



The roles of autonomy support and harmonious and obsessive passions in educational persistence

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ABSTRACT

This research aims at examining the role of autonomy support and passion in the persistence of students involved in higher education. In academic settings, autonomy-supportive environments consider students as self-determined individuals who are capable of making choices. In contrast, controlling academic environments impose pressure on students without giving them a clear rationale for doing so. Because autonomy support facilitates the self-determined internalization of behavior, it is expected to be associated with a harmonious passion and with high persistence into the chosen field of study, whereas less autonomy-supportive environments are expected to relate to obsessive passion and to hinder persistence. The results of two studies involving music students, using correlational and short longitudinal designs, mainly supported these hypotheses. The divergent impact of autonomy support and passion in persistence is discussed.

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Let me tell you the secret that has led me to my goal: my strength lies solely in my tenacity. Louis Pasteur

1. Introduction

As with many other achievers, the famous biologist Louis Pasteur was seen by his professors as an average student. Yet, as this quote demonstrates, his persistence throughout the years has led him to obtain the highest academic degree and to discover some of the most influential medical innovations of all times. According to one of his biographers, Pasteur would never have persisted in higher education without the encouragement and support from one of his high school professors (Vallery-Radot, 1994).

This anecdote is only one of the many examples of the roles of determination and social support in retention and persistence in education. In fact, researchers in education and in psychology have long held an interest in the subjective (intentions) and objective (dropout rates) components of students' persistence (e.g. Tinto, 2006). In line with Self-Determination Theory (SDT), the persistence that students display towards their own schooling could be partly explained by the autonomy-supportive interpersonal style adopted by their teachers. In addition, The Dualistic Model of Passion proposes that obsessive and harmonious passions towards education can provide some insights regarding the individual processes related to persistence in educational

settings. In two studies involving music students, this article addresses the question of how autonomy support and passion facilitate persistence in higher education.

1.1. Autonomy support from teachers

As suggested by SDT, the psychological needs for competence, autonomy, and relatedness should be satisfied in order for people to achieve optimal functioning (Deci & Ryan, 1987, 2000). In addition, this theory posits that the satisfaction of these needs are fostered in an autonomy-supportive environment and hindered in a controlling environment. In academic settings, the concept of autonomy support refers to environments that consider students as self-determined individuals who are capable of making choices (Black & Deci, 2000). On the contrary, psychologically controlling environments place value on authority, where pressure and control are used to make students behave in a specific way (Soenens, Sierens, Vansteenkiste, Dohy, & Goossens, 2012). Autonomy support and psychological control in the educational context have mostly been assessed as two opposite poles of a continuum: from very controlling to very autonomy-supportive (Reeve, Jang, Carrell, Jeon, & Barch, 2004; Soenens & Vansteenkiste, 2005). However, some authors have suggested that psychological control might not be the exact opposite of autonomy-support (Silk, Morris, Kanaya, & Steinberg, 2003). In fact, educators and teachers often display both autonomy supportive, such as providing choice and being empathetic, and controlling behavior, such as pressuring students and being negative (Reeve & Jang, 2006; Tessier, Sarrazin, & Ntoumanis, 2008).

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Autonomy-supportive teachers acknowledge their students' emotions and thoughts, give adequate structure and feedback, give a meaningful rationale for tasks and provide opportunities for decision-making. Students who perceive their teachers as autonomy-supportive display a higher self esteem and are more satisfied with their life (Deci, Schwartz, Sheinman, & Ryan, 1981; Ryan & Grolnick, 1986; Sheldon, Abad, & Omoile, 2009). At the post-secondary level, autonomy support from teachers is associated with self-determined forms of motivation and with higher perceptions of competence (e.g. Williams & Deci, 1998). In terms of school environment, students have more positive feelings towards the academic institution in general and fewer negative feelings towards school-related work if they believe their autonomy is acknowledged (Assor, Kaplan, & Roth, 2002; Williams et al., 2006). Students who feel that they are supported also show enhanced academic self-regulation, psychological adjustment, learning, performance, and persistence (Black & Deci, 2000; Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004).

In contrast, teachers who exert psychological control are centered on their own agenda rather than being focused on their students' needs. Those teachers tend to give answers to students instead of giving hints, to use 'should' or other directive statements, to interrupt their students and to criticize them (Reeve & Jang, 2006). Under psychological control, students experience higher levels of anxiety and lower well being, as well as diminished task enjoyment and engagement (Bartholomew, Ntoumanis, & Thogersen-Ntoumani, 2009). Perceived psychological control also has been linked with decreased autonomous motivation and lesser use of adaptive meta-cognitive strategies (Soenens et al., 2012).

In summary, students who feel that their autonomy is supported by their educators are more likely to engage in learning tasks for autonomous reasons. As a result, they report having a more positive experience at school, using more efficient learning strategies and they display higher levels of performance and persistence. The opposite is found when students perceive that their teacher is psychologically controlling.

1.2. *Harmonious and obsessive passion*

In line with the Dualistic Model of Passion (Vallerand, 2010; Vallerand et al., 2003), a few important activities that people love, that they value, and into which they devote their time and energy, come to be self-defining and are considered a passion. Integrated in the above-mentioned definition is the core concept of inclusion of the activity into the self. Indeed, people who are passionate should feel that their activity is a central part of their identity. For example, music students who are passionate about music see themselves as musicians. Numerous studies have related passion with activity identification: individuals who are passionate towards their studies, dance, sports, and even politics do perceive their passionate activity as self-defining.

In order to be considered as passionate, individuals should at least moderately agree that: they are passionate for their activity, the activity is important to them, they regularly spend time and energy on it, and they love it. The midpoint of the criterion subscale (on a 7-point scale) has served in many studies as the cutoff point to differentiate between people who are passionate from people who are not (e.g. Bonneville-Roussy, Lavigne, & Vallerand, 2011; Donahue, Rip, & Vallerand, 2009; Vallerand & Houliort, 2003). Furthermore, the discriminant validity of the subscale has been examined in a developmental study (Mageau et al., 2009, Study 3). Using this criterion, the researchers have found that only 36% of high school students who had never attended music classes showed at least a moderate passion for music after five months of music studies. This result suggests that even with a cut-off point as low as the center of the passion criterion subscale, the vast majority of individuals do not form a passion towards an activity. In addition, the development of a passion towards an activity seems to be preceded by the incorporation of this activity into the self. Evidence for this process was reported in the same set of studies

(Mageau et al., 2009), where it was found that these students who developed a passion towards music differed from those who did not develop a passion in that they were more inclined to integrate music as part of their student's identity early in the course of the term.

The way people incorporate their loved activity into the self will qualify the type of passion they develop. In autonomy-supportive social environments, an autonomous internalization of the activity is likely to occur, evolving into harmonious passion (HP). With HP the person freely chooses to be involved in a project for the mere pleasure of activity engagement, because of the intrinsic enjoyment the activity conveys. On the contrary, obsessive passion (OP) arises from a controlled internalization, which develops in more controlling environments. When people are obsessively passionate, they participate in their beloved activity because of internal or external pressure and often feel the obligation of persisting in it, even when they experience negative consequences. Recently, Mageau et al. (2009) have performed a series of studies that examined the social determinants of passion. The authors found that perceived autonomy support from parents and music professors/sport coaches was higher for participants who displayed a harmonious passion than for those who had an obsessive passion towards their activity. These results have been replicated in different contexts: with objective measures of social support (as assessed by the social agent rather than by the participant, Lafrenière, Jowett, Vallerand, Donahue, & Lorimer, 2008; Mageau et al., 2009, Study 2), in a 5-month longitudinal study (Mageau et al., 2009, Study 3), and with younger participants performing various activities (Mageau et al., 2009, Studies 2 and 3).

Harmonious and obsessive passions have been linked to numerous outcomes (see Vallerand, 2010, for a review). HP has been related to higher levels of well-being, of life satisfaction and to the experience of flow during and after the activity. On the other hand, OP, but not HP, has been linked with interpersonal dissension and conflicts with other life activities, with lower levels of life satisfaction and compromised general well-being. Obsessively passionate students in turn seem to display higher levels of both approach- and avoidance- performance goals (Vallerand et al., 2007, 2008). In the same set of studies, both HP and OP have been associated to performance. However, the pathway to performance seems more positive in HP than in OP, the former also being associated with adaptive goal settings, learning strategies and well-being. In summary, research has shown that HP seems to induce mostly positive psychological and behavioral consequences, while the effects of OP are less positive and at times even negative.

One of the core outcomes associated with the Dualistic Model of Passion is persistence, conceptualized in most studies as long term engagement towards the loved activity (Vallerand, 2008, 2010; Vallerand et al., 2003). When positive psychological consequences are experienced, harmoniously passionate people persevere in their activity. They show a flexible commitment and are able to keep their life balanced between their preferred activity and other important life domains (Vallerand et al., 2003). Conversely, obsessively passionate people feel an internal pressure to continue and thus display rigid engagement, even if they experience unfavorable conditions during or after the activity. For instance, one study has shown that cyclists who display an obsessive passion are more likely than harmoniously passionate individuals to continue cycling in dangerous conditions during the cold Canadian winter (Vallerand et al., 2003, Study 3). The role of passion in educational persistence per se has not yet been investigated.

1.3. *The role of autonomy support and passion in educational persistence*

The previous-mentioned literature on autonomy support and passion provides a conceptual framework for the study of educational persistence, defined as students' intentions to persist (subjective persistence) or retention rates (objective persistence). Overall, this research has shown that HP derives from an autonomous

internalization of an activity, so it should be enhanced by autonomy-supportive styles from social agents where choices and one's feelings are acknowledged. On the other hand, controlling styles, where pressure and critics are more frequent, should foster the development of OP.

No empirical research to date has explored the links between autonomy support, passion, and persistence at school. Separately however, the concepts of autonomy support and passion provide evidence that such links might exist. Autonomy support and psychological control from educators have been linked with persistence at school, using quasi-experimental, correlational and longitudinal designs (Hardre & Reeve, 2003; Lavigne, Vallerand, & Miquelon, 2007; Pelletier, Fortier, Vallerand, & Brière, 2001; Skinner & Belmont, 1993; Vallerand, Fortier, & Guay, 1997; Vansteenkiste et al., 2004). In these studies, autonomy support from teachers was related to persistence through autonomy and competence needs satisfaction and autonomous forms of motivation. Outside the classroom, autonomy support has been studied through the coach-athlete relationship (e.g., see Mageau & Vallerand, 2003, for a review). As in the school context, athletes who perceived their coach as more autonomy-supportive had lower drop-out rates than those who perceived their coach as less autonomy-supportive. In sum, these findings show that autonomy support from educators facilitate long-term engagement and persistence.

Studies that have measured passion and learning activity engagement provide some support to the existence of the relationship between the two constructs. In the education literature, activity engagement is described as the participation in educationally purposeful activities, and is considered as a predictor of persistence in higher education (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). A number of studies have examined the role of passion in activity engagement with student samples (Bonneville-Roussy et al., 2011; Vallerand et al., 2007, 2008). In a first investigation, students enrolled in an undergraduate degree in psychology were assessed on their levels of passion towards the study of psychology, mastery goals, and study engagement (deliberate practice) in a psychology-related course (Vallerand et al., 2007). Interestingly, the findings revealed that mastery goals mediated the links between both types of passion and activity engagement, although this relationship was stronger for HP (Vallerand et al., 2007, Study 2). This result has been replicated with a sample of athletes (Vallerand et al., 2008, Study 2). Another study involving expert musicians showed that harmonious, but not obsessive, passion leads to activity engagement and to higher levels of musical performance (Bonneville-Roussy et al., 2011). The results of these studies seem to demonstrate that, in an educational context where high levels of performance are expected, HP is related to greater activity engagement than OP. In other words, the previous findings taken together raise questions about how harmonious and obsessive passions are linked to engagement (and to a larger extent, persistence) in this context.

1.4. The present research

The present paper aims to examine a model of the determinants of persistence in higher-education, using the autonomy support and passion frameworks. In post-secondary and pre-professional music education, the instrumental music tutor is often the main source of training and development for their pupils (Gaunt, 2008). Students at this level typically have private music lessons with their musical instructors for an hour or more per week. The relationship that is created in this setting is highly comparable to that of a doctoral student and his or her supervisor. In this one-to-one context, it is believed that the influence of the interpersonal teaching style of the music tutor should facilitate the development of either a harmonious or an obsessive type of passion that would in turn lead to a divergent pattern of persistence in music. In addition, the development of either kind of passion was shown to be preceded by an early identification

towards the beloved activity. As such, it is believed that music students who endorse a strong musical identity early in their musical path should be more prone to develop a harmonious or an obsessive passion for music. In summary, the two determinants of passions: autonomy support and identity, were expected to positively predict the formation of passion. In Study 1¹, we explored the links between perceived autonomy support, the two types of passion, and subjective persistence (intentions to make music a career), with a population of highly skilled music students. In Study 2, we extended the results of Study 1 to a general population of students who chose music as their college major. In this study, we tested a model linking autonomy-support and passion to objective persistence (drop-out rate) in a short-term longitudinal study involving three times of measurement. In this study, we also further examined the determinants of passion and persistence by adding measures of musical identity.

2. Study 1

The purpose of Study 1 was to explore the association between perceived autonomy support from the music teacher, harmonious and obsessive passions, and subjective persistence, with an international music-student population. These students were enrolled in summer music academies for a short duration (between a week and a month). Thus, they were expected to come from very different backgrounds and to share distinct environments. This setting ensured that the relationships between perceptions of autonomy-support, passion, and persistence were coming from genuine individual differences rather than from shared environments. Due to their high levels of performance, these students were also expected to display high levels of persistence in music. Based on the results obtained by Mageau et al. (2009), we hypothesized that students' perceptions of autonomy support from their music tutor would be positively linked to HP and unrelated to OP. Finally, in line with The Dualistic Model of Passion, it was assumed that harmonious and obsessive passion would both be positively associated with persistence.

2.1. Method

2.1.1. Participants and procedure

A total of 144 music students (60 men and 84 women) who registered in two international summer music academies in Canada were recruited for this study. The music academies offer an advanced preparation to talented young music students from all around the world, who want to become professional musicians, or who are at the beginning of a career in classical or jazz music. The summer academies are highly competitive and students are chosen based on an audiotaped audition, letters of reference from their principal music instructors, and their musical experience. Their age ranged from 15 to 33 years-old, with a mean age of 21.67 years ($SD=3.82$). Participants had an average of 10.74 years ($SD=4.76$) of experience in playing their instrument and practiced 24.60 h ($SD=10.54$) per week. Most musicians were string ($n=71$) and wind players ($n=44$). Remaining participants were pianists ($n=15$) and singers ($n=14$). After obtaining the consent of the academies' administration, questionnaires containing written explanations were answered on site by voluntary participants, during break times. In addition, all participants signed a consent form.

¹ In both studies, the effects of gender, age, musical experience (in years), and amount of weekly practice on the independent and dependent variables were controlled prior to performing the main analyses. In addition, we examined the effect of negative self-evaluation on students' perceptions. This was conceptualized in Study 1 as neuroticism and in Study 2 as low self-esteem.

Table 1
Descriptive statistics, zero-order correlations and partial correlations between the variables of Study 1.

	<i>M</i>	<i>SD</i>	Minimum Value	Maximum Value	1	2	3	4
1. Autonomy support	4.85	1.69	1.00	7.00	–	.21*	.09	.26**
2. Harmonious passion	5.57	.89	2.83	7.00	.19*	–	.19*	.42***
3. Obsessive passion	2.90	1.21	1.00	6.50	.10	.17*	–	.15
4. Persistence	6.55	.59	3.00	7.00	.24**	.44***	.13	–

Notes: Partial correlations are controlled for negative self-evaluation (neuroticism). Bottom left diagonal: Zero order correlations, $N = 143$; Top right diagonal: Partial correlations controlling for negative self-evaluation, $N = 142$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

2.1.2. Measures

Participants completed a questionnaire containing socio-demographic questions, and measures of perceived autonomy support from their most significant music professor, harmonious and obsessive passions, negative self-evaluation (neuroticism), and persistence (intentions to continue into the music field). All scales were rated on a 7-point Likert-type scale ranging from 1: *I do not agree at all*; to 7: *I strongly agree* and the mean scores on the items were used as the final measures.

2.1.2.1. Perceived autonomy support. This scale was derived from existing measures of autonomy support (Lavigne et al., 2007; Pelletier et al., 2001). It assesses the extent to which participants perceived autonomy-supportive behavior in their main (home-based) music instructor. A sample item is: “My music teacher gives me the opportunity to make choices about the musical exercises I have to practice” (3 items, $\alpha = .65$).

2.1.2.2. Harmonious and obsessive passions. The Passion Scale (Vallerand et al., 2003), was adapted to music (Bonneville-Roussy et al., 2011; Mageau et al., 2009), and contains two 6-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. Psychometric properties of the Passion Scale have been assessed in previous studies, which have supported its validity and reliability (Vallerand et al., 2003). Exploratory and confirmatory factor analyses have confirmed the two-factor structure across samples (e.g. Vallerand et al., 2003, Study 1). A 4-item criterion subscale is also included in the Passion Scale. It measures 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 assesses 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). Internal consistency indices for the present study were adequate ($\alpha = .73, .74$, and $.73$ for the harmonious, obsessive and criterion subscales, respectively).

2.1.2.3. Negative self-evaluation. Neuroticism was used to control for negative self-evaluation on the relationships between the main variables. Two items taken from the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003), measured participants’ neurotic personality trait. They were “In general are you? 1. ‘anxious, easily upset’; 2. ‘calm, emotionally stable’”. Higher scores on these items indicated a higher negative self-evaluation. Range varied from 1 to 7, with a mean score of 3.09 ($SD = 1.37$). The inter-item correlation was $r = .39$.

2.1.2.4. Persistence. This single item measured on a 7-points Likert-type scale ranging from 1: *I do not agree at all*; to 7: *I strongly agree*, was: “After my studies in music... I have the intention of becoming a professional musician.” In the present study, the scores ranged from 3 to 7.

2.2. Results and discussion

2.2.1. Passion criterion

In line with previous research, participants who scored at the mid-point or above (≥ 4 , in the present study) on the criterion subscale were classified as having a passion for music. The average scores on the four items of the criterion subscale ranged from 4.00 to 7.00 ($M = 6.34, SD = .69$). As a result, 100% of our sample was considered passionate.

2.2.2. Preliminary analyses

2.2.2.1. Gender differences. A Hotelling T-square (gender (coded 0 for males and 1 for females) by HP, OP, autonomy-support and persistence) performed in order to evaluate gender differences on the variables of the present study revealed no difference as a function of gender, Hotelling $T^2 F(4, 139) = .54, p = .71, \eta^2 = .02$.

2.2.2.2. Negative self-evaluation. To assess whether the neuroticism personality trait affected the relationships between the variables (autonomy support, HP, OP and persistence), partial correlations controlling for neuroticism were performed. These are presented in Table 1 (top right diagonal); zero-order correlations are also presented in Table 1 (bottom-left diagonal). Zero-order correlations between neuroticism and the main variables were: $r = .10, p = .22$ for autonomy support; $r = -.16, p = .06$ for HP; $r = .11, p = .17$ for OP; and finally $r = -.16, p = .05$ for persistence. At first glance, the relationships between the main variables seem not to be affected by neuroticism. To confirm this finding, differences between the zero-order and partial correlation coefficients were examined using Fisher’s r -to- z transformation. None of the differences in correlations met the significance criterion (Fisher’s r -to- z ranging from $z = |.20|, p = .84$, to $z = |.08|, p = .94$). Therefore, neuroticism had no impact on the perception participants had of themselves and of their teachers in this study.

2.2.3. Main results

Descriptive statistics are presented in Table 1. The links between autonomy support and passion were measured through Pearson’s correlation coefficients. The relationship between autonomy support and HP was significant and positive ($r = .19, p = .03$), but the link between autonomy support and OP failed to reach the level of significance ($r = .10, p = .24$). To assess the roles of autonomy support, HP, and OP in persistence, a hierarchical regression² was performed. Sociodemographic data (age, gender and number of years of experience) were entered at Step 1. Then, autonomy support, HP, and OP were included at Step 2. Table 2 displays the unstandardized and standardized regression coefficients of the two steps. The variables included at Step 1 did not significantly contribute to regression,

² In Study 1, performing a path analysis within the SEM framework would entail having an underidentified model (Kline, 2010).

Table 2
Results of the hierarchical multiple regression of persistence (Study 1).

Variables	B	SE B	β
Step 1			
Gender	-.08	.10	-.07
Experience	.01	.01	.10
Age	-.02	.01	-.13
R and R ² coefficients	R = .15	R ² = .02,	Adj R ² = .002
Step 2			
Gender	-.13	.09	-.11
Experience	.02	.01	.17*
Age	-.02	.01	-.11
Harmonious passion	.27	.05	.41***
Obsessive passion	.04	.04	.09
Autonomy support	.06	.03	.16*
R and R ² coefficients	R = .51	R ² = .26	Adj R ² = .22**

Notes: N = 144.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

$F(3, 140) = 1.10, p = .35$. Taken together, the variables included at Step 2 explained 22 % of the variance in persistence, $F(6, 137) = 7.84, p < .001$. Harmonious passion and autonomy support significantly predicted persistence ($\beta = .41, p < .001$, and $\beta = .16, p = .03$, respectively), but obsessive passion did not ($\beta = .09, p = .25$). In summary, on one hand, autonomy support was positively linked with HP and intentions to make music a career. On the other hand, autonomy support and OP were not related to each other, nor was OP with persistence. This suggests the existence of two different paths linking autonomy support, passion and subjective persistence.

This study first explored the links between perceived autonomy support and harmonious and obsessive passions. The positive relationship between autonomy support and HP and the non-significant link between autonomy support and OP replicate the results found by Mageau et al. (2009) concerning the determinants of passion. The second aim of this study was to explore the links between autonomy support, harmonious and obsessive passions and subjective persistence in music. HP was positively linked to students' intentions to continue in the music field. Autonomy support was also directly associated with future musical intentions. Contrary to our expectation, OP did not predict this type of persistence. Finally, these links were not affected by students' negative self-evaluation. In summary, this study provided preliminary evidence of the role of autonomy support in the development of the two types of passion and on the divergent impact of OP and HP in persistence.

3. Study 2

Study 1 revealed one possible path by which autonomy support and passion can be related to persistence. Indeed, perceived autonomy support from music tutors seemed to foster harmonious passion and persistence. However, the hypothesized link between obsessive passion and persistence was not confirmed. The main purpose of Study 2 was thus to build on these preliminary findings and to examine a model linking autonomy support, passion, and persistence using a 4-month longitudinal design. Four specific objectives were pursued. The first aim was to replicate and extend the results of Study 1 to a general population of students. The sample of Study 2 consisted of college music students who not only took music lessons, but also general music courses (e.g. history of music) and non-music related courses (e.g. literature). In addition, in the first study, the measure of autonomy support contained three items that assessed only the autonomy-support pole of the 'autonomy-support' continuum and mostly neglected psychological control. The second aim of Study 2 was thus to examine the role of both autonomy support and psychological control in predicting the two types of passion. A third objective was to further explore the determinants of passion, by adding a

measure of musical identification. According to the results of previous research, early inclusion of music into students' identity should lead to the development of either type of passion. Lastly, we aimed at providing an objective assessment of persistence (persistence/dropout rates) by following musicians over one college semester, and using students' actual registration as a measure of persistence.

The combination of these four objectives led to the design of an integrative model of persistence. Consistent with the Dualistic Model of Passion (see Vallerand et al., 2003), we hypothesized that musical identity would lead to both harmonious and obsessive passion. In line with the findings of Mageau et al. (2009), and with those of Study 1, we postulated that autonomy support would be positively related to HP and unrelated to OP. In line with the Dualistic Model of Passion, we postulated that psychological control would be positively related to OP but unrelated to HP. Finally, based on Study 1, we assumed that HP would directly and positively induce persistence, and that OP would not be related to it. In summary, this model investigated two paths: one leading to persistence via identity, autonomy support and HP, and one leading to drop-out via identity, psychological control and OP.

3.1. Method

3.1.1. Participants and procedure

296 participants aged between 16 and 30 years ($M = 18.07, SD = 1.80$) answered the first time of measurement (of which 161 were males, 121 were females and 14 did not say). Of this sample, 218 participants also answered the second time of measurement and accepted to give us access to their proof of registration for the next semester. This final sample served as the basis for all the analyses reported here.

The 218 full-time students were enrolled in college music major in the Province of Quebec, Canada. They were 116 men and 102 women aged between 16 and 30 years ($M = 18.06, SD = 1.86$) and voluntarily participated in the study. They had been playing their instruments for an average of 7.23 years ($SD = 3.68$) at T1, and practiced for an average of 10.87 h ($SD = 7.58$) weekly. Participants who were included in the final sample were similar to those who did not participate in the second phase of the study in age, number of years of experience, and hours of weekly practice (Hotelling T², $F(3, 273) = .62, p = .61, \eta^2 = .007$).

To ensure that our sample of music students were representative of the general sample of students, they were recruited in two colleges that offered general education as well as a specialized training in music. The college system in the province of Quebec is a 2-year pre-university or a 3-year technical degree roughly equivalent to grades 12–13 in the rest of Canada and in the USA or to Sixth Form College in England and Wales (UK). In order to obtain a College degree, students must earn credits in literature, French or English as a second language, philosophy and physical education in addition to their major. They can also choose to major in more than one domain (e.g. music and natural sciences). The participants of this study were first met during the first and second weeks of the Fall semester 2009 (T-1)³. They completed a consent form, stating that they agreed to give the researchers the permission to obtain their proof of registration for the next semester, answered questions about their levels of identification as music students, their levels of self-esteem, and the sociodemographic questionnaire. During T-2, which took place during weeks seven to nine (mid-end of the same semester), students were asked to answer questions about their perceived level of autonomy support and psychological control received from their principal music tutor, as well as their own levels of passion. The proofs of

³ A semester in the Quebec college system comprises 82 days (17 weeks).

registration were obtained by the colleges' registrars at the beginning of the following semester (T-3).

3.1.2. Measures

The average scores of the items were taken as the level of measurement. Demographic variables such as age and gender were measured, along with the instrument played, the number of years of musical engagement and weekly practice time.

3.1.2.1. Passion. The Passion scale used in Study 2 was the same as the one used in Study 1. Internal consistency indices for the present study were adequate ($\alpha = .79, .83, \text{ and } .75$ for the harmonious, obsessive and criterion subscales, respectively).

3.1.2.2. Identity. This instrument was first developed by Jackson (2002), and then adapted to university students and translated in French (Amiot, Blanchard, & Gaudreau, 2008). This scale was rated on a 7-point Likert-type scale ranging from 1: *I do not agree at all*; to 7: *I strongly agree*. In the present study, the French version of the questionnaire was adapted to measure cognitive (e.g., "Being a music student is important to the way I view myself.") and affective ("I am glad to be a music student.") aspects of participants' degree of identification as a music student (8 items, $\alpha = .92$).

3.1.2.3. Autonomy support and psychological control. The Perceived Autonomy Support Scale for employees (PASS-E; Moreau & Mageau, 2012) adapted to music teachers measures autonomy support ("My music teacher gives me the opportunity to take decisions related to music."; 9 items; $\alpha = .84$) and psychological control ("My music teacher makes me feel guilty when I don't have the time to complete a task."; 6 items; $\alpha = .86$). This scale was rated on a 7-point Likert-type scale ranging from 1: *I do not agree at all*; to 7: *I strongly agree*. The original validation confirmed the two-factor structure of the scale and showed its validity and reliability.

3.1.2.4. Negative self-evaluation. The self-esteem scale (Rosenberg, 1965), conceptualized towards the negative, was used as the measure of negative self-evaluation. The scale consists of 10 items assessing (low) global self-esteem ("At times, I think I am no good at all."). Responses were coded on a 6-point scale ranging from 1 (I strongly disagree) to 6 (I strongly agree). A lower score indicates a more negative self-evaluation. In this study, the minimum value was 1.90 and the maximum was 6.00 ($M = 4.96, SD = .84$), with an alpha coefficient of .88.

3.1.2.5. Persistence. The proof of registration in a music program for the Winter 2010 term was taken as the measure of persistence. Students were assigned a score of 0 (dropout from the music program; $n = 18$) if they were not registered as music students for the Winter 2010 term. On the opposite, students who were registered in a music program were given a score of 1 (persistence; $n = 200$).

3.2. Results and discussion

3.2.1. Passion criterion

Based on the same criteria as in Study 1, 100% of our sample was considered passionate (mean on the subscale ranging from 4.00 to 7.00; $M = 6.30, SD = .72$).

3.2.2. Preliminary analyses

3.2.2.1. Gender differences. A Hotelling T-square (gender, coded 0 for males and 1 for females) by identity HP, OP, autonomy-support and psychological control, was performed in order to evaluate gender differences on the variables of the present study. Results did not reveal any significant effect of gender, Hotelling $T^2 F(5, 212) = 1.79,$

$p = .12, \eta^2 = .04$. In addition, a 2×2 chi-square analysis (Male/Female \times Persistence/Dropout) indicated that persistence and gender were not related, $\chi^2(1) = .49, p = .48$.

3.2.2.2. Demographic differences in persistence. A Hotelling T-square (persistence, coded 0 for drop-out and 1 for persistence) by age, years of musical experience, and hours of weekly practice, was performed in order to determine whether the demographic variables affected persistence. No demographic differences were found in relation to persistence, Hotelling $T^2 F(3, 211) = .28, p = .84, \eta^2 = .004$.

3.2.2.3. Negative self-evaluation. Descriptive statistics, zero-order correlations (bottom left diagonal) and partial correlations (top right diagonal) between the variables are shown in Table 3⁴. The same method as in Study 1 was used to assess the relationships between negative self-esteem and the main variables included in the present study. Given the dichotomous nature of persistence, this variable was not included in the analyses. Zero-order correlations between negative self-esteem and the main variables were: $r = -.26, p < .001$ for identity; $r = -.13, p = .07$ for autonomy support; $r = .10, p = .13$ for psychological control; $r = -.34, p < .001$ for HP; and $r = -.01, p = .89$ for OP. No significant differences in correlations were found between the zero-order and partial correlation coefficients (controlling for negative self-esteem), using Fisher's r -to- z transformation (ranging from $z = |.52|, p = .60$, to $z = .00, p = 1.00$).

3.2.3. Path analysis

Considering the dichotomous outcome of this causal model, a mean and variance-adjusted weighted least-squares (WLSMV) estimation was used with the Mplus 6.11 software (Muthén & Muthén, 1998–2011). The WLSMV method is computed using bivariate associations between observed variables estimated with polychoric correlations and asymptotic covariance matrices (Kline, 2010). This method produces robust standard errors and corrected chi-square values when using categorical outcomes. In addition, the weighted least-squares (WLS) family of estimators is robust to violations of the assumption of normality (Flora & Curran, 2004) and the WLSMV method is robust to small sample size bias (Byrne, 2012). Causal models of persistence in education using the WLS family of estimators have previously been successfully implemented (Cabrera, Nora, & Castaneda, 1993; Caprara et al., 2008).

Polychoric correlations between the variables included in the model are found in Table 4 and the final model is presented in Fig. 1⁵. Polychoric correlations do not control for shared variance and are presented for information purpose. Fit indices were very good (Kline, 2010; $\chi^2_5, (N = 218) = 3.88, p = .57$; RMSEA = .00 (.00, .08); WRMR = .29; CFI = 1.00; TLI = 1.03). The model reveals that identity at Time-1 predicted both harmonious and obsessive passions at T-2 ($\beta = .45, p < .001, \beta = .38, p < .001$). Autonomy support at Time-2 was also linked with HP ($\beta = .13, p < .01$), while psychological control at Time-2 was linked with OP ($\beta = .13, p = .03$). HP in turn positively predicted persistence at Time-3 ($\beta = .24, p = .04$). Finally, OP did not predict persistence ($\beta = -.10, p = .25$).

To further rule out the effect of students' own evaluation of their passion towards music on their perception of the autonomy support provided by their music tutor, an equivalent model was tested. This

⁴ Similar correlations between HP and OP have been found in previous research (Carpentier, Mageau, & Vallerand, 2012; Philippe, Vallerand, Houffort, Lavigne, & Donahue, 2010). Indeed, these two variables are expected to be positively related because they share related components, namely being a passion. In the path analysis performed here, we controlled for the common variance shared between HP and OP by allowing them to correlate (see for similar analytical strategies Carpentier et al., 2012; Mageau, Vallerand, Rousseau, Ratelle, & Provencher, 2005).

⁵ Given that the predictions regarding the relationships between variables were all expected to go on one direction, one-sided p values are presented in Study 2.

Table 3
Descriptive statistics, zero-order correlations and partial correlations between the variables of Study 2.

	Persistence		Dropout		Minimum and maximum values		Zero-order and partial correlations				
	M	SD	M	SD	Min	Max	1	2	3	4	5
1. Identity	5.81	.90	5.82	1.05	2.86	7.00	–	.19**	.00	.44***	.37***
2. Autonomy support	5.59	.91	5.62	.87	2.00	7.00	.21**	–	–.44***	.19**	.01
3. Psychological control	2.20	1.17	2.58	1.25	1.00	6.83	–.03	–.45***	–	–.07	.10
4. Harmonious passion	5.85	.81	5.43	1.04	3.17	7.00	.48***	.22*	–.10	–	.47***
5. Obsessive passion	3.94	1.45	3.80	1.53	1.00	6.67	.36***	.01	.10	.44***	–

Notes: Partial correlations are controlled for negative self-evaluation (low self-esteem). Persistence $n = 200$; Dropout $n = 18$; Total $N = 218$; Bottom left diagonal: Zero order correlations, $N = 211$; Top right diagonal: Partial correlations $N = 210$.

* $p < .05$.

** $p < .01$.

*** $p < .001$.

model posited that the students' levels of harmonious and obsessive passion triggers a more or less positive perception of their teachers later on, that leads to persistence. To test this possibility the alternative model was performed as follows: identity⁶ predicted both harmonious and obsessive passion that, in turn, predicted perceptions of autonomy-support and control. Finally, autonomy support and psychological control predicted persistence. The results revealed that this model did not fit the data well, χ^2_7 , ($N = 218$) = 19.15, $p < .01$; RMSEA = .09 (.04, .14); WRMR = .86; CFI = .92; TLI = .82.

In summary, the results of Study 2 supported the proposed model. We first replicated and extended the results of Study 1 with a more general population of students in higher musical education. We also added a measure of musical identity as a determinant of passion and assessed both autonomy supportive and psychological controlling interpersonal teaching styles. Finally, we used a 4-month longitudinal design to test our proposed model. The positive link between identity and both harmonious and obsessive passion found in previous research was replicated here. We also predicted that autonomy support would be positively linked to HP while psychological control was expected to predict OP. Though the results showed relatively small coefficients, this hypothesis was supported. In addition, we aimed at further examining the links between passion and persistence. As expected, a positive link was found between HP and persistence whereas OP was not linked with it. Finally, negative self-evaluation did not seem to bias the relationships found among these variables.

4. General discussion

The general objective of this research was to examine the roles of autonomy support and passion in the persistence of students in higher education. The first study was exploratory in nature and aimed at specifying the links between perceived autonomy-support, HP, OP, and persistence in a cross-sectional design with a population of highly skilled music students. Because this population could behave differently from the normal student population, the first objective of Study 2 was to replicate the results with a general population of college students who chose music as their major. The other objectives were to test an integrative model linking autonomy support and passion with persistence and to provide additional evidence about the determinants of passion by adding a measure of psychological control and a measure of identification. Furthermore, in the first study, we examined the subjective persistence (future musical intentions) of expert music students, and in the second, we assessed in a short-term longitudinal study the behavioral persistence of college music students. Within both studies, we made the assumptions that autonomy support would be positively

⁶ Identity was measured before the other variables. To respect the principle of temporal precedence, the position of identity in the alternative model remained the same as in the main model.

linked to harmonious passion and not significantly associated to obsessive passion. In the second study, we hypothesized that another determinant of passion, identity, would be positively related to both types of passion. We also predicted that, contrary to autonomy support, psychological control would be positively linked to OP and unrelated to HP. Finally, based upon the results of Study 1, we postulated in Study 2 that harmonious and obsessive passions would be differentially related to persistence.

Our hypotheses were largely confirmed. First, in both studies, music students who perceived their music professor as autonomy-supportive displayed higher levels of harmonious passion. In addition, young musicians who viewed their professor as controlling in Study 2 were slightly more prone to being obsessively passionate about music. Study 2 further revealed that identification towards the activity was linked to the development of both HP and OP. In both studies, HP predicted persistence in the music field. On the other hand, OP was not linked to persistence neither in Study 1 nor in Study 2. Finally, these relationships remained after controlling for negative self-evaluation.

In summary, the consistent results found in these studies confirm the proposed paths linking autonomy support, passion and persistence. In the adaptive path, the students perceive that their autonomy is acknowledged by their teachers. This leads them to develop a harmonious passion and to persist in their domain. On the other hand, students who perceive psychological control from their educators are more prone to develop an obsessive passion which does not necessary lead them to persist. The findings described above have a number of theoretical and practical implications.

4.1. Theoretical implications of a model linking autonomy support and passion to persistence

The present research provides a first model of the determinants of persistence integrating autonomy support and the Dualistic Model of Passion conceptual frameworks. As mentioned previously, the links between autonomy support and persistence in educational settings have led to extensive research (Hardre & Reeve, 2003). In contrast, research assessing the determinants of passion is scarce. In fact, only one publication has previously examined the processes by which HP

Table 4
Polychoric correlation matrix between the variables of Study 2.

	1	2	3	4	5
1. Identity	–				
2. Autonomy support	.23	–			
3. Psychological control	–.02	–.44	–		
4. Harmonious passion	.49	.23	–.08	–	
5. Obsessive passion	.37	.02	.11	.44	–
6. Persistence	–.01	–.02	–.15	.22	.05

Note. $N = 218$.

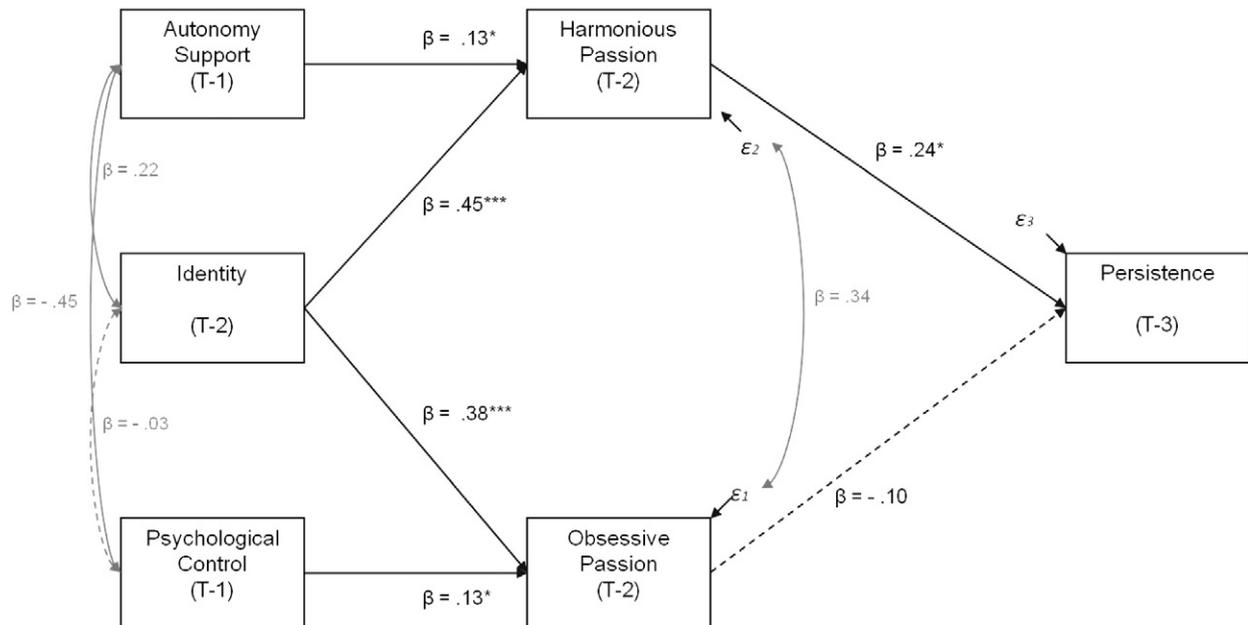


Fig. 1. Path analysis linking identity, autonomy support, passion, and persistence in college music education. Note. T-1, T-2 and T-3 indicate the times of measurement. $N = 218$; Coefficients are standardized; The pseudo R^2 gives an approximation of the variance explained under categorical models: Harmonious Passion, pseudo $R^2 = .24$, Obsessive Passion, pseudo $R^2 = .16$, Persistence, pseudo $R^2 = .05$; The dashed line represents a non-significant path; P values: $^*p < .05$, $^{***}p < .001$.

and OP develop (Mageau et al., 2009). Our findings replicate those of Mageau et al., who underscored the importance of an autonomy-supportive environment and a strong identification in the activity for the development of a harmonious type of passion for an activity. Regarding the relationship between passion and persistence, several studies have linked the two constructs in terms of activity engagement, a proxy of persistence (e.g. my means of deliberate practice, Bonneville-Roussy et al., 2011; Vallerand et al., 2007). However, the present study is the first one to examine the associations between passion and persistence in the context of higher education. In addition, our findings concerning the relationships between autonomy support, psychological control, and passions confirm the relevance of measuring autonomy support and psychological control independently. Although research on autonomy support has traditionally measured autonomy support and control as opposite poles of the same continuum (Deci et al., 1981; Reeve et al., 2004; Soenens & Vansteenkiste, 2010) the present findings showed that autonomy support and control could lead to different outcomes. Consequently, these constructs are not the exact opposite of each other and would appear to capture much more independent variance. Future research should further investigate the divergent results of both constructs measured separately.

4.2. Implications for higher education and music education

The special context in which music students learn to play their instrument might seem to be too specific to be extended to other disciplines such as humanities and sciences. However, the important role of educators who teach in private or in a classroom has been extensively acknowledged in the literature by the presence of many concepts outside autonomy support such as motivational climates (Ames, 1992) and classroom environments (Church, Elliot, & Gable, 2001). The sample of Study 1 was particularly unique and the results obtained with this sample may not generalize to a standard population of students. Nevertheless, this sample allowed us to control for the effect of shared environments, a variable normally difficult to assess in classroom settings. The results of Study 1 also could be applicable in many performance related disciplines (e.g. dramatic arts, dance and physical education). The sample of Study 2 was more representative of a general population of college students.

Although they still learned their instrument in a one-to-one tuition as did the participants in Study 1, they also had access to the classroom environment in their general music courses as well as in their compulsory non-music related courses (which were also attended by non-music students).

For these reasons, a model linking autonomy support, passion, and persistence has several empirical implications not only for music but for other educational contexts as well. Many studies stressed the importance of autonomy-supportive environments for the development of an adaptive school functioning (Deci & Ryan, 1987; Reeve et al., 2004; Soenens & Vansteenkiste, 2005). Students who perceive that their autonomy is supported appear to have a higher quality learning experience (Vansteenkiste et al., 2004), higher perceived self-efficacy and competence (Guay, Boggiano, & Vallerand, 2001; Williams & Deci, 1998), and are more likely to develop self-determined forms of motivation (Black & Deci, 2000; Deci & Ryan, 1987; Ryan & Stiller, 1991; Vallerand et al., 1997; Williams & Deci, 1998) and harmonious passion (Mageau et al., 2009). Moreover, music students who are harmoniously passionate experience more positive consequences which lead them to show greater levels of persistence. As previous studies have revealed, harmoniously passionate musicians at the expert level are more likely to set mastery goals and to have higher levels of subjective well-being than obsessively passionate musicians (Bonneville-Roussy et al., 2011). For them, music is almost always seen as enjoyable and the positives outcomes they experience with music outweigh the negative consequences they sometimes encounter. This result is also consistent with the extensive literature on motivational factors, such as self-efficacy and intrinsic motivation, which are important predictors of students' persistence (Bouffard, Bouchard, Denoncourt, Goulet, & Couture, 2005; Pajares, 1996; Vallerand et al., 1997).

In the present research, OP was consistently unrelated to persistence. These results are in line with the findings of previous research that showed that only HP (but not OP) was related to long-term activity engagement (Bonneville-Roussy et al., 2011; Vallerand et al., 2007). In the context of higher music education, obsessively passionate students who do not want to continue into the music field or who actually dropout from a music program may view persistence as too demanding for the rewards it offers (Hallam, 1998; Hurley, 1995). Research has revealed that it takes at least ten years of regular practice in order

to become expert in a musical discipline (Ericsson, Krampe, & Tesch-Römer, 1993). Furthermore, practicing a musical instrument and performing in music often comes with physical injuries and performance anxiety (Fry, 1987; Papageorgi, Hallam, & Welch, 2007). In addition, music is so competitive that even highly skilled musicians are not sure if they would find an adequate position in music following their musical training (Subotnik, Jarvin, Moga, & Sternberg, 2003). In part because of the lack of autonomy support, they perceive from their music tutor, obsessively passionate music students may experience negative consequences related to music sooner and in a larger proportion than harmoniously passionate students and may therefore drop out at a larger rate. The specific relationship between obsessive passion and educational persistence needs to be examined in future studies.

Some further limitations of our paper should be mentioned. First, the design was correlational in nature and does not ensure causality. In addition, in Study 1, the autonomy support measure had a low reliability coefficient and persistence was measured with one single subjective item. Furthermore, Study 2 predicted only a small amount of variance in persistence; other unknown variables might have played a greater role in the persistence/dropout decision of these students. Future research is necessary to replicate the results found in this paper over an extended period of time and with repeated measures. In both studies, we measured autonomy support from teachers as perceived by their students. Although we controlled for negative self-evaluation in both studies, unknown individual characteristics of the participants may have influenced the perception students had of their teachers. An observational study design could help better understand the role of teachers in the development of passion. Finally, some additional factors that were not measured in the present study could have mediated the links between obsessive passion and persistence. Obsessively passionate students might experience higher levels of stress or may use ineffective coping strategies compared with harmoniously passionate students. Future research should take into account the effects of stress and coping in a model that connects passion to persistence.

5. Conclusion

In sum, the present paper highlights the role of autonomy-support and passion in school-related persistence. The findings of this study are meaningful not only for the study of persistence in musical education, but in every domain in which people invest a large amount of their time and energy. For example, some scientific careers are highly demanding and Health and Natural Sciences students drop out at alarming rates (Arulampalam, Naylor, & Smith, 2004; Mills, Heyworth, Rosenwax, Carr, & Rosenberg, 2009). Teaching in an autonomy-supportive way and promoting harmonious passion could help students in these very demanding educational paths to persist towards their expected career in a healthy and positive way. Further investigations are needed to build understanding about the processes linking autonomy support, passion, and persistence in educational contexts.

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