in flexible persistence were expected to positively predict *increases* in the thriving in life.

The model fit indices revealed a good fit to the data, $\chi^2(df = 6) = 10.946, p = .090, CFI = .974, TLI = .936, RMSEA = .058 (.000, .112), SRMR = .040$ (see Figure 6). The hypothesized model was fully supported. HP at Time 1 positively predicted changes in flexible persistence ($\beta = .20, p = .001$), whereas OP at Time 1 predicted positive changes in rigid persistence ($\beta = .14, p = .016$), but negatively predicted increases in flexible persistence ($\beta = -.12, p = .043$). In turn, changes in flexible persistence ($\beta = .40, p < .001$) and in rigid persistence ($\beta = .29, p < .001$) predicted increases in performance in the activity over time. Finally, as expected, only changes in flexible persistence predicted increases in thriving in life ($\beta = .15, p = .019$) over time.

Five indirect effects were also tested and reported in Table S10 in the online supplemental materials. Results of indirect effects provided support for the mediating role of changes in flexible persistence in the relation between HP at Time 1 and changes in performance and between HP at Time 1 and changes in thriving in life. Results also provided evidence of an indirect effect with changes in rigid persistence mediating the relationship between OP at Time 1 and changes in performance in the activity. Finally, a negative indirect effect was observed with changes in flexible persistence in the relation between OP at Time 1 and changes in performance in the activity, but not with changes in thriving. In sum, the combined indirect effects of changes in rigid and flexible persistence were significant ($\beta = .086, p = .039, 95\% CI [.004, .170]$). It should be noted that the standardized beta weight for flexible persistence was not significantly higher than that involving rigid persistence for performance in the activity given that their CIs did overlap ($95\% CI [.290, .590]$ and $[.178, .396]$, respectively).

The results of Study 6 provided crucial evidence on the dynamic relations among passion, persistence, and activity and life outcomes. Overall, these findings suggest that passion leads to changes in

Figure 6
Results of SEM Analyses of Study 6



Note. Δ = regression residuals (from Times 1 to 2) for flexible and rigid persistence, thriving, and performance are used in the analysis. SEM = structural equation modeling.

* $p < .05$. ** $p < .01$. *** $p < .001$.

persistence over a 6-month period and that rigid persistence may contribute to changes in activity outcomes over time whereas flexible persistence contributes to both activity and life outcomes.

General Discussion

The overarching goal of the present research was to assess the nature, determinants, and consequences of two new types of persistence: rigid and flexible. Overall, the results of various analyses across six studies provided strong support for this perspective. First, the results of EFA and CFA and correlations between the Rigid and Flexible Persistence Scale and related scales provided clear empirical support for the existence of two types of persistence, rigid and flexible. Second, the results of Studies 1–6 provided strong support for the role of passion as a determinant of persistence. Specifically, HP was found to mainly lead to flexible, and to a lesser extent, to rigid persistence; OP was found to mainly positively lead to rigid persistence and to a lesser extent to negatively predict flexible persistence. Third, the results of four studies (Studies 3–6) revealed that both rigid and flexible persistence yielded positive outcomes within the purview of the activity one is passionate about. Finally, the findings of Studies 4–6 revealed that only flexible persistence allowed one to experience adaptive outcomes *outside* of the passionate activity, in one's life. These findings lead to a number of key conclusions.

A New Perspective on the Nature of Persistence

A first conclusion from the present research is that there is support for a new perspective on persistence. Specifically, the present findings underscore the fact that the quality of persistence needs to be accounted for, namely its rigidity–flexibility. This view on persistence provides a fresh and novel view of the nature of persistence. This novel perspective complements past research and theory that focuses on the intensity part of persistence by adding the qualitative dimension of persistence. While both types of persistence include the intensity dimension, the novel contribution presented here

deals with the distinction between the rigidity versus flexibility in the *nature* of persisting toward a goal. Past theories that have proposed qualitative differences in goal persistence posited that people either changed the goal they pursue to accommodate to the context (Brandstätter & Renner, 1990) or eventually shelve or drop the goal altogether (Wrosch et al., 2003). The present conceptualization posits that one can adopt two different ways of pursuing one's goals without changing or dropping the goal. Rigid persistence leads individuals to narrowly focus on activity goals and in the process to experience positive task outcomes, but no life outcomes outside the activity. Such is not the case with flexible persistence where both types of outcomes are experienced. These hypotheses were upheld in the present research. Clearly, there is much more to persistence than intensity.

A second contribution on the dual nature of persistence is that it was revealed that it is not a trait but rather takes place at the activity level. Specifically, people will persist in those activities that they are passionate about (or at least highly motivated). For example, one individual passionate about basketball would persist for hours perfecting her jump shot, but not toward another activity (e.g., playing the piano) unless also passionate about it. Persistence is activity specific. This is contrary to other perspectives that define persistence as a trait.

Third, another novel hypothesis from the present perspective on persistence is that we see passion and persistence as two independent constructs. As the results of the structural equation modeling (SEM) analyses of the present series of six studies clearly revealed, passion and persistence are empirically distinct constructs. Passion is a determinant of persistence. The present position is in line with classic perspectives on motivational processes and persistence (e.g., Atkinson, 1957) and shows that considering the two constructs separately clarifies issues conceptually and leads to finer predictions such as when motivational processes (here, passion) should lead to persistence and of which type. Finally, the present perspective makes novel predictions with respect to determinants and outcomes. These two issues are discussed below.

Passion as a Determinant of Persistence

The present perspective posits that passion and persistence are different constructs and further, that passion leads to persistence. Passion refers to how one feels about a specific activity, whereas persistence deals with how one pursues goals within the purview of this activity. They are thus conceptually distinct. The results of the SEM models of the different studies provided empirical support for the fact that passion is a determinant of persistence. Specifically, results of all SEM analyses showed that HP was found to strongly lead to flexible, and to a lesser extent, to rigid persistence whereas OP was found to positively lead to rigid persistence and to a lesser extent to negatively predict flexible persistence. Of additional importance, the results of Study 2 provided support for the *causal* effects of passion on persistence. Specifically, in Study 2, experimentally inducing HP led to higher levels of flexible persistence whereas inducing OP led to higher levels of rigid persistence. Finally, the results of Study 6 showed that HP and OP predicted increases in flexible and rigid persistence, respectively, over time as predicted. These findings, overall, provide strong support for the fact that passion is indeed a determinant of persistence.

It thus appears that the type of passion one has for an activity is likely to dictate the *quality* of persistence toward goals associated with this activity. The present findings suggest that HP leads to flexibly pursuing goals in the beloved activity whereas OP leads to rigidly pursuing such goals. With OP, people engage in the activity with one goal only in mind while neglecting other life goals (Bélanger et al., 2019). Such is not the case with HP as one can pursue concomitantly several goals, including activity and life goals. Similarly, other research by Philippe et al. (2017) has also shown that individuals with a HP for sexuality have harmoniously integrated other life goals (e.g., relationship with one's partner) and activities with sexuality, whereas this is not the case with OP. Thus, because it is rooted in HP, flexible persistence allows one to fully persist toward activity goals while having a more complete and successful life than it is possible with rigid persistence and its obsessive origins.

Of additional interest is the fact that OP was generally negatively related to flexible persistence in the different studies. This was to be expected as past research has shown OP to lead to conflict between the activity one is passionate about and other life activities (e.g., Boiché & Caudroit, 2019; Vallerand et al., 2003, 2010) and to engaging in counterfactual means where one pursues certain goals at the expense of others (Bélanger et al., 2019). Thus, OP functioning fosters rigid, and undermines flexible, persistence toward activity goals. Conversely, one is reminded that HP also positively predicted rigid persistence, although to a lesser extent than OP. This positive relationship between HP and rigid persistence was expected because flexibility also entails having the opportunity to choose to rigidly pursue an activity goal at some point should this be deemed advantageous to reach and complete activity goals. Future research is necessary to better understand how people with HP negotiate this minor use of rigid persistence.

Persistence and Outcomes

The present findings make an important contribution to our understanding of the role of rigid and flexible persistence in

outcomes on at least two counts. First, it was hypothesized and found that both types of persistence, rigid and flexible, yield positive outcomes within the realm of the activity. All studies of the present research provided support for this hypothesis. Both flexible and rigid persistence positively predicted a number of adaptive activity outcomes that include flow, satisfaction with the activity, overcoming obstacles, as well as objective and subjective assessments of performance. Of importance, such findings were obtained while statistically controlling for the constructs of grit and conscientiousness (see Study 3). Thus, the two types of persistence are not only conceptually independent of these two constructs (Study 1), but their relationships to outcomes remain significant when grit and conscientiousness are included as predictors. It should be noted that there was one important exception to the above findings and it pertained to the results of Study 5 in which rigid persistence *negatively* predicted objective performance on the academic performance task. It is the only negative relationship between rigid persistence and activity outcomes found in the present research. One explanation for this surprising result may have to do with the nature of the task. As OP fosters rumination and internal conflict (Vallerand et al., 2003), it is possible that rigid persistence (that takes origins in OP) is experienced in the context of rumination about a past performance on a given trial (like on the Raven matrices) that may cloud one's thinking and undermines cognitive performance on subsequent trials. It remains to be seen if such an undermining effect also takes place on effort tasks that require less reflection or deliberation. With HP, one can persist on cognitive tasks free from rumination, thereby facilitating flexible persistence devoid from cognitive distractions and ensuring performance. Future research is necessary on this issue.

A second major contribution of the present research with respect to outcomes, was that only flexible persistence was found to lead to adaptive outcomes *outside* the passionate activity. The findings of Studies 4–6 provided support for this hypothesis. Results showed that flexible persistence allowed participants to overcome obstacles while experiencing vitality in life (Study 4), to perform at a high level on the academic task while engaging in other life (online) tasks (Study 5), and to experience increases in thriving in life while achieving increases in high levels of performance in the purview of the passionate activity (Study 6). These various outcomes *outside* of the passionate activity were not predicted by rigid persistence. This is because flexible persistence allows one to experience a richer life outside the activity, whereas this is not the case with rigid persistence with its narrow focus on the activity at the expense of other life pursuits.

The present findings represent only a fraction of what future research on persistence may reveal. For instance, the present research has not looked at *negative* outcomes during activity involvement. Are there situations when rigid persistence leads to negative outcomes? Research shows that OP leads to alcohol drinking problems (e.g., Steers et al., 2015) and smoking marijuana addiction (e.g., Davis & Arterberry, 2019; Davis et al., 2018) but not HP. Is rigid persistence responsible of such deleterious effects of OP? Conversely, are there situations when flexible persistence fails to reach full adaptive benefits? Is rigid persistence necessary in the last few steps of a project or goal? If not, then why does HP lead at times to the adoption of rigid persistence? Longitudinal research and diary studies are necessary to address these issues.

Limitations

The present research has some limitations. First, this research relied mostly on self-report data, except for Study 5 that included behavioral outcomes. Thus, future research using other types of measures such as informant reports and diary reports is encouraged. Second, whereas Study 2 used an experimental design involving passion and persistence, an experimental design was not used to experimentally induce rigid and flexible persistence and assess their causal role in outcomes. Thus, future research should use experimental designs to test the causal effects of persistence on outcomes. A third limit is that although Study 6 was longitudinal in nature, it did not use three time points. Future research should do so in order to ensure that passion, persistence, and outcomes are all assessed at different time points, thereby providing further evidence of causality among constructs. A fourth limit is that participants in several of our studies came from the MTurk participant pool. Thus, although using MTurk participants has been found to yield valid results (Coppock, 2019; Litman & Robinson, 2020), the use of nonpaid participants is nevertheless encouraged. Finally, the participants in our research were all from North America. Future research is necessary to show the applicability of the persistence construct to other cultures.

In sum, the present research is the first to document the existence of two types of persistence, rigid and flexible, their construct validity, how they are predicted by HP and OP, and how they differently contribute to activity and life outcomes. Future research along these lines therefore appears to point toward exciting and novel directions.

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