**Chapter 22 The Role of Passion in the Development of Expertise:**

**A Conceptual Model**

**In:** **Hambrick, David Z., Guillermo Campitelli, and Brooke N. Macnamara, eds. The Science of Expertise: Behavioral, Neural, and Genetic Approaches to Complex Skill. Routledge, 2017.**

Arielle Bonneville-Roussy

Department of Education, Roehampton University, London, UK

Robert J. Vallerand

Department of Psychology, University of Quebec, Montreal, Canada

 School of Psychology, Australian Catholic University, Banyo, Australia

*Nothing is as important as passion.*

*No matter what you do with your life, be passionate.*

Jon Bon Jovi

**INTRODUCTION**

In many achievement domains, such as sports, music, the arts, professions, and academics, when experts are asked about what carried them to excellence, most talk about their enduring passion for their activity. Indeed, several personalities over the years, such as Jon Bon Jovi, the American rock musician quoted above, have celebrated the role of passion in persistence and high levels of performance. From ancient Greece up to this day, the concept of passion for an activity has fascinated scientists interested in the study of human flourishing (for a brief history of research on passion for an activity, see Vallerand, 2015). For instance, the German philosopher Hegel (1770-1831) claimed that “Nothing great in this world has ever been accomplished without passion.”. So it is in this chapter, that we, as “fascinated scientists,” propose that passion represents a key motivational force that leads individuals to persist, develop, and succeed in their preferred activity, from their initial contact with the activity through full mastery of their skills.

This chapter is divided into four main sections. The first section examines the definitions and current developmental models of expertise. In the second section, we present the Dualistic Model of Passion (DMP; Vallerand, 2015; Vallerand et al., 2003). Then, drawing from past research, the third section proposes a new conceptual model linking passion to the development of expertise. Finally, the fourth section explores the practical implications of the model and suggests avenues for future research.

**The Development of Expertise**

**A Definition of Expertise**

According to the Oxford English Dictionary (OED), an expert is defined as (1) “One who is expert or has gained skill from experience,” and (2) “One whose special knowledge or skill causes him to be regarded as an authority; a specialist.”(Oxford English Dictionary, 2016). This definition mirrors early psychological research in the area, where expertise entailed the distinctions of experts and non-experts as a function of experience (Simon & Chase, 1973).

More recently, Chi (2006), has proposed a taxonomy to account for the diverse ways in which expertise was categorized in past research. The two main approaches to expertise have been conceptualized as being “absolute” or “relative.” The absolute approach attempts to understand exceptional expert skills, those that are attained by only a handful of individuals per generation (and is associated with the second OED definition presented above). Early research divided experts and non-experts with regards to this absolute approach, by looking at the acquisition of exceptional levels of expertise as measured by objective performance criteria (Baker, Côté, & Abernethy, 2003; Ericsson & Charness, 1994; Helsen, Hodges, Van Winckel, & Starkes, 2000; Krampe & Ericsson, 1996). The relative approach posits that experts are the most proficient individuals in a gradient of skills ranging from novice to experts (Chi, 2006). For instance, using a relative approach, skills can be compared between international or national sports teams and regional teams, between doctoral students andundergraduate students, or even between senior andjunior staff in a company. Chi outlines specific criteria to define expertise using this relative approach that can be summarized as follows: Experts generate the best answers to a problem, with the best strategy possible, and with the least amount of cognitive (or physical) effort. Adopting the relative perspective allows us to examine, at a macro-level, how individuals develop their skills to become experts. Most importantly, this relative approach assumes that expertise can be generalized to almost any field.

**The Development of Expertise**

Current models of expertise development—for instance, development of talent in young people (Bloom, 1985), talent in sports (Côté, 1999; Macnamara, Button, & Collins, 2010a, 2010b), expert skills acquisition (Ericsson, Krampe, & Tesch-Römer, 1993), and the novice to expert continuum (Dreyfuss & Dreyfus, 1980)—have focused on describing the set of cognitive and, to some extent, physical skills needed to reach the highest levels of expertise. One developmental model stands out by the richness of the investigation that led to its conceptualization. Using the absolute approach, Bloom (1985) and his team interviewed 120 exceptional performers in the arts, sciences, and sports, along with their parents and their teachers, in order to understand how talent and skills develop from childhood up until early adulthood.

From this research, Bloom (1985) concluded that the development of expert skills mainly encompasses three stages: the *early,* *middle* and *final years.* This developmental model stipulates that the stages are distinguishable in three key areas: (1) early successes and interests; (2) social influences; (3) time and effort invested in the activity. This section summarizes the stages described by Bloom (1985); later sections will expand the model further. The first stage of development of expertise, the early years, is characterized by the exploration of various activities, in which fostering interest is the main focus. Time and effort is split between various activities and the amount of formal involvement in a single activity is limited. The middle years of expertise development are marked by an increased commitment to mainly one activity. The transition between the middle and the later years is again marked by an increased amount of time doing the activity. Finally, in the later years stage, individuals make a full-time investment in the activity of interest. The main goal of this phase is to practice and improve the required skills to attain the expert level. Côté (1999) later revised and applied Bloom’s (1985) model to the sports domain. Côté’s model of expertise defined the three stages of age-specific expertise development as the *sampling* (6-12 years old), *specialization* (13-15 years old), and *investment* (16 years old and older) stages (for more on this model, see Chapter 18, Play During Childhood and the Development of Expertise in Sport).

The models of development of talent in young people (Bloom, 1985; Côté, 1999) have served as a foundation to empirical research that explains the developmental processes that lead people to become experts (Ericsson et al., 1993; Macnamara et al., 2010a, 2010b). Those studies investigated the type of activities that leads people to become experts in a given area, what skills distinguish experts from non-experts, and who is influential in this development. Although the aforementioned models have acknowledged the key role of motivation in developing skills, they make little direct reference to the type of psychological drive that people need in order to become experts. We believe that passion for an activity can explain the determination that leads people to become experts.

**Passion as the Motor Underlying the Development of Expertise**

**A Definition of Passion**

Surprisingly, until recently, there has been very little theorizing and research on the psychology of passion (see Vallerand, 2015, Chapters 1 and 2, for a history on the concept of passion). Although there has been research on passionate love (e.g., Hatfield, Walster, & Reading, 1978), no theoretical analysis of passion for activities has been formulated until Vallerand and colleagues (2003) proposed a Dualistic Model of Passion (DMP; see also Vallerand, 2010, 2015). The DMP defines passion as a strong inclination toward a *self-defining* activity that one loves (or strongly likes), finds important, and in which one invests time and energy (Vallerand et al., 2003). Such an activity comes to be so self-defining that it represents a central feature of one’s identity. Playing tennis, playing a musical instrument (e.g., the piano), or one’s work represent examples of activities that one can be passionate about and help define identity.

**On the Harmonious and Obsessive Passions**

The DMP further posits that there are two types of passion, *harmonious* and *obsessive*, that can be distinguished in terms of how the passionate activity has been internalized into one’s identity. Obsessive passion results from a controlled internalization (Ryan & Deci, 2000) in identity of the activity that one loves. Such an internalization process leads the activity representation to be part of the person’s identity thereby preventing access to optimal self-processes. With obsessive passion, people can experience an uncontrollable urge to partake in the activity. Consequently, although they may display task persistence, with obsessive passion such persistence is rigid and people risk experiencing conflicts and other negative affective, cognitive, and behavioral consequences during and after activity engagement.

Conversely, harmonious passion results from an autonomous internalization of the activity into the person’s identity. An autonomous internalization occurs when individuals have freely accepted the activity as important for them without any contingencies attached to it. When harmonious passion is at play, the activity occupies a significant but not overpowering space in the person’s identity, is in harmony with other aspects of the person’s self and life, and is experienced as volitional. This type of passion is conducive to flexible persistence and positive outcomes. In sum, with harmonious passion, the person controls one’s passion, while with obsessive passion, one is controlled by the passion. Although both types of passion are expected to be very powerful, harmonious passion is hypothesized to be more adaptive than obsessive passion and should therefore lead to more optimal outcomes.

**Research on Passion**

The Vallerand et al. (2003) article opened up a new area of research on passion for activities. Since then, well over 200 studies have been conducted on the passion construct. Such research has been typically conducted in field settings with a variety of real-life participants such as athletes, musicians, actors, dancers, painters, teachers, nurses, administrators, video gamers, and others. In most studies, participants are asked to complete the Passion Scale, which contains two subscales assessing obsessive (e.g., “I almost have an obsessive feeling toward this activity”) and harmonious passion (e.g., “This activity is in harmony with other activities in my life”). There is also another subscale that assesses the general passion criteria (e.g., love, valuation, and regular engagement in the activity) and thus helps determine whether participants are passionate or not with respect to their favorite activity (e.g., painting). Such research has used a variety of methodological designs (e.g., cross-sectional, longitudinal, diary study), and psychological and behavioral outcomes as well as responses from various informants (see Vallerand, 2015 for a review). In other studies, the harmonious and obsessive passions have been experimentally induced (the results with these procedures and the Passion Scale are remarkably similar).

**On the Prevalence of Passion**

Using the criteria reflecting the definition of passion (see above), several studies have shown that a majority of the population is either highly passionate (75 %; Philippe et al., 2009) or at least moderately passionate (84%; Stenseng, 2008; Vallerand et al., 2003, Study 1) for at least one activity in their life. Of importance, such passion is not fleeting but rather persistent as people typically engage in their passionate activity on average eight hours per week and have been doing so for several years (see Vallerand et al., 2003). As long as activities include some interesting elements**,** theyhavethe potential to become passionate for a given individual.

**On the Development of Passion**

The DMP posits that people engage in various activities throughout life in the hope of satisfying the basic psychological needs of autonomy (to feel a sense of personal initiative), competence (to interact effectively with the environment), and relatedness (to feel connected to significant others) (see Ryan & Deci, 2000). Of these activities, a limited few (one or two) will eventually be perceived as particularly enjoyable and important, and to have some resonance with how we see ourselves. Such valuation and identification for these activities will lead them to be internalized in identity, and passion for these activities will develop.

According to the DMP, there are at least three processes involved in the transformation of an interesting activity into a passion: *activity valuation*, *identification with the activity*, and *internalization of the activity in one’s identity*. Activity valuation refers to the importance one gives to an activity. Activity identification takes place when one feels that the activity defines him or her. Finally, activity internalization is the process through which the activity becomes part of the person’s sense of self and identity. In line with past research (Deci, Eghrari, Patrick, & Leone, 1994), an activity is likely to be internalized when it is highly valued and meaningful. In line with self-determination theory (Ryan & Deci, 2000), two types of internalization can take place: *autonomous* and *controlled*. To the extent that one’s social environment (e.g., parents, teachers, coaches, school principals) is autonomy-supportive (provides some choices within reasonable limits), an autonomous internalization is likely to take place leading to harmonious passion. Conversely, to the extent that one’s social environment is controlling (coercing people to engage in behavior), a controlled internalization will take place, leading to obsessive passion. Parents, teachers, coaches, supervisors, managers, and mentors all play an important role in individuals’ valuation of a given activity (e.g., Eccles & Wigfield, 2002).

Results reveal that all three processes are important in the development of passion. For instance, Mageau et al. (2009, Study 3) showed that first-year high school students who had never played a musical instrument before and who later became passionate for music at the end of a semester (36% of the sample) were those who valued music, identified with it, and interacted with autonomy-supportive parents and music teachers. Furthermore, among the passionate music students, those who developed a harmonious passion reported experiencing higher levels of autonomy support than those who developed an obsessive passion. When an interesting activity becomes so important that it contributes to one’s identity or has the potential to do so in the future, individuals are more likely to become passionate. Indeed, enjoying music and having the perception that one may become a musician later on should make this potential identity element salient, facilitate its internalization in identity (Houser-Marko & Sheldon, 2006), and should lead to the development of passion. This internalization process facilitated by autonomy support provided by the social environment represents a crucial factor leading to passion development (see also Mageau et al., 2009).

The processes discussed above pertained to activities where participants had been engaging in the activity for just a few months or even from time zero (Mageau et al., 2009, Study 3). Thus, these studies related more to the initial development of passion. However, once developed, passion can also undergo on-going development as it is affected by a variety of social factors (Vallerand, 2010, 2015). Because internalization is never 100% autonomous or controlled in nature, both types of internalization processes are at play and elements of the two types of passion are internalized to different degrees. Depending on the type of social factors present in one’s environment, it is possible to subsequently trigger one type of passion or the other. For instance, in a study with music students and with an average of over seven years of musical experience (Bonneville-Roussy, Vallerand, & Bouffard, 2013), it was found that students who interacted with autonomy-supportive music teachers displayed higher levels of harmonious passion toward music than those with controlling teachers. Other social factors such as task autonomy and task resources (support) have been found to facilitate the development of a more harmonious passion (Trépanier, Fernet, Austin, Forest, & Vallerand, 2014).

Individual differences may also play a role in the development of specific types of passion. Vallerand et al. (2006) showed that athlete’s activity valuation (the subjective importance of the activity) coupled with an autonomous internalization style predicted harmonious passion. Obsessive passion, on the other hand, was predicted by activity valuation coupled with a controlled internalization style. Other research has shown that using signature strengths (one’s most positive core attributes) leads one to experience increases in harmonious passion for work (Forest et al., 2012). In sum, the development of passion is related to contextual influences, social factors, and, to some extent, personal dispositions, that shape how the passionate activity is internalized into one’s identity and leads to the initial or ongoing development of passion.

**Passion and Psychological Outcomes**

Most studies conducted on passion have looked at the role of the two types of passion in a variety of outcomes. The results of these studies yield remarkably similar findings (see Curran et al., 2015 for a recent meta-analysis). Germane to this chapter, passion has been found to predict behavioral engagement, persistence, and performance. In this case, both harmonious passion and obsessive passion have been typically found to predict positively the sustained engagement in the passionate activity (e.g., Parastatidou, Doganis, Theodorakis, & Vlachopoulos, 2012; Vallerand et al., 2007; Vallerand et al., 2008). In addition, both harmonious and obsessive passions have been found to predict positively the engagement in highly demanding task activities aimed at improving on the activity, such as deliberate practice (see, Bonneville-Roussy et al., 2011; Vallerand et al., 2007; Vallerand et al., 2008). It is through regular engagement in deliberate practice activities that long-term improvement in performance takes place. However, Bonneville-Roussy et al. (2013) have found that only harmonious passion predicted long-term persistence in an activity. That is, obsessively passionate individuals may be more likely than their harmoniously passionate counterparts to drop out of an activity. Finally, both types of passion affect the display of performance through their positive effects on various cognitive mediators such as concentration and absorption (e.g., Ho, Wong, & Lee, 2011). Thus, because both the harmonious and obsessive passions lead one to engage in deliberate practice to a similar extent, they both facilitate the development of long-term performance and its display in the short term.

Of additional importance, harmonious passion leads to higher levels of optimal functioning both at the intrapersonal (e.g., concentration, psychological well-being, health, engagement, motivation, etc.) and interpersonal levels (e.g., relationships; see Vallerand, 2015). On the contrary, obsessive passion positively predicts maladaptive outcomes (e.g., general negative affect, life conflicts, burnout), whereas harmonious passion is either unrelated or even negatively associated with these negative outcomes. In other words, harmonious passion for a given activity may protect one against negative outcomes and ill-being. Conversely, with obsessive passion, individuals seem to be on a “see-saw pattern” where their well-being goes up and down as a function of their performance on the activity that they are passionate about (see Lafrenière, St-Louis, Vallerand, & Donahue, 2012; Mageau, Carpentier, & Vallerand, 2011). It should also be emphasized that the adaptive outcomes engendered by harmonious passion are experienced on a recurrent basis. Thus, contrary to the often reported “tread mill effect” where gains are not sustained, the positive effects due to harmonious passion are indeed sustainable (see Vallerand, 2010, 2015).

Finally, although the long-term performance effects of the two types of passion may be similar, it should be noted that the process appears to be quite different. Specifically, because harmonious passion also facilitates the experience of more adaptive on-task cognitive and affective as well as life outcomes, the harmonious road to excellence would appear to be much more adaptive than the obsessive road that is devoid of such a positive process and may include emotional suffering along the way (Vallerand, 2015).

**Toward a Conceptual Model Linking**

**Passion to Expertise Development**

Building on past research on passion and expertise, we propose a model of the long-term development of expertise that takes into account how passion can serve as a drive to this development. Research has demonstrated that experts are in general highly passionate about their dedicated activity (e.g. Bonneville-Roussy, Lavigne, & Vallerand, 2011; Vallerand et al., 2007). As such, passion can be considered as the fuel that individuals need in order to engage, persist, and succeed in their preferred activity, and eventually become experts. This model also expands prior models of expertise development (Bloom, 1985; Côté, 1999), as it takes a lifespan developmental perspective (Baltes, Staudinger, & Lindenberger, 1999) and assumes that expertise, and passion towards an activity, can be developed and maintained at almost any stage in life.

Figure 1 illustrates our conceptual model in which the former stages serve as the foundation to the next stage of development. We propose four stages of expertise in which passion plays a major role. The first three stages are based on Bloom (1985, b), and Côté’s (1999) models of development of expertise described above, and are the *exploration* (early years or sampling, Bloom, 1985 and Côté, 1999, respectively), *specialization* (Côté, 1999; the middle years for Bloom, 1985), and *investment* (final years, Bloom, 1985) stages of development. To these three stages, we add a fourth one, namely the *refinement stage* of expertise that happens when experts have acquired their skills and need to maintain and refine them. Table 1 summarizes the most important findings on the role of passion in the developmental stages of expertise that are described below.

**Passion and the Exploration Stage of Expertise Development**

This first stage roughly encompasses the first few years of involvement in an activity, from the complete start up until one or a few preferred activities become more formally chosen. The main developmental goal of the exploration stage of expertise acquisition is to promote interest and passion in one or many activities (Bloom, 1985; Côté, Baker, & Abernethy, 2003). Children usually explore activities, such as music, mathematics, reading, and sports informally and formally at school and during extracurricular activities. Families can also create a climate that is conducive to exploration, through continuing exposition to varied activities and promoting growth within them (Bloom, 1985; Vallerand, 2015). Young adults may sample different study and career choices in secondary school and college. Adults may also explore a variety of activities as hobbies, or during work transitions. The key feature of this stage is that many activities are often explored simultaneously, and mostly informally, according to the availability of the activities and initial interests. Individuals at this stage of development find out that some activities are more valuable to them than others. At any age, role models can be influential in the selection of activities, and individuals repeatedly report that role models play an important part in the initiation of a new activity (Bloom, 1985; Gibson, 2004)

At the exploration stage, the type of passion that is developed is strongly influenced by the levels of involvement of social agents, such as family, friends, coaches, and mentors (Mageau et al., 2009) but also culture (Vallerand, 2015). For instance, Mageau et al. (2009) have found that, in the exploration stage of expertise development, only 36% of individuals develop a passion towards a specific activity presented in a school context. In addition, harmonious and obsessive passions appear to be malleable at this stage of development, and highly influenced by the social context (Mageau et al., 2009). As seen in a previous section, autonomy support from social agents tends to influence the development of passion in general. Without freedom to engage and to explore in the activity, only external regulation will develop for a given activity. The activity is then engaged only when one feels that he or she has to do it (e.g., practicing a musical instrument only when told “go to your room and practice!”). However, sustained autonomy support from one’s social environment is key to lead to the further differentiation of passion into harmonious passion, whereas further controlling behaviors from social agents lead to the development of obsessive passion (Bonneville-Roussy, Vallerand, & Bouffard, 2013; Mageau et al., 2009).

The supportive role of family and friends, as well as mentors and teachers, is also acknowledged in talent development theories (e.g. Bloom, 1985; Côté, 1999). For instance, Peter, an Olympic swimmer cited in Bloom’s (1985) research, indirectly summarizes the difference between autonomy-supportive parents and controlling parents, and the consequences they had to the desire to swim: “They weren't oppressive – a lot of parents are oppressive in their support. […] My parents were very encouraging [and] smart enough to know not to overencourage me or not to be oppressive, because a lot of people will rebel and just back away.” (Bloom, 1985, p.196). Therefore, adequate support fosters the growth of healthy passion and interest in the activity, whereas psychological control or “oppression” hinders it and leads to obsessive passion (see Mageau et al., 2009).

Two main outcomes may arise from the development of passion and of expertise at the end of the exploration stage. It is likely that an activity that is not interesting enough or not considered important may never develop into a passion. It is also likely that this non-passionate activity will be dropped before the next stage of expertise development. If the activity is highly valued, loved, and starting to form an integral part of one’s identity, providing that the person invests a sufficient amount of time doing it, this activity can eventually become a passion. Regardless of whether individuals developed an obsessive or harmonious passion, as long as they are at least moderately passionate for an activity, it is expected that individuals will carry on to the next stage of expertise development.

In operational terms, the exploration phase should be characterized by (a) the sampling of various activities; (b) a focus on enjoyment and informal training rather than deliberate practice and formal training; (c) a strong influence of the social environment seen through autonomy support and control that promote or hinder harmonious or obsessive passion, respectively; and finally (d) lower levels, or fluctuating levels, of passion towards the activity. A successful transition between the first stage and the next stages of development should be seen through a greater identification towards the activity, higher levels of passion, and a greater amount of time and energy spent in the activity.

**Passion and the Specialization Stage of Expertise Development**

During the specialization stage of expertise development, individuals choose one or sometimes two areas of specialization (Bloom, 1985; Côté, 1999). It can be roughly compared with the first half of the “10 years and 10,000 hours of deliberate practice” rule of thumb regarding expertise acquisition (Ericsson, 2016; Simon & Chase, 1973). In this stage, individuals gradually adapt their focus from the initial play and informal learning to mastering their skills. Although some levels of exploration are still present, such as playing two musical instruments (personal experience from the first author) or being involved in many sports (personal experience from the second author; see also Ericsson et al., 2007), more formal types of learning are also experienced, the most common one being deliberate practice (Côté et al., 2003). One successful research neurologist described in Bloom (1985) summarizes the transition from exploration to specialization: “I had left high school winning some sort of award in biology, so I automatically assumed I’d go into biology or medicine” (Bloom, 1985, p. 384). This stage involves a developing identification with the activity. The area of specialization gradually becomes an integral part of the person’s life through an increased use of one’s free time that is devoted to the activity, of time given to rehearsal and practice, and general involvement in extra-curricular activities related to the area of specialization (such as attending professional concerts for musicians or aquiring more specialized equipment; Bloom, 1985, b; Coleman & Guo, 2013).

The specialization stage is characterized by an increase in the level of passion for the activity of interest. For instance, in one study that examined the development of passion with teenagers who were specializing in various activities (e.g., dance and ecology), Mageau et al. (2009, Study 2) have found that, at the specialization stage of expertise, 92% of individuals were passionate. Further, greater differentiation between harmonious and obsessive passions takes place at this second stage, and Mageau et al. concluded that autonomy support (or lack of it) from parents plays a key role in such differentiation. Specifically, preferences for what may be too early activity specialization from the teenagers and also their parents led to the development of more obsessive types of passion in the teenagers. Presumably, experiencing pressure to specialize too early in a given activity leads to obsessive passion for the activity. In the same vein, Côté, Lidor and Hackford (2009) have suggested that early exploration of various activities can be beneficial to the later stage of expertise developments, but their arguments towards an early activity specialization were mixed. Another study qualitatively examined the links between passion and early activity specialization and reached the same conclusion: the young people interviewed who displayed high levels of specialization seemed to display an almost obsessive passion towards their activity (Fredricks, Alfeld, & Eccles, 2010).

Among other factors contributing to passion and expertise development at this stage, Fredricks and colleagues (2010) also noted that the social context needs to provide an adequate level of challenge, as boredom was seen an obstructive factor in the development of passion, and the desire to specialize further in an activity. In addition, the more passionate individuals in Fredricks et al.’s sample had more opportunities to demonstrate their competence through competitions or other means. Finally, an enduring lack of challenge in the activity may lead people to “fall out” of passion and to stop the activity altogether (Aujla, Nordin-Bates, & Redding, 2015; Fredricks et al., 2010).

To operationalize this second stage, specialization should be accompanied with the following: (a) a choice of one or two activities in which more time is invested; (b) an increasing focus on deliberate practice and decreasing focus on play and informal activities; (c) a strong influence of the social environment seen through autonomy support and control that promote or hinder harmonious or obsessive passion, respectively; and (d) increasing levels of passion towards the activity that is better discriminated between the harmonious and obsessive types. Signs of transition between the specialization and the next stage of development are: the activity that becomes an integral part of the person’s identity, higher levels of both harmonious and obsessive passions, and a progression towards an (almost) full time engagement in the activity.

**Passion and the Investment Stage of Expertise Development**

The investment stage of expertise development is marked by a full-time involvement in the activity with the explicit desire to excel in the activity (Bloom, 1985; Côté et al., 2003)**.** At this stage, individuals are completely invested in, and passionate about, the activity that they usually love to do more than anything else. Many studies conducted with hundreds of participants concluded that almost, if not 100% of individuals who attain the investment phase of expertise are passionate about their activity (e.g., Bonneville-Roussy et al., 2011; Mageau et al., 2009; Vallerand et al., 2007, 2008). This research has shown that passion is the most important psychological drive that allows people to maintain the energy to go through the high demands of

Another important characteristic of the investment stage is the full-time attention to practice and improvement, by the use of sustained deliberate practice (Ericsson et al., 1993; Starkes, Deakin, Allard, Hodges, & Hayes, 1996). It is not surprising to see that the sheer amount of deliberate practice seems to increase dramatically, to reach a weekly number of hours that varies between 10 and as many as 40, depending on the sample and activity at play (Krampe & Ericsson, 1996). Further, the content of such practice moves toward excellence. Indeed, experts-to-be seem to focus their attention on improving precision and control, and to “practice to perfection” (Bloom, 1985). Because such practice is so demanding, passion is the key factor providing the energy to sustain such practice over time.

Finally, we see a full integration of the activity into the person’s identity: The activity has now become an integral part of who they are (Bloom, 1985; Bonneville-Roussy et al., 2013; Côté et al., 2003). A successful research mathematician in Bloom’s research sums up his later years of expertise development as “I’m certainly seduced by mathematics. I couldn’t help myself *being a mathematician*” (Bloom, 1985, p. 329). Bonneville-Roussy et al. (2013) replicated this finding quantitatively by showing that integration of the activity into the identity was an important predictor of the development of harmonious and obsessive passions. Mageau et al. (2009) have shown that as compared with individuals who were still exploring options, individuals in transition between the investment and the expert levels of expertise display higher levels of harmonious and obsessive passion, and the criteria of passion: activity valuation, love for the activity, and time investment.

Coaches or mentors have an increasing role to play in order to provide fine-grained feedback and in preparation for performances and examinations during the investment stage of development (Bloom, 1985; Carpentier & Mageau, 2014). In addition, Bonneville-Roussy et al. (2013) have found that musicians at the investment stage also benefit from an autonomy-supportive style from their instructor (see also Mageau et al., 2009). In this study, musicians who perceived more autonomy support from their music teachers tended to develop a more harmonious passion later on, and those who perceived more control tended to report having a more obsessive passion. Côté (1999) noted that family and significant others also provide important emotional and material support at this stage.

Since the investment stage of expertise is characterized by an intense involvement in the activity, and since most individuals are passionate, the type of passion individuals hold can greatly influence the quality of outcome derived from investment in the activity. Three main sources of outcomes have been investigated regarding the links between passion and expertise at the investment stage of development: performance, persistence, and well-being.

Harmoniously passionate individuals at the investment stage tend to experience an enhanced well-being when engaging in their activity, as compared with obsessively passionate individuals (Bonneville-Roussy et al., 2011; Vallerand et al., 2007, 2008). This finding can be related to the way passion is manifested when individuals are highly involved in their activity. That is, harmonious passion has been associated with a more flexible approach to engagement in the activity which leaves space for other important activities, such as family and friends gatherings (Vallerand, 2015; Vallerand et al., 2003). On the contrary, obsessively passionate individuals tend to display a rigid involvement in their preferred activity, and other activities are often seen as obstacles that create internal or external conflicts (e.g., feelings of guilt or conflict with others; Vallerand et al., 2003).

In terms of performance, research has shown that passion and deliberate practice were some of the most important predictors of achievement at the investment stage (Bonneville-Roussy & Bouffard, 2014; Hambrick et al., 2013; Vallerand et al., 2007, 2008). Bonneville-Roussy and Bouffard (2014) have found that the sheer amount of musical practice was not enough to predict performance at the investment stage of expertise development, and that deliberate practice was the most important predictor of performance at this level. Deliberate practice usually explains between 18% and 34% of the variance in expert performance, and although these percentages are lower than what was previously claimed, deliberate practice remains a very important predictor of performance (Ericsson et al., 1993; Ericsson, 2016; Hambrick et al., 2013; Macnamara, Hambrick, & Oswald, 2014). Research shows that being harmoniously or obsessively passionate towards an activity leads to performance through a greater use of deliberate practice and more time spent on the activity (Mageau et al., 2009, Study 1; Vallerand et al., 2008, Study 1).

Research has also indicated that the links between passion and deliberate practice are mediated by achievement goals (Elliot, 1999). That is, when mastery (desire for personal improvement), performance-approach (to perform better than others) and performance-avoidance goals (to avoid performing worse than others) are assessed, both harmonious and obsessive passions are linked to the use of mastery goals that leads to a greater use of deliberate practice. However, only obsessive passion is linked with the use of performance-approach and performance avoidance goals, that are either unrelated or negatively related to deliberate practice (Bonneville-Roussy et al., 2011; Vallerand et al., 2007; Vallerand et al., 2008).

In sum, if both types of passion are related to deliberate practice and to performance at the investment stage, it seems that individuals who are predominantly harmoniously passionate follow a more adaptive path to performance by their use of mastery goals. Conversely, individuals who are predominantly obsessively passionate for their activity make their lives harder by pursuing both mastery and performance goals.

In terms of persistence, having a harmonious passion has been related to lower levels of dropout and a better quality of engagement in the activity (Aujla et al., 2015; Aujla, Nordin-Bates, Redding, & Jobbins, 2014; Bonneville-Roussy et al., 2013; Vallerand et al., 2003) as well as higher levels of psychological well-being (Bonneville-Roussy et al., 2011; Vallerand et al., 2007, 2008). It may be that, for harmoniously passionate individuals, the activity is almost always seen as enjoyable, and the positives outcomes they experience with their activity outweigh the negative consequences sometimes encountered. This assumption has been supported in dance and music research (Aujla et al., 2015; Bonneville-Roussy et al., 2013).

To operationalize this stage, there is (a) a full time investment in one activity, (b) an intense focus on deliberate practice to master specific skills, (c) a strong influence of peers (or colleagues) and mentors, coaches or teachers, and (d) a strong passion towards the activity that leads to more adaptive outcomes when the passion is harmonious as compared with obsessive. Transition is seen from this stage to the next when individuals finally reach expertise. According to our definition, expertise would be measured with external and measureable indicators, such as a professional career in the area of expertise, the winning of high stakes competitions, or success in one’s area of study (such as obtaining a PhD or another skilled qualification).

**Passion and the Refinement Stage of Expertise Development**

We define the refinement stage of expertise as the point when someone has gained a considerable amount of experience in their area of expertise and the focus is on maintaining, consolidating, and refining such expertise over time. Individuals at this stage are termed “eminent,” “renowned experts,” “old experts,” “masters,” or “elites” (Bonneville-Roussy et al., 2011; Krampe & Ericsson, 1996; Macnamara et al., 2010a, 2010b; Simonton, 2000). Little is known about what happens to experts when they finally reach the highest levels of expertise and need to maintain and continuously refine their levels of excellence. It seems that renowned experts need to overcome different challenges spend less time practicing, and pursue fewer performance-oriented goals than in the earlier stages of expertise development (Bonneville-Roussy et al., 2011; Krampe & Ericsson, 1996; Macnamara et al., 2010a). Macnamara et al. (2010a) have found that expertise maintenance in sports was related to the challenges of dealing with occasional failures and sustaining high levels of motivation. Research has also shown that renowned expert musicians required a significantly smaller amount of time doing deliberate practice in order to maintain their skills, but they were significantly better at processing skills-related tasks than younger experts (Krampe & Ericsson, 1996).

In terms of passion, experts seem to display levels of passion that are equivalent to those of individuals at the investment stage of expertise (Bonneville-Roussy et al., 2011). That is, it is expected that most if not all experts retain their passion for the activity over time. However, it is possible that a self-selection process occurs and that only the more harmoniously passionate experts stay in the activity in the long run, since harmonious passion, but not obsessive passion, has been related to a greater long-term persistence in the activity (Aujla et al., 2015; Bonneville-Roussy et al., 2013). This avenue needs to be explored further to draw a clearer picture of the roles of passion in the later stage of expertise development. Research has shown that having an harmonious passion towards an activity generally leads to the experience of more positive emotions, greater life satisfaction, and higher levels of subjective well-being (for reviews, see Curran et al., 2015; Vallerand, 2015). Harmonious passion also buffers the negative effects of stress and negative experiences (Carbonneau, Vallerand, Fernet, & Guay, 2008; Gustafsson, Hassmén, & Hassmén, 2011; Schellenberg, Gaudreau, & Crocker, 2013). On the other hand, obsessive passion generally leads to both positive and negative outcomes (Curran et al., 2015; Vallerand, 2015). In particular, individuals who are obsessively passionate tend to display a form of dependence towards the activity (see Orosz, Vallerand, Bőthe, Tóth-Király, & Paskuj, 2016; Vallerand, 2015). They also experience a mixture of positive and negative affect, are more likely to experience burnout and physical injuries (Carbonneau et al., 2008; Curran, Appleton, Hill, & Hall, 2011; Gustafsson et al., 2011; Rip, Fortin, & Vallerand, 2006; Schellenberg et al., 2013; Vallerand et al., 2003).

Taken together, experts at the refinement stage seem to be less focused on acquiring new skills, and more on refining and maintaining those that are already present. Since much less research has been done on this stage of expertise development, the operationalization of the variables is less detailed than in the former stages. Renowned experts may be more harmoniously passionate because the more obsessively passionate individuals may have dropped out of the activity at an earlier stage and/or having achieved high levels of success may lead obsessive passion to subside. Extrapolating from this analysis, renowned experts may also experience more positive outcomes derived from their preferred activity, because they are more harmoniously passionate. These speculations about the role of passion in the later stage of expertise development open many avenues for future research.

**Applications and Future Research**

We believe that this developmental model may be applied to any area of expertise, from music and sports to higher education and work. Further, we propose that the four stages are not age-specific. Earlier research has described the age-specificity of the development of expertise in the performing arts and sports (Côté et al., 2003; Ericsson et al., 1993). In both domains, exploration starts early in childhood and expertise is attained early. In other areas, such as skilled work (e.g. nursing, medicine, piloting and research), and to some extent the visual arts, the stages seem to happen much later (see Bloom, 1985).

In establishing how passion drives expertise development, the present model has implications for educational, work and talent development settings. As our model shows, the development of a passion is conducive to expertise and is facilitated by a positive involvement of significant others. A cost-effective strategy to foster the development of a more harmonious form of passion and a more adaptive path to expertise, that is supported by research on the DMP, is to promote environments that are autonomy-supportive. In performance domains such as sports and the performing arts, it is important to increase instructors’ awareness of the benefits of an autonomy-supportive style, and the potential thwarting effects of psychological control, on the development of harmonious passion, that in turn leads to more adaptive processes and outcomes, such as deliberate practice, performance, and persistence (Bonneville-Roussy et al., 2011; Mageau et al., 2009). This strategy can also be applied in domains where expertise develops later, such as in the visual arts, the sciences, higher education and many work domains such as business and entrepreneurship, as the roles of mentors have been shown to be very important for the development of a harmonious passion (e.g., Bonneville-Roussy et al., 2013), well-being, and optimal functioning of adults (see Vallerand, 2015).

Research on passion and expertise is still at its infancy, and the present model sets the stage for future research. First, the role of passion at each stage of expertise needs to be examined thoroughly. For instance, we know little about what triggers passion in the exploration stage of development. Additional research is needed to extend our knowledge of the development of passion that leads to expertise, from the first introduction of a new activity, to the development of a strong interest and eventually passion for this activity. The examination of transitions (for instance, from undergraduate to graduate studies, or from study to work) would be a natural first step to assess how passion and expertise develop in times of change. Although we are starting to get a clearer picture of the exploration and investment stages of development, research is needed on the levels of passion at the specialization and refinement stages. That is, more work is needed to understand the psychological processes that trigger activity specialization, and the evolution of passion at the refinement stage of expertise. In addition, future research should investigate what factors may lead people to “fall-out” of passion, and abandon their passionate activity, at any stage of expertise. These questions, and the whole model, would benefit from longitudinal studies that would examine the development of passion and expertise concurrently. Finally, the role of passion in the development of expertise in many domains, such as the arts, education, sport and work merits to be investigated further.

**Conclusion**

In this chapter, we have presented a model in which passion is posited to represent the psychological force that drives individuals to become experts. We have described the exploration, specialization, investment, and refinement stages of expertise development. We linked these stages with passion development, contextual influences, and psychological outcomes. In this model, we operationalize the most important characteristics of the four stages in terms of passion and expertise, and the signs of transitions between an earlier and a later stage. We suggest that this model of passion and expertise is not domain-specific and we have demonstrated how some of its principles can be applied. Research has found strong links between passion and the development of expertise and our proposed model suggests a framework to study those processes. Many aspects affect expertise acquisition. However, the role of passion is crucial at each stage of its development. We are optimistic that future research will shed additional light on the very processes that link passion with expertise.

**References**

Aujla, I. J., Nordin-Bates, S. M., & Redding, E. (2015). Multidisciplinary predictors of adherence to contemporary dance training: findings from the UK Centres for Advanced Training. *Journal of Sports Sciences*, *33*, 1564–1573. doi:10.1080/02640414.2014.996183

Aujla, I. J., Nordin-Bates, S. M., Redding, E., & Jobbins, V. (2014). Developing talent among young dancers: findings from the UK Centres for Advanced Training. *Theatre, Dance and Performance Training*, *5*, 15–30. doi:10.1080/19443927.2013.877964

Baker, J., Côté, J., & Abernethy, B. (2003). Sport-specific practice and the development of expert decision-making in team ball aports. *Journal of Applied Sport Psychology*, *15*, 12–25. doi:10.1080/10413200305400

Baltes, P. B., Staudinger, U. M., & Lindenberger, U. (1999). Lifespan psychology: Theory and application to intellectual functioning. *Annual Review of Psychology*, *50*, 471–507. doi:10.1146/annurev.psych.50.1.471

Bloom, B. S. (1985). *Developing talent in young people*. New York: Ballantine Books.

Bonneville-Roussy, A., & Bouffard, T. (2014). When quantity is not enough: Disentangling the roles of practice time, self-regulation and deliberate practice in musical achievement. *Psychology of Music*. doi:10.1177/0305735614534910

Bonneville-Roussy, A., Lavigne, G. L., & Vallerand, R. J. (2011). When passion leads to excellence: the case of musicians. *Psychology of Music*, *39*, 123–138. doi:10.1177/0305735609352441

Bonneville-Roussy, A., Vallerand, R. J., & Bouffard, T. (2013). The roles of autonomy support and harmonious and obsessive passions in educational persistence. *Learning and Individual Differences*, *24*, 22–31. doi:10.1016/j.lindif.2012.12.015

Carbonneau, N., Vallerand, R. J., Fernet, C., & Guay, F. (2008). The role of passion for teaching in intrapersonal and interpersonal outcomes. *Journal of Educational Psychology*, *100*, 977–987. doi:10.1037/a0012545

Carpentier, J., & Mageau, G. A. (2014). The role of coaches’ passion and athletes’ motivation in the prediction of change-oriented feedback quality and quantity. *Psychology of Sport and Exercise*, *15*, 326–335. doi:10.1016/j.psychsport.2014.02.005

Chi, M. T. H. (2006). Two approaches to the study of experts’ characteristics. In K. A. Ericsson, N. Charness, P. J. Feltovich, & R. R. Hoffman (Eds.), *The Cambridge handbook of expertise and expert performance* (pp. 21–30). Cambridge University Press. doi:10.1017/CBO9780511816796.002

Coleman, L. J., & Guo, A. (2013). Exploring children’s passion for learning in six domains. *Journal for the Education of the Gifted*, *36*, 155–175. doi:10.1177/0162353213480432

Côté, J. (1999). The influence of the family in the development of talent in sport. *The Sport Psychologist*, *13*, 395–417. doi:10.1177/1527002502003003001

Côté, J., Baker, J., & Abernethy, B. (2003). From play to practice. A developmental framework for the acquisition of expertise in team sports. *Expert Performance in Sports. Advances in Research on Sport Expertise*, 89–110.

Côté, J., Lidor, R., & Hackfort, D. (2009). ISSP position stand: To sample or to specialize? Seven postulates about youth sport activities that lead to continued participation and elite performance. *International Journal of Sport and Exercise Psychology*, *7*, 7–17. doi:10.1080/1612197X.2009.9671889

Curran, T., Appleton, P. R., Hill, A. P., & Hall, H. K. (2011). Passion and burnout in elite junior soccer players: The mediating role of self-determined motivation. *Psychology of Sport and Exercise*, *12*, 655–661. doi:10.1016/j.psychsport.2011.06.004

Curran, T., Hill, A. P., Appleton, P. R., Vallerand, R. J., & Standage, M. (2015). The psychology of passion: A meta-analytical review of a decade of research on intrapersonal outcomes. *Motivation and Emotion*, *39*, 631–655. doi:10.1007/s11031-015-9503-0

Deci, E. L., Eghrari, H., Patrick, B. C., & Leone, D. R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality*, *62*, 119–142. doi:10.1111/j.1467-6494.1994.tb00797.x

Dreyfuss, S. E., & Dreyfus, H. L. (1980). *A five-stage model of the mental activities involved in directed skill acquisition*. Operations Research Center.

Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, *53*, 109–132.

Elliot, A. J. (1999). Approach and avoidance motivation and achievement goals. *Educational Psychologist*, *34*, 169–189. doi:10.1207/s15326985ep3403\_3

Ericsson, K. A. (2016). Summing up hours of any type of practice versus identifying optimal practice activities: Commentary on Macnamara, Moreau, & Hambrick (2016). *Perspectives on Psychological Science*, *11*, 351–354. doi:10.1177/1745691616635600

Ericsson, K. A., & Charness, N. (1994). Expert performance: Its structure and acquisition. *American Psychologist*, *49*, 725–747. doi:10.1037/0003-066X.50.9.803

Ericsson, K. A., Côté, J., & Fraser-Thomas, J. (2007). Sport experiences, milestones, and educational activities associated with high-performance coaches’ development. *The Sport Psychologist*, *21*, 302–316. doi:10.1080/10413200390180035

Ericsson, K. A., Krampe, R. T., & Tesch-Römer, C. (1993). The Role of deliberate practice in the acquisition of expert performance. *Psychological Review*, *100*, 363–406.

“Expert.” (2016). *Oxford English Dictionary*.

Forest, J., Mageau, G. A., Crevier-Braud, L., Bergeron, E., Dubreuil, P., & Lavigne, G. L. (2012). Harmonious passion as an explanation of the relation between signature strengths’ use and well-being at work: Test of an intervention program. *Human Relations*, *65*, 1233–1252. doi:10.1177/0018726711433134

Fredricks, J. A., Alfeld, C., & Eccles, J. S. (2010). Developing and fostering passion in academic and nonacademic domains. *Gifted Child Quarterly*, *54*, 18–30. doi:10.1177/0016986209352683

Gibson, D. E. (2004). Role models in career development: New directions for theory and research. *Journal of Vocational Behavior*, *65*, 134–156. doi:10.1016/S0001-8791(03)00051-4

Gustafsson, H., Hassmén, P., & Hassmén, N. (2011). Are athletes burning out with passion? *European Journal of Sport Science*, *11*, 387–395. doi:10.1080/17461391.2010.536573

Hambrick, D. Z., Oswald, F. L., Altmann, E. M., Meinz, E. J., Gobet, F., & Campitelli, G. (2013). Deliberate practice: Is that all it takes to become an expert? *Intelligence*. doi:10.1016/j.intell.2013.04.001

Hatfield, E., Walster, G. W., & Reading, M. A. (1978). *A new look at love.* Reading: Addison-Wesley.

Helsen, W. F., Hodges, N. J., Van Winckel, J., & Starkes, J. L. (2000). The roles of talent, physical precocity and practice in the development of soccer expertise. *Journal of Sports Sciences*, *18*, 727–736. doi:10.1080/02640410050120104

Ho, V. T., Wong, S.-S., & Lee, C. H. (2011). A tale of passion: Linking job passion and cognitive engagement to employee work performance. *Journal of Management Studies*, *48*, 26–47. doi:10.1111/j.1467-6486.2009.00878.x

Houser-Marko, L., & Sheldon, K. M. (2006). Motivating behavioral persistence: The self-as-doer construct. *Personality and Social Psychology Bulletin*, *32*, 1037–1049. doi:10.1177/0146167206287974

Krampe, R. T., & Ericsson, K. A. (1996). Maintaining excellence: deliberate practice and elite performance in young and older pianists. *Journal of Experimental Psychology. General*, *125*, 331–59.

Lafrenière, M.-A. K., St-Louis, A. C., Vallerand, R. J., & Donahue, E. G. (2012). On the relation between performance and life satisfaction: The moderating role of passion. *Self and Identity*, *11*, 516–530. doi:10.1080/15298868.2011.616000

Macnamara, A., Button, A., & Collins, D. (2010a). The role of psychological characteristics in facilitating the pathway to elite performance-Part 1: Identifying mental skills and behaviors. *Sport Psychologist*, *24*, 52–73.

Macnamara, A., Button, A., & Collins, D. (2010b). The role of psychological characteristics in facilitating the pathway to elite performance-Part 2: Examining environmental and stage-related differences in skills and behaviors. *The Sports Psychologist*, *24*, 74–96.

Macnamara, B. N., Hambrick, D. Z., & Oswald, F. L. (2014). Deliberate practice and performance in music, games, sports, education, and professions: A meta-analysis. *Psychological Science*, *25*, 1608–1618. doi:10.1177/0956797614535810

Mageau, G. A., Carpentier, J., & Vallerand, R. J. (2011). The role of self-esteem contingencies in the distinction between obsessive and harmonious passion. *European Journal of Social Psychology*, *41*, 720–729. doi:10.1002/ejsp.798

Mageau, G. A., Vallerand, R. J., Charest, J., Salvy, S.-J., Lacaille, N., Bouffard, T., & Koestner, R. (2009). On the development of harmonious and obsessive passion: The role of autonomy support, activity specialization, and identification with the activity. *Journal of Personality*, *77*, 601–646.

McAdams, D. P., & de St. Aubin, E. (1992). A theory of generativity and its assessment through self-report, behavioral acts, and narrative themes in autobiography. *Journal of Personality and Social Psychology*, *62*, 1003–1015. doi:10.1037/0022-3514.62.6.1003

Orosz, G., Vallerand, R. J., Bőthe, B., Tóth-Király, I., & Paskuj, B. (2016). On the correlates of passion for screen-based behaviors: The case of impulsivity and the problematic and non-problematic Facebook use and TV series watching. *Personality and Individual Differences*, *101*, 167–176. doi:10.1016/j.paid.2016.05.368

Parastatidou, I. S., Doganis, G., Theodorakis, Y., & Vlachopoulos, S. P. (2012). Exercising with passion: Initial validation of the passion scale in exercise. *Measurement in Physical Education and Exercise Science*, *16*, 119–134. doi:10.1080/1091367X.2012.657561

Philippe, F. L., Vallerand, R. J., & Lavigne, G. L. (2009). Passion does make a difference in people’s lives: A look at well-being in passionate and non-passionate individuals. *Applied Psychology: Health and Well-Being*, *1*, 3–22. doi: 10.1111/j.1758-0854.2008.01003.x

Rip, B., Fortin, S., & Vallerand, R. J. (2006). The relationship between passion and injury in dance students. *Journal of Dance Medicine and Science*, *10*, 14.

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology. Special Issue: Motivation and the Educational Process*, *25*, 54–67.

Schellenberg, B. J. I., Gaudreau, P., & Crocker, P. R. E. (2013). Passion and coping: relationships with changes in burnout and goal attainment in collegiate volleyball players. *Journal of Sport & Exercise Psychology*, *35*, 270–80.

Simon, H. A., & Chase, W. G. (1973). Skill in chess. *American Scientist*, *61*, 394–403.

Simonton, D. K. (2000). Creative development as acquired expertise: Theoretical issues and an empirical test. *Developmental Review*, *20*, 283–318. doi:10.1006/drev.1999.0504

Starkes, J. L., Deakin, J. M., Allard, F., Hodges, N., & Hayes, A. F. (1996). Deliberate practice in sports: Acquisition, what is it anyway? In K. A. Ericsson (Ed.), *The Road to Excellence: The Acquisition of Expert Performance in the Arts and Sciences, Sports, and Games.* (pp. 81–106). Mahwah, NJ: Erlbaum.

Stenseng, F. (2008). The two faces of leisure activity engagement: Harmonious and obsessive passion in relation to intrapersonal conflict and life domain outcomes. *Leisure Sciences*, *30*, 465–481. doi:10.1080/01490400802353224

Trépanier, S.-G., Fernet, C., Austin, S., Forest, J., & Vallerand, R. J. (2014). Linking job demands and resources to burnout and work engagement: Does passion underlie these differential relationships? *Motivation and Emotion*, *38*, 353–366. doi:10.1007/s11031-013-9384-z

Vallerand, R. J. (2015). *The psychology of passion: A dualistic model.* New York: Oxford University Press.

Vallerand, R. J., Blanchard, C., Mageau, G. A., Koestner, R., Ratelle, C., Léonard, M., … Marsolais, J. (2003). Les passions de l’âme: On obsessive and harmonious passion. *Journal of Personality and Social Psychology*, *85*, 756–767. doi:10.1037/0022-3514.85.4.756

Vallerand, R. J., Mageau, G. A., Elliot, A. J., Dumais, A., Demers, M.-A. A., & Rousseau, F. (2008). Passion and performance attainment in sport. *Psychology of Sport and Exercise*, *9*, 373–392. doi:10.1016/j.psychsport.2007.05.003

Vallerand, R. J., Rousseau, F. L., Grouzet, F. M. E., Dumais, A., Grenier, S., & Blanchard, C. (2006). Passion in sport: A look at determinants and affective experiences. *Journal of Sport & Exercise Psychology*, *28*, 454–478.

Vallerand, R. J., Salvy, S.-J., Mageau, G. A., Elliot, A. J., Denis, P. L., Grouzet, F. M. E., & Blanchard, C. (2007). On the role of passion in performance. *Journal of Personality*, *75*, 505–534. doi:10.1111/j.1467-6494.2007.00447.x

Williams, A. M., & Ford, P. R. (2008). Expertise and expert performance in sport. *International Review of Sport and Exercise Psychology*, *1*, 4–18. doi:10.1080/17509840701836867

**Table 1. Summary of the key characteristics of passion at each stage of the development of expertise.**

|  |  |  |  |
| --- | --- | --- | --- |
| **Associated Passion Characteristics**  **Stages of Development** | **Development of passion** | **Contextual factors** | **Outcomes** |
| **Exploration**  *The activity is new and is explored on its own or in combination with other similar activities* | * Around 30% of people develop a passion for a specific activity * Harmonious and obsessive passions may be less differentiated | * Strong contextual influences * Autonomy-support fosters the development of harmonious passion * Psychological control fosters the development of obsessive passion | * Non-passionate individuals are likely to drop out of the activity |
| **Specialization**  *The activity is valued and chosen as the area of concentration. More time is spent on the activity.* | * Passion towards one specific activity starts to develop * Early preference for activity specialization is associated with obsessive passion * Beginning of the integration of the activity into the identity | * An environment that supports the needs for autonomy and competence promotes passion * Autonomy-support fosters the development of harmonious passion * Psychological control fosters the development of obsessive passion | * Boredom hinders the development of a passion, and may lead to a drop out |
| **Investment**  *Full-time investment in the activity, The main focus of skills mastery and control. At the end of this stage, individuals are experts.* | * Basically all individuals at this stage are passionate * High levels of both harmonious and obsessive passion | * Important influence of the activity-related peers and mentors * Autonomy support and psychological control from mentors lead to the development of a harmonious or an obsessive passion, respectively | * Harmonious passion promotes performance, persistence and well-being * Obsessive passion may promote performance, but hinders persistence and well-being |
| **Refinement**  *The skills are mastered and the focus is on preservation and fine-tuning of such skills.* | * Higher levels of harmonious passion may be more prevalent * Individuals may develop a more harmonious passion with time * The most obsessively passionate performers may drop out | * Individuals may be more immune to contextual influences | * Harmonious passion is linked with more positive affect, and a greater life satisfaction and well-being * Obsessive passion is associated with more negative affect, burnout and physical injuries. |

Expertise

3. Investment

Full time work

Almost all are passionate

4. Refinement

Maintenance and fine-tuning

Increased Har. passion

2. Specialization

Most free time

Increased levels of Har. and Obs. passions

1. Exploration

First contacts

Passion is manifested as a strong interest

**Passion and Expertise**

Stages of Passion and Expertise Development

Figure 1. Conceptual model on the relations between passion and the development of expertise. The first three stages are adapted from Bloom (1985) and Côté (1999). Har. = Harmonious; Obs. = Obsessive

Transition

Increased amount of time

Transition

From learners to experts

Transition

From part time to full time