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Harmonious and obsessive Internet passion, competence, and self-worth: A study of high school students in the United States and Russia

Elizaveta Naydanova [a], Brent D. Beal [b, *]

[a] All Saints Episcopal School, United States
[b] The University of Texas at Tyler, United States

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ABSTRACT

This study uses a dualistic model of passion to examine the relationships between Internet passion and perceptions of competence and general self-worth among high school students in the United States and Russia. Indirect relationships between harmonious and obsessive Internet passion and general self-worth, and the mediating roles of cognitive and social competence were analyzed using structural equation modeling. The majority of the findings were identical in both the U.S. and Russian samples. Harmonious Internet passion was found to be positively related to cognitive and social competence, and general self-worth, while obsessive Internet passion was negatively related to the three constructs. Culture-specific findings include the mediating role of social competence on the relationship between harmonious and obsessive Internet passion and general self-worth in the United States, but not in Russia. This research contributes to the ongoing debate about whether excessive Internet use is good or bad by demonstrating that it can be both depending on the type of passion involved. This study provides direction for high school administrators and parents about how to effectively capitalize on the benefits of Internet use by encouraging harmonious passion and discouraging obsessive passion.

1. Introduction

The Internet has become an indispensable part of modern life. Despite the numerous benefits, such as quick and easy access to information, the Internet can also be detrimental for individuals. Excessive Internet use has been shown to contribute to physical and psychological problems, such as reduced performance, aggressive behavior, stress, and social isolation (Ando, Takahira, & Sakamoto, 2005; Ko, Yen, Liu, Huang, & Yen, 2009; Odacı & Kalkan, 2010; Wang et al., 2011; Yang & Tung, 2007). While no age group is immune from problems stemming from excessive Internet use, high school students can be particularly vulnerable for at least three reasons. First, the K-12 educational system increasingly relies on the Internet to enhance learning effectiveness; Internet use is actively promoted as a means of increasing the odds of academic success. Second, college-bound high school students often spend long hours on the Internet searching for information about prospective colleges. Third, because adolescents are often actively engaged in developing their personal identities and establishing interpersonal relationships, they are often drawn to the Internet-based social networks (Lin & Tsai, 2002).

Prior research on excessive Internet use among high school students has produced inconsistent findings. While some studies highlight the negative consequences of excessive Internet use (Lin & Tsai, 2002), other studies emphasize its benefits (Tsai & Tsai, 2010). As a response to this inconsistency, researchers have recently introduced the construct of Internet passion and argued that this passion can be either harmonious or obsessive, with the former associated with positive outcomes, and the latter linked to negative outcomes (Burnay, Billieux, Blairy, & Larøi, 2015; Wang, Liu, Chye, & Chatzisarantis, 2001).

1.1. Dualistic passion

The passion for an activity construct was introduced by Vallerand et al. (2003); they define passion as “a strong inclination toward an activity that people like, that they find important, and in

* Corresponding author. College of Business and Technology, The University of Texas at Tyler, 3900 University Blvd., Tyler, TX 75799, United States.
E-mail address: bbeal@uttyler.edu (B.D. Beal).

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which they invest time and energy." (p. 756). Vallerand et al. (2003) argued that the representation of a favorite activity that a person likes and engages in becomes internalized into the person's identity. Drawing from self-determination theory (Deci & Ryan, 2000), researchers have extended the concept of passion by differentiating between two distinct types—harmonious and obsessive passion—based on differences in how internalization of a favorite activity into the person's identity occurs. Harmonious passion results from the autonomous internalization that occurs when an individual freely chooses to engage in the activity and does so for the sake of personal enjoyment rather than external contingency or reward. Harmonious passion operates in harmony with the other aspects of an individual's life, and is therefore more likely to be associated with positive outcomes. In contrast, obsessive passion is the result of an externally controlled process of internalization in which one's engagement in the activity is shaped by external contingencies and is largely beyond one's control. Obsessive passion often has an overpowering effect and has the potential to engender conflict between different aspects of one's life; it is therefore more likely to be associated with negative outcomes.

As documented by recent studies, passion for Internet activities can be either harmonious or obsessive (Séguin-Lévesque, Laliberté, Pelletier, Blanchard, & Vallerand, 2003; Tosun & Lajunen, 2010). Although a few studies have examined Internet passion among adolescents in the context of online gaming (Wang & Chu, 2007), little research has focused on internet passion and broader internet use. We believe it is important to address the impact of Internet use in general (not just in a gaming environment), because high school students use the Internet for educational as well as social purposes. In addition, there is a need to address the impact of Internet use on cognitive and social competencies, given that harmonious and obsessive Internet passion may enhance or impede development of these competencies, and may therefore contribute to students' perceptions of self-worth.

Using two samples of high school students, one from the United States, and the other from Russia, we test the indirect (through cognitive and social competence) relationships between harmonious and obsessive Internet passion and general self-worth. The implications of this study are at least three-fold. First, this research addresses the ongoing debate of whether excessive Internet use is good or bad by demonstrating that the answer depends on whether this use is associated with harmonious or obsessive Internet passion. Second, by testing the mediating effect of cognitive and social competence, we examine the mechanisms that may potentially explain *how* each type of Internet passion may be related to an individual's self-worth. Third, our cross-cultural investigation provides important insights into specific cultural differences and commonalities with respect to the linkages between Internet passion, cognitive and social competence, and self-worth among high school students. Finally, this study provides guidance to high school administrators, teachers and parents who are in a position to encourage or tame Internet passion with the objective of enhancing its positive effects while reducing its negative impact.

1.2. Internet passion and general self-worth

We expect a positive relationship between harmonious Internet passion and general self-worth. Self-worth or self-esteem is an attitude of approval or disapproval of oneself, and indicates the extent to which the individual believes him/herself capable, significant, successful and worthy (Coopersmith, 1967). As Hodgins and Knee (2002) note, harmonious passion derives from an autonomous internalization, which engenders a secure sense of self-esteem. High school students with harmonious Internet passion will derive a sense of enjoyment from Internet activities and will balance their time on the Internet with other activities, such as sports or face-to-face time with friends or parents. For students with harmonious Internet passion, Internet use is one activity of many, not the only focus of their lives. Their balanced lives allow them to acquire information about themselves and receive support from multiple sources and, during this process, adolescents might discount areas in which they are not competent and strengthen their strong sides (Harter, 1985), heightening perceptions of general self-worth.

We predict a negative link between obsessive Internet passion and general self-worth. The use of the Internet by individuals with obsessive Internet passion is driven by contingencies, such as the desire for rewards or social acceptance. The desire for external rewards or recognition is strong enough that students may continue "surfing" the Internet with the compulsive goal to "overachieve" even if this happens at the expense of other activities. Forgoing life outside of the Internet (hobbies, friends, family etc.) will limit the students' exposure to interpersonal relationships and support which are viewed as critical contributors to self-worth (Harter, 1985, 1993).

Hypothesis 1. Harmonious Internet passion is positively related to general self-worth.

Hypothesis 2. Obsessive Internet passion is negatively related to general self-worth.

1.3. Internet passion and competence

Competence is generally defined as effectiveness in a particular domain, with cognitive competence referred to as effectiveness in learning (Harter, 1982) and social competence as effectiveness in interactions (Rose-Krasnor, 1997). We believe that harmoniously passionate internet use will be associated with greater cognitive and social competence. When using the Internet for schoolwork, harmoniously passionate students will be driven by the desire to learn more and grow intellectually rather than receive a good grade. In line with self-determination theory, this intrinsically valued activity will enhance performance (Deci & Ryan, 2000), thereby contributing to greater of cognitive competence. Similarly, the use of the Internet for engaging in social networks will also be viewed as fun and intrinsically enjoyable. Harmoniously passionate students will post pictures or statuses to stay in touch friends and share positive or negative experiences. The lack of fear of being negatively evaluated by others will make online social interactions worry-free and enjoyable. Because harmoniously passionate individuals value balance between their favorite activities and other life activities (Vallerand et al., 2003), they will likely augment their online social communications with face-to-face interactions. This balanced approach will reinforce existing relationships and facilitate the formation of new ones, and this will contribute to an increased sense of social competence.

In contrast, we anticipate that the links between obsessive Internet passion and cognitive and social competence will be negative. Because obsessively passionate individuals engage in an activity in order to obtain a reward or social approval (Astakhova & Porter, 2015), their motivation for Internet activities will be extrinsic. For example, when working on a school project, obsessively passionate students will likely desire to maintain their reputation as good student or to simply pass the course. Because of their fear of failure (Vallerand & Houlfort, 2003), individuals with obsessive Internet passion will likely pursue the goal of avoiding negative consequences rather than mastering the task, and this is known to compromise cognitive self-enhancement (Van Yperen et al., 2009). The desire to be accepted by others will make

obsessively passionate individuals more likely to be critical of themselves. To assure social acceptance, they will be very restrictive in what they write and post and will feel disheartened if they fail to receive the desired approval. Online interactions motivated by obsessive passion are more likely to distract from face-to-face interaction and have the potential to negatively affect perceived social competence.

Hypothesis 3. Harmonious Internet passion is positively related to a) cognitive competence and b) social competence.

Hypothesis 4. Obsessive Internet passion is negatively related to a) cognitive competence and b) social competence.

1.4. Competence and general self-worth

Self-esteem literature has long posited that general perceptions of oneself are influenced by an underlying hierarchy of more specific judgments (Marsh, 1986). In line with this contention, we propose that cognitive and social competence will shape perceptions of an individual's general self-worth. High school students with high levels of cognitive and social competence will feel more successful and will be more likely to approve of themselves, and this will positively affect their perceptions of general self-worth. In contrast, high school students with low levels of cognitive and social competence will be more likely to harbor negative feelings about themselves, and this will negatively effect their perceptions of general self-worth.

Hypothesis 5. a) Cognitive competence and b) social competence are positively related to general self-worth.

1.5. Mediating roles of cognitive and social competence

Finally, we hypothesize a mediating process that explains how harmonious and obsessive Internet passion may translate into general self-worth. Prior research suggests that perceived competence may be central to the relationships between individual and environmental factors and self-esteem. Harter (1978, 1993) refers to global (or general) self-esteem as a multidimensional and hierarchical construct which is construed by several domains (i.e. social, physical, cognitive). Harter's model builds on the competence model of motivation and suggests that individual differences that influence the outlook on the environment can shape one's perceived competence and ultimately produce a more general view of the self.

Hypothesis 6. a) Cognitive competence and b) social competence mediate the positive relationship between harmonious Internet passion and general self-worth.

Hypothesis 7. a) Cognitive competence and b) social competence mediate the negative relationship between obsessive Internet passion and general self-worth.

2. Method

2.1. Participants and procedures

Participants for the study were high school students recruited from schools in the United States and Russia (one school in each country). Upon receiving permission from the schools' principals, the bi-lingual principal investigator (PI) contacted teachers of the mandatory high school courses (English in the United States and Russian in Russia), explained the purpose of the study and instructed the teachers to distribute the paper-and-pencil surveys to students. Participation in the study was anonymous and voluntary. Participants were entered into a drawing to win fifteen $10 iTunes gift cards for participation. Prior to collecting data in Russia, the survey was translated into Russian and then back-translated; minor stylistic discrepancies were resolved during a discussion between the authors and two bi-lingual translators (Brislin, 1980).

In the United States, of 212 high school students enrolled in the core course at the time of data collection, 140 consented to participate in the survey (66% response rate). Eight surveys were incomplete and were excluded from the final sample, resulting in 132 usable responses. Of 132 participants, 58% were male, 5% freshmen, 41% sophomores, 30% juniors, and 24% seniors, 92% were white and spent on average five hours daily on the Internet.

In Russia, of 154 high school students enrolled in the core course at the time of data collection, 121 students consented to participate in the survey (79% response rate). Ten surveys were incomplete and were excluded from the final sample, resulting in 111 usable responses. Of 111 participants, 24% were male, 6% freshmen, 28% sophomores, 51% juniors, and 12% seniors, 92% were Russians, and spent six hours daily on the Internet.

2.2. Measures

The survey solicited information on participants' demographics (gender, age, ethnicity, year in high school, and hours of daily Internet usage), harmonious and obsessive Internet passion, general self-worth, and competence. Harmonious and obsessive Internet passion were assessed using the 14-item Vallerand et al.'s passion for a general activity measure (7 items for each type of passion) which was adapted to the Internet context. The sample items include "The new things that I discover on the Internet allow me to appreciate it even more" and "The urge is so strong. I can't help myself from using the Internet" for harmonious and obsessive Internet passion, respectively. General self-worth was measured by the 7-item self-worth scale (Harter, 1982). The sample item is "I am the one who … is sure of myself." Finally, cognitive and social competence were measured by the 14-item scale (7 items each) developed by Harter (1982). The sample items include "I am the one who … is good at schoolwork" and "I am the one who … has a lot of friends."

2.3. Data analyses

The data were analyzed in four steps. First, confirmatory factor analysis (CFA), using maximum likelihood in LISREL 8.80 was used to assess the discriminant validity among the five latent constructs (harmonious and obsessive passion, general self-worth, and cognitive and social competence). Second, given the nature of the cross-cultural research, we conducted a multi-group analysis to test the measurement equivalence of the study constructs across the U.S. and Russian samples. Third, using the structural equation modeling (SEM), we tested the proposed structural relationships.

3. Results

Descriptive statistics for all study variables are presented in Table 1.

3.1. Confirmatory factor analysis

We used an item parceling approach to parcel the items for the five scales into three composite indicators each, so as to optimize the measurement structure of constructs and minimize the potential pitfalls of small sample sizes relative to the number of

Table 1
Descriptive statistics and correlations for and among study variables (U.S. and Russian samples).

Variable	Mean	SD	1	2	3	4	5
			U.S. Sample (n = 132)				
1. Harmonious Internet passion	4.43	1.22	*0.85*				
2. Obsessive Internet passion	3.43	1.38	0.34**	*0.90*			
3. General self-worth	2.94	0.64	0.15	−0.08	*0.87*		
4. Cognitive competence	2.94	0.59	0.01	−0.07	0.38**	*0.84*	
5. Social competence	2.84	0.75	0.07	−0.01	0.51**	0.26**	*0.92*
			Russian Sample (n = 111)				
1. Harmonious Internet passion	3.84	1.22	*0.83*				
2. Obsessive Internet passion	2.44	1.42	0.48**	*0.93*			
3. General self-worth	2.91	0.65	0.18	−0.14	*0.88*		
4. Cognitive competence	2.77	0.52	0.15	−0.09	0.47**	*0.79*	
5. Social competence	2.69	0.72	0.11	−0.14	0.62**	0.35**	*0.90*

Note. Cronbach's alphas are presented in the diagonal.
**$p < 0.01$.

estimated parameters (Little, Cunningham, Shahar, & Widaman, 2002). The 5-factor measurement model revealed an acceptable fit both in the United States ($\chi^2 = 156.24$, *d.f.* = 81, $p < 0.001$, $\chi^2/d.f. = 1.93$, RMSEA = 0.08, NNFI = 0.96, and CFI = 0.97) and Russia ($\chi^2 = 122.35$, *d.f.* = 81, $p < 0.001$, $\chi^2/d.f. = 1.51$, RMSEA = 0.07, NNFI = 0.97, and CFI = 0.98), supporting the discriminant validity of the study constructs.

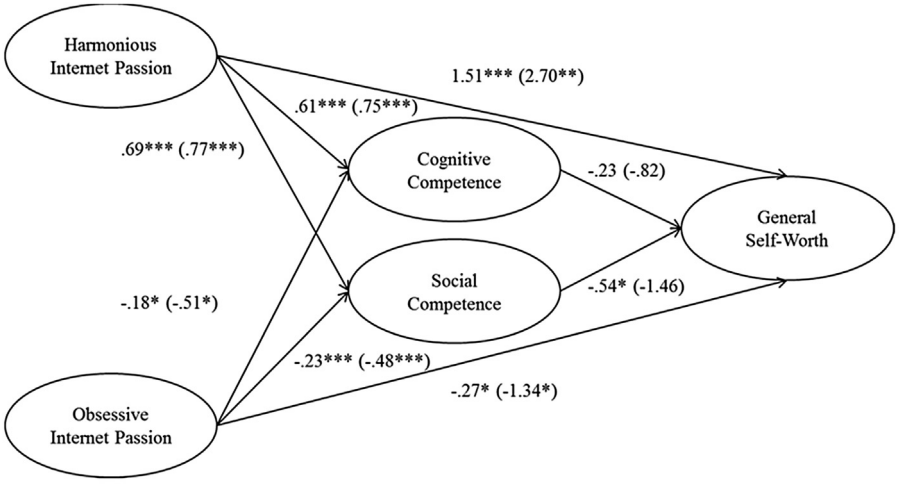
3.2. Multi-group invariance analysis

The measurement invariance tests were performed using the hierarchical ordering of nested models that tested for configural and metric invariance. According to Vandenberg and Lance (2000), in non-comparative research, these two steps will be sufficient to conclude about the equivalence of the scale items' meaning and factor structure. The results are evaluated by the change in the chi-square value, as the index of difference in fit. A non-significant chi-square change indicates support the scales' invariance. The chi-square values were $\chi^2 = 304.78$ and $\chi^2 = 312.54$, for the configural and metric invariance tests, respectively, yielding the non-significant chi-square change of $\Delta\chi^2 = 7.76$, d.f. = 13, $p < 0.05$. This suggests the scale invariance across the U.S. and Russian samples.

3.3. Structural equation modeling analysis

The structural model revealed an acceptable fit in both the United States ($\chi^2 = 185.72$, *d.f.* = 82, $p < 0.001$, $\chi^2/d.f. = 2.25$, RMSEA = 0.09, NNFI = 0.95, and CFI = 0.96), and Russia ($\chi^2 = 161.27$, *d.f.* = 82, $p < 0.001$, $\chi^2/d.f. = 1.97$, RMSEA = 0.09, NNFI = 0.94, and CFI = 0.96).

Fig. 1 summarizes the results for hypotheses testing. Hypothesis 1 predicted a positive relationship between harmonious Internet passion and general self-worth. This link was indeed positive and significant in both the United States ($\beta = 1.51$, $p < 0.001$) and Russia ($\beta = 2.70$, $p < 0.01$), fully supporting Hypothesis 1. Hypothesis 2 stated that the relationships between obsessive Internet passion and general self-worth would be negative. As expected, the negative relationships were found between the two constructs in the United States ($\beta = -0.27$, $p < 0.05$) and Russia ($\beta = -1.34$, $p < 0.05$).



Note. $n = 132$ (U.S. Sample); $n = 111$ (Russian sample). The first coefficient represents the result for the U.S. sample and the coefficient in parentheses represents the result for the Russian sample.

Fig. 1. Study results in the U.S. and Russia.

Hypotheses 3a and 3b predicted positive relationships between harmonious Internet passion and cognitive and social competence, respectively. In the United States, both pairs of the relationships were positive and significant ($\beta = 0.61$, $p < 0.001$ and $\beta = 0.69$, $p < 0.001$, for the links between harmonious Internet passion and cognitive and social competence, respectively). Similarly, in Russia, both pairs of the relationships were positive and significant ($\beta = 0.75$, $p < 0.001$ and $\beta = 0.77$, $p < 0.001$). This fully supports Hypotheses 3.

According to Hypotheses 4a and 4b, the relationships between obsessive Internet passion and cognitive and social competence will be negative. In the United States, both pairs of the relationships were positive and significant ($\beta = -0.18$, $p < 0.05$ and $\beta = -0.23$, $p < 0.05$, for the links between harmonious Internet passion and cognitive and social competence, respectively). Similarly, in Russia, both pairs of the relationships were positive and significant ($\beta = -0.51$, $p < 0.001$ and $\beta = -0.49$, $p < 0.001$). This evidence supports Hypotheses 4.

Hypotheses 5a and 5b predicted that cognitive competence and social competence, respectively, are positively related to general self-worth. In the United States, neither pair of the relationships was significant ($\beta = 0.23$, $p > 0.05$ and $\beta = 0.54$, $p < 0.05$). In Russia, neither pair of the relationships was significant ($\beta = -0.82$, $p > 0.05$ and $\beta = -1.46$, $p > 0.05$). Therefore, our results failed to support Hypothesis 5.

3.4. Mediation tests

Hypothesis 6a and 6b predicted the mediating effects of cognitive competence (a) and social competence (b) on the link between harmonious Internet passion and general self-worth, whereas Hypothesis 7a and 7b proposed the mediating effects of the same constructs on the link between obsessive Internet passion and general self-worth. The prerequisite for testing mediation is the significance of the relationships between the independent variable (IV) and the mediator and between the mediator and the dependent variable (DV) (Baron & Kenny, 1986). Although the IV-mediator relationships were significant in both the United States and Russia, only one mediator-DV link (cognitive competence–general self-worth) was significant in the United States (Fig. 1). As such, we were able to test only the mediating relationships proposed Hypotheses 6b and 7b (in the United States).

To test the mediating effects in Hypotheses 6b and 7b, we examined a series of nested models to determine whether the mediation is full or partial. In relation to Hypothesis 6b, the direct path from harmonious passion to general self-worth was constrained to zero. This resulted on a significantly worsened model fit ($\Delta\chi^2(1) = 23.04$, $p < 0.001$), suggesting that social competence only partially mediates the relationship between harmonious Internet passion and general self-worth. Further, in relation to Hypothesis 7b, the direct path from obsessive Internet passion to general self-worth was constrained to zero. The model fit also significantly worsened ($\Delta\chi^2(1) = 84.32$, $p < 0.001$), confirming a partial mediating effect of social competence on the obsessive Internet passion–general self-worth link. These findings support Hypotheses 6b and 7b, suggesting that social competence only partially transmits the relationships between harmonious and obsessive Internet passion and general self-worth among U.S. high school students.

4. Discussion

Given the pervasiveness of the Internet use among high school students, it is important to understand its consequences. This is the first cross-cultural study that employs the dualistic model of Internet passion to examine the relationships between students' Internet passion and perceived competence and general self-worth. Consistent with initial predictions, positive relationships between harmonious Internet passion, cognitive and social competence, and general self-worth and the negative relationships between obsessive Internet passion and these three constructs were consistent in both the United States and Russia. These results align with previous passion studies that have found harmonious passion to be associated with adaptive and positive and outcomes, and obsessive passion to be associated with maladaptive and negative outcomes (Burke, Astakhova, & Hang, 2015; Vallerand & Houlfort, 2003). By applying the dualistic passion model in the context of Internet use, we have helped explain the equivocal outcomes of studies that have referred to Internet to be both beneficial and problematic. Our results demonstrate that individuals may devote considerable time and effort to Internet activities, but may experience different outcomes, depending on the type of passion that motivates the behavior.

Surprisingly, no significant relationship was found between cognitive competence and general self-worth in either country (United States or Russia), or between social competence and general self-worth (in Russia). These null findings can be potentially explained by the presence of a third variable which may moderate these relationships. For example, individualistic (collectivistic) and masculinity (femininity) values may alter the above relationships. Because goal mastery is associated with masculinity (Hofstede, 2001), social competence may be more strongly related to general self-worth for those that score high on this dimension.

4.1. Implications for research

This study contributes to passion research by expanding the nomological framework of the dualistic passion construct. Our findings demonstrate that different types of Internet passion are associated with different outcomes in high school students. This study corroborates other studies in other contexts, such as sports, games, or work, that have found "good" outcomes to be associated with harmonious passion and "bad" outcomes to be associated with obsessive passion (Burke et al., 2015; Przybylski, Weinstein, Ryan, & Rigby, 2009; Vallerand et al., 2008). This finding is important because it provides additional evidence that passion-outcome relationships can be generalized to various contexts. The consistency of the majority of our findings in student samples from the United States and Russia is further evidence of generalizability.

4.2. Implications for practice

Our results suggest that investing time and effort in using the Internet is not always detrimental to high school students. Students with harmonious Internet passion are likely to feel better about their cognitive and social competence and may have a greater general sense of their own self-worth. This finding should motivate teachers and administrators to cultivate harmonious Internet passion. According to Vallerand and Houlfort (2003), two key ingredients for nurturing harmonious passion are activity importance and autonomous internalization of the activity. Therefore, teachers need to promote autonomy in learning by encouraging students to take ownership of the process (Liu, Wang, Tan, Koh, & Ee, 2009). Teachers and administrators also need to emphasize the long-term importance of knowledge versus grades to increase the intrinsic value of schoolwork.

The knowledge that obsessive Internet passion harms students' perceived competence and self-worth should motivate teachers and administrators to work to curb obsessive use of the Internet. Steps to reduce obsessive Internet passion are particularly critical given that Internet addiction may be a direct consequence of

obsessive Internet passion (Lafrenière, Donahue, & Lavigne, 2009; Przybylski et al., 2009). Schools should make an effort to balance the life of high school students. Encouraging students' participation in clubs, sports, and other extra-curricular activities may be one way to promote this kind of balance.

Finally, our findings suggest that an easy way for students to enhance their perceptions of competence and self-worth is to engage in a favorite activity. Masten and Coatsworth (1998) emphasized the importance of motivational systems in developing competence. As we demonstrated, harmonious Internet passion creates a sense of endorsement and contributes to the expansion of knowledge and social relations, enhancing perceptions of cognitive and social competence. By proving examples of harmonious Internet passion, parents and high school teachers can encourage harmonious passion in students and, ultimately, strengthen their self-views.

4.3. Limitations and future research directions

This study has several limitations. Only cross-sectional data were used, and caution should therefore be used regarding the interpretation of causal relationships. Because the data were self-reported, common method variance may also be present (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). Despite these limitations, however, the majority of our findings are consistent across two independent samples collected in two different countries. Finally, we hypothesized and measured general Internet passion rather than passion for specific Internet uses (social media, gaming, etc.). Future studies may attempt to replicate our findings for those specific Internet uses.

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