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What is This?

# When passion leads to excellence: the case of musicians

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## Abstract

This article investigates the relationship between passion and the attainment of an elite level of performance within a population of expert musicians. Furthermore, the mediational role of performance goals and deliberate practice between passion and performance is also explored. Results of the path analysis showed that harmonious passion predicted the use of mastery goals, which in turn predicted the use of deliberate practice and a higher level of performance. On the other hand, obsessive passion positively predicted approach and avoidance goals with both having a direct negative impact on performance attainment. Consistent with previous research on passion, results also showed that harmonious, but not obsessive passion, was a positive predictor of subjective well-being. These results suggest the existence of two different pathways linking passion and elite performance, the harmonious passion path being the most adaptive.

## Keywords

*achievement goals, deliberate practice, expert performance, music performance, passion, subjective well-being*

For years, research on expert performance has tried to explain how people manage to attain exceptional levels of performance (Ericsson, 2006; Ericsson, Krampe, & Tesch-Römer, 1993). What seems to be clear is that to become an international musician, to acquire the ability to play, for example, Chopin or Paganini fluidly and effortlessly, represents a long and difficult process. When professional musicians are asked how they managed to practice for the thousands of hours required over many years without giving up, neither their courage nor their sacrifices are mentioned: what they talk about is their passion for music.

Research has mainly focused on the cognitive and perceptual abilities (e.g. visuospatial and verbal abilities, Halpern & Wai, 2007) and motor skills (Starkes, Cullen, & MacMahon, 2004) involved in expert performance in diverse domains like medicine, chess, sports (Ericsson, 2007; Gobet & Charness, 2006; Janelle & Hillman, 2003), and music (see Gabrielsson, 2003 for a

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comprehensive review). Yet, little is known about the motivational mechanisms underlying the persistence needed by musicians at expert levels (Smith, 2005). Vallerand and colleagues (2003) have proposed that the concept of passion for an activity may help explain the high commitment expert performers such as musicians display towards their art. Passion might explain the origin of the driving force to practice several hours each day, tirelessly, and for many years in order to reach excellence. Accordingly, previous research has examined the role of passion in performance in different contexts such as dramatic arts, psychology studies, and sports (Vallerand et al., 2007, 2008), but none has yet examined this relationship in music. The purpose of the present study was therefore to address this issue with expert classical musicians.

## The concept of passion for an activity

Vallerand and colleagues (Vallerand et al., 2003, 2008) have proposed the Dualistic Model of Passion. Passion is defined as a strong inclination towards a self-defining activity that people love, that they consider important, and in which they devote significant amounts of time and energy. One important aspect of passion is its internalization process into the person's identity. According to the Self-Determination Theory (SDT), humans have a natural tendency to internalize some activities into the self (Deci & Ryan, 1985, 2000). Depending on the importance and the value placed on the activities, a few will eventually become a central part of people's identity. For instance, if one of the internalized activities is highly valued, loved, engaged in on a regular basis, and has become a central part of one's identity, the activity has become a passion. For example, someone who is passionate about playing clarinet does not consider him/herself only as someone who plays the clarinet, but defines him/herself as a 'clarinetist'.

   Vallerand et al. (2003; Vallerand, 2008) also proposed the existence of two types of passion which differ depending on how the activity has been internalized in identity. An autonomous internalization will result in a harmonious passion (HP). In this type of passion, a person freely chooses to engage in an activity for the pleasure derived from it, without external or internal pressure. In addition, HP is characterized by a flexible persistence in the activity, leaving space for other important life domains (Vallerand et al., 2003). For instance, an individual who experiences positive emotions and consequences through the activity (without major conflicts) will feel free to continue practicing the activity. Conversely, a person experiencing many negative consequences (e.g. physical injuries or family conflict) because of the passionate activity, may temporarily or completely stop engaging in the activity. Because of the flexible persistence related to HP, people with this type of passion derive mostly positive consequences from it. According to previous studies on the outcomes of passion, HP people usually experience positive emotions and reduced stress (Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005; Vallerand et al., 2003), both eventually leading to an enhanced sense of subjective well-being (Rousseau & Vallerand, 2008; Vallerand et al., 2007, 2008). Therefore, the positive outcomes and the virtual absence of negative outcomes typical of harmonious passion are associated with higher psychological adjustment.

   In contrast, a controlled internalization of the activity in the identity leads to an obsessive passion (OP) for the activity. With this type of passion, people are controlled by external (acceptance from peers or teachers) or internal (activity-contingent self-esteem or uncontrollable excitement) pressures that control their engagement in the activity. This results in an unmanageable urge to engage in the activity. The passionate activity comes to control the person's life and creates conflicts with other life domains. Thus, the importance of the activity becomes disproportionate and the time invested in the passionate activity often occurs to the detriment

of school, work, or family life. With OP, people will continue taking part in the activity regardless of the emotions and the consequences associated with it. As a result, OP leads to a rigid persistence towards the activity. For example, a clarinettist with an obsessive passion for the instrument will continue playing the clarinet even if he or she has a bad injury (e.g. tendinitis), with the deplorable consequence of slowing or stopping the healing process. If he or she is prevented from practicing for a period of time, this musician may feel guilty for not improving, or feel worthless because of the impossibility to engage in the only important activity in his or her life. Consequently, OP is associated with less positive outcomes than HP and sometimes leads to negative consequences (Mageau et al., 2005; Vallerand et al., 2003).

The concept of passion has some ties with those of intrinsic and extrinsic motivations (Deci & Ryan, 1985, 2000; Vallerand, 2008). People who are intrinsically motivated freely engage in the activity for itself and the inherent satisfaction derived from activity engagement. As such, both intrinsic motivation and passion entail some liking of the activity. However, an important distinction is that with passion the activity becomes a central part of the person's identity while this is not the case for intrinsic motivation. On the other hand, extrinsic motivation leads one to engage in the activity in order to obtain outcomes that are separate from the activity itself and does not provide a sense of enjoyment. Thus, both types of passion differ from the concept of intrinsic and extrinsic motivation. Research by Vallerand et al. (2003) has empirically supported this claim.

Empirical studies supporting the Dualistic Model of Passion have been conducted in several domains. For instance, studies in the area of sport showed that HP leads to positive affect, whereas OP leads to negative affect while practicing different sports either within a recreational or a competitive context (Vallerand & Miquelon, 2007; Vallerand et al., 2003; Vallerand, Rousseau, Grouzet, Dumais, & Grenier, 2006). In the artistic domain, Rip, Fortin, and Vallerand (2006) demonstrated that OP was related to higher rates of chronic injuries and health-threatening behaviors in a population of dance students and professional dancers while HP was associated with better coping responses when injured and less time spent suffering from chronic dance-related injuries (Rip et al., 2006; Rip, Vallerand, & Fortin, 2008). Studies on passion have also been conducted with various activities such as work, Internet use, recreational activities, specialized studies leading to the doctoral level, and gambling (Castelda, Mattson, MacKillop, Anderson, & Donovick, 2007; Stenseng, 2008; Vallerand, 2008). However, no study on passion and music performance has been conducted to date.

## Other factors leading to performance

In the past two decades, psychologists have studied the types of goals associated with performing difficult tasks. Elliot and Church (1997) have proposed two types of achievement goals. The first type, mastery goals, has as its aim learning and eventually mastering difficult tasks. People, when engaged in mastery goals, want to improve their abilities and master new skills. The second type of goal, performance goals, is further divided into two categories: performance-approach and performance-avoidance goals, both focusing on comparison with others. While approach goals are based on demonstrating that one has better capacities than others, avoidance goals are characterized by a desire to avoid failure relative to others. Research on achievement goals revealed that mastery and, at times, performance-approach goals are associated with positive affects and high levels of intrinsic motivation towards challenging tasks. On the other hand, performance-avoidance goals are linked to negative affect, anxiety, and high levels of extrinsic motivation towards the activity (Elliot, Shell, Henry, & Maier, 2005).

The achievement of excellence in music entails not only specific goals, but also a hard-working and time-consuming process that requires a huge amount of practice. Research on expertise has shown that it takes at least 10 years in order to attain an international level of performance in most sports and the arts, as well as in work areas (Ericsson & Charness, 1994; Ericsson et al., 1993). Furthermore, in an interview study, Ericsson and his colleagues (1993) demonstrated that the best violinists with expert soloist careers had accumulated ten thousand hours of practice by the age of 20. According to Ericsson and his colleagues, even though the amount of practice is a key factor in achieving an international level of expertise, the factor contributing the most to expertise is the type of practice, specifically deliberate practice (Ericsson & Lehmann, 1996; Ericsson et al., 1993). Deliberate practice is described as a period of training in which the explicit aim is to improve performance. These highly structured training sessions require effort, determination, and concentration and are not inherently enjoyable (Deakin, Côté, & Harvey, 2006). Numerous studies have demonstrated the relationship between the amount of deliberate practice and the acquisition of high levels of performance in diverse domains such as chess (Charness, Tuffiash, Krampe, Reingold, & Vasyukova, 2005), music (Lehman & Gruber, 2006), and sports (Hodges, Kerr, Starkes, Weir, & Nananidou, 2004).

Because deliberate practice may not always be enjoyable and requires a large amount of personal investment with little or even no external reward, one must ask why musicians continue practicing. Previous studies demonstrated that passion towards an activity could be the motivational force that helps people initiate and persevere in the deliberate practice of their passionate activity (Vallerand, 2008; Vallerand et al., 2007, 2008).

## Previous research on factors leading to expert and elite music performance

Relatively little research has looked at the role of motivational factors in music performance, or the acquisition of expertise in music (Gabrielsson, 2003). In one of those studies, McPherson and McCormick (2006) investigated a model linking practice, self-efficacy, and performance in music students. Although the model seems interesting, it has never been tested with music students in higher education or with professionals. Other studies have shown that the use of mastery-oriented motivational patterns (e.g. focus on the mastery of the task) seem to lead to persistence while helpless motivational patterns (e.g. failure avoidance) seem to lead to an increase in giving up when facing a musical difficulty (O'Neill, 1999; O'Neill & McPherson, 2002). One study by Manturzewska (1990) reported results from semi-structured and structured interviews with 165 professional musicians. An important factor found to predict the attainment of a professional career is the 'drive towards music' that musicians had in relation to their musical training (Manturzewska, 1990). Retrospective studies on the achievement of elite music performance showed that soloists differed from professors early in the course of their music development on a variety of factors such as the amount of time spent each day with the instrument, deliberate practice, and the daily planning of activities in order to fit with their practice constraints (Davidson, Howe, & Sloboda, 2000; Ericsson et al., 1993; Gembris, 2006). Studies on expert levels of music performance and deliberate practice are highly helpful for the understanding of the behaviors people must adopt in order to achieve excellence. However, they provide little insight into the motivational mechanisms musicians must possess in order to persist in deliberate practice and eventually reach expert performance (Gembris, 2006).

## The present research

The first purpose of the present study was to test a process model linking passion and performance. The main assumption of this paper is that passion represents the motivational mechanism that explains the commitment towards music and eventually the attainment of expert levels of performance. A series of studies have previously examined the link between passion and performance (Vallerand et al., 2007, 2008). The first one (Vallerand et al., 2007) proposed a model linking passion and performance among students in dramatic arts, and students in a specialized psychology program leading to the doctoral level, while the second one (Vallerand et al., 2008) replicated this model in the sport domain. These studies have shown that achievement goals serve as mediators between passion and performance (Vallerand et al., 2007, 2008). While harmonious and obsessive passion both predicted the use of mastery goals, which in turn predicted deliberate practice and performance, only obsessive passion was linked to performance-approach and performance-avoidance goals. In both studies, performance-avoidance goals directly and negatively predicted performance. However, the link between performance-approach goals and performance differed between the two studies. Although performance-approach directly predicted performance in the first study (Vallerand et al., 2007), performance-approach was unrelated to performance in the second one (Vallerand et al., 2008). In addition, these studies have supported the relationship between passion and subjective well-being. Harmonious, but not obsessive, passion was indeed positively linked to life satisfaction.

As previously seen, harmonious passion leads one to set adaptive goals related to the development and mastery of their skills, while obsessive passion leads one to set adaptive as well as maladaptive goals (Vallerand et al., 2007, 2008). In turn, people who want to master their skills should use more deliberate practice behaviors. On the other hand, because the main focus is on social comparison, people holding performance goals are not expected to use much deliberate practice, and consequently this should be unrelated to improved performance. Furthermore, because of the maladaptive nature of avoidance goals, people who use such goals are expected to have an undermined level of performance (Elliot et al., 2005). Finally, harmonious passion has been found to be conducive of the experience of life satisfaction (e.g. Vallerand et al., 2007, 2008).

The present study sought to test this model involving passion, life satisfaction, goals, deliberate practice and performance among expert musicians from the provincial to the international level; a population that has never been studied before in the literature on passion. In line with past research on passion and performance (Vallerand et al., 2007, 2008), it was expected that harmonious passion would positively predict the use of mastery goals, while obsessive passion would positively predict the three types of achievement goals (i.e. mastery, performance-approach, and performance-avoidance goals). Mastery goals should predict greater use of deliberate practice, which in turn should be positively linked to performance. It was also postulated that performance-avoidance goals would be directly and negatively associated with lower levels of performance, while, in line with the findings of Vallerand et al. (2008) with athletes, performance-approach goals should not be linked to performance. Finally, it was postulated that harmonious passion would positively predict high subjective well-being, while obsessive passion should not be related to it.

To the best of our knowledge, no research has systematically investigated the distinction between professional and expert student musicians with respect to motivational constructs, the type of achievement goals adopted, and deliberate practice behaviors. Thus, the second goal of

this study was to explore potential differences between professional and expert student musical performers with respect to the above variables.

## Method

### Participants

A sample of 202 classical musicians originally participated in this study. In line with the existing literature (Mageau et al., 2009; Vallerand & Houlfort, 2003), participants were judged to be passionate if they reported a score of four or higher on the average of the four passion-criterion items. Overall, 99 percent of the present sample was found to be passionate. The two non-passionate participants were removed from subsequent analyses. In addition, 11 participants were removed because of missing data, and two participants were removed because they were found to be multivariate outliers (Tabachnick & Fidell, 2001).

A total of 187 participants (86 men, 99 women, two unknown) were thus retained for subsequent analyses. The majority of participants of this final sample were from Canada ($n = 111$) and the USA ($n = 64$). In addition, 11 participants came from seven different countries in Asia, Europe and South America and one participant did not specify their country of origin. A total of 143 participants were music performance students in conservatories ($n = 42$), colleges or universities ($n = 93$), or students who took private lessons outside a specific institution ($n = 6$). Finally, two music students did not specify this information. A total of 44 participants were professional performers. Professionals were soloists and/or professors regarded as experts in the classical musical world. Overall, participants were string players ($n = 97$), woodwind players ($n = 52$), pianists ($n = 23$), singers ($n = 3$), a brass player ($n = 1$) and a harpsichordist ($n = 1$). Participants were aged between 15 and 74 years ($M = 26.54$, SD = 12.92 years). They had been playing their instrument for an average of 15.07 years (SD = 12.22 years) and practiced their instrument for an average of 24.37 hours (SD = 5.63 hours) per week.

### Procedure

Participants were for the most part recruited from two summer music academies in the Province of Québec (Canada) known for their international level, during the summer of 2006. Students were selected by the academies through audiotaped auditions that were listened to by a jury of expert musicians prior to their acceptance in the summer academies. Professionals ($n = 31$) at these academies were active musicians. The remaining 19 professionals were recruited through regular music institutions (conservatories and artist managers). Surveys were initially administered by the authors to both students and professionals in the summer academies with the prior consent of the academies' directors. Questionnaires containing written explanations were answered on the spot by voluntary participants, during break times. Thereafter, only professional musicians were recruited via their home institutions. In this latter case, pre-stamped, confidential envelopes containing an explanatory letter and the questionnaire were given to heads of the institutions who had the responsibility of handing over the envelopes to participants. Finally, these questionnaires were sent back to the research laboratory by regular mail.

### Questionnaires

Questionnaires were available in both French and English. A total of 111 participants completed the questionnaire in English and 76 in French.

*Passion.*    The Passion Scale (Vallerand et al., 2003), adapted to music, contained two six-item subscales assessing harmonious (e.g. 'Playing my instrument is in harmony with the other activities in my life') and obsessive (e.g. 'I have difficulties controlling my urge to play my instrument') passion. A four-item criterion subscale measured the degree to which participants were passionate about playing their musical instrument (e.g. 'Playing my instrument is a passion for me'). Each item of this subscale assessed a different criterion related to the definition of passion (the extent to which the activity is liked, valued, and is a 'passion' for the participant, as well as the time spent in the activity). All subscales were rated on a seven-point Likert scale ranging from 1, 'I do not agree at all' to 7, 'I strongly agree'. Psychometric properties of the Passion Scale had been assessed in previous studies and supported its validity and reliability (see Vallerand, 2008; Vallerand et al., 2003). Internal consistency indices for the present study were adequate ($\alpha$ = .73, .76, and .76 for the harmonious, obsessive and criterion subscales, respectively).

*Achievement goals.*    This 12-item scale (Elliot & Church, 1997), divided into three four-item subscales, is designed to measure the three different types of achievement goals. The first two subscales measured performance goals: performance-approach (e.g. 'It is important for me to do well compared to others') and performance-avoidance (e.g. 'I'm afraid that if I play poorly, others might think that I'm not very talented'). The third subscale consisted of mastery goals items (e.g. 'It is important for me to develop my skills as thoroughly as possible'). All items were assessed on a seven-point scale ranging from 1, 'I do not agree at all' to 7, 'I strongly agree'. Internal reliability coefficients were acceptable ($\alpha$ = . 76, .87, and .87, respectively).

*Deliberate practice.*    To assess deliberate practice, two scales previously used in similar studies were modified for the specific purposes of the present study (see Vallerand et al., 2007, 2008). These two scales were prepared by experts in the areas of sports and theatre and were developed in line with the process proposed by Ericsson and Charness (1994). Modifications were made by the authors to adapt these scales to music practice constraints. This scale consisted of four items and measured the frequency of four typical music practice behaviors on a seven-point Likert scale ranging from 1, 'Never' to 7, 'Almost always' (e.g. 'When I do my daily practice ... I slowly repeat difficult excerpts', $\alpha$ = .53).

*Life satisfaction.*    The Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985) and its French-Canadian validation (Blais, Vallerand, Pelletier, & Brière, 1989) were used to assess participants' subjective well-being. They both included five items measuring the degree of satisfaction participants have with their own life (e.g. 'My life corresponds closely to what I desire'). Both versions demonstrated high levels of reliability ($\alpha$ = .80 for both).

*Performance index.*    In order to create a performance index, participants were asked to write down the number of solo concerts they had performed in their career. For the student subsample, it was specified 'outside the academic context'. It is believed that this question is a reliable assessment of music performance because the classical music domain is so competitive that a musician who has not reached a certain level of musical proficiency would never be given the opportunity by the classical music gatekeepers to perform a large amount of solo concerts (Subotnik, Jarvin, Moga, & Sternberg, 2003). Participants had performed between zero and 4500 solo concerts in their career ($M$ = 93.55, SD = 386.49). Because very few of the musicians in this study had performed more than 500 solo concerts in their career ($n$ = 10), we

**Table 1.** Means, standard deviations for professionals and students and correlations for each variable of the model

| | Professionals (N = 44) | | Students (N = 143) | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | *M* | SD | *M* | SD | | | | | | | |
| Harmonious passion (1) | 5.47 | 0.77 | 5.58 | 0.89 | | | | | | | |
| Obsessive passion (2) | 2.64 | 1.18 | 2.90 | 1.22 | .15 * | | | | | | |
| Mastery goals (3) | 6.06 | 0.84 | 6.52 | 0.70 | .30 *** | .14 | | | | | |
| Avoidance goals (4) | 2.85 | 1.40 | 4.06 | 1.45 | -.11 | .20 ** | .22 ** | | | | |
| Approach goals (5) | 3.07 | 1.58 | 4.27 | 1.64 | -.01 | .21 ** | .20 ** | .67 *** | | | |
| Deliberate practice (6) | 5.09 | 1.05 | 4.93 | 1.10 | .23 *** | .16 * | .27 *** | .03 | .07 | | |
| Performance (7) | 5.92 | 5.18 | 0.77 | 1.17 | .07 | -.05 | .03 | -.29 *** | -.26 *** | .23 *** | |
| Life satisfaction | 5.86 | 1.00 | 5.65 | 1.01 | .29 *** | -.09 | .03 | -.11 | -.07 | .15* | .16* |

*Notes*: N = 187; * $p$ < .05; ** $p$ < .01; *** $p$ < .001.

decided to set a ceiling limit of 500 concerts in order to reduce the variability of the performance variable. Then, in order to avoid the performance variable being solely a reflection of the number of years of music involvement, the number of concerts given by participants was divided by their number of years of experience. For example, a musician who had performed 20 concerts in 20 years would be given a score of 1. The music performance index (MPI) varied between 0 and 16.67 ($M$ = 1.8, SD = 3.2). The MPI was used as the performance variable in the main analyses.
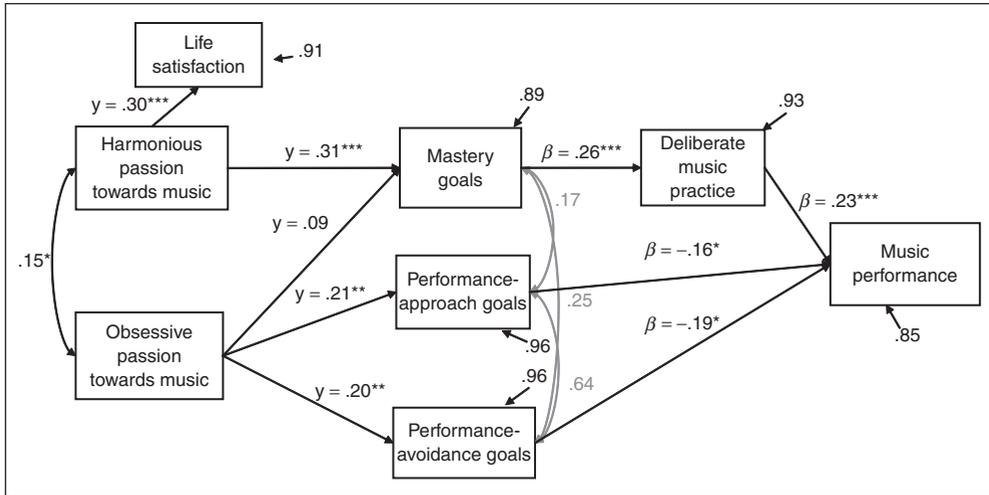
## Results

### *Preliminary analyses*

The means, standard deviations, as well as the correlation matrix for the different variables are presented in Table 1. A multivariate analysis of variance (MANOVA) was performed in order to evaluate if sex differences existed on the variables of the present study. No sex differences were found on any of the variables (T2 = .52, $F(32, 312)$ = 1.23 $p$ > .05).

### *Path analysis*

In order to test the proposed model, a path analysis was performed with LISREL 8.0. Given that all three types of goals (mastery, performance-approach, and performance-avoidance) measured related constructs, covariances between these three variables were added to the model. This procedure has also been used in previous research (Elliot & Church, 1997). Results showed a satisfactory fit of the model to the data ($\chi^2$ (df = 15, $N$ = 182) = 23.13, $p$ = .08; RMSEA = .05 ( .00, .09); SRMR = .07; NFI = .90; NNFI = .92; CFI = .96; GFI = .97; AIC = 65.13; Kline, 2005). The correlation matrix for the different variables is presented in Table 1.

**Figure 1.** Results of the structural equation modeling linking passion to performance in music.

*Notes:* \*p < .05; \*\*p < .01; \*\*\* p < .001

Results showed that harmonious passion was positively associated with the use of mastery goals ($\gamma = .31$, $p < .001$), that was in turn positively associated with deliberate practice ($\beta = .26$, $p < .001$). In turn, deliberate practice predicted higher levels of performance ($\beta = .23$, $p < .001$). On the other hand, obsessive passion was positively associated with performance-approach ($\gamma = .21$, $p < .01$) and performance-avoidance goals ($\gamma = . 20$, $p < .01$) and was unrelated to mastery goals ($\gamma = .09$, $p > .05$). In turn, performance-approach and performance-avoidance goals were directly and negatively associated with performance ($\beta = -.16$, $p < .05$, and $\beta = -.19$, $p < .05$, respectively). Finally, harmonious passion was also associated with high levels of life satisfaction ($\gamma = .30$, p < .001). The results of the path analysis are presented in Figure 1.

In order to further assess the validity of the proposed model, two alternative models were tested (Kline, 2005). In the first model, deliberate practice and goals were reversed, the former predicting all types of goals. In the second alternative model, passion and goals were reversed (the three types of goals predicting passion, which in turn predicted deliberate practice that led to performance). None of these alternative models satisfactorily fitted the present data set (Model 1: $\chi^2 (15, N = 182) = 45.27$, $p < .001$, RMSEA = .11 ( .07, .14); SRMR = .09; NFI = .81; NNFI = .91; CFI = .86; GFI = .94; AIC = 87.27; Model 2: $\chi^2 (12, N = 182) = 37.45$, $p < .01$, RMSEA = .09 ( .06, .13); SRMR = .09; NFI = .84; NNFI = .79; CFI = .89; GFI = .95; AIC = 79.45). Thus, the hypothesized model best described the data of the present study.

## Differences between professional and student music performers

The means and standard deviations of the model variables as a function of types of musicians are presented in Table 1. Professionals and students differed on their actual level of performance, $t(181) = 11.10$, $p < .001$. A MANCOVA (with the number of years of experience with the instrument as the covariate) was performed to further assess the difference between professionals and students on harmonious passion, obsessive passion, mastery, approach, and avoidance goals, deliberate practice and life satisfaction. Students and professionals were similar on

all the variables as evidenced by a non-significant MANCOVA, $F(7, 175) = .57$, $p > .05$. Thus, after controlling for participants' years of experience, no differences between professionals and students were found on any of the given variables.

## Discussion

The primary purpose of this study was to test a model on the role of passion, goals, deliberate practice and subjective well-being in expert music performance. This model posits that harmonious passion predicts the use of mastery goals, that in turn predicts deliberate practice and high levels of performance. Conversely, obsessive passion was hypothesized to lead to the three types of achievement goals: mastery, performance-approach, and performance-avoidance goals, the last being directly and negatively associated with performance. Furthermore, the model hypothesized that harmonious, but not obsessive, passion would lead to subjective well-being.

The results generally supported the hypothesized model. First, almost all participants (99%) had a passion for playing their musical instrument. This confirms previous results showing that passion is an important motivational force as well as a facilitator of the attainment of elite levels of performance (Vallerand et al., 2008). In fact, achieving excellence in music is a long-term process that demands full-time commitment (Lehman & Gruber, 2006). It is believed that without at least an above-average level of passion towards an activity as demanding as playing a musical instrument, people would certainly drop out before attaining an expert level of performance. Consequently, because the present sample contained only high-level musicians it is understandable to find such a high number of passionate individuals. A previous study on passion with a sample of expert dancers showed similar results, as all participants were found to be passionate for dancing (Rip et al., 2006, 2008). In non-expert domains, the amount of passionate people is typically somewhat lower (see Vallerand et al., 2003).

In the present study, results demonstrated that the two types of passion predict different outcomes. While harmonious passion was found to predict the use of mastery goals, obsessive passion mainly predicted the use of performance goals. As harmoniously passionate musicians freely choose to engage in musical activities, their motivation to continue playing and practicing is one of seeking mastery, of improving, with little or no external constraints. Thus, with a harmonious passion, musicians are likely to engage in goals having the same purpose: to master the activity. As they do not experience internal or external pressure to play their instrument, harmoniously passionate musicians do not feel the need to compare themselves with others. On the other hand, obsessive passion positively predicted the use of approach and avoidance performance goals. With obsessive passion, musicians experience an uncontrollable urge to play and to practice. Although they love music, the internal pressure to practice seems to be related to their need to compare themselves to others, to their desire to do better than their fellow musicians, or to avoid doing worse than they do. As a result, such obsessively passionate musicians are expected to have more performance goals than harmoniously passionate musicians. The link between obsessive passion and mastery goals, although marginally positive, was not fully supported in this study. In fact, this relationship was almost absent; OP did not appear to be related significantly to mastery goals. This finding differs from our hypotheses, where OP was expected to predict the three types of goals. It also diverges from the results of two previous studies measuring the relationship between passion and achievement goals (Vallerand et al., 2007, 2008). In both studies, obsessive passion was significantly and positively associated with mastery goals ($\beta = .14$, $p \leq .10$ in the first study, and $\beta = .22$, $p < .10$ in the second one). However, in these studies, a smaller number of participants attained an expert level of performance compared with the participants of the present study (an average of 15 hours per week of

deliberate practice for six years in the first study and nine hours per week for five years in the second study). It is possible that the relationship between obsessive passion and mastery goals decreases as level of expertise increases. Future research should explore this link thoroughly with participants having attained various levels of performance in order to better understand the association between OP and mastery goals.

The various links between achievement goals and performance deserve comment. First, performance was predicted by the engagement in deliberate practice (that was predicted by mastery goals). Because harmoniously passionate individuals have for a main goal the improvement of their skills regardless of comparisons with other musicians, they are more likely to engage in self-improvement musical practice behaviors, the latter predicting higher levels of performance. Second, performance-avoidance goals were negatively linked to performance. As expected, having an explicit goal of avoiding doing less well than other musicians or to avoid poor performances in front of an audience decreased participants' levels of performance. This is in line with past research on achievement goals (see Elliot, 2005). Finally, performance-approach goals were negatively related to performance. This means that setting goals to outperform others seems to undermine musical performance. While it was hypothesized that performance-approach goals would prove unrelated to performance, this result supports previous research on the outcomes of achievement goals in a musical setting (Lacaille, Whipple, & Koestner, 2005). The study conducted by Lacaille and colleagues (2005) investigated the difference between musicians and athletes in terms of the consequences of mastery, performance-approach, and performance-avoidance goals. Results of this research showed that musicians benefit only from mastery goals and that both performance-related types of goals were associated with more negative outcomes like higher levels of performance anxiety. However, past research in the achievement goals literature has shown performance goals to negatively or positively contribute to performance, or even be unrelated to it (for reviews on the outcomes of achievement goals see Covington, 2000; Elliot, 2005; Elliot & Conroy, 2005). Future research is needed in order to replicate these findings with respect to the various types of achievement goals, and in particular as it pertains to performance-approach goals targeted towards music performance.

The link between deliberate practice and levels of performance in the present study supports past research by Ericsson and his colleagues (1993). Much research revealed that in order to achieve high levels of performance, one must engage in sustained deliberate practice (Ericsson et al., 1993; Lehman & Gruber, 2006). Ericsson has suggested a 10-year rule of deliberate practice. This 10-year rule has been demonstrated in various fields such as medicine and sport, and has been shown to predict high levels of performance (Ericsson, 2005).

A final result observed in the present model is that harmonious passion positively predicted life satisfaction and that obsessive passion was unrelated to it. This finding is in line with past research (Rousseau & Vallerand, 2003, 2008; Vallerand et al., 2007, 2008). Thus, having a harmonious passion towards playing a musical instrument not only indirectly contributes to better performance, but it also directly leads to positive psychological well-being. As harmoniously passionate musicians allow themselves to explore other activities in their life than those related to music, they do not experience the negative emotions of guilt and anger when prevented from playing. On the contrary, obsessively passionate musicians are controlled by their need to play their musical instrument. They are especially likely to experience negative feelings when prevented from playing. However, this result was obtained with a cross-sectional design which does not permit causality conclusions. Future longitudinal research should assess in detail the psychological outcomes associated with harmonious and obsessive passion in a performance context.

In sum, results have shown that there are two different paths through which passion and performance are linked. The first one, the harmonious passion path, leads to positive outcomes such as high levels of long-term performance and high subjective well-being through the use of

adaptive mastery goals and deliberate practice. The second one, the obsessive passion path, leads to more ambiguous outcomes. By mostly focusing on performance goals, obsessively passionate musicians focus on social comparison and do not focus as much on deliberate practice. Such a focus makes the pathway towards high levels of performance longer and more difficult. In addition, the obsessive path undermines happiness in one's life.

The second goal of this study was to explore the differences between professional and student expert music performers in terms of harmonious and obsessive passion, mastery, approach, and avoidance goals, deliberate practice, performance level, and general life satisfaction controlling for the number of years of experience with the instrument. Professionals had a higher level of performance than students. No differences were found on any of the other variables. These findings suggest that the same psychological processes explain the performance reached by students and professional musicians. However, longitudinal research is needed to further explore this hypothesis with expert as well as non-expert musicians.

The present study has certain limitations that must be highlighted. First, the performance measure was self-reported and retrospective in nature. Therefore, this measure may be subject to some biases. Future research should assess the link between passion and performance in music with a more objective measure of performance. Another limitation concerns the deliberate practice scale, that had a low level of internal consistency. A more thoroughly validated scale of deliberate practice should be used in subsequent research. Finally, the sample was highly heterogeneous: the ages of participants and their levels of performance were very diverse. Future research focusing mainly on elite performers should be conducted in order to assess more precisely the link between passion and elite performance.

## *Practical implications*

The classical music culture does not seem to systematically encourage musicians to be aware of physical or psychological problems related to their art. In fact, the myth 'No pain, no gain' is prevalent in this domain (Shoup, 1995). Creating a social environment that promotes harmonious behaviors, like promoting self-comparison rather than social comparison early in the course of the musical training, would probably help young musicians develop a harmonious passion rather than an obsessive passion. When musicians get older and are ready to invest a lot of time and energy in their passion, encouraging them to keep other aspects of their lives active would prevent them from integrating controlled feelings of shame and guilt when prevented from playing. Finally, encouraging harmonious passion in expert and elite musicians would help them maintain a high level of well-being without decreasing performance.

In conclusion, it seems that the concept of passion can be of great value to our understanding of the vocational call musicians have towards their art as well as to our understanding of elite levels of performance and high subjective well-being. It would be important in future research to explore the relationship between harmonious and obsessive passions and personality traits that are characteristic of music performers like introversion and anxiety. Clearly additional research is still needed in order to better understand the intricacies underlying the role of passion in elite music performance.

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