© International Journal of Clinical and Health Psychology

ISSN 1697-2600 2009, Vol. 9, Nº 1, pp.117-126



Somewhere between illusion of control and powerlessness: Trying to situate the pathological gambler's locus of control

Franz Meyer de Stadelhofen, Laurence Aufrère, Jacques Besson, and Jérôme Rossier¹ (University of Lausanne, Switzerland)

> (Received October 9, 2007 / Recibido 9 de octubre 2007) (Accepted June 6, 2008 / Aceptado 6 de junio 2008)

ABSTRACT. It has been suggested that pathological gamblers develop illusory perceptions of control regarding the outcome of the games and should express higher internal and chance locus of control. A sample of 48 outpatients diagnosed with pathological gambling disorder who participated in this *ex post facto* study, completed the Internality, Powerful Others, and Chance Scale, the South Oaks Gambling Screen Questionnaire, and the Beck Depression Inventory. Results for the locus of control measure were compared with a reference group. Pathological gamblers scored higher than the reference group on the Chance locus of control, which increased with the severity of cases. Moreover, internal locus of control did show a curvilinear relationship with the severity of cases. Pathological gamblers have specific locus of control scores that vary in function of the severity, in a linear fashion or a non-linear fashion according to the scale. This effect might be caused by competition between illusion of control and the tendency to attribute adverse consequence of gambling to external causes.

KEY WORDS. Pathological gambling. Personality traits. Locus of control. Depression. *Ex post facto* study.

¹ Correspondence: Institute of Psychology. University of Lausanne. Anthropole-3127. CH-1015 Lausanne (Switzerland). E-mail: Jerome.Rossier@unil.ch

RESUMEN. Se ha sugerido que los jugadores patológicos desarrollan percepciones ilusorias de control referidas a los resultados del juego y deberían mostrar locus de control interno y de suerte más altos. Una muestra de 48 pacientes externos diagnosticados con trastorno de juego patológico que han participado en este estudio *ex post facto* completaron las escalas de Internalidad, Otros con poder y Suerte, el *South Oaks Gambling Screen Questionnaire* y el Inventario de Depresión de Beck. Los resultados de las medidas del locus de control fueron comparados con un grupo de referencia. Los jugadores patológicos puntuaban más alto que los controles en el locus de control de suerte, lo cual se incrementaba junto con la severidad de los casos. Adicionalmente, el locus de control de suerte no mostraba relación curvilínea con la severidad de los casos. Los jugadores patológicos tienen puntuaciones en el locus de control específico que varían en función de la severidad de modo linear o no linear dependiendo de la escala. Este efecto podría ser causado por la competición entre la ilusión de control y la tendencia de atribuir las consecuencias adversas del juego a causas externas.

PALABRAS CLAVE. Juego patológico. Rasgos de personalidad. Locus de control. Depresión. Estudio *ex post facto.*

Pathological gambling is included in the Diagnostic and Statistical Manual of Mental Disorders (DSM) since 1980. According to the forth edition (DSM-IV; American Psychiatric Association, 1994), an individual must meet at least five out of ten criteria to be considered a pathological gambler. In most industrial countries, the percentage of pathological gamblers falls in between 1 and 3 % (Ladouceur, Sylvain, Boutin and Doucet, 2002). Toce-Gerstein, Gerstein and Volberg (2003) have proposed that different gambling disorders form a hierarchy, according to which gamblers who meet more criteria for pathological gambling actually suffer from a more severe form of the disorder. Finally, many pathological gamblers suffer from anxiety or depression (Becoña, Del Carmen, and Fuentes, 1996; Vander Bilt, Dodge, Pandav, Shaffer and Ganguli, 2004). A striking characteristic of gambling activities is that they do not seem to make any sense from a rational utilitarian point of view. Accordingly, cognitive psychologists tend to stress the fact that gamblers do not assess their probabilities of winning rationally, and that they develop illusory perceptions of control regarding the outcome of the game they are playing (Langer, 1975). According to Henslin (1967) for instance, craps players tend to throw the dice with more or less strength depending on the numbers they hope to obtain. Roulette players are also known to systematically monitor the random chain of numbers that comes up, hour after hour, in order to determine when and how to place a winning bet (Ladouceur et al., 2002).

The Locus of Control (LOC) construct was originally defined as the degree to which individuals believe that they have personal control over actions and events in their lives (Rotter, 1966). Individuals with internal LOC believe in their efficacy to control events in their lives, and several authors hypothesized that because pathological gamblers are supposed to develop illusory perceptions of control, their LOC should be more internal than average. However, studies testing this hypothesis have produced equivocal results (Caroll and Huxley, 1994; Malkin and Syme, 1986; Sprott, Brumbaugh, and

Miyazaki, 2001). During the years following the publication of the original LOC, a number of empirical studies showed that the LOC was better conceived of as a multidimensional construct and Levenson (1974) suggested to take into account three relatively independent locuses of control, an internal one (I) and two external ones: Powerful others (P) and Chance (C) (Levenson, 1974; Rossier, Dahourou, and McCrae, 2005; Rossier, Rigozzi and Berthoud, 2002). According to Ladouceur, and colleagues (2002), gamblers misunderstand the very notion of randomness by assimilating gambling to a (very difficult) game of skill. Expressed in terms of operant learning theory, we can say that the experience of loosing much more frequently then wining maintains a gambler's belief that what happens is determined largely by forces outside his control (Clarke, 2004). However, intermittent winning simultaneously reinforces the same gambler's belief in his ability to achieve control. This manner of attributing success to one's ability and failure to external causes leads us to expect that pathological gamblers should obtain high scores on both the *Chance* and the *Internal* LOC scales.

Clarke (2004) used a selection of questionnaires, including Levenson's IPC scale, in order to investigate the differences existing between a group of 25 problem gamblers and a group of 122 non-problem gamblers. The author found no significant differences in means between the two groups on any one of the three IPC scales. However, this lack of significant differences could possibly have been caused by methodological problems. Indeed, all 147 participants in the study came from the same class of students enrolled in an introductory psychology course. Clarke used the scores obtained by these 147 participants on the South Oaks Gambling Screen (SOGS) to identify the problem-gamblers in the class. The SOGS (Lesieur and Blume, 1987) is a screening questionnaire made up of 20 items based on DSM-III criteria. In Clarke's study, respondents that scored 3 or greater were assigned to the problem-gambler group, while all other participants were identified as non-problem gamblers. Actually, according to the authors of the questionnaire, a score of 5 or greater is needed to identify a «probable pathological gambler». It is therefore possible that only a small number of the participants in the problem gambling group really suffered from severe-enough gambling-problems to qualify as pathological gamblers. It is therefore reasonable to imagine that Clarke might have observed significant difference of LOC between problem gamblers and nonproblem gamblers if severe cases had been more numerous in the problem-gambling group.

Accordingly, we hypothesized that gamblers, with a serious enough problem to have sought treatment and been diagnosed as pathological gamblers (based on DSM-IV criteria), would score significantly higher than a reference group selected from a normative French-speaking sample on the *Internal* and *Chance* scales of the IPC scale and that both the I and the C locus of control scores should increase with the severity of individual cases according to the SOGS scores or to the number of DSM-IV criteria met by a patient. Concerning the powerful others locus of control, because gamblers generally do not believe the game they play is rigged, we expected to find no relationship between the «powerful others» locus of control score and gambling. Finally, we hypothesized that we would observe significant positive correlations between depression and both DSM-IV and SOGS numbers.

Method

Participants

The sample was made up of 48 outpatients diagnosed with pathological gambling disorder (17 women and 31 men). The members of this group all met between five and ten DSM-IV criteria for pathological gambling disorder (M = 8.20 criteria). The clinical evaluation was done according the DSM-IV criteria by the clinicians of the Center for Excessive Gambling of the Department of Psychiatry of Lausanne University Hospital. Ages ranged from 26 to 64 with a median age of 40.90 years (SD = 9.30 years). For the locus of control measure, a reference group of 107 adults similar in terms of age was selected from the French-speaking Swiss normative sample (Rossier, *et al.*, 2002). Ages ran from 26 to 57 with a median age of 40.87 years (SD = 9.70 years). However, this reference sample differed regarding the gender distribution.

Instruments

- The South Oaks Gambling Screen (SOGS; Lesieur and Blume, 1987) is a 20-item questionnaire based on DSM-III-R criteria, and used to screen for people with gambling problems. Respondents answer «yes» or «no» to each question and score one for every yes response. A score of five or more categorizes an individual as a probable pathological gambler. A score of three or four indicates the presence of some problem and, finally, a score of less than three indicates the absence of any problem.
- The Internality, Powerful Others, and Chance (IPC; Levenson, 1974) scale is a questionnaire featuring three relatively independent scales made up of 8 items each. The first scale measures the level of attribution of events to internal control (I), the second measures the level of attribution to powerful others (P), and the third measures attribution to chance (C). All questions are answered on a Likert type scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*).
- The Beck Depression Inventory (BDI; Beck, Ward, Mendelson, Mock, and Erbaugh, 1961) was designed to measure the severity of depressive symptoms during the two previous weeks. It is made up of 21 items in multiple-choice format. Each item attempts to assess a specific symptom or attitude that appears to be specific to depressed patients.

Procedure

All patients completed the three questionnaires prior to beginning treatment. These questionnaires were part of the pre-intervention standard psychological assessment and the treatment was adapted to the characteristics of the patient but was roughly in accordance with what was suggested by Ladouceur and colleagues (2002). The current paper is an *ex post facto* study (Montero and León, 2007) which has been created according to the norms established by Ramos-Álvarez, Moreno-Fernández, Valdés-Conroy, and Catena (2008).

Results

Table 1 compares the patients' mean scores for all three IPC scales with those of the reference group for both men and women. Concerning Internality, $t_{(153)} = -.75$, p > .05, and Powerful Others, $t_{(153)} = 1.10$, p > .05, we observed no significant difference between patients and the reference group. Concerning Chance, patients scored considerably higher than the reference group, $t_{(153)} = 3.18$, p = .002. This difference was associated with a medium effect size. The gender distribution being different in the two groups, we further looked at the sex by group membership interaction but found no significant interaction.

TABLE 1. Comparison of IPC locus of control scores for patients and the reference group.

	Patients		Reference group				
	Mean	SD	Mean	SD	р	Cohen's d	
Internality	29.06	6.69	29.89	6.23	> .05	13	
Powerful others	14.96	7.70	13.64	6.44	> .05	.19	
Chance	21.31	8.43	17.58	5.86	.002	.63	

The SOGS scores of the 48 outpatients ranged from 6 to 19 (M = 12.60, SD = 3). As should be the case, the SOGS measure was significantly linked to the number of DSM-IV criteria met by a patient (r = .56; p < .001). Table 2 gives bivariate Pearson correlations between these SOGS and DSM numbers, on the one hand, and both the IPC locus of control scales and the Beck Depression Inventory, on the other hand. As expected, the correlation between the severity of a case and the Chance LOC is positive but the correlation between the severity of a case and the Internal LOC is negative. This last result is obviously contrary to what we hypothesized. Nonetheless, it seems congruent with our previous observation according to which pathological gamblers score no higher than controls on the internal LOC. Table 2 also gives the partial correlations between the SOGS and DSM-IV numbers when the effect of depression is partialed out. As one can see, the relationship between gambling and the LOC appears to be almost entirely independent from depression.

TABLE 2. Correlation between the severity of cases and both IPC locus of control and BDI scores.

Severity	Type	Ι	Р	С	Depression
Number of DSM-IV criteria	Bivariate	38**	.23	.46**	.30*
	Partial	33*	.16	.48**	Controlled for
SOGS scores	Bivariate	22	.15	.31*	.12
	Partial	18	.18	.30	Controlled for

*p < .05, **p < .01.

The significant negative correlation which was found between the number of DSM-IV criteria and the internal LOC should logically imply that pathological gamblers would score lower than controls on the internal LOC. It was seen that this is not really the case. A possible explanation is that the relation between the number of criteria met by a patient and the LOC score is not linear. To test this possibility, we plotted the internal LOC scores against the number of DSM criteria using the method suggested by O'Connor (2005) in a slightly different context.

FIGURE 1. Regression line plot of Internal LOC scores against the number of DSM-IV criteria.



The units used in Figure 1 for the internal LOC are *z*-scores. In order to control for sex, these scores were computed separately for men and women on the basis of the data from the reference group. The depicted curve shows that, in our sample, the relation between the internal LOC scores and the number of DSM-IV criteria is not linear. Indeed, one can observe that the downward slope of the curve increases regularly along the interval going from 8 to 10 DSM-IV criteria. This downward slope corresponding to a gradual lowering of the Internal LOC results in a marked negative deviation from the reference-group average for the most severe forms of pathological gambling. Concurrently, for less severe forms of pathological gambling (5 to 7 criteria), we observe a slight positive deviation relative to the reference-group average.

Discussion

As expected, pathological gamblers score significantly higher than the reference group on the Chance LOC scale. The Chance score is further significantly correlated with the number of DSM-IV criteria met by a patient. It thus seems reasonable to conclude that the Chance score increases with the severity of problem-gambling. Concerning the Internal LOC, contrarily to what was hypothesized; there were no significant difference between patients and controls. However, a significant negative correlation was found between the internal LOC and the number of DSM-IV criteria met by a patient. If we adopt the point of view according to which there exists a hierarchy of pathologicalgambling disorders (Toce-Gerstein et al., 2003), the correlation which was found can be interpreted as signifying that the Internal LOC decreases as we move towards more severe forms of pathological gambling. Logically, this apparently implies that pathological gamblers should score lower on the Internal LOC. However, the relation between the Internal LOC and the number of DSM-IV criteria is not linear and the range between 5 and 7 criteria is associated with scores that are actually higher than the reference-group average. We should naturally expect these forms of pathological gambling with slightly higher scores and the other, more severe, forms of pathological gambling, associated with considerably lower scores, to average out. This provides an explanation why we did not observe any significant difference between the patient and the reference groups.

As were the other hypotheses we tested in this study, our expectations of a higher internal LOC was inspired by available cognitive literature on the causes of pathological gambling. However, we might have come up with a somewhat different hypothesis, if we had focused on the effects of pathological gambling instead of on hypothesized vulnerability factors. Indeed, although it is reasonable to expect that an individual's particular LOC might predispose him/her to gamble excessively, it is no less reasonable to expect that pathological gambling might extensively affect this same individual's LOC. According to Ladouceur and colleagues (2002), pathological gamblers will often tend to minimize any personal responsibility and will often portray himself as a victim of bad luck. In other words, a pathological gambler tends to attribute his problems to external causes. These observations lead us to suggest that a pathological gambler's internal LOC can be affected by two competing factors: the first of these factors being the illusion of control that predisposes to excessive gambling, and the second factor resulting from the gambler's tendency to attribute the multiple adverse consequences of gambling to external causes. As more severe forms of pathological gambling should be associated with more numerous adverse consequences, we further expect that pathological gamblers that meet the greatest number of DSM-IV criteria will have the lowest levels of internal LOC. It seems to us that the explanation we have just proposed has several merits. Not only does it do a good job in explaining the data shown in Figure 1, but it might also account for at least some of the contradictory results obtained by different previous studies (Carroll and Huxley, 1994; Clarke, 2004; Malkin and Syme, 1986; Sprott et al., 2001).

In the previous discussion a review of mainstream psychological literature on pathological gambling led us to suggest that the level of LOC might be related to two competing factors. On the one hand, gamblers harboring an illusion of control should tend to have both high levels of Internal LOC and a predisposition to excessive gambling. On the other hand, gamblers suffering from more severe forms of pathological gambling should tend to have reduced levels of Internal LOC. Interestingly, similar nonlinear patterns, according to which reduced levels of Internal LOC are observed only with the more severe forms of a disorder, have also been described in the case of substance abuse. In particular, De Moja (1997) observed no difference between non-addicted users and controls on the level of LOC. However, on the average, the addicts had a significantly less Internal LOC than a group of non addicted drug-users and a control group. Furthermore, alcoholics are generally found to be no less Internal than controls. However, Severe alcoholics entering treatment tend to grow more Internal when they become able to abstain from drinking (Rohsenow and O'Leary, 1978).

However, low internal locus of control might also be understood as a vulnerability factor for pathological gambling and not only as a consequence of this pathology. Indeed, locus of control seems to be consistently linked with some personality dimensions that are known for being stable across cultures (Rossier et al., 2007) and associated with personality disorders (Rossier, Rigozzi, C., and Personality Across Culture Research Group, 2008; Rigozzi et al., in press; Verardi, Nicastro, McQuillan, Keizer, and Rossier, 2008). More precisely, low internal locus of control seems to be associated with cluster B personality disorders criteria and most pathological gamblers have impulsive personality disorders with high Novelty Seeking and low Self-directedness (Svrakic, Whitehead, Przybeck, and Cloninger, 1993). Recently, Cunningham-Williams and colleagues (2005) found that pathological gamblers scored higher on Novelty Seeking and had lower scores on Self-directedness and Cooperativeness suggesting an immature personality and character style that have been previously associated with substance abuse and cluster B personality disorder criteria. Moreover, they observed that Novelty Seeking was a significant predictor of gambling severity status. Accordingly, low internal locus of control might also be considered as a vulnerability factor. Obviously, more research should be done about the relationship between pathological gambling, locus of control, personality, and personality disorders.

Up to now, most authors interested in the relation between pathological gambling and LOC have tended to focus on the specificities of gambling and on their psychological implications. Indeed, the results discussed in the present paper appear to validate this approach as far as the Chance LOC is concerned. However, in the case of the Internal LOC, it seems to us that the resemblance, between the non-linear pattern we observed for gamblers and patterns reported in the literature about substance abuse, could mean that it is necessary to look at both the specifics of gambling and the generalities of compulsive behaviors and substance abuse when trying to account for LOC data.

References

Beck, A.T., Ward, C.M., Mendelson, M., Mock, J.E., and Erbaugh, J.K. (1961). Inventory for measuring depression. Archive General of Psychiatry, 4, 561-571.

Int J Clin Health Psychol, Vol. 9. Nº 1

American Psychiatric Association (1994). *Diagnostic and statistical manual of mental disorders, fourth edition (DSM-IV).* Washington D.C.: Author.

- Becoña, E., Del Carmen, L.M., and Fuentes, M.J. (1996). Pathological gambling and depression. *Psychological Report*, 78, 635-640.
- Carroll, D. and Huxley, J.A.A. (1994). Cognitive, dispositional, and physiological correlates of dependent slot machine gambling in young people. *Journal of Applied Social Psychology*, 24, 1070-1083.
- Clarke, D. (2004). Impulsiveness, Locus of Control, Motivation and Problem Gambling. *Journal* of Gambling Studies, 20, 319-345.
- Cunningham-Williams, R.M., Grucza, R.A., Cottler, L.B., Womack, S.B., Books, S.J., Przybeck, T.R., Spitznagel, E.L., and Cloninger, C.R. (2005). Prevalence and predictors of pathological gambling: Results form the St. Louis personality, health and lifestyle (SLPHL) study. *Journal of Psychiatric Research*, 39, 377-390.
- De Moja, C.A. (1997). Scores of locus of control and aggression for drug addicts, users, and controls. *Psychological Report*, 80, 40-42.
- Henslin, J.M. (1967). Craps and Magic. American Journal of Sociology, 73, 316-330.
- Ladouceur, R., Sylvain, C., Boutin, C., and Doucet, C. (2002). Understanding and treating pathological gamblers. London: Wiley.
- Langer, E.J. (1975). The illusion of control. *Journal of Personality and Social Psychology*, 32, 311-328.
- Lesieur, H.R. and Blume, S.B. (1987). The South Oaks Gambling Screen (SOGS): A new intrument of the identification of pathological gamblers. *American Journal of Psychiatry*, 144, 1184-1188.
- Levenson, H. (1974). Activism and powerful others: Distinctions within the concept of Internal-External control. *Journal of Personality Assessment*, 38, 377-383.
- Malkin, D. and Syme, G.J. (1986). Personality and problem gambling. *International Journal of Addiction*, 21, 267-272.
- Montero, I. and León, O.G. (2007). A guide for naming research studies in Psychology. International Journal of Clinical and Health Psychology, 7, 847-862.
- O'Connor, B.P. (2005). Graphical Analyses of Personality Disorders in Five-Factor Model Space. *European Journal of Personality*, 19, 287-305.
- Ramos-Álvarez, M.M., Moreno-Fernández, M.M., Valdés-Conroy, B., and Catena, A. (2008). Criteria of the peer-review process for publication of experimental and quasi-experimental research in Psychology: A guide for creating research papers. *International Journal of Clinical and Health Psychology, 8*, 751-764.
- Rigozzi, C., Rossier, J., Verardi, S., Dahourou, D., Ah-Kion, U., Bhowon, U., Ng Tseung, C., Amoussou-Yeye, D., Adjahouisso, M., Bouatta, C., Dougoumalé Cissé, D., Mbodji, M., Barry, O., Minga Minga, D., Ondongo, F., Tsokini, D., Nouri Romdhane, M., and Sfayhi, N. (in press). A cross-cultural study of the higher-order structures underlying personality disorders in French-speaking Africa and Switzerland. *Journal of Personality Disorders*.
- Rohsenow, D.J. and O'Leary, M.R. (1978). Locus of control research on alcoholic populations: A review. I: Development, scales, and treatment. *International Journal of Addiction*, 13, 55-78.
- Rossier, J., Aluja, A., García, L.F., Angleitner, A., De Pascalis, V., Wang, W., Kuhlman, M., and Zuckerman, M. (2007). The cross-cultural generalizability of Zuckerman's Alternative Five-Factor Model of Personality. *Journal of Personality Assessment*, 89, 188-196.
- Rossier, J., Dahourou, D., and McCrae, R.R. (2005). Structural and mean-level analyses of the Five-Factor Model and locus of control: Further evidence from Africa. *Journal of Cross-Cultural Psychology*, 36, 227-46.
- Rossier, J., Rigozzi, C., and Berthoud, S. (2002). Validation de la version française de l'échelle de contrôle de Levenson (IPC), influence de variables démographiques et de la personnalité. *Annales Médico-Psychologiques*, 160, 138-148.

- Rossier, J., Rigozzi, C., and Personality Across Culture Research Group (2008). Personality disorders and the Five-Factor Model among French speakers in Africa and Europe. *Canadian Journal of Psychiatry*, 53, 534-544.
- Rotter, J.B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs*, 80, 1-28.
- Sprott, D.E., Brumbaugh, A.M., and Miyazaki, A.D. (2001). Motivation and ability as predictors of play behavior in state-sponsored lotteries: an empirical assessment of psychological control. *Psychology and Marketing*, 18, 973-983.
- Svrakic, D.M., Whitehead, C., Przybeck, T.R., and Cloninger, C.R. (1993). Differential diagnosis of personality disorders by the seven-factor model of temperament and character. *Archives of General Psychiatry*, 50, 991-999.
- Toce-Gerstein, M., Gerstein, D.R., and Volberg, R.A. (2003). A hierarchy of gambling disorders in the community. *Addiction*, *98*, 1661-1672.
- Vander Bilt, J., Dodge, H.H., Pandav, R., Shaffer, H.J., and Ganguli, M. (2004). Gambling participation and social support among older adults: A longitudinal community study. *Journal of Gambling Studies*, 20, 373-390.
- Verardi, S., Nicastro R., McQuillan, A., Keizer, I., and Rossier, J. (2008). The personality profile of borderline out-patients according to the Five-Factor Model of personality. *International Journal of Clinical and Health Psychology*, 8, 451-464.