

## ***Subjective Vitality is a Mediator in the Relationships between Harmonious, Obsessive Passion and Life Satisfaction for Physically Active Old Adults***

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*In exercise psychology, few of studies are interested in physically old adults in French culture. The specific goals of the present research are: i) to test the factor structure for the three components: passion, subjective vitality and life satisfaction, and ii) to test a model that describes a mediator role of subjective vitality in the relationships between harmonious, obsessive passion and life satisfaction. Method two studies have been conducted. Data was collected from 790 physically active old adults ( $n = 567$ ;  $n = 223$ ). They practiced regularly their favorite physical activity more than 10 years old and aged between 55 and 72 years old. The Passion Scale (PS), Subjective Vitality Scale (SVS), and Satisfaction with Life Scale (SWLS) were administered on the participants. Results of the first study confirmed the factor structure and internal consistency for the three scales. However, 2 items have been deleted from the passion scale. The Goodness of Fit was acceptable in terms of  $\chi^2/df$  ratio, GFI, NFI, RMR, and RMSEA. Results of the second study confirmed the hypothesis; the mediator role of the subjective vitality of the effect of only harmonious passion on the life satisfaction has been confirmed. However, obsessive passion has no effect on the life satisfaction. Findings have been discussed.*

**Key words:** CFA, Path analysis, Passion, SVS, SWLS

### **Introduction**

Within the general population, considerable research has shown that regular participation in physical activity is associated with improvements in a wide range of SWB outcomes (e.g., Ku, McKenna, & Fox, 2007). A numerous studies have provided empirical support for the positive relationship between activity engagement and Subjective well-being (SWB) in older adults (Leventhal, Rabin, Leventhal, & Burns, 2001; Rousseau & Vallerand, 2008).

Moreover, McAuley, Blissmer, Katula, Duncan, and Mihalko (2000) found that previously sedentary older adults who participated in an exercise program three times a week for six months reported increased levels of satisfaction with life at the end of the program, even when controlling for amount of social support reported by participants. On the basis of these and other similar findings, it is tempting to conclude that higher levels of activity engagement necessarily lead to greater SWB. The relationship between activity

engagement and SWB, however, is complex and several factors might influence the degree to which activity engagement is beneficial for older adults (Kozma, Stone, & Stones, 2000).

The type of activity performed might also play a role. In a study conducted with older adults, Reich, Zautra, and Hill (1987) found that engagement in desired activities (e.g., doing a hobby) was positively related to well-being, while engagement in non-desired activities (e.g., having to keep up with correspondence) was unrelated to wellbeing. Finally, in a study on the relationship between SWB and the reasons that underlie older adults' participation in activities, Everard, Lach, Fisher, and Baum (2000) reported that activity engagement performed to meet people was associated with higher levels of SWB, whereas activity engagement performed with the purpose of spending time was associated with lower levels of SWB. Taken together, these results point to the need to go beyond the "more-is-better" approach about activity engagement, and to identify variables that increase the likelihood that older adults will benefit from an active lifestyle. In other words, as mentioned by (Berger, Pargman, & Weinberg, 2002) a type of physical activity, may refer to acute and chronic exercise, aerobic and anaerobic activities, competitive and noncompetitive recreational physical activities, and group and solitary activities. Even within a single exercise mode, many factors vary. These include practice or training characteristics, the exercise environment, psychological characteristics and backgrounds of the participants, fitness and skill levels of participants, and the instructors' characteristics and approaches to exercise. Another contributor to the complexity of the relationship between physical exercise and subjective well-

being is that the type and extent of the psychological benefits (and decrements) of physical exercise may differ for specific groups of participants. Participants may vary in age from preschoolers to the elderly and include normal and psychiatric populations. Despite such complex issues, there is a strong consensus that many types of exercise are associated with enhanced subjective well-being, vigor or vitality, and a sense of "feeling better" e.g., (Berger et al., 2002); Netz, Wu et al. 2005).

#### *The Dualistic Model of Passion (DMP)*

Vallerand and his colleagues (Rousseau & Vallerand, 2008; Vallerand et al., 2003; Vallerand et al., 2007) have developed a model of passion that addresses the dualism inherent in passion. In line with Self-Determination Theory (Deci & Ryan, 2010), the DMP posits that individuals are motivated to explore their environment in order to grow as individuals. In so doing, they engage in a variety of activities. Of these, only a few will be perceived as particularly enjoyable, important, and to have some resonance with how people see themselves. From these few activities one or two will eventually be preferred and engaged in on a regular basis and turn out to be passionate.

Furthermore, Self-determination theory and research has shown that elements from the environment can be internalized in either a controlled or an autonomous fashion (Grolnick, Deci, & Ryan, 1997). Thus, in line with the above, the DMP proposes that there are two types of passion, obsessive and harmonious, 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 of the activity into one's identity and self. A controlled internalization originates from intra

and/or interpersonal pressure typically because certain contingencies are attached to the activity such as feelings of social acceptance or self-esteem or because the sense of excitement derived from activity engagement is uncontrollable (Mageau & Vallerand, 2007; Mageau et al., 2009).

Conversely, harmonious passion results from an autonomous internalization of the activity representation into the person's identity. An autonomous internalization occurs when individuals have freely accepted the activity as important for them without any or little contingencies attached to it. This type of internalization emanates from the intrinsic and integrative tendencies of the self (Richard M. Ryan & Deci, 2003). It produces a motivational force to engage in the activity willingly and engenders a sense of volition and personal endorsement about pursuing the activity. When harmonious passion is at play, individuals do not experience an uncontrollable urge to engage in the passionate activity, but rather freely choose to do so. With this type of passion, the activity occupies a significant but not overpowering space in the person's identity and is in harmony with other aspects of the person's life.

According to Vallerand publications, initial research provided support for the concept of harmonious and obsessive passion. Since the initial publication, over 100 studies have been conducted on the concept of passion and have focused on a host of cognitive, affective, behavioral, relational, and performance outcomes experienced within the realms of hundreds of activities conducted in both my own as well as other laboratories. In general, such research reveals that harmonious passion predicts more adaptive outcomes than obsessive passion. In the

light of Philippe, Vallerand, Houliort, Lavigne, and Donahue (2010) studies, the present paper focuses on the effect of passion in life satisfaction with the mediation of subjective vitality.

#### *Subjective well-being component*

The overall field of subjective well-being is a broad concept that refers to one's positive experience of life. While originally studied as a one-dimensional variable, research has acknowledged its multidimensional nature and the concept is typically divided not only horizontally into the concepts of satisfaction with life and vitality, but also vertically into the cognitive (beliefs and outlook) and the affective (moods and the emotional). A focus on the cognitive (rather than the affective) aspects of well-being investigates the dimension's more cognitively accessible and temporally stable nature (Diener, Suh, Lucas, & Smith, 1999).

Life satisfaction is the cognitive assessment of one's life as a whole. In arriving at overall evaluations of life, individuals typically use their own set of criteria and standards in weighting the different aspects of their lives (Pavot & Diener, 1993; Shin & Johnson, 1978). Consequently, it is often more meaningful to assess global judgments of life satisfaction rather than satisfaction with specific life domains (Pavot & Diener, 1993). However, the life satisfaction construct incorporates the full range of satisfaction (i.e., from very low to very high) and thus measurement of this personal strength is fitting for a positive psychological paradigm interested in optimal wellbeing and human fulfillment. Life satisfaction is then a more general construct of SWB. Theory and research from outside of the rehabilitation fields have suggested that SWB has at least three components, positive affective appraisal, negative affective appraisal,

and life satisfaction. Life satisfaction is distinguished from affective appraisal in that it is more cognitively than emotionally driven. Life satisfaction can be assessed specific to a particular domain of life (e.g., work, family) or globally.

Furthermore, vitality is a subjective feeling; it has been variously defined as a sense of feeling really alive, invigorated, or full of energy and enthusiasm for life. The concept of subjective vitality refers to the state of feeling alive and alert to having energy available to the self. Vitality is considered then as an aspect of eudemonic well-being (Richard M. Ryan & Deci, 2001), as being vital and energetic is part of what it means to be fully functioning and psychologically well. Various authors have used a number of adjectives in adjective selection tests in order to capture the concept. These have included active, peppy, energetic, vigorous, lively (Richard M. Ryan & Deci, 2001), and enthusiasm, zeal, zest, and exhilaration (Shaver, Schwartz, Kirson, & O'Connor, 1987). It is interesting to note that in these adjective tests, affective terms such as happy, contented, pleased, elated, overjoyed, satisfied, cheerfulness, joy, the light, happiness, and satisfaction did not load on the factor described as 'vigor'. Yet, these descriptive expressions may refer to anything from a momentary feeling in the emotional swing of everyday life to physical symptoms of fatigue and improper diet.

### **The present research**

In exercise psychology, there are very few studies that have tested the factorial structure and the internal consistency for the French versions of the scales measuring the different variables of this study. In addition, little information has been known about the relationships among passion and both of

subjective vitality and life satisfaction, as a component of subjective well-being. In addition, in French culture, studies concerning the physically old adults are still rare. So, my main purpose of this study was to (i) test the factor structure and internal consistency of the French version of these different constructs and to (ii) test the mediator role of subjective vitality in the relationships between passion and life satisfaction. In other word, the specific goals of the present research were twofold. The first objective was to test the factor structure for the three components: passion, subjective vitality and life satisfaction for physically active older adult. The second was to test a model that described a mediator role of subjective vitality in the relationships between harmonious, obsessive passion and life satisfaction. For that, two studies have been conducted.

### **Study 1**

#### **Materials and Method**

##### **Participants**

According to the French translation and validation methodology, using "forward and backward" translation by four bilingual individuals, experimental French versions equivalents to the original following scales were created. More precisely, the original scales were translated from English into French by two bilingual persons. The two translated versions were then back translated into English by two independent translators. Translators were not affiliated with the study to ensure comparability and meaning equivalence (Vallerand & Hess, 2000). Using the different versions, authors have created the French version for each scale. An independent professional has revised the created French versions. In general, minor differences were corrected at this stage by agreement between the different translations. The participants of this study were French

physically active adults aged between 55 and 72 years old ( $M = 63.03$ ,  $SD = 6.99$ ). There were 319 women and 248 men ( $n = 567$ ) from Rennes city and other beside villages. They had practiced the favorite sport activity more than 10 years ago ( $M = 27.09$ ,  $SD = 8.71$ ). Currently they practiced regularly the footing as a voluntary activity 4 to 7 times per week. The practice time was between 55 to 90 minutes daily.

### Measures

**Passion scale.** The Passion Scale (Vallerand et al., 2003) was administered to assess the type of passion that characterizes participants' activity. The Passion Scale is composed of two six items subscales assessing harmonious passion and obsessive passion. Each item is responded to on a 7-point Likert scale ranging from 1 (do not agree at all) to 7 (completely agree). In this study, we used a respond to on a 5-point Likert scale cause of more adaptability to seniors' people. It ranges from 1 (do not agree) to 5 (agree). Sample items for obsessive passion are "I have difficulties controlling my urge to do my work" or "I have almost an obsessive feeling for my work," whereas sample items for harmonious passion are "The new things that I discover in my work allow me to appreciate it even more" or "My activity is in harmony with other things that are part of me.

**Subjective Vitality Scale (SVS).** According to Richard M. Ryan and Frederick (1997), The SVS is a short instrument to measure vitality. A 7-point Likert scale was used ranging from "strongly disagree" (1-point) to "strongly agree" (7-point). In this study, we used a respond to on a 5-point Likert scale cause of more adaptability to seniors' people. It is ranging from 1 (do not agree) to 5 (agree). Author used the version of the instrument that contains six items. It has been developed by (Bostic, Rubio, & Hood, 2000). It has

rarely been used with physical activity samples (Salama-Younes, 2011; Salama-Younes, Montazeri, Ismail, & Roncin, 2009)

**Satisfaction With Life Scale (SWLS).** The SWLS is a global measure of life satisfaction. The SWLS composes of five items. A 7-point Likert scale was used ranging from "strongly disagree" (1-point) to "strongly agree" (7-point). In this study, we used a respond to on a 5-point Likert scale cause of more adaptability to old adult. It is ranging from 1 (do not agree) to 5 (agree). The SWLS is a measure of life satisfaction developed by Diener, Emmons, Larsen, and Griffin (1985). The SWLS is shown to have favorable psychometric properties for French speaking in Canada (Diener et al., 1985).

### Procedure

The collection of data was in 13 and 14 October, 2012. They had participated in *Tout Rennes Court* competition for 10 Km and 21 Km. Author informed samples about the objective of the study, their participation was voluntary and they could withdraw at any time. Both oral and written instructions were given regarding items understanding (i.e., there was no right or wrong answer to the questions and they should freely state what they think), and they were reassured about the confidentiality of their responses.

### Statistical analysis

Missing values (representing .1% of the total data file) were replaced using a regression imputation procedure. Exploratory Factor Analyses (EFA) using the robust maximum likelihood estimation method was performed to examine the factorial structure of all scales. The Confirmatory Factor Analyses (CFA) was also performed using the same data and the results of EFA. The SPSS (Statistic Package for Social Sciences) 21.00 was used to perform the EFA (Exploratory Factor Analysis) and the internal

consistency (Cronbach alpha $\alpha$ ). The LISREL (Linear Structural Relations) 8.8 computer program was used for testing the CFA (confirmatory factor analyses).

### Results

Firstly, we tested the internal consistency (Cronbach alpha  $\alpha$ ) by SPSS software. Internal consistency that tests reliability was assessed by calculating the Cronbach's coefficient. The values of 0.70 or greater were considered satisfactory. After being tested the factor structure by EFA, we performed CFA to assess the five instruments' structure for each sample. The intention was to indicate if the model fits well the data. There are varying suggestions in the literature about the number, type, and cut-off values for goodness-of-fit required to be reported for CFA (Byrne, 2009). A popular recommendation is to present three of four indices from different areas. Accordingly, we report several goodness-of-fit indicators including GFI (Goodness-of-Fit Index), NFI (Normed Fit Index), RMR (Root Mean Square Residual), RMSEA (Root Mean Square Error of Approximation), and  $\chi^2/df$ . The recommended cut-off values for acceptable values are  $\geq 0.90$  for GFI and NFI. The RMR and RMSEA test the fit of the model to the covariance matrix. As a guideline, values below 0.05 indicate a close fit and values below 0.11 are an

acceptable fit. The value of 2 alone may be used as an index, but 2 divided by the degrees of freedom ( $2/df$ ) reduces its sensitivity to sample size (cut-off values  $< 2$  to 5).

In the present study, only a 5-point Likert scale was used. It was more adapted with the old adult individuals. For that, we tested the EFA and CFA for these two scales. The EFA shows that each of the two scales was composed of only one dimension. The SVS composed of 6 items and SWLS is composed of 5 items. CFA confirmed these findings. The Goodness of Fit was acceptable in terms of  $\chi^2/df$  ratio, GFI, NFI, RMR, and RMSEA. However, for the passion scale, the EFA shows that 2 items have been deleted. There are item 5 for both harmonious and obsessive passion sub-scale. The internal consistency and CFA confirmed the same finding. The passion scale became only 10 items for both factors. The Goodness of Fit was acceptable in terms of  $\chi^2/df$  ratio, GFI, NFI, RMR, and RMSEA. Using a large sample, the result of present study is similar with findings of a recent study (Marsh et al., 2013). We concluded that the three scales have an acceptable factor structure using a 5-point Likert scale. We have then the possibility to test the mediator role of subjective vitality in the relationships of passion and life satisfaction.

**Table 1. Exploratory Factor Analysis for the passion scale**

Item	Factor 1	Factor 2	M	SD	Asy	Apl
Obss 1	0.72		4.79	2.24	-1.07	-0.89
Obss 2	0.70		4.84	1.86	-1.02	1.03
Obss 3	0.48		4.31	1.93	-1.04	0.69
Obss 4	0.73		2.90	1.94	0.68	-0.64
Obss 5	0.32		4.67	1.97	-1.65	-1.00
Obss 6	0.77		1.87	2.01	0.76	1.24
Harm1		0.45	5.39	1.98	0.87	-0.71
Harm2		0.66	5.54	1.83	0.86	-0.47
Harm3		0.76	5.78	1.84	-1.01	-0.71
Harm4		0.69	5.18	1.88	-0.79	-0.28
Harm5		0.34	4.83	1.99	-1.06	1.35
Harm6		0.59	4.95	1.81	1.11	-1.13
<b>Eigenvalues</b>	2.99	1.23				
<b>% of variance</b>	29.96	41.22				

**Table 2 Goodness-of-Fit of the CFA Models (n = 567)**

Scale	$\chi^2$	df	GFI	NFI	RMR	RMSEA	$\chi^2/df$	Cronbach alpha $\alpha$
Passion (2 factors)	387.27	53	0.99	0.99	0.001	0.001	7.32	0.82
Passion (1 factor)	530.83	53	0.90	0.92	0.062	0.112	10.01	0.79
SVS	16.19	6	0.90	0.91	0.024	0.024	2.96*	0.81
SWLS	11.35	5	0.98	0.99	0.028	0.028	2.18*	0.84

Notes: \* $p < .01$ , \*\* $p < .001$ .

## Study 2

The aim of study 2 was to investigate the moderating role of subjective vitality on the relation between passion and participants' life satisfaction. It was hypothesized that the more participants reported having an harmonious passion for physical practice, the more they should experience an increase in life satisfaction by mediating the subjective vitality in this relation. Furthermore, the more participants reported having an obsessive passion, the more they should experience a decrease in life satisfaction by mediating the subjective vitality in this relation. Moreover, it was hypothesized that harmonious passion should be positively related to life satisfaction in general. On the other hand, obsessive passion should be unrelated or negatively related to overall levels of life satisfaction.

## Materials and Method

### Participants

The participants of this study were aged French physically active adults between 52 and 66 years old ( $M = 57.97$ ,  $SD = 4.43$ ). There were 96 women and 127 men ( $n = 223$ ) residents in Rennes city. They had practiced a favorite sport activity more than 10 years ago ( $M = 16.15$ ,  $SD = 3.02$ ). Currently they practiced regularly the biking or swimming as a voluntary activity 3 or more times per week. The practice time was between 60 to 120 minutes.

### Measures

**Passion scale.** The Passion Scale is composed of two subscales of only five items, each assessing a precise type of passion: harmonious passion and

obsessive passion. Each item is responded to on a 5-point Likert scale ranging from 1 (do not agree) to 5 (agree).

### Subjective Vitality Scale (SVS).

The SVS is a short instrument to measure vitality. A 5-point Likert scale was used ranging from "disagree" (1-point) to "agree" (5-point). The six item version has been used.

**Satisfaction With Life Scale (SWLS).** In this study, we used a respond to on a 5-point Likert scale cause of more adaptability to seniors' people. It is ranging from 1 (do not agree) to 5 (agree). The scale composed from 5 items.

### Procedure

Data has been collected in the physical practice places from 9 May to 17 June 2013. Author informed samples about the objective of the study, their participation was voluntary and they could withdraw at any time. Both oral and written instructions were given regarding items understanding (i.e., there was no right or wrong answer to the questions and they should freely state what they think), and they were reassured about the confidentiality of their responses.

### Statistical analysis

The LISREL (Linear Structural Relations) 8.8 computer program was used for testing the path analysis.

### Results

Positive and significant correlation among the passion mean score, passion subscales, SVS and SWLS was obtained. It ranged between  $r = .17$  and  $.70$ ,  $p < .01$ . The same results have been found in the relationships of passion and

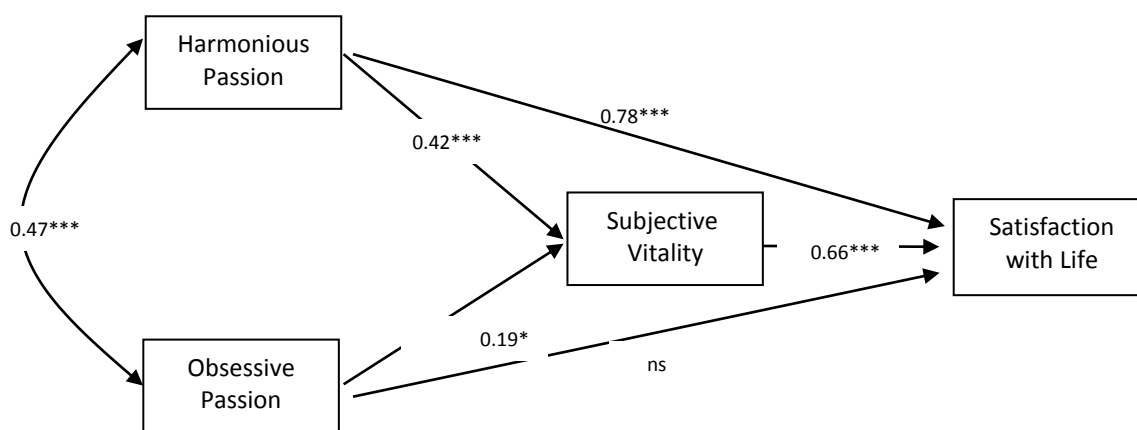
life satisfaction (Lafrenière, Vallerand, & Sedikides, 2013). However, the role of passion in this relation was a

mediator variable between self-enhancement and life satisfaction.

**Table 3. Pearson correlations among Different Variables for Physically Active Old Adults**

Variable	1	2	3	4	5	M	SD
(1) Obsessive	–					4.16	1.35
(2) Harmonious	.42**	–				4.33	1.32
(3) Passion total score	.70**	.49**	–			4.61	1.23
(4) Subjective Vitality	.33**	.32**	.38**	–		4.69	1.09
(5) Satisfaction with life	.17*	.28**	.33**	.70**	–	4.53	1.10

Notes. \*\* $p < .01$  \* $p < .05$



**Figure 1. Study 2 path analysis models of the relations among harmonious, obsessive passion, subjective vitality and life satisfaction.** Standardized path coefficients are presented. Significant direct and indirect effect paths are shown for harmonious passion, subjective vitality and life satisfaction. Only one no significant direct effect paths are shown for obsessive and life satisfaction. However, the values of the path coefficients are those of the full mediating model, including the direct effects of the independent variables to the outcome variables. \* $p < .05$ . \*\*\* $p < .001$ .

The hypothesis stated that subjective vitality should mediate the relation between harmonious passion-not obsessive passion- and life satisfaction. To test this model, a path analysis was conducted with LISREL 8.7 (Jöreskog & Sörbom, 2005). The correlation matrix served as the database for the path analysis and the method of estimation was maximum likelihood. All the path analyses conducted in the present research were performed with

SIMPLIS project.

The present model was composed of two exogenous variables (harmonious passion, obsessive passion) and two endogenous variables (subjective vitality and life satisfaction). The paths were drawn according to the hypothesis presented above.

Results of the path analysis revealed a satisfactory fit to the data in terms of  $\chi^2/df$  ratio, GFI, NFI, RMR, and RMSEA. The  $\chi^2$  (1, N= 223)= 1.94,  $p = .83$ , Normed Fit Index (NFI)= 1.00, Comparative Fit Index (CFI) = 1.00, Root-Mean-Square Error of Approximation (RMSEA)= .00 [.00; .01], Goodness-of-Fit Index (GFI) = 1.00, Root Mean Square Residual (RMR) = 0.00. As shown in Figure 1, all estimated paths were significant at least at  $p = .05$ , except for the path between obsessive passion and life satisfaction that was not significant ( $p = .05$ , *ns*).



## Discussion

People with an obsessive passion can thus find themselves in the position of experiencing an uncontrollable urge to partake in the activity they view as important and enjoyable. The passion for the activity comes to control the person. They cannot help but to engage in the passionate activity leading to rigid persistence toward the activity. While such rigid persistence may at times lead to some benefits (e.g., improvement on the activity over time), it may also incur some costs, potentially leading to less than optimal functioning within the confines of the passionate activity because of the lack of flexibility that it entails. Such a rigid and defensive style should lead to self-closure from intrapersonal and interpersonal experiences, to a poor integrative experience during task engagement (Hodgins & Knee, 2002), and thus to negative emotional experiences, while reducing the positive affective outcomes that would normally be experienced (Hodgins & Knee, 2002). Consequently, people with a harmonious passion should be able to fully focus on the task at hand and experience positive outcomes both during (e.g., flow, positive affect, and concentration) and after task engagement (e.g., satisfaction, general positive affect). Thus, there should be little or no conflict between the person's passionate activity and his/her other life activities. Furthermore, when prevented from engaging in their passionate activity, people with a harmonious passion should be able to adapt well to the situation and focus their attention and energy on other tasks that need to be done. Finally, with harmonious passion, the person is in control of the activity and can decide when to and when not to engage in the activity. People with a harmonious passion are able to decide not to engage in the activity on a given day if needed or even to eventually terminate the relationship with the activity if they

decide it has become a permanent negative factor in their life. Thus, behavioral engagement in the passionate activity can be seen as flexible. In sum, practicing the favorite physical activity brings some people intrinsic joy. These people feel in control of their practicing, feel good about themselves while practicing, find their favorite activity to be in harmony with their other activities. Psychologists describe these folks as having *harmonious passion*. But there's another kind of passion: *obsessive passion*. Those who are obsessively passionate feel an uncontrollable urge to engage in their practicing, feel more conflict between their passion and other areas in their life. The present study shows that the obsessive passion has no effect on the life satisfaction. Findings conform with Vallerand's and his colleagues results, obsessive passion is not expected to produce a positive effects and may even facilitate negative affect, conflict with other life activities, and psychological ill-being (Vallerand, 2012).

## Conclusion

Objectives of this study were to (i) test the factor structure and internal consistency of the three following concepts. There are the harmonious, obsessive passions; subjective vitality and life satisfaction; (ii) test a model that described a mediator role of subjective vitality in the relationships between harmonious, obsessive passion and life satisfaction. Sample of older adult practicing regularly physical activities has been participated in two studies. Finding from the first study shows the structure of passion scale in two factors. However, two items have been deleted cause of consistency and EFA. The CFA confirmed this finding. Concerning the SVS and SWLS, the internal consistency, EFA confirmed the unidimensionality for both of them. CFA confirmed the same result. The objective of the second study was to test the mediator role of subjective vitality

in the relationships between harmonious, obsessive passion and life satisfaction. According to hypothesis, results confirmed this hypothesis. Some limitations should be kept in mind when interpreting the current findings. First, the correlational design used in the present study does not allow us to infer causal inferences. Therefore, it is impossible to determine the directionality of causality with respect to the proposed model. Consequently, researchers should try to replicate the present findings using experimental designs in order to clearly establish the directionality of effects. This

experimental design should be in sequence of times. In the present study, we passed questionnaire of three scales just after finishing the physical activity session. Second, the sample contained a large disproportion of men and women aged more than 50 years old. This drawback did not permit us to investigate the issue of gender differences. This is not my objective in the present study. Future research should look into this issue given that gender differences have been reported in the passion as an independent and/or mediator variable.

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