

Gambling Motives Questionnaire validation in adolescents: Differences based on gambling severity and activities

Validación del Cuestionario de Motivos de Juego en adolescentes: Diferencias según la gravedad y las actividades de juego

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Abstract

Self-reported reasons for gambling have been highlighted as crucial to understanding why adults develop problems with gambling. However, research on motives among adolescents remains scarce. The aim of this study is to explore the factorial structure of the Gambling Motives Questionnaire (GMQ) and to analyze differences in motives among adolescents, depending on the gambling activity and level of gambling severity. A total of 698 adolescent gamblers ($M = 15.24$, $SD = .76$) were assessed. As well as the GMQ, the South Oaks Gambling Screen (SOGS-RA) questionnaire was used. Gamblers were classified into three categories (strategic, non-strategic, and mixed) according to the activities engaged in during the last year. An Exploratory Factor Analysis was conducted followed by a Confirmatory Factor Analysis in order to explore the internal structure of the GMQ. Three two-way between-groups Analyses of Variance (ANOVA) were conducted to explore differences in motives according to the type of activity and the gambling severity levels. According to the factorial structure of the GMQ, three main groups of motivations were found: enhancement, coping and social. Compared to non-problem gamblers, problem gamblers scored higher on all motives. Moreover, gamblers seeking enhancement prefer strategic games, those gambling to cope with stress use non-strategic games more frequently, while social gamblers do not show a preference for either strategic or non-strategic games. In conclusion, gambling motives are related to gambling severity and structural characteristics of gambling. These findings may be useful from a prevention standpoint.

Keywords: Gambling; Adolescents; Gambling motives; Problem gambling.

Resumen

Los motivos de juego han sido considerados como variables clave para comprender el desarrollo de problemas asociados al mismo en adultos. Sin embargo, la literatura sobre las motivaciones de los adolescentes para jugar es escasa. El presente estudio tiene como objetivo explorar la estructura factorial del Cuestionario de Motivos de Juego (GMQ) y analizar las diferencias de los motivos de los adolescentes según la actividad de juego y la gravedad de los problemas asociados. Se evaluó una muestra de 698 jugadores adolescentes ($M = 15,24$, $DT = ,76$) a los que se les aplicó, además del GMQ, el cuestionario South Oaks Gambling Screen (SOGS-RA). Los jugadores fueron clasificados en tres categorías (estratégicos, no estratégicos, mixtos) según el tipo de juegos utilizados durante el último año. Para el estudio de la estructura interna del GMQ se realizó un primer Análisis Factorial Exploratorio y un segundo Análisis Factorial Confirmatorio. Se emplearon tres Análisis de Varianza (ANOVA) de dos vías para evaluar las diferencias en motivos entre los niveles de gravedad y tipo de actividad. De acuerdo con la estructura factorial del GMQ, existen tres principales grupos de motivaciones para jugar: búsqueda de emociones positivas, afrontamiento del estrés y causas sociales. En comparación con los jugadores sin problema, los jugadores problemáticos puntuaron más alto en todos los motivos. Además, los jugadores que buscan emociones positivas se decantan más por los juegos estratégicos, los que utilizan el juego para afrontar el estrés utilizan más los no estratégicos, mientras que los jugadores sociales no presentan preferencia por ninguno de los dos. En conclusión, la motivación para jugar se encuentra en relación con la gravedad y las características del juego. Estos resultados son de utilidad desde el punto de vista de la prevención.

Palabras clave: Juego de apuestas; Adolescentes; Motivos de juego; Juego problema.

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Despite it being an illegal activity, gambling has become very popular among adolescents, with higher rates of problem gambling than adults (Blinn-Pike, Worthy, & Jonkman, 2010; Calado, Alexandre, & Griffiths, 2016; Delfabbro, King, & Derevensky, 2016). Self-reported reasons for gambling have been identified as crucial to understanding why adults develop problems with gambling (Moragas et al., 2015; Myrseth & Notelaers, 2017; Stewart, Zack, Collins, & Klein, 2008). However, research on motives among adolescents remains extremely scarce, with only one study on population of this age (Cerdà Salom, Nebot Ibáñez, Campos Bacas, & Quero Castellano, 2016).

Several instruments have emerged to assess gambling motives in adult population. Adapted from the Drinking Motives Questionnaire – DMQ (Cooper, Russell, Skinner, & Windle, 1992), the Gambling Motives Questionnaire – GMQ (Stewart & Zack, 2008) is one of the most widely used instruments. The GMQ has strong psychometric properties, such as high internal consistency and concurrent validity for predicting more severe gambling behavior and gambling problems, and a similar factorial structure to that of the motivations underlying the use of other addictive substances, such as alcohol (Dechant & Ellery, 2011, Stewart & Zack, 2008). The original GMQ offers a three-dimensional motivational model: (1) enhancement (ENH), which refers to internal positive reinforcement; (2) coping (COP), in terms of internal negative reinforcement, indicating the use of gambling as a maladaptive coping strategy to escape from negative emotional states; and (3) social (SOC), related to external positive reinforcement (Stewart & Zack, 2008).

However, this model has recently been questioned in adults. As making money has been reported as a main reason for gambling (Chantal, Vallerand, & Vallieres, 1995; Myrseth & Notelaers, 2017; Stewart et al., 2008), some authors have posited an additional financial motive through the addition of new items (Dechant, 2014; Dechant & Ellery, 2011). Furthermore, Myrseth and Notelaers (2017) revised the original GMQ finding a fourth motive named self-gratification, defined as gambling to feel more self-confident. In light of this controversy, and considering the absence of factorial examination among adolescents, research in minors should be encouraged. To our knowledge, only the abovementioned study (Cerdà Salom et al., 2016) has examined the factorial structure among youngsters, finding the traditional three factor motivational model (Cerdà Salom et al., 2016). However, due to the small sample size and the use of both under- and over-age participants, findings should be interpreted with caution.

Different gambling motives have been associated with gambling-related problems in adult population. While SOC motives are more frequently reported by non-problem gamblers (non-PGs) (Dechant & Ellery, 2011; Lambe, Mackinnon & Stewart, 2015; Stewart & Zack, 2008),

ENH and COP motives are more prevalent among problem gamblers (PGs) (Dechant & Ellery, 2011; Lambe et al., 2015; McGrath, Stewart, Klein, & Barrett, 2010; Myrseth & Notelaers, 2017; Stewart & Zack, 2008). Only two studies have explored this association among young people. The first one (Gupta & Derevensky, 1998) found PGs to be more likely to report more reasons for gambling than regular and occasional gamblers. The second study (Gupta, Derevensky, & Marget, 2004) related maladaptive COP strategies with excessive gambling. Moreover, adolescents presenting Internet Gaming Disorder diagnostic (IGD) and an internalizing profile seem to use video games as a preferred way of coping with unpleasant emotions (Martín-Fernández et al., 2017). However, of the two aforementioned studies, neither Gupta and Derevensky (1998) nor Gupta et al. (2004) considered the type of gambling activities that gamblers engaged in, thus, more studies are needed to ascertain this relation.

Gambling motives also differ between adults engaging in different types of gambling. Individuals gambling for ENH tend to involve skill-based games more frequently (Chantal & Vallerand, 1996; Fang & Mowen, 2009; Potenza et al., 2001; Wardle et al., 2011), while those gambling for COP prefer non-strategic games (Fang & Mowen, 2009; McGrath et al., 2010; Moragas et al., 2015; Wardle et al., 2011). Conflicting data exist regarding gambling activities and severity. Previous studies have related non-strategic (Bonnaire, Bungenier & Varescon, 2009; Grant, Odlaug, Chamberlain & Schreiber, 2012; Griffiths, Scarfe & Bellringer, 1999; Navas et al., 2017), strategic (Moragas et al., 2015) and both types of gambling activity (Odlaug, Marsh, Won Kim & Grant, 2011) with greater severity. Despite the relevance of these findings for prevention and treatment, to date no research has addressed this topic among adolescents.

The aim of this study was twofold. The first objective was to explore the factorial structure and to estimate the reliability of the GMQ scores in a sample of adolescents. It was hypothesized that factorial analyses would replicate the classical structure of the original scale, revealing its tri-dimensional model (Dechant & Ellery, 2011). The second objective was to analyze differences in gambling motives among participants engaging in several types of gambling activities and endorsing different gambling severity. It was hypothesized that strategic games would relate more to ENH motives, and non-strategic games to COP motives. In relation to gambling severity levels, PGs were expected to score higher on both COP and ENH motives, as stated in previous research.

Method

Standards of methodological rigor in the study of addictions have been followed in the drafting of this paper (Fonseca Pedrero, 2017).

Participants

A total of 1,810 adolescents aged between 14 and 17 years from 22 Spanish secondary schools (16 from the Principality of Asturias and 6 from Alicante) were assessed, comprising both public and state-aided centers. Schools were selected following a random stratified and incidental procedure. The pre-established exclusion criteria were: 1) having sensory impairment or intellectual disability ($n = 1$), 2) presenting difficulties with Spanish language ($n = 0$), 3) being 18 years old or more ($n = 11$), and 4) presenting random answers ($n = 43$). Due to these criteria, 55 participants were removed from the study, and a further 1 due to technical issues. After removing participants who had not gambled within the last year ($n = 1,056$), the final sample comprised 698 adolescents. The participants' characteristics are shown in Table 1.

Table 1. *Participants' characteristics*

Sociodemographic data	<i>n</i>	%
Sex (male)	436	62.5
Age ₁	698	15.23 (.74)
Nationality (Spanish) ₂	586	90.7
Family structure		
Living with none of their parents	15	2.1
Monoparental family	177	25.4
Living with both parents	506	72.5
Weekly allowance		
0 – 10€	301	43.1
10 – 20€	290	41.5
20 – 40€	81	11.6
More than 40€	26	3.7
Most frequent academic mark ₂		
Failing grade	100	15.5
Good	250	38.7
Notable	225	34.8
Outstanding	71	11
Type of gambling activity		
Strategic Gamblers	162	23.2
Non-Strategic Gamblers	329	47.1
Mixed Gamblers	207	29.7
Gambling severity		
Problem Gamblers	101	14.5
Gambling motives ₃		
Enhancement	79	11.3
Coping	25	3.6
Social	49	7

Note. ₁ = Mean (Standard Deviation). ₂ = 52 missing data due to technical problems in the data collection. ₃ = Frequencies of gamblers who reported gambling often or always on each subscale of the Gambling Motives Questionnaire are shown.

Instruments

Control variables. The Oviedo Infrequency Scale - INF-OV (Fonseca-Pedrero, Paño, Lemos-Giráldez, & Muñiz, 2008) was used in order to exclude participants that presented random answers. Its 12 Likert-type items about obvious facts (e.g., "I know people who wear glasses", "I have sometimes watched films on TV") were interspersed throughout the entire survey. In accordance with the authors' recommendations, participants presenting more than three wrong answers were excluded.

Gambling motives. A Spanish version of the GMQ (Dechant & Ellery, 2011) was used (see Appendix). Participants were asked to indicate on a Likert-type scale (never or almost never = 1, almost always or always = 4) how often they gambled for each reason. The GMQ provides a score for each subscale, producing a motivational profile of the gambler. Subscales are not exclusive, thus, each gambler may score on all of them. After carrying out a forward-backward translation procedure from the original to the Spanish version, linguistic and cultural adaptations to the target language were carried out, following the second edition of the guidelines of the International Test Commission (ITC) for adapting tests across cultures (Muñiz, Elosua, & Hambleton, 2013). The quality guidelines for the translation and adaptation of the items proposed by Hambleton and Zenisky (2011) were verified for the entire questionnaire. The original version showed good reliability of the scores for each factor (ENH: $\alpha = .74$; COP: $\alpha = 0.76$; SOC $\alpha = 0.67$).

Gambling activities. Participants indicated how often they had gambled in the last year prior to the assessment on different land-based and online-based activities (bingo, poker, other casino games –OCGs-, sports betting, lottery, scratch-tickets and electronic gaming machines –EGMs). Before performing the analyses, the activities were classified according to their characteristics following Moragas et al. (2015). Based on this, gamblers engaged in activities emphasizing individual skills (poker, OCGs or sports betting) were classified as strategic gamblers (SGs), while participants who bet on games involving chance (EGMs, bingo, lottery or scratch-tickets) were considered to be non-strategic gamblers (non-SGs). Those who gambled on either type were classified as mixed gamblers (MGs).

Gambling severity. Gambling severity was assessed by means of the Spanish adaptation (Becona, 1997) of the South Oaks Gambling Screen-Revised for Adolescents - SOGS-RA (Winters, Stinchfield, & Fulkerson, 1993). The SOGS-RA has 10 dichotomous items (no = 0, yes = 1) assessing past year gambling-related problems. Individuals can be classified into three categories: non-problem (0-1 scores), at-risk (2-3) and problem-gamblers (4 or more). The Spanish version showed good reliability of the scores ($\alpha = .80$).

Procedure

The students were surveyed in their own classrooms using digital devices (Samsung Galaxy Tab2 10.1). The software was designed to prevent inappropriate responses based on previous answers and to detect blank responses, and reminding the participants to review their answers to avoid missing data. The students completed the survey in a single session of 75 minutes. A trained researcher provided instructions for completing the questionnaires and supervised the procedure. Participation in the study was completely voluntary, so no gratification was offered. Prior to the assessment, informed consent was obtained from schools, parents and education authorities. Students were reminded about confidentiality and anonymity. All participants gave their informed consent and no one refused to participate in the study. Ethical approval was obtained from the Research Committee of the University of Oviedo.

Data analysis

Descriptive analyses were carried out in order to assess sociodemographic and gambling characteristics. Outliers of the scores in the GMQ were explored and modified following Tabachnick and Fidell (2007). For the study of sources of validity evidence based on internal structure, an initial Promin Exploratory Factor Analysis (EFA) and subsequent Procrustes Confirmatory Factor Analysis (CFA) based on Robust Unweighted Least Squares (RULS) estimation were carried out, dividing the sample into two random subsamples. The number of factors was determined by Schwarz's Bayesian Information Criterion (BIC). The Comparative Fit Index (CFI) and the Root Mean Square of the Residuals (RMSR) were used to determine the goodness of fit, considering $CFI > .98$ and $RMSR < .05$ as reference values. Reliability analysis of the scores was carried out via Cronbach's alpha and McDonald's omega. Although Cronbach's alpha is the most used index to estimate internal consistency, McDonald's omega (McDonald, 1999) is recommended for ordinal response items or Likert scales with less than five categories (Elosua Oliden & Zumbo, 2008). Moreover, omega has been considered to be a more sensitive index of internal consistency and has shown less risk of overestimation or underestimation of the reliability of the scores (Dunn, Baguley, & Brunsten, 2014). After a preliminary study of the equivalence of the psychometric properties of the GMQ attending to sex, age and gambling severity levels, *t* test comparisons were carried out in order to assess gambling motives differences according to sex and age. In order to explore differences in gambling motives according to the severity and type of gambling activity, three two-way between-groups Analysis of Variance (ANOVA) were conducted. Hochberg's GT2 pairwise comparisons were used to adjust for the unbalanced groups. Due to the low sample size of each SOGS-RA

category, and the problems associated with both at-risk and problem gambling (Potenza et al., 2001), participants were classified into two groups: non-PGs (SOGS-RA ≤ 1) and PGs (SOGS-RA ≥ 2). Factorial analyses were carried out with FACTOR 10.4.01 software (Ferrando & Lorenzo-Seva, 2017), and descriptive and ANOVA analyses were conducted using SPSS 22.0.

Results

Factorial structure of the GMQ

First, an EFA was conducted on the first subsample ($n = 347$). The Kaiser-Meyer-Olkin test and the Bartlett Sphericity test showed a good adequacy for the factor analysis ($KMO = .875$; $\chi^2_{(120)} = 2411.9$, $p < .001$). The BIC recommended the extraction of three factors, explaining 66.8% of the variance (43.1% factor 1, 12.3% factor 2 and 11.4% factor 3). The Comparative Fit Index ($CFI = .993$) and the Root Mean Square of Residuals ($RMSR = .036$) showed an excellent fit to the model. A CFA was performed on the second subsample ($n = 351$) with the advised structure ($KMO = .899$; $\chi^2_{(120)} = 3177.7$, $p < .001$; $CFI = .986$; $RMSR = .038$), which explained 67.7% of the variance (48.6% factor 1, 10.6% factor 2 and 8.5% factor 3). Item loadings confirmed the classical tri-dimensional structure. Factor loadings ranged from .43 to .93 for factor 1 (SOC), from .71 to .95 for factor 2 (ENH) and from .45 to .91 for factor 3 (COP) (see Table 2). The financial item (item 16) loaded under .3 in all factors, indicating its inadequacy for the model.

Reliability estimation of the scores

Cronbach's alpha showed a good internal consistency for the three subscales (ENH: $\alpha = .85$; COP: $\alpha = .87$; SOC: $\alpha = .80$), as well as McDonald's omega (ENH: $\omega = .86$; COP: $\omega = .87$; SOC: $\omega = .81$). The inter-factor correlation was adequate ($r_{ENH-COP} = 0.659$; $r_{ENH-SOC} = 0.623$; $r_{COP-SOC} = 0.627$).

Gambling motives differences

Differences in motives according to sex and age were explored, with males showing higher scores than females on the three subscales. Gamblers aged 14 - 15 years reported higher SOC motives than those aged 16 - 17 years (see Table 3).

Differences according to severity and type of gambling activity were explored. The main effect for gambling severity was significant on ENH ($F_{(1, 692)} = 34.95$, $p < .001$, h^2 partial = .05), with PGs scoring higher than non-PGs (see Table 4). The type of gambling activity was also significant ($F_{(2, 692)} = 4.23$, $p = .015$, h^2 partial = .01). Specifically, non-SGs reported lower ENH than both SGs ($p = .001$) and MGs ($p < .001$) (see Table 5). The interaction effect was not significant ($F_{(1, 692)} = .40$, $p < .67$, h^2 partial = .00).

Table 2. Descriptive statistics and factor loadings of each item on the subscales of the Gambling Motives Questionnaire

Items	M (SD)	Discrimination indices of the items	ENH	COP	SOC
3. Because you like the feeling	.68 (.86)	.71	.92		
6. Because it's exciting	.48 (.78)	.73	.95		
15. Because it makes you feel good	.5 (.80)	.75	.81		
12. Because it's fun	1.31 (1.06)	.55	.68		
9. To get a high feeling	.39 (.73)	.62	.71		
5. To forget worries	.23 (.58)	.7		.69	
11. Because it helps when you are feeling nervous or depressed	.21 (.54)	.77		.9	
14. To cheer you up when you're in a bad mood	.24 (.59)	.74		.91	
8. Because you feel more self-confident or sure of yourself	.25 (.63)	.64		.54	
2. To relax	.4 (.7)	.64		.46	
7. To be sociable	.27 (.65)	.51			.43
4. Because it's what most of your friends do when they get together	.38 (.71)	.54			.77
13. Because it makes a social gathering more enjoyable	.52 (.79)	.69			.93
1. As a way to celebrate	.46 (.79)	.66			.65
10. It's something you do on special occasions	.71 (.9)	.56			.5

Note. Factor loadings < .30 are not reported. M (SD) = Mean (Standard Deviation); ENH: Enhancement motive; COP: Coping motive; SOC: Social motive.

Table 3. Gambling motives differences according to sex and age

Gambling motives	Sex		Age		t	η²
	M (SD)		M (SD)			
	Males (n = 436)	Females (n = 262)	14-15 years (n = 503)	16-17 years (n = 195)		
ENH	3.64 (3.55)	2.88 (2.99)			3.05*	.01
COP	1.46 (2.4)	.96 (2.01)			2.92*	.01
SOC	2.5 (2.94)	2.06 (2.57)			2.1*	.01
ENH			3.35 (3.39)	3.38 (3.34)	-.11	-
COP			1.28 (2.32)	1.28 (2.13)	-.3	-
SOC			2.47 (2.89)	1.98 (2.58)	2.09*	.01

Note. ENH: Enhancement motive; COP: Coping motive; SOC: Social motive. M (SD) = Mean (Standard Deviation).

*p < .05.

Table 4. Gambling motives according to gambling severity levels

Gambling motives	PGs (n = 101)	Non-PGs (n = 597)	F	η² partial
	M (SD)	M (SD)		
ENH	5.42 (4.37)	3.00 (3.04)	34.95**	.05
COP	2.87 (3.27)	1.01 (1.93)	50.7**	.07
SOC	3.72 (3.66)	2.10 (2.58)	21.56**	.03

Note. PGs: Problem Gamblers; Non-PGs: Non-Problem Gamblers; ENH: Enhancement motive; COP: Coping motive; SOC: Social motive. M (SD) = Mean (Standard Deviation).

**p < .001.

The interaction effect between severity and type of gambling activity was significant on COP ($F_{(2, 692)} = 6.16, p = .002, \eta^2 \text{ partial} = .02$). Specifically, non-strategic and mixed PGs reported higher COP than strategic PGs ($p = .003$ and $p = .033$, respectively) (see Table 5).

The main effect for gambling severity was significant on SOC ($F_{(1, 692)} = 21.56, p < .001, \eta^2 \text{ partial} = .03$), with PGs scoring higher than non-PGs (see Table 4). Type of gambling activity was also significant ($F_{(2, 692)} = 4.36, p = .013, \eta^2 \text{ partial} = .01$), with MGs showing higher SOC than both SGs ($p = .003$) and non-SGs ($p < .001$) (see Table 5). The interaction effect was not significant ($F_{(2, 692)} = .77, p = .462, \eta^2 \text{ partial} = .00$).

Table 5. *Gambling motives according to type of gambling activity*

	SGs (n = 162)	Non-SGs (n = 329)	MGs (n = 207)	F	η^2 partial
	M \pm SD	M \pm SD	M \pm SD		
ENH	3.77 \pm 3.57 _a	2.68 \pm 3.04 _b	4.09 \pm 3.52 _a	4.23*	.01
COP					
PGs	1.68 \pm 2.23 _a	3.6 \pm 4.04 _b	3.04 \pm 3.06 _b	6.16*	.02
Non-PGs	1.11 \pm 2.1 _a	.84 \pm 1.86 _a	1.24 \pm 1.9 _a	6.16*	.02
SOC	2.12 \pm 2.53 _a	1.98 \pm 2.73 _a	3.06 \pm 3.02 _b	4.36*	.01

Note. Subscripts indicate between-group differences. Groups with the same subscript did not differ significantly from each other. SGs: Strategic-Gamblers; Non-SGs: Non-Strategic Gamblers; MGs: Mixed Gamblers; ENH: Enhancement motive; COP: Coping motive; SOC: Social motive. M + SD = Mean + Standard Deviation.

* $p < .05$.

Discussion

This is the first study aimed at exploring differences in gambling motives between different gambling activities and severity in adolescents. Three main findings have been reported: 1) Three main gambling motives were found, categorized into the following groups of factors: enhancement (ENH), coping (COP) and social (SOC); 2) Problem gamblers (PGs) reported higher scores for all gambling motives; 3) While strategic-gamblers (SGs) reported higher ENH, and non-strategic (non-SG) PGs higher COP, SOC gamblers tend to engage in both strategic and non-strategic gambling activities.

In accordance with the traditional structure (Stewart & Zack, 2008), the results of the GMQ evidence of internal structure showed a three-factor solution. The present study in under-age population did not find any evidence of the financial motive recently reported among adults (Dechant, 2014; Dechant & Ellery, 2011). In contrast with the latter population, making money does not seem to be a substantial reason for gambling in adolescents. As reported by Zuckerman (1994), the risk and uncertainty associated with betting, and the potential loss or gain, can be highly arousing. Thus, adolescents may bet more for the drive to win and the excitement of the game than to make money itself (Derevensky & Gilbeau, 2015).

Regarding severity, adolescent PGs had higher scores on all three gambling motives. Consistent with previous research among adults (Dechant & Ellery, 2011; Lambe et al., 2015; McGrath et al., 2010; Myrseth & Notelaers, 2017; Stewart & Zack, 2008) and adolescents (Gupta & Derevensky, 1998; Gupta et al., 2004), PGs reported higher ENH and COP. Adolescent PGs showed higher SOC levels, according to the only study that addresses this topic among this population (Gupta & Derevensky, 1998). This finding contrasts with gambling research in adults, which relates the SOC motive to non-PGs (Dechant & Ellery, 2011; Lambe et al., 2015; Stewart & Zack, 2008). This inconsistency has several explanations. The expansion of gambling venues, the increased variety of gambling activities, and the

effect of media advertising might lead adolescents to consider gambling as an acceptable leisure activity (St-Pierre, Walker, Derevensky, & Gupta, 2014). This could contribute to increasing the popularity of gambling as a means for socialization among peers (Derevensky 2012; Derevensky & Gilbeau, 2015), as teenagers are more sensitive than adults to these stimuli. Thus, preventive interventions should address responsible and healthy leisure strategies in order to avoid the identification of gambling as a low-risk entertainment activity.

With regards to the types of gambling activity, three main results were found. Firstly, SGs reported higher ENH than non-SGs, in line with previous evidence among adults (Chantal & Vallerand, 1996; Fang & Mowen, 2009; McGrath et al., 2010). The ENH motive is based on the increase of positive emotions and related to sensation seeking. Those who demonstrate this trait are individuals who seek "novel, varied or complex sensations or experiences [... and] are willing to take risks for the sake of such experience" (Breen & Zuckerman, 1999). Previous research has related strategic or active games with this personality construct (Bonnaire et al., 2009; Bonnaire, Bungener, & Varescon, 2017), as they are perceived as activities that are easily mastered with knowledge (Breen & Zimmerman, 2002). These games tend to delay the result of bets for hours, involving more planning and regulating physiological states of hypo-arousal (Bonnaire et al., 2009; Cocco, Sharpe & Blaszczyński, 1995), which matches the ENH motivational factor better than the others. Secondly, non-strategic PGs reported higher COP than strategic PGs. This finding is supported by previous research, both in adults (Bonnaire et al., 2009; Grant et al., 2012; Navas et al., 2017) and adolescents (Bergevin, Gupta, Derevensky & Kaufman, 2006; Gupta et al., 2004). An excessive and problematic gambling pattern has been identified as an avoidance-focused coping strategy (Bergevin et al., 2006; Gupta et al., 2004). Thus, adolescent PGs seeking relief from negative internal emotional states prefer games of chance involving continuous and repetitive gambling patterns (Breen & Zimmerman, 2002; Dickerson,

1993). Finally, adolescent SOC gamblers tend to use both SG and non-SG gambling activities without any preference. This type of gambler is motivated by external reinforcement (i.e., social interaction with peers). In this sense, SOC gamblers tend to get carried away by social circumstances and gambling opportunities, using both strategic and non-strategic games indiscriminately. It is worth mentioning that those engaging in both types of gambling activities (MGs) reported the highest scores of the three groups. This result may indicate that MGs are a heterogeneous group comprised of different subpopulations of gamblers. Thus, future studies should examine this group of gamblers in order to better ascertain their characteristics.

Notwithstanding the above, several limitations should be considered. First, the cross-sectional design of the study precludes the establishment of casual effects. Longitudinal designs exploring gambling patterns over adolescence could find changes in gambling motivations. Second, the use of self-reported measures may obtain biased data. However, the use of a computerized system enabled us to prevent inconsistent responses based on previous answers, thus ensuring a stronger reliability of the scores. Despite these limitations, the present study contributes to broadening motives research and reports novel findings in the field of gambling research in adolescents.

In conclusion, studying gambling motives in adolescents using the GMQ could be useful for the evaluation and implementation of preventive strategies, as well as in tailoring treatment. This study shows the relevance of gambling severity levels and type of gambling activity on gambling motivations.

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Conflict of interest

The authors declare that they have no conflict of interest.

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Appendix. *Cuestionario de Motivos de Juego*

A continuación, aparecerá una serie de motivos por los cuales es posible que juegues. Por favor, señala con qué frecuencia juegas por cada uno de los siguientes motivos.

¿Cón qué frecuencia juegas...	Nunca o casi nunca	Algunas veces	A menudo	Casi siempre o siempre
porque te gusta lo que sientes?	1	2	3	4
porque es excitante?	1	2	3	4
porque te hace sentir bien?	1	2	3	4
porque es divertido?	1	2	3	4
para conseguir un sentimiento intenso o "de subidón"?	1	2	3	4
para olvidar las preocupaciones?	1	2	3	4
porque te ayuda cuando te sientes nervioso o deprimido?	1	2	3	4
para levantarte el ánimo cuando te sientes mal?	1	2	3	4
porque te sientes más seguro de ti mismo?	1	2	3	4
para relajarte?	1	2	3	4
para ser sociable?	1	2	3	4
porque es lo que la mayoría de tus amigos hace cuando se juntan?	1	2	3	4
porque esto hace que una reunión de amigos sea más agradable?	1	2	3	4
como una manera de celebración?	1	2	3	4
porque es algo que haces en ocasiones especiales?	1	2	3	4