

Passion and Gambling: On the Validation of the Gambling Passion Scale (GPS)

François L. Rousseau
Robert J. Vallerand
Catherine F. Ratelle
Geneviève A. Mageau
Pierre J. Provencher

Université du Québec à Montréal

Vallerand and his colleagues (Vallerand & Blanchard, 1999; Vallerand, Blanchard, Koestner, & Gagné, 2001) have recently proposed a new concept of passion. According to these authors, passion refers to a strong inclination toward an activity that we like, find important, and in which we invest time. Vallerand et al. have identified two types of passion: obsessive and harmonious. Obsessive passion refers to an internal pressure that forces an individual to engage in the activity. Harmonious passion, on the other hand, refers to an internal force that leads an individual to choose freely to engage in an activity. While obsessive passion has been shown in some circumstances to lead to negative psychological and physical consequences, harmonious passion generally leads to positive psychological and physical consequences. The purpose of the present research was to validate a measure of passion toward gambling: the Gambling Passion Scale (GPS). The GPS consists of two subscales (obsessive passion and harmonious passion) comprising five items each. Results from two studies involving a total of 340 participants revealed satisfactory internal consistency and temporal stability indices, as well as a two-

Please address all correspondence to Robert J. Vallerand, Laboratoire de Recherche sur le Comportement Social, Département de Psychologie, Université du Québec à Montréal, C.P. 8888, Station "Centre-Ville," Montréal, PQ, Canada H3C 3P8; e-mail: Vallerand.Robert_J@uqam.ca.

Preparation of this article was facilitated through doctoral fellowships from the Social Sciences and Humanities Research Council of Canada (SSHRC) to the first and fourth author, a doctoral fellowship from the Université du Québec à Montréal (UQAM) to the first author, a doctoral fellowship from the Fonds pour la Formation de Chercheurs et l'Aide à la Recherche (FCAR) to the third author, and through grants from SSHRC and Loto-Québec to the second author.

factor structure supported by exploratory and confirmatory factor analyses. Finally, a series of partial correlational analyses between the two subscales and scales assessing behavioral measures related to gambling supported the construct validity of the GPS. The present results suggest that the GPS is a useful scale for research on gambling.

KEY WORDS: obsessive and harmonious passion; scale validation; gambling behaviors.

Despite its potentially negative consequences for individuals and society (Ladouceur, Boisvert, Pépin, Loranger, & Sylvain, 1994), gambling is increasingly gaining in popularity. For instance, for the fiscal year of 1998–1999, Loto-Québec, a state-owned corporation that operates the lotteries, casinos, and bingos in the province of Quebec, reported net profits of (CAN)\$1.2 billion. This represents an increase of (CAN)\$111.6 millions over the previous fiscal year (Loto-Québec, 1999). The increased popularity of gambling has also been reported in several other countries, including the United States (D. A. Abbott & Cramer, 1993; Volberg, 1996) and New Zealand (M. W. Abbott & Volberg, 1996). This interest in gambling can partly be explained by the enjoyment and thrill individuals experience when gambling (e.g., Dickerson & Adcock, 1987; Spanier, 1987). This enjoyment can lead certain individuals to develop a serious interest for, and invest more time in, gambling. Some people may even come to refer to gambling as a passion. Vallerand and his colleagues (Vallerand & Blanchard, 1999; Vallerand, Blanchard, Koestner, & Gagné, 2001) recently developed a general motivational approach to passion highly relevant to the domain of gambling.

According to Vallerand et al. (2001), passion is a strong inclination toward an activity that we like, find important, and in which we invest time. Two types of passion are proposed: obsessive passion and harmonious passion. Obsessive passion refers to an internal pressure that forces individuals to perform an activity. People with an obsessive passion experience an urge to do the activity that is difficult to resist. This can create conflicts because individuals feel trapped between the urge to partake in their passionate activity and their obligations in other life contexts. As a result, they are likely to experience negative consequences during and after the practice of their passionate activity. For example, individuals for whom gambling is an obsessive passion may feel guilty for spending too much time at the casino instead of spending time with their family. Harmonious passion, on the other

hand, refers to a motivational tendency that leads individuals to choose freely to engage in the activity. Instead of feeling pressured, as is the case with obsessive passion, individuals with a harmonious passion feel in control of their activity and can decide when to engage in it. The passionate activity is thus in harmony with activities or responsibilities in other life contexts. Harmonious passion is expected to result in positive consequences.

The type of passion that individuals develop depends on the way the activity has been internalized into the self (Vallerand et al., 2001). Obsessive passion is hypothesized to develop as a result of nonself-determined internalization (Deci & Ryan, 1991). Individuals with an obsessive passion would have internalized their passionate activity while they felt pressured to engage in it. For instance, they may have developed an obsessive passion for gambling because they originally felt coerced by their friends to participate in gambling games. It is important to note that the pressure could also have been self-imposed (see Ryan & Deci, 2000). On the other hand, harmonious passion is hypothesized to develop as a result of self-determined internalization. Individuals with a harmonious passion would have internalized their passionate activity while they originally felt totally free to partake in the activity or not.

Several factors are likely to be involved in the development of passion. Personality variables are hypothesized to be one type of influence. In line with this perspective, Vallerand et al. (2001) showed that global motivation (a type of motivation akin to a personality trait; Vallerand & Ratelle, in press) was associated with passion. More specifically, nonself-determined global motivation (i.e., a general motivational orientation to interact with the environment out of external or internal pressures) was associated with obsessive passion, while self-determined global motivation (i.e., a general motivational orientation to interact with the environment out of pleasure, satisfaction, or personal choice) was associated with harmonious passion. Specific personality traits have also been linked to different types of passion. In a study conducted with undergraduate students, Blanchard, Heather-ton, Koepsel, and Hull (2001) found that obsessive passion was positively related to neuroticism, but harmonious passion was positively related to openness to experience.

External forces (e.g., encouragement, criticism, etc.) can also play a role in the development of passion. Research conducted with chil-

dren and their parents suggests that parents influence the development of obsessive passion in their children (Salvy, Mageau, Seidah, Vallerand, & Bouffard, 2001). Salvy et al. found that this influence results from parents' wishes that their children develop a passion for an activity, and that they engage in only one, rather than several, activities. With respect to gambling, external factors such as pressure from friends and colleagues could lead an individual to develop a passion for that activity. Major life events or life transitions may also play a role in the development of passion. Individuals going through a difficult time (e.g., divorce) might feel the urge to escape self-awareness (Baumeister, 1998) by investing time and energy into an activity like gambling, which may then become an obsessive passion. In contrast, other situations may lead individuals to develop a harmonious passion. For instance, with more time on their hands, recently retired individuals might freely decide to invest more time and energy into an activity that they find very interesting (Atchley, 1993). Although, research on the determinants of passion are still in the early stages, empirical findings already provide support for the potential role of personality traits and external forces in the development of passion.

Several studies have examined the consequences associated with obsessive and harmonious passion in domains as varied as sport (Blanchard & Vallerand, 2001; Rousseau, Dumais, & Vallerand, 2000; Mageau, Demers, Vallerand, & Provencher, 2000), work (Houffort, Vallerand, & Blanchard, 1999), theatre (Salvy, Vallerand, & Blanchard, 1999), internet use (Séguin-Lévesque, Laliberté, Pelletier, Blanchard, & Vallerand, 2001), summer camps for children (Salvy et al., 2000), and aging (Rousseau, Vallerand, LeMartret, & Clark, 1999). Taken together, the results of these studies show that obsessive passion is typically associated with negative consequences such as conflict in interpersonal relationships (Séguin-Lévesque et al., 2001), depression (Rousseau et al., 1999), and perceived stress (Blanchard & Vallerand, 2001), while harmonious passion is associated with positive consequences such as enhanced subjective well-being (Houffort et al., 1999; Rousseau et al., 1999; Salvy et al., 1999), better emotional control (Blanchard & Vallerand, 2001), and increased meaning in life and vitality (Rousseau et al., 1999). No study, however, has applied Vallerand et al.'s (2001) concept of passion to gambling. Doing so could yield important information about the psychological processes, and

the consequences, associated with gambling. On the basis of previous studies on passion, it could be argued that gambling involvement as such might not necessarily lead to negative consequences. Rather, it should only be the case if obsessive passion is at play. Gambling involvement originating from harmonious passion may even lead to some positive outcomes. It is therefore important to examine the role of different types of passion toward gambling.

In order to measure passion, Vallerand et al. (2001) developed the Passion Scale. The Passion Scale is made up of two subscales (obsessive passion and harmonious passion) of seven items each. Depending on the needs of the study, two sets of instructions can be used. In one set of instructions participants are asked to think of the activity that is most important to them. The passionate activity can thus differ from one participant to the next. In another set of instructions, participants are asked to think about a specific activity determined ahead of time by the researchers. This last set of instructions is used when researchers are interested in examining passion toward a specific activity, such as work (Houlihan et al., 1999) or basketball (Mageau et al., 2000). All participants (regardless of the instructions they receive) are then asked to indicate their degree of agreement with each of the 14 items of the Passion Scale referring to their passionate activity. An example of an item from the obsessive passion subscale is "I have a tough time controlling my need to do this activity," while a sample item from the harmonious passion subscale is "This activity is in harmony with the other activities in my life."

Although the Passion Scale is a reliable and valid instrument, its length and item content need to be adapted to reflect the specific characteristics of the activity of gambling. Gambling differs from other passionate activities examined in past research in at least two respects. First, for some individuals the consequences associated with gambling (e.g., severe financial losses, interpersonal problems, and criminal behavior) can be extremely detrimental (Ladouceur et al., 1994; Meyer & Stadler, 1999). Thus, the items used to measure passion toward sport or work for instance may not directly apply to gambling, and therefore need to be adapted. Second, gambling takes place in locations where testing might be difficult to conduct (e.g., casinos). A shorter instrument would be very useful in such circumstances. The purpose of the present study was therefore to validate the Gambling

Passion Scale (GPS), a French measure of passion toward gambling based on Vallerand et al.'s (2001) Passion Scale.¹ We hypothesized that the GPS would be both reliable and valid among a population of casino gamblers. More specifically, we hypothesized that results from factor analyses (exploratory and confirmatory) of the GPS would yield a two-factor structure and that both subscales would have satisfactory reliability. We also hypothesized that the associations between the two types of passion for gambling and several behavioral consequences related to gambling would lead to findings similar to those observed in other contexts (e.g., Blanchard & Vallerand, 2001; Vallerand et al., 2001). We expected obsessive passion to be associated with negative behavioral consequences, but harmonious passion to be either unrelated or weakly related to such consequences.

STUDY 1

The purpose of the first study was threefold. The first purpose was to examine the factor structure of the GPS through exploratory and confirmatory factor analyses. The second purpose was to assess the internal consistency of the two subscales (obsessive passion and harmonious passion). The final purpose was to assess the construct validity of the GPS by conducting a Pearson correlation between the two subscales, as well as by conducting partial correlations between the two subscales and behavioral outcomes related to gambling.

Method

Participants. The GPS was completed by 312 French-speaking participants (134 females, and 177 males; gender information was missing for one participant). The average age of the participants was 47.9 years and their average income fell between (CAN)\$30,000 and (CAN)\$39,999.

Procedures. Participants were recruited in one of the main entrance halls of the Montreal Casino. The interviewers approached all passersby. After identifying themselves as students from a local university, interviewers told casino gamblers that they were conducting a sur-

vey on gambling and asked them if they gambled at the casino at least once a month. Passersby who said yes were then asked to fill out a questionnaire on their general attitudes toward gambling. (It is not possible to report how many passersby refused to fill out the questionnaire because interviewers did not record this information.) Passersby who agreed to fill out the questionnaire were taken to a table located behind dividers. There, they were given additional explanations about the survey. They were told that there were no right or wrong answers, that they should answer spontaneously and honestly, and that their answers would remain confidential and anonymous. Participants were offered a coffee or a juice while they filled out the questionnaire. Upon completion of the questionnaire, participants were offered a lottery ticket for their participation. Participants who felt the need to talk to someone about gambling-related issues were given phone numbers to contact either the counselling services of the Montreal Casino or Gamblers Anonymous.

Measures. The questionnaire included the GPS. Participants were asked to think about their favorite gambling game and to indicate their degree of agreement for each item of the GPS accordingly. The GPS was adapted from Vallerand et al.'s (2001) Passion Scale. The items in the GPS were adapted to refer to a gambling game or the act of gambling. Also, four items were deleted to shorten the scale, leaving five items to measure obsessive passion and five items to measure harmonious passion. An example of an item from the obsessive passion subscale on the GPS is "I have a tough time controlling my need to gamble at this game," while a sample item from the harmonious passion subscale is "Gambling is in harmony with the other activities in my life" (see Table 1 for the other items). Participants' responses to each item were scored using a seven-point Likert scale anchored by the end point "Not agree at all" (1) and "Very strongly agree" (7). The questionnaire also comprised six behavioral measures related to gambling. First, we measured the amount of money participants usually spent at their favorite gambling game ["In general, in my favorite gambling game I spend . . ."; 9-point scale anchored by the end point "Little money" (1) and "A lot of money" (9)]. Second, we measured participants' perceptions of themselves as gamblers ["In general, in my favorite gambling game I consider myself . . ."; 9-point scale anchored by

Table 1
Results from the Exploratory Factor
Analysis of the Gambling Passion Scale

	<i>F1</i>	<i>F2</i>
I cannot live without this gambling game. (OP1)	.81	
I am emotionally dependent on this gambling game. (OP2)	.85	
I have a tough time controlling my need to play this gambling game. (OP3)	.78	
I have almost an obsessive feeling for this gambling game. (OP4)	.85	
The urge is so strong, I cannot help myself from playing this gambling game. (OP5)	.83	
This gambling game allows me to live memorable experiences. (HP1)		.65
This gambling game is in harmony with the other activities in my life. (HP2)		.54
The new things that I discover with this gambling game allow me to appreciate it even more. (HP3)		.67
This gambling game reflects the qualities I like about myself. (HP4)		.66
This gambling game allows me to live a variety of experiences. (HP5)		.76
Eigenvalue	4.32	2.17
Variance (%)	38.80	17.50

Note. $n = 162$. Factor loadings not shown were all less than .50. These items have been translated from the French Gambling Passion Scale, but have not been validated in English.

the end point “A light gambler” (1) and “A heavy gambler” (9)]. Third, we measured participants’ longevity of gambling at their favorite game [“I have been playing at my favorite gambling game . . .”; 9-point scale anchored by the end point “For very little time” (1) and “For a very long time” (9)]. Fourth, we measured the number of gambling games at which participants played. Fifth, we also measured participants’ gambling frequency [“I play at my favorite gambling game. . .”; 9-point scale anchored by the end point “Very rarely” (1) and

“Very often” (9)]. Finally, we measured participants’ perceptions of gambling as being part of their self. This was done by adapting the “Inclusion of Others into Self Scale” (see Aron, Aron, & Smollan, 1992; Blanchard, Perreault, & Vallerand, 1998). Participants were provided with Venn diagrams of two circles depicting the relation between themselves and their favorite gambling game. One circle represented the participant and the other circle represented the participant’s favorite gambling game. The first diagram showed the two circles side by side (i.e., no overlap between the two circles). Going from left to right, six more Venn diagrams were presented with the circles gradually overlapping, until the seventh Venn diagram depicted an almost complete overlap of the two circles. Participants had to circle one of the seven diagrams [7-point scale anchored by the end point “Me and the game represent two distinct entities” (1) and “Me and the game represent almost the same entity” (7)]. The questionnaire also comprised a short version of the Social Desirability Scale (SDS; Crowne & Marlowe, 1960; e.g., “When I make a mistake I am always ready to admit it”; 14 items, $\alpha = .64$). The SDS was assessed on a 7-point scale anchored by the end points “Do not agree at all” (1) and “Agree completely” (7) with the midpoint “Agree moderately” (4). The SDS was randomly included in some questionnaires in order to keep the questionnaire as short as possible for most participants. In total, 164 participants filled-out the SDS. Results from *t*-tests revealed no significant differences on socio-demographic variables and behavioral measures of gambling between participants who filled out the SDS and participants who did not. Finally, measures of socio-demographic information (i.e., sex, age, schooling, and income) were included in all questionnaires.

Results and Discussion

First, an exploratory factor analysis was conducted in order to test the hypothesized structure of the GPS, followed by a confirmatory factor analysis to confirm the structure of the GPS. We randomly divided the main sample into two subsamples (see Joiner et al., 1999 for a similar procedure), leaving 162 participants for the exploratory factor analysis and 150 participants for the confirmatory factor analysis. All the other analyses were used with the total sample ($n = 312$), unless indicated otherwise. Second, internal consistency of the subscales was assessed using Cronbach alphas. Finally, in order to establish the con-

struct validity of the GPS, we conducted a Pearson correlation between the two subscales, as well as partial correlations between the two subscales (controlling for the other Passion subscale) and the six behavioral measures related to gambling described in the previous paragraph.

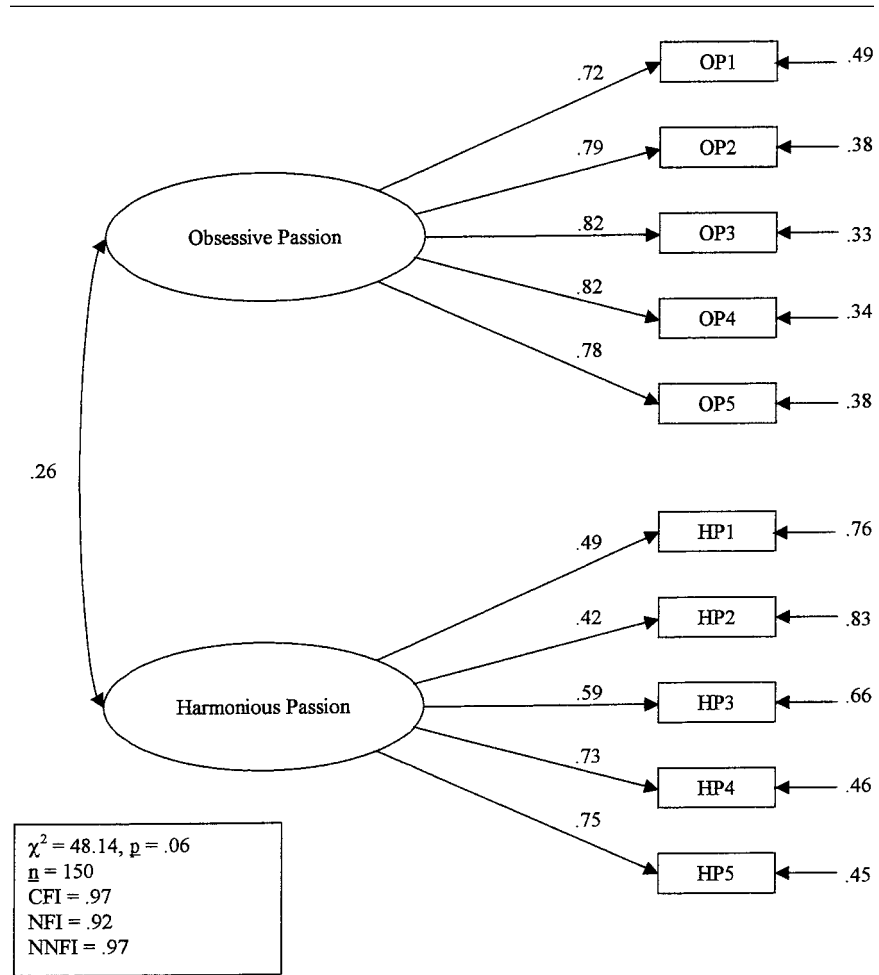
Exploratory Factor Analysis (EFA). As a first step, we examined separately the univariate distributions of all variables and verified that they were normally distributed (levels of skewness and kurtosis within ± 2). Then an EFA was conducted on the 10 items of the GPS, using a maximum likelihood method of estimation with Oblimin rotation. Results showed that two factors could be extracted, explaining a total of 56.3% of the variance (see Table 1). Both factors were identified as obsessive passion and harmonious passion, with eigenvalues of 4.32 and 2.17, respectively. Each subscale was composed of five items, and all loadings were higher than .50. Finally, the correlation between both factors was .33 ($n = 162$), indicating that although related (since both factors represent passion toward gambling) they were relatively independent from each other.

Confirmatory Factor Analysis (CFA). As a second step, a CFA using a maximum likelihood method of estimation was performed with EQS (Bentler, 1995) on the second half of the sample ($n = 150$). A confirmatory factor model that allowed free loadings on the items within each of the two factors as postulated by the theory was tested. Factor variances were fixed at unity and both factors were allowed to correlate freely. The adequacy of fit for the model was based on the chi-square statistic (Bentler, 1980), the comparative fit index (CFI; Bentler, 1990), the normed fit index (NFI; Bentler & Bonett, 1980), and the non-normed fit index (NNFI; Bentler, 1990).

In this model, two factors were postulated. These factors corresponded to the two subscales of the GPS and were made up of the 10 corresponding items. No cross-loadings were postulated. The chi-square statistic p value was non-significant, $\chi^2(34, n = 150) = 48.14$, $p > .05$, and all three fit indices were satisfactory (CFI = .97; NFI = .92; NNFI = .97). Taken together, these results indicate that the postulated model was acceptable. The model is presented in Figure 1.

Internal Consistency and Means. The internal consistency of the two subscales was assessed using Cronbach alphas. As can be seen from

Figure 1
A Confirmatory Factor Analysis of the Gambling Passion Scale



Note. The coefficient associated with the two-headed arrow is the correlation between the factors. The arrows leading from the factors to the items show the factor loading of each item. The coefficients to the right of the items show the percent of the item variance that is not explained by the factor.

Table 2, values were satisfactory, with alphas of .90 and .76 for obsessive passion and harmonious passion, respectively. The means for obsessive passion were 2.67 and 2.71, for females and males, respectively, $t(309) = -0.20, n.s.$ The means for harmonious passion were

Table 2
Means, Standard Deviations, Internal Consistency Values (Cronbach Alpha), and
Test–Retest Correlations of the Gambling Passion Scale Subscales for Study 1 and Study 2

	<i>Study 1</i>			<i>Study 2</i>						
	<i>Means</i>	<i>SD</i>	<i>Alpha</i>	<i>Pretest</i>			<i>Posttest</i>			<i>Test–Retest</i> <i>Correlations</i>
				<i>Means</i>	<i>SD</i>	<i>Alpha</i>	<i>Means</i>	<i>SD</i>	<i>Alpha</i>	
Obsessive Passion	2.69	1.61	.90	2.23	1.50	.96	1.97	1.25	.89	.84***
Harmonious Passion	3.37	1.31	.76	2.89	1.36	.83	2.99	1.35	.84	.89***

Note. For Study 1, $n = 312$. For Study 2, $n = 28$.

*** $p < .001$.

3.13 and 3.56, for females and males, respectively, $t(309) = -2.92$, $p < .01$. Means on the GPS were also examined according to the gambling games reported by participants. Three games were clearly more popular than the other games: slot machines (197 participants), blackjack (47 participants) and roulette (22 participants). The means on the obsessive passion subscale for these three activities were 2.67, 3.00, and 2.11, respectively. A oneway analysis of variance showed no significant difference among those scores. The means on the harmonious passion subscale were 3.21 (slot machines), 3.83 (blackjack), and 3.55 (roulette). Results from a oneway analysis of variance revealed a significant main effect, $F(2, 265) = 4.50$, $p < .05$. Scheffé post hoc tests revealed that the mean scores on harmonious passion for participants whose favorite game was blackjack were significantly higher than the mean scores for participants whose favorite game was slot machines, $t(263) = -2.90$, $p < .01$. There were no significant differences between the mean scores for participants whose favorite game was roulette and the mean scores for participants whose favorite game was slot machines.

Correlations Between the Two Subscales. In line with past research (e.g., Houliort et al., 1999; Vallerand et al., 2001), we expected obsessive and harmonious passion to be only moderately correlated. Results showed that the Pearson correlation between obsessive and harmonious passion was .28 ($n = 312$), thus underscoring that both subscales are relatively independent from each other.

Partial Correlations. First, partial correlations were conducted between the GPS subscales and socio-demographic variables (controlling for the other Passion subscale). As can be seen from Table 3, the only significant partial correlation occurred between sex and harmonious passion, showing that men tended to report more harmonious passion toward gambling than women (partial $r = .17$, $p < .01$). Therefore, both types of passion do not seem to vary according to the socio-demographic variables measured in this study, with the exception of sex. It should also be noted that there was no significant association between obsessive or harmonious passion and social desirability.

We then conducted partial correlations (again controlling for the other Passion subscale) between the GPS subscales and the six measures of gambling behaviors (see Table 4). With respect to obsessive

Table 3
Means, Standard Deviations, and Partial Correlations Between the Sociodemographic Variables and the Social Desirability Scale and the Harmonious and Obsessive Subscales of the Gambling Passion Scale

<i>Sociodemographic Variables</i>	<i>Means</i>	<i>SD</i>	<i>n</i>	<i>Partial Correlations</i>	
				<i>Obsessive Passion (Controlling for Harmonious Passion)</i>	<i>Harmonious Passion (Controlling for Obsessive Passion)</i>
Age (in years)	47.94	16.33	309	-.01	-.02
Sex (women = 0; men = 1)	.57	.50	311	-.04	.17**
Schooling (in years)	13.11	4.17	309	-.07	-.02
Income	3.68	2.11	293	-.06	.00
Social Desirability	8.85	2.75	164	-.13	-.14

Note. For "Income," possible values ranged from 1 = \$10,000–\$19,999 to 10 = \$90,000–\$99,999 with increments of \$10,000 for each unity.
 ** $p < .01$.

passion, there was a significant positive association with the amount of money gambled in general (partial $r = .51$, $p < .001$), being a heavy gambler (partial $r = .49$, $p < .001$), longevity of gambling (partial $r = .19$, $p < .001$), and the number of gambling games involved in (partial $r = .14$, $p < .05$). These partial correlations indicate that participants who reported higher levels of obsessive passion toward gambling also reported (1) gambling more money in general, (2) perceiving themselves as being heavier gamblers, (3) having gambled for a longer period of time, and (4) gambling at more games. Harmonious passion was not significantly associated with any of those measures. Obsessive passion and harmonious passion were both positively associated with game frequency (partial $r = .31$, $p < .001$ and partial $r = .17$, $p < .01$ for obsessive and harmonious passion, respectively) and game as part of the self (partial $r = .46$, $p < .001$ and partial $r = .15$, $p < .01$ for obsessive and harmonious passion, respectively). In both instances, however, the partial correlations were stronger for

obsessive passion than for harmonious passion. Thus, participants who reported higher levels of obsessive passion toward gambling reported gambling more frequently and perceived the game as being more part of their selves. Taken together, the results from partial correlations indicate that obsessive passion is associated with several potentially negative outcomes. Although our results do not allow us to talk about causality, they indicate that obsessive passion may contribute to remaining a heavy gambler and betting large sums of money at more games. Harmonious passion, on the other hand, may contribute to a healthier style of engagement in gambling.

In summary, the results from Study 1 underscore several important findings. First, results from both an EFA and a CFA support the two-factor structure of the GPS. Second, obsessive and harmonious passion are relatively independent from each other. Third, the internal consistency values of the obsessive passion subscale and the harmonious passion subscale are satisfactory. Fourth, social desirability and socio-demographic variables, with the exception of sex, are not related to the two types of passion. Finally, obsessive passion was more strongly associated with negative behaviors related to gambling than harmonious passion, thus providing support for the construct validity of the GPS.

STUDY 2

In order to demonstrate that the GPS is a reliable measure of individuals' passion toward gambling, it should be relatively stable across time. The purpose of the second study was therefore to evaluate the temporal stability of the GPS using test-retest correlations. The internal consistency of the subscales was also reassessed.

Method

Participants. Twenty-eight French-speaking individuals (11 females and 17 males) took part in this study. The average age of the participants was 44.8 years and their average income fell between (CAN)\$30,000 and (CAN)\$39,999.

Procedures. Participants were first contacted at the Montreal Casino, where they filled out a questionnaire (the procedure used was

Table 4
Means, Standard Deviations, and Partial Correlations Between the
Variables Related to Gambling Behaviors and the Harmonious and
Obsessive Subscales of the Gambling Passion Scale

<i>Behavioral Measures of</i> <i>Gambling</i>	<i>Means</i>	<i>SD</i>	<i>Partial Correlations</i>	
			<i>Obsessive</i> <i>Passion</i> <i>(Controlling for</i> <i>Harmonious</i> <i>Passion)</i>	<i>Harmonious</i> <i>Passion</i> <i>(Controlling for</i> <i>Obsessive</i> <i>Passion)</i>
Amount of money gambled in general	4.44	2.03	.51***	-.01
Heavy gambler	3.94	2.18	.49***	.05
Longevity of gambling	5.07	2.27	.19***	.09
Number of gambling games	2.39	1.70	.14*	.09
Game frequency	5.56	2.08	.31***	.17**
Game as part of self	2.75	1.64	.46***	.15**

Note. $n = 312$ for all variables except for "Number of gambling games" ($n = 275$). All variables were measured using a 9-point Likert scale, except "Game as part of self" (7-point Likert scale).
 * $p < .05$; ** $p < .01$; *** $p < .001$.

the same as the one described in Study 1). Upon completion of the questionnaire, participants were asked if they would accept to complete a second questionnaire a few weeks later. They were informed that the questionnaire would be mailed to them and that they would also receive a pre-addressed and pre-stamped envelope to return their questionnaire after completing it. They were also reminded that their responses would remain confidential. Participants who agreed to participate gave their address and their name or initials. Approximately four weeks later, participants were mailed a second questionnaire comprising the GPS and the same socio-demographic information used in the first study. A lottery ticket was also included in the package as a token of our appreciation. Of all the participants who agreed to take

part in the study, 28 filled out and returned their questionnaire. Unfortunately, the exact number of participants who agreed to take part in Study 2 is not available.

Internal Consistency and Means. The internal consistency of the two subscales was assessed using Cronbach alphas. As can be seen from Table 2, values were satisfactory with alphas ranging from .83 to .96. The means for pretest for obsessive passion were 2.33 and 2.17, for females and males, respectively, $t(26) = 0.28$, n.s. The means for pretest for harmonious passion were 2.04 and 3.44, for females and males, respectively, $t(26) = -3.02$, $p < .01$. The means for posttest for obsessive passion were 2.29 and 1.77, for females and males, respectively, $t(26) = 1.09$, n.s. The means for posttest for harmonious passion were 2.42 and 3.37, for females and males, respectively, $t(26) = -1.89$, n.s.

Results and Discussion

First, results showed that the test-retest correlations for the obsessive ($r = .83$, $p < .001$) and harmonious ($r = .82$, $p < .001$) passion subscales were high and significant, thus supporting the temporal stability of the GPS (see Table 2). Second, as indicated in the previous paragraph, alpha values for the pretest ($\alpha = .96$ and $\alpha = .83$ for the obsessive and harmonious subscales, respectively) and the posttest ($\alpha = .89$ and $\alpha = .84$ for the obsessive and harmonious subscales, respectively) were also satisfactory. Taken together, these results provide further support for the internal consistency of the obsessive and harmonious subscales. The results of Study 2 thus show that the GPS is a reliable instrument to measure casino gamblers' passion toward gambling.

GENERAL DISCUSSION

The purpose of the two studies reported in this article was to validate the Gambling Passion Scale (GPS), a scale that measures individuals' passion toward gambling. The present results reveal that the GPS has adequate levels of reliability and validity. With respect to the reliability of the scale, results from the two studies showed that both subscales have adequate levels of internal consistency and display good

levels of temporal stability over a four-week period. With respect to the validity of the GPS, results from an EFA and a CFA supported the hypothesized two-factor structure of the GPS, thereby providing factorial validity to the scale. Moreover, partial correlations showed that obsessive passion is associated with negative behavioral measures related to gambling while harmonious passion is generally not associated with those measures. These results underscore the importance of examining both obsessive and harmonious passion toward gambling as these two types of passion may lead to different consequences.

One advantage of the GPS is its short length. With only 10 items, the GPS can be administered rapidly and can be used in locations generally less conducive to testing (e.g., casinos). For instance, the GPS could be administered to individuals while they are actually gambling. This could lead to interesting studies.

Although the present results are very encouraging, further studies will be needed to examine the psychometric properties of the GPS more thoroughly. First, we will need to determine if the GPS can also be used with non-casino gamblers, such as individuals who buy lottery tickets or play at video lottery terminals (VLT). Lotteries and VLTs are easily accessible and very popular. Indeed, they accounted for 77% of Loto-Québec's net profits for the fiscal year of 1998–1999 (Loto-Québec, 1999). Having an instrument to measure passion toward several casino and non-casino gambling activities would further our knowledge of gambling and its consequences. Second, the GPS should be translated and validated in English. Doing so would yield at least two benefits. First, it would make the scale available to a greater number of researchers. Second, it would then be possible to try to replicate the present results in other countries and cultures.

The validation of the GPS shows that gambling is an activity that can be subjected to the psychological processes of passion. This finding opens up several avenues of research on gambling. First, Vallerand et al. (2001) proposed that obsessive passion generally leads to negative consequences while harmonious passion generally leads to positive consequences. Results from Study 1 showed that obsessive passion toward gambling is associated with negative behavioral consequences such as gambling large sums of money, being a heavy gambler, having gambled for a longer period of time, and gambling at more games. On the basis of past studies (e.g., Blanchard & Vallerand, 2001; Houliort et al., 1999; Salvy et al., 1999; Rousseau et al., 1999; Vallerand

et al., 2001), we would expect this pattern to occur for affective and cognitive consequences as well. For instance, we would expect obsessive passion toward gambling to be associated with negative affective consequences such as anxiety and guilt, while harmonious passion should be associated with positive affective consequences such as fun and enjoyment. Future studies should therefore examine the behavioral, affective, and cognitive consequences associated with obsessive and harmonious passion toward gambling. A second avenue of research concerns the possibility that different patterns of fluctuations in gamblers' behaviors, affects, and cognitions may emerge according to the types of passion reported by gamblers. For instance, individuals for whom gambling is an obsessive passion might experience great pleasure while gambling, only to experience intense guilt later on (following a gambling episode) upon realizing that their gambling led them to spend large sums of money or to miss an important meeting. On the other hand, individuals for whom gambling is a harmonious passion might report experiencing more positive consequences regularly. Addressing this issue would lead to a better understanding of the consequences of gambling, not only in the context of gambling, but also with respect to outcomes it can produce in other life contexts such as work and family relationships.

From an applied perspective, the GPS should help researchers gain a better understanding of pathological gambling, a disorder of impulse control with important social consequences (American Psychiatric Association, Diagnostic and Statistical Manual of Mental Disorders-IV, 1994; Walker, 1992). Vallerand et al. (2001) see people with an obsessive passion as individuals who are controlled by, and cannot resist the urge to engage in, their favorite activity. Obsessive passion may represent the psychological mechanism responsible for the lack of control observed in pathological gambling. In line with this hypothesis, results from Study 1 showed that obsessive passion was associated with potential indicators of pathological gambling (e.g., higher amount of money generally spent on gambling, being a heavier gambler, longevity of gambling). Equally important is the fact that the GPS, contrary to other standard measures of pathological gambling (South Oaks Gambling Screen, Lesieur & Blume, 1987), makes the distinction between two types of gamblers who can both be as passionate for gambling, but who experience very different consequences as the result of their passion. The distinction between obsessive and harmonious pas-

sion should allow researchers to discriminate between passionate gamblers who suffer from pathological gambling (obsessive passion), and passionate gamblers who are relatively free from such problems (harmonious passion). In other words, the GPS taps into a dimension not available through other measures of problem gambling, according to which individuals who are very involved in gambling automatically experience negative consequences. Moreover, future research on passion might be able to determine if individuals can switch from one type of passion to the other, and if so, under what conditions. If obsessive passion for gambling is indeed related to pathological gambling, a better understanding of the fluctuations between harmonious and obsessive passion could lead researchers and clinicians using the GPS to develop better prevention programs against pathological gambling by identifying individuals who are at risk.

In summary, although the GPS is a new instrument that needs further testing, the present results underscore the quality of its psychometric properties. Those characteristics, combined with the flexibility offered by the short length of the scale, and the information not obtainable through the use of other standard measures of gambling, should make the GPS a useful tool in future research on gambling.

NOTE

1. Work is currently underway to validate an English version of the scale.

REFERENCES

- Abbott, D. A., & Cramer, S. L. (1993). Gambling attitudes and participation: A Midwestern survey. *Journal of Gambling Studies, 9*, 247–263.
- Abbott, M. W., & Volberg, R. A. (1996). The New Zealand national survey of problem and pathological gambling. *Journal of Gambling Studies, 12*, 143–160.
- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Aron, A., Aron, E. N., & Smollan, D. (1992). Inclusion of other in the self scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology, 63*, 596–612.
- Atchley, R. C. (1993). Continuity theory and the evolution of activity in later adulthood. In J. R. Kelly (Ed.), *Activity and aging: Staying active in later life* (pp. 5–16). Newbury Park, CA: Sage Publications.
- Baumeister, R. F. (1998). The self. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *The handbook of social psychology* (4th ed., Vol. 1, pp. 680–740). Boston, MA: McGraw Hill.

- Bentler, P. M. (1980). Multivariate analysis with latent variables: Causal modeling. *Annual Review of Psychology*, *31*, 419–456.
- Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–246.
- Bentler, P. M. (1995). *EQS: Structural equations program manual*. Los Angeles, CA: BMDP Statistical software.
- Bentler, P. M., & Bonett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin*, *88*, 588–606.
- Blanchard, C. M., Heatherston, T. F., Koepsel, C., & Hull, J. (2001). *The passionate self*. Poster session presented at the 2nd Annual Meeting of the Society for Personality and Social Psychology, San Antonio, TX.
- Blanchard, C., Perreault, S., & Vallerand, R. J. (1998). Participation in team sport: A self-expansion perspective. *International Journal of Sport Psychology*, *29*, 289–302.
- Blanchard, C. M. & Vallerand, R. J. (2001). *Passion and physical health: A motivational approach*. Manuscript in preparation, Université du Québec à Montréal, Montréal, Canada.
- Crowne, D. P., & Marlowe, D. (1960). A new scale of social desirability independent of psychopathology. *Journal of Consulting Psychology*, *24*, 349–354.
- Deci, E. L., & Ryan, R. M. (1991). A motivational approach to self: Integration in personality. In R. Deinstbier (Ed.), *Nebraska symposium on motivation: Vol. 38. Perspectives on motivation* (pp. 237–288). Lincoln, NE: University of Nebraska Press.
- Dickerson, M. G., & Adcock, S. (1987). Mood, arousal and cognitions in persistent gambling: Preliminary investigation of a theoretical model. *Journal of Gambling Behavior*, *3*, 3–15.
- Houffort, N., Vallerand, R. J., & Blanchard, C. M. (1999). *Passion au travail et ajustement psychologique: Une étude prospective*. [Passion toward work and psychological adjustment: A prospective study]. Paper presented at the 22nd annual Congress of the Quebec Society for Research in Psychology, Québec, Canada.
- Joiner, T. E., Steer, R. A., Beck, A. T., Schmidt, N. B., Rudd, M. D., & Catanzaro, S. J. (1999). Physiological hyperarousal: Construct validity of a central aspect of the tripartite model of depression and anxiety. *Journal of Abnormal Psychology*, *108*, 290–298.
- Ladouceur, R., Boisvert, J.-M., Pépin, M., Loranger, M., & Sylvain, C. (1994). Social cost of pathological gambling. *Journal of Gambling Studies*, *10*, 399–409.
- Lesieur, H. R., & Blume, S. B. (1987). The South Oaks Gambling Screen (SOGS): A new instrument for the identification of pathological gamblers. *American Journal of Psychiatry*, *9*, 1184–1188.
- Loto-Québec (1999). *Rapport annuel 1998–1999*. [1998–1999 Annual report]. Montreal: The Directorate of Public Affairs (Loto-Québec).
- Mageau, G. A. Demers, M.-A., Vallerand, R. J., & Provencher, P. J. (2000). *L'impact de la passion sur les stratégies de coping et l'anxiété d'état*. [The role of passion and coping strategies on state anxiety]. Poster session presented at the 23rd annual Congress of the Quebec Society for Research in Psychology, Hull, Canada.
- Meyer, G., & Stadler, M. A. (1999). Criminal behavior associated with pathological gambling. *Journal of Gambling Studies*, *15*, 29–43.
- Rousseau, F. L., Dumais, A., & Vallerand, R. J. (2000). *Passion et performance: une étude chez des athlètes de water-polo et de nage synchronisée* [Passion and performance among water-polo and synchronized swimming athletes]. Poster session presented at the 23rd annual Congress of the Quebec Society for Research on Psychology, Hull, Canada.
- Rousseau, F. L., Vallerand, R. J., LeMartret, K., & Clark, M. (1999). *Passion and subjective well-being among nursing home residents*. Poster session presented at the 28th Annual Scientific and Educational Meeting of the Canadian Association on Gerontology, Ottawa, Canada.
- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, *55*, 68–78.
- Salvy, S.-J., Mageau, G. A., Seidah, A., Vallerand, R. J., & Bouffard, T. (2001). *On the determinants of passion*. Unpublished raw data.
- Salvy, S.-J., Vallerand, R. J., & Blanchard, C. M. (1999). *Passion et performance en art dramatique: une*

- étude prospective*. [Passion and performance in theatre: A prospective study]. Paper presented at the 22nd annual Congress of the Quebec Society for Research in Psychology, Québec, Canada.
- Séguin-Lévesque, C., Laliberté, M.-L., N., Pelletier, L. G., Blanchard, C., & Vallerand, R. J. (2001). *Harmonious and obsessive passion for the internet: Their associations with couple's relationships*. Manuscript submitted for publication.
- Spanier, D. (1987). *Easy money: Inside the gambler's mind*. London: Secker & Warburg.
- Vallerand, R. J., & Blanchard, C. M. (1999). *Toward a psychology of passion*. Paper presented at the 11th annual convention of the American Psychological Society, Denver, CO.
- Vallerand, R. J., Blanchard, C. M., Koestner, R., & Gagné, M. (2001). *Les passions de l'âme: On obsessive and harmonious passion*. Manuscript in preparation, Université du Québec à Montréal, Montréal, Canada.
- Vallerand, R. J., & Ratelle, C. F. (in press). Intrinsic and extrinsic motivation: A hierarchical model. In E. L. Deci & R. M. Ryan (Eds.), *Handbook of self-determination research*. Rochester, NY: University of Rochester Press.
- Volberg, R. A. (1996). Prevalence studies of problem gambling in the United States. *Journal of Gambling Studies*, 12, 111–128.
- Walker, M. B. (1992). *The psychology of gambling*. New York: Pergamon Press.

Received August 21, 2000; final revision October 18, 2001; accepted December 19, 2001.