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FULL-LENGTH REPORT

Relationship of gambling disorder with traumatic life events and emotion regulation in adolescents and young adults

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ABSTRACT

Introduction: Traumatic life events (TLE) and difficulties in emotion regulation (ER) can be considered risk factors for the development of gambling disorder in adolescents and young adults. *Methods:* The aim of the present study was to examine the differences in TLE, ER strategies, positive and negative affect, and gambling severity in a clinical sample of individuals undergoing treatment for gambling disorder (92.8% males; Mage = 24.83, SD = 3.80) and a healthy control group (52.4% males; Mage = 15.65, SD = 2.22). The relationship between the variables was assessed and the mediating role of ER in the relationship between TLE and gambling in the clinical sample was analysed. *Results:* The results showed higher scores in gambling severity, positive and negative affect, ER strategies and TLE in the clinical sample. In addition, the severity of gambling was positively correlated with TLE, negative affect and with rumination. TLE were also correlated positively with negative and positive affect, rumination ER strategies, plan focus, positive reinterpretation, and catastrophizing. Finally, rumination mediated the relationship between TLE and gambling severity. *Conclusions:* These findings may have relevant implications for the prevention, understanding and treatment of gambling disorder.

KEYWORDS

traumatic life events, emotion regulation, gambling disorder, adolescents, young adults

Gambling disorder is a worldwide public health issue (Rogier & Velotti, 2018), and is defined as a recurrent and persistent gambling behaviour that causes a severe impact on daily life (López-Torres, León-Quismondo, & Ibáñez, 2020). It is presently accepted that up to 10% of all emerging adults are at risk of developing a gambling disorder (Marchica, Mills, Keough, Montreuil, & Derevensky, 2019), which indicates a growing pattern from previous estimates (Rodriguez, Neighbors, Rinker, & Tackett, 2015). The age of onset is a crucial dimension because the sooner individuals engage in gambling behaviour the higher their risk of experiencing gambling problems (Casellas, Cabrera, & Lloret, 2018). According to a recent systematic review, between a 1.1% and 48.4% of adolescents presented some degree of problematic online gambling, and problem gambling had between a 10.2% and a 21.9% of prevalence in online gamblers (Montiel, Ortega-Barón, Basterra-González, González-Cabrera, & Machimbarrena, 2021). Gambling disorder can have severe consequences on young people's well-being, as it is associated with greater degree of disorders such as anxiety, depression (Dussault, Brendgen, Vitaro, Wanner, & Tremblay, 2011).

One of the main models that explains gambling behaviour is the pathways model (Blaszczynski & Nower, 2002). This model includes three different paths or stages in gambling disorder: 1) behaviourally conditioned problem gamblers, 2) emotionally vulnerable problem gamblers, and 3) antisocial impulsivity problem gamblers. According to this model, behaviourally conditioned gamblers are at the low end of the pathological basis, requiring only little interventions to improve their condition. However, when gamblers escalate to the next stage, emotionally vulnerable gamblers, have greater resistance to change

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and require a treatment that focuses on underlying emotional vulnerabilities. This group comprises gamblers with higher levels of anxiety and depression and poor coping skills, who tend to gamble as a way of regulating negative emotions, and tend to have negative life events and family background experiences. Antisocial impulsivity gamblers, which is the most severe group, tend to show family history antisocial and alcohol problems as well. This model was analysed in adolescent gamblers, and a model of 5 types of gambling was found, with one of the groups having as main characteristics childhood abuse and suicidal tendencies, as well as higher scores in depression (Gupta et al., 2013). This model has also been longitudinally replicated in adolescents, and the same three groups as the original study were found, as well as a fourth group consisting in a mix of behaviourally conditioned and emotionally vulnerable problem gamblers (Allami et al., 2017).

Emotion regulation (ER) is one of the factors influencing both the onset of gambling disorder and its severity (Sancho et al., 2019). ER is defined as the ability to understand, regulate, and influence one's own emotions and other's (McRae & Gross, 2020). The adequate management of ER strategies is essential for an adaptive functioning (Helion, Krueger, & Ochsner, 2019), and emotional dysregulation is considered to be an underlying cause for several psychological disorders (Cludius, Mennin, & Ehring, 2020). In individuals experiencing gambling-related problems, a maladaptive ER might explain their behaviour (Rogier & Velotti, 2018), since it increases positive affect while alleviating negative one (Hudson, Jacques, & Stewart, 2013). Previous research shows that positive urgency —i.e., the tendency to diminished behavioural control as a result of positive mood states— may be associated to early onset of gambling behaviour (Navas, Verdejo-García, López-Gómez, Maldonado, & Perales, 2016). In the case of negative emotions, they have been both theoretically and empirically linked with gambling disorder (Blaszczynski & Nower, 2002; Rogier & Velotti, 2018). Previous research on adolescents and young people shows that gambling is both related to gambling as a mean for increasing positive emotions, as well as a way of coping with negative emotions (Jauregui, Estevez, Macía, & López-González, 2020). There would be also gender differences, since in the case of young women gambling has been especially related to coping motives, that is, gambling as a way of dealing with negative emotional states, while gambling has been more related to enhancement motives in males (Macía, Estévez, & Jáuregui, 2022).

The central role of emotion dysregulation in gambling problems has been identified in studies exploring adolescent and young adult gambling (Estévez, Herrero, Sarabia, & Jáuregui, 2014; Estévez, Jáuregui, Sánchez-Marcos, López-González, & Griffiths, 2017). Young gamblers experiencing gambling-related problems employ dysfunctional ER strategies more often to control their negative emotional states than those not experiencing problems (Estévez et al., 2020). They also exhibit negative urgency – which is related to impulsivity – as a response to negative emotions (Torrado et al., 2020). As to the specific maladaptive ER strategies used by people experiencing gambling problems, Navas et al. (2017) found that they predominantly use emotional suppression. Other studies have identified self-blame, catastrophizing, and positive reappraisal more frequently in problem than non-problem gamblers (Navas et al., 2016). Despite these studies, there is still a lack of scientific evidence regarding the exact role of ER in adolescents and young adult gambling.

In addition to ER, a second key variable to the present study are traumatic life events (TLE). TLE are stressful experiences that individuals endure that might become central in their lives with respect to how they build their personal identity and how they interpret other life events (Fernández-Alcántara et al., 2015). Exposure to TLE might cause significant functional impairment (Echeburúa & Amor, 2019), with a negative impact on both psychical and psychological wellbeing (Benjet et al., 2016). Previous research in adolescents has shown that the memory of a traumatic or stressful event can turn into a reference point in everyday life, a central component of personal identity, and a turning point in the personal life story, and these memories could make the specific demands of adolescence and young adulthood more demanding (Ionio, Mascheroni, & Di Blasio, 2018). Regarding gender differences, some studies found that females might be more likely than males to incorporate negative experiences as central to their identity, but the results have not been consistent across literature (Boals, 2010).

There is some preliminary evidence indicating the association between TLE and gambling problems. In his general theory of additions, Jacobs (1986) stated that a gambling disorder may be linked to adverse childhood experiences, and gambling may be a way of scaping and dissociating from emotional pain. In a study conducted by Leppink and Grant (2015), 22.6% of gamblers experiencing gambling disorder reported having experienced a traumatic life event to which they had responded with intense fear and impotence. Being exposed to TLE during childhood might predispose to gambling disorder. Among such TLE can be considered negligence and violence against children, witnessing somebody die or get severely injured (Scherrer et al., 2007), sexual abuse, parental alcohol misuse (Viskum, Curtis, & Bjerregaard, 2013), and partner abuse (Roberts et al., 2017). Some studies have found higher levels of childhood maltreatment in young adults with problem gambling (Felsher, Derevensky, & Gupta, 2010), and the presence of more major negative life events but not more minor negative life events has been found in young samples of gamblers (Bergevin, Gupta, Derevensky, & Kaufman, 2006). However, the majority of such investigations have been carried out in adults, and/or are retrospective studies, with not much evidence coming from participants currently at adolescence. Regarding gender differences, both male and female gamblers tend to present adverse life events, but females may have more tendency to experience intimate partner violence, while men may have more tendency to cumulate difficulties in social life (Andronicos et al., 2015).

The association between TLE and ER have been proposed in various studies, theorising that TLE during

childhood might predict dysfunctional ER strategies later in life (Dereboy, Demirkapı, Şakiroğlu, & Öztürk, 2018; Morie, Zhai, Potenza, & Mayes, 2020). In addition, the use of certain ER strategies might determine how people recover from TLE. Those using maladaptive ER strategies (e.g., rumination, acceptance, catastrophizing, self-blame, or blaming others) to overcome TLE show worse prognosis (Garnefski & Kraaij, 2007; Sakakibara & Kitahara, 2016). Maladaptive ER strategies have been found to be a key factor on the development of psychological maladjustment in adolescents (Gruhn & Compas, 2020). Difficulties in ER have been proposed as mediating factors between TLE in childhood and addictions, for instance, between violence against children and alcohol use disorder (Dutcher, Vujanovic, Paulus, & Barlett, 2017), and emotional abuse during childhood and anorexia nervosa (Racine & Wildes, 2015). However, the mediating role of ER in the association between TLE and gambling disorder continues to be unexplored.

Therefore, the aim of the present paper is twofold. First, to examine TLE, ER, and gambling severity both in a clinical sample of participants experiencing gambling problems and in healthy individuals. Second, to further the analysis of the aforementioned variables within the clinical sample. And finally, to understand the mediating role of ER between TLE and gambling severity. The hypothesis of this study were the next: 1) participants with gambling disorder will present more impact of TLE and ER difficulties; 2) Gambling severity, ER difficulties and TLE will correlate; 3) ER difficulties will mediate the relationship among TLE and gambling severity.

METHODS

Participants

A convenience sample of clinical and non-clinical participants was recruited for the study. The clinical sample included 83 individuals undergoing treatment for gambling disorder, recruited from treatment facilities for gambling disorder in Spain. Such facilities were mostly associated with FEJAR (Spanish Federation of Rehabilitated Gamblers), one of the most prominent Spanish institutions in the treatment of gambling-related problems. All these individuals had been categorised as pathological gamblers in the South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987). The non-clinical sample comprised 831 participants recruited from educational centres in the country who had reported being non-gamblers. The clinical sample was recruited in Basque Country, while the non-clinical sample was recruited in Basque Country (52.8%) and other communities from Spain (47.2%). Sociodemographic data of both samples is presented in Table 1.

Table 1. Sociodemographic data of clinical and non-clinical sample

	Clinical sample	Non-clinical sample
Sex		
Men	92.8%	52.4%
Women	72%	47.6%
Age (M, SD)	24.83 (3.80)	15.65 (2.22)
Educational level		
No completed studies	1.2%	0.9%
Primary studies	2.4%	38.%
Secondary studies	19.5%	41.7%
High school graduate	15.9%	8.9%
Technical and vocational training	39%	8.3%
University studies	22%	1.5%
Employment status		
Full time workers	57.8%	1.7%
Students	24.1%	97.3%
Unemployed	12%	0.4%
Student and worker	6%	0.7%

Instruments

Gambling disorder. *South Oaks Gambling Screen-Revised for Adolescents* (SOGS-RA; Winters, Stinchfield, & Fulkerson, 1993). Adapted to Spanish by Secades and y Villa (1998). The instrument consists of 12 items that describe gambling behaviour within the past 12 months. All the items, except item 1, have 'yes or no' answers. Scores of 4 and above show presence of gambling disorder. The original psychometric properties of the instrument were good (Cronbach's alpha = 0.81). For the present study, $\alpha = 0.94$.

Traumatic life events. Centrality of Event Scale (CES; Berntsen y Rubin, 2006). Adapted to Spanish by Fernández-Alcántara., et al. (2015). It comprises 20 items with 5-point Likert scales (1 = *completely disagree*, 5 = *completely agree*). The instrument measures the centrality in the respondents' life of a traumatic event. At the beginning, participants are asked to remember their most traumatic life event in order to complete the questionnaire. The scale items are designed to assess how respondents interpret that traumatic event, whether it is perceived as a component of their personal identity, if it was a turning point in their life, and whether it is used by respondents to interpret other life events (Berntsen & Rubin, 2006). The authors reported a good reliability score (Cronbach's alpha = 0.91−0.94). The Spanish version of this scale has been validated in young people samples (Galan et al., 2017). For the present study, Cronbach's alpha was good as well ($\alpha = 0.96$).

The Cognitive Emotion Regulation Questionnaire (CERQ- Garnefski & Kraaij, 2007). The Spanish version by Domínguez-Sánchez, Lasa-Aristu, Amor, and Holgado-Tello (2013) was used for the current study. It assesses the cognitive processes involved when dealing with a stressful or negative event. It comprises 18 items divided into nine cognitive strategies of ER, four maladaptive and five adaptive. *Rumination* consists in thinking excessively about the thoughts and feelings that a stressful or negative event has caused. *Catastrophizing* assesses the proneness to think emphatically about the experience of terror involved in an event. *Self-blame* is the attribution of blame to oneself, while

blaming others attributes such blame to others. *Putting into perspective* refers to brushing aside the seriousness of an event by comparing it to other events, reducing its importance. *Acceptance* consists in resigning yourself to what has happened. *Positive refocusing* is the ability to go back to joyful and pleasant thoughts. *Positive reappraisal* means to interpret the stressful event in terms of personal growth. *Refocus on planning* evaluates the thoughts about the necessary steps to solve the problem caused by the stressful event. The scores are rated on a 5-point Likert ranging from 1 (almost never) to 5 (almost always). The Spanish validation had a Cronbach's alpha of 0.60–0.86 (Domínguez-Sánchez et al., 2013). The Spanish version of this scale has been validated in young people samples (Chamizo et al., 2020). For the present study, $\alpha = 0.88$ for the total scale, and 0.64–0.86 for the subscales (self-blame = 0.81; acceptance = 0.64; rumination = 0.75; positive refocusing = 0.80; refocus on planning = 0.79; positive reappraisal = 0.73; putting into perspective = 0.72; catastrophizing = 0.86; blaming others = 0.82).

Positive and negative affect. Positive and Negative Affect Schedule (PANAS; Watson, Clark, & Tellegen, 1988). Adapted to Spanish by Sandín et al., (1999). The instrument comprises 20 words that describe feelings and emotions corresponding to two categories: positive affect and negative affect, each comprising 10 items. Respondents are required to report whether they are experiencing now or have experienced in the last two weeks that word in a 5-point Likert scale: 1 = *not at all/very slightly*; 5 = *very much*. The scores for each subscale range from 10 to 50 points, greater scores indicating more affect. The internal consistency is high in both subscales ($\alpha = 0.85$ and 0.89, respectively). The Spanish version of this scale has been validated in young people samples (Ortuño-Sierra, Santarén-Rosell, de Albéniz, & Fonseca-Pedrero, 2015). For the current study, $\alpha = 0.93$.

Procedure

The community sample was obtained through educational institutions located in Spain, and clinical centers for treatment of individuals with gambling disorder. All the associations belonging to FEJAR (Spanish Federation of Rehabilitated Gamblers) ($n = 22$) were also contacted. These institutions have received feedback regarding the results of the study.

Both paper-and-pencil and online questionnaires were administered. The questionnaire included general information about the main goals of the study. It was also made clear that there were no right or wrong responses and that they could email the research team if they wanted further information about the study. To be eligible, participants were requested to give informed consent. All participants were informed about the study and all provided informed consent. Parental consent was sought for those younger than 18 years of age. The administration of the questionnaire lasted 45 min. The scales were not counterbalanced. All the questionnaires were administered by psychologists with expertise in gambling. The clinical sample completed the questionnaire at the time of agreeing to participate in the study, with a mean time of 10.22 months of treatment (SD = 12.38).

Confidentiality, anonymity, and voluntary participation were granted for all participants. Contact information was provided for those who required it. The participants did not receive any compensation for participating.

Data analysis

First, a Student's *t*-test was carried out to examine the mean differences between the clinical and non-clinical subsamples concerning TLE, ER, and gambling severity. On completion, size effects were measured using Cohen's *d*, which indicates that values around 0.20 correspond to small size effects, around 0.50 to moderate size effects, and above 0.80 to large size effects (Cohen, 1992). Second, the bivariate relationships between the study variables were explored within the clinical sample by means of a correlational analysis (Pearson's *r*).

Third, it was examined the mediational role of ER strategies between TLE (independent variable) and gambling severity (outcome variable), via a multiple mediation analysis, controlling for sex and age. The analyses were performed using Preacher and Hayes' (2008) INDIRECT macro, which is an adequate way of measuring multiple mediation models with small and moderate samples. First, the significance of the effect of the independent variable on the mediator variables (a-path) and the effect of mediator variables on the outcome variable (b-path) were tested. Then, the total effect of the independent variable on the outcome variable along with the mediator variables (c-path) was measured, and the direct effect of the independent variable on the outcome variable was measured while controlling for the effect of mediator variables (c'-path). A full mediation effect is found when c-path is significant but c'-path is not, whereas a partial mediation effect is found when c and c'-path are significant. Afterwards, the indirect effect of the mediator variables was measured by bootstrapping with a sample of 5,000 bootstraps. The indirect effect of each mediator variable on the relationship between X and Y was analysed. The indirect effect is considered significant if 95% of the confidence intervals (CI) of the bootstraps do not include zero—that is, if both the lower and the upper CI of the measured variable are higher or lower, respectively, than zero. Multicollinearity test were performed, and no VIF values above 5 were found, discarding the multicollinearity. Outliers in gambling behaviour have been calculated with SPSS, which considers that an outlier is any value outside 3rd quartile +1.5*interquartile range or 1st quartile – 1.5*interquartile range. No outliers were found in the clinical sample, and 10 outliers were removed in the non-clinical sample.

Ethics

The study procedures were carried out in accordance with the Declaration of Helsinki. The Institutional Review Board of the University of Deusto approved the study. All subjects were informed about the study and all provided informed consent.

RESULTS

First, mean differences were examined between the clinical and non-clinical samples regarding TLE, ER, and gambling behaviour (See Table 2). The results showed significant differences between the samples in all variables except *putting into perspective* ER strategy. Large size effect were found for gambling severity, TLE, and *acceptance* ER strategy, while the rest of the statistically significant associations had moderate size effects.

Second, a correlational analysis was performed between the variables for the clinical group (see Table 3). Gambling severity was positively correlated to TLE, negative affect (now and in the last two weeks), *rumination* ER strategy. Similarly, TLE were positively associated to negative affect (now and in the last two weeks), positive affect (in the last two weeks), and with ER strategies of *rumination*, *refocus on planning*, *positive reappraisal*, and *catastrophizing*.

Third, also within the clinical sample, the mediating role of ER strategies between TLE and gambling severity was explored, controlling for age and sex (see Fig. 1). The results exhibited a partial mediation of ER strategies between both variables. More specifically, rumination was responsible for the mediation of the relationship (BC CI 95% = 0.004–0.05). Neither sex nor age had any significant effect on this model. Based on the correlational data, the model was run again controlling for negative affect, but no statistically significant mediation was identified.

DISCUSSION

The current study aimed at examining the differences in gambling severity, traumatic life events (TLE), and emotion regulation (ER) between a sample of people experiencing gambling-related problems and healthy individuals. Firstly, participants with gambling disorder showed higher levels of gambling severity, TLE, ER strategies, and positive and negative affect in the last two weeks. These results are in concordance with previous evidence suggesting that emotion dysregulation is more frequent in adolescents with gambling disorders than in those not experiencing gambling problems (Estévez et al., 2020). Also, the literature indicates that emerging adults report the increase of positive affect and the reduction or avoidance of negative affect as motives for engaging in gambling behaviour (Lambe, Mackinnon, & y Stewart, 2015). In the present study, self-blame was the ER strategy with the highest size effect, something that replicates previous findings from clinical adult groups (Jauregui, Estevez & Onaindia, 2017). In terms of adaptive strategies, positive reappraisal obtained the highest size effect in the present sample. This result is in agreement with previous studies that posited that gamblers experiencing problems would score higher not only in maladaptive strategies (e.g., rumination, other-blame) but also in some adaptive strategies such as positive reappraisal, which would reinforce the erroneous beliefs and biased cognitions related to gambling (Ruiz de Lara, Navas, & Perales, 2019) and reduce the negative emotions associated with gambling (Navas et al., 2016). According to these authors, ER strategies that have been considered as adaptive might turn into maladaptive ER strategies that reinforce gambling behavior (e.g., refocus on planning may lead to an enhanced gambler behavior in order to solve gambling-related behaviors, and is predictive of gambling severity). In the case of positive reappraisal, it might reduce the evaluation of gambling behavior and gambling-related problems as potential harmful. Pathological gamblers tend to have greater degrees of wishful thinking (the desire that the reality could be different) as a coping mechanism (Jauregui, Onaindia, & Estévez, 2017), so positive reappraisal might be a way of distorting a painful reality in a more acceptable way. As for TLE, the findings here agree with those pointing out that many problem gamblers have experienced TLE during childhood and/or

Table 2. Mean differences between gambling severity, traumatic life events, emotion regulation, and affect

	People with gambling disorder M(DT)	Non-gamblers M(DT)	*t* (df)	*d*
1.Gambling severity	9.46 (1.63)	0.70 (1.78)	34.58 (1,795)*	5.13
2. ER_Self-blame	7.55 (2.21)	4.58 (2.26)	11.35 (1,833)*	1.32
3. ER_Acceptance	8.63 (1.64)	6.45 (3.27)	10.07 (1,163.87)*	0.84
4. ER_Rumination	7.24 (2.05)	5.68 (2.41)	5.71 (1,838)*	0.70
5. ER_Positive refocusing	6.11 (2.54)	5.14 (2.48)	3.35 (1,831)**	0.39
6. ER_Refocus on planning	7.79 (2.01)	6.17 (2.65)	6.71 (1,114.681)*	0.69
7. ER_Positive reappraisal	8.65 (1.58)	6.44 (3.09)	10.65 (1,158.521)*	0.90
8. ER_Putting into perspective	6.04 (2.42)	5.62 (2.44)	1.47 (1,830)	0.17
9. ER_Catastrophizing	6.27 (2.46)	4.61 (2.35)	6.03 (1,827)*	0.69
10. ER_Blaming others	4.61 (2.35)	3.38 (2.14)	−3.20 (1,825)**	0.55
11. Stressful events	72.76 (12.39)	57.28 (20.65)	9.40 (1,143.147)*	0.91
12. Positive affect – Now	31.19 (7.94)	24.43 (9.42)	6.83 (95,505)*	0.78
13. Negative affect - Now	21.75 (9.38)	15.72 (7.01)	5.40 (1,83.261)*	0.73
14. Positive affect – Two weeks	31.77 (7.71)	27.80 (8.64)	3.99 (1,824)*	0.48
15. Negative affect – Two weeks	24.94 (10.84)	19.50 (7.68)	4.32 (1,85.47)*	0.58

*p = 00, **p < 0.01, ***p < 0.05.

Table 3. Correlation between gambling severity, traumatic life events, positive and negative affect, and emotion regulation strategies

	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Gambling severity	–													
2. Stressful events	0.34**	–												
3. Positive affect – 2 weeks	0.04	0.32**	–											
4. Negative affect – 2 weeks	0.44**	0.33**	−0.13**	–										
5. Positive affect – now	−0.01	0.25**	0.74**	−0.08**	–									
6. Negative affect – now	0.39**	0.18**	−0.05	0.77**	0.06	–								
7. ER_Self-blame	0.24**	0.16**	0.11**	0.20**	0.14**	0.27**	–							
8. ER_Acceptance	0.11**	0.06	0.28**	−0.04	0.39**	0.10**	0.50**	–						
9. ER_Rumination	0.36**	0.45**	0.09	0.46**	0.12**	0.49**	0.41**	0.25**	–					
10. ER_Positive refocusing	−0.15**	0.10**	0.18**	−0.22**	0.26**	−0.07	0.26**	0.29**	0.21**	–				
11. ER_Refocusing on planning	0.04	0.30**	0.35**	−0.01	0.32**	0.06	0.43**	0.43**	0.36**	0.49**	–			
12. ER_Positive reappraisal	0.01	0.36**	0.38**	−0.01	0.38**	0.01	0.34**	0.53**	0.34**	0.41**	0.71**	–		
13. ER_Putting into perspective	−0.07**	0.07**	0.02	−0.01**	−0.10**	0.03**	0.18**	0.10**	0.17**	0.40**	0.25**	0.25**	–	
14. ER_Catastrophizing	0.25**	0.38**	−0.02	0.40**	−0.02	0.43**	0.36**	0.18**	0.62**	0.20**	0.31**	0.25**	0.17**	–
15. ER_Blaming others	0.07**	0.18**	0.02	0.13**	−0.17**	0.16**	0.16**	0.02	0.24**	0.25**	0.09	0.02	0.45**	0.33**

** = $p < 0.01$; * = $p < 0.05$.

adulthood (Leppink & Grant, 2015). This result also agrees with previous theories such as the pathways model or the general theory of addictions, that state that problem gamblers may have greater levels of adverse life events (Blaszczynski & Nower, 2002; Jacobs, 1986).

Secondly, the clinical sample was analysed in order to determine the relationship between gambling severity, TLE, negative and positive affect, and ER. The results showed a positive relationship between gambling severity and TLE, rumination, and negative affect (now and over the last two weeks). Other studies have also found such relationship between gambling and TLF (Leppink & Grant, 2015; Roberts et al., 2017; Viskum, Curtis y Bjerregaard, 2013), especially those identifying a higher presence of TLE among individuals with gambling disorder (Lane et al., 2016; Lotzin et al., 2018). Similarly, the obtained data resonate published evidence that argues an association between gambling disorder and ER difficulties (Jara-Rizzo, Navas, Catena, & Perales, 2019; Rogier, Beomonte-Zobel, & Velotti, 2020), more specifically with rumination (Krause et al., 2018), emotion suppression and negative affect (Dowling et al., 2018). The present results reinforce the generality of previous evidence obtained from adult samples, expanding its significance to adolescents and young adults.

Finally, the mediating role of ER in the relationship of TLE and gambling severity was tested. Rumination was found to be the specific variable that mediated their relationship. Although rumination had been previously proposed as an intervening factor in gambling disorder (Krause et al., 2018) these results can be considered novel. They could explain gambling problems as a consequence of traumatic events that have been maladaptively processed through rumination. The persistence of a negative, repetitive thought could lead to the development and maintenance of negative emotional consequences, and thus explain its mediating part in the overall process (García, Cova, Rincón, & Vázquez, 2015). In this sense, it has been previously noted that rumination could have a mediating role between adverse life events and psychological distress in young adults and adolescents because it could amplify negative affect (Boyes, Hasking, & Martin, 2016). Consequently, gambling may constitute a self-medicating behaviour for pervasive negative emotions after TLE. It is also noteworthy that the model was run again controlling for negative affect, but no statistically significant mediation was identified. Therefore, in the absence of negative effect, rumination may not have the same impact on gambling behaviour. That suggests that rumination might be enhanced by negative emotion, or linked to the presence of disorders such as depression (McLaughlin & Nolen-Hoeksema, 2011). Gambling disorder has been previously linked with metacognitive facets such as having negative metacognitive beliefs about worry-related thoughts and the uncontrollability of thoughts, which are very related to rumination processes and obsessive-compulsive spectrum (Rogier, Zobel, Morganti, Ponzoni, & Velotti, 2021; Wahl, Ertle, Bohne, Zurowski, & Kordon, 2011). Although gambling behaviour and obsessive compulsive disorders cannot be placed in the same

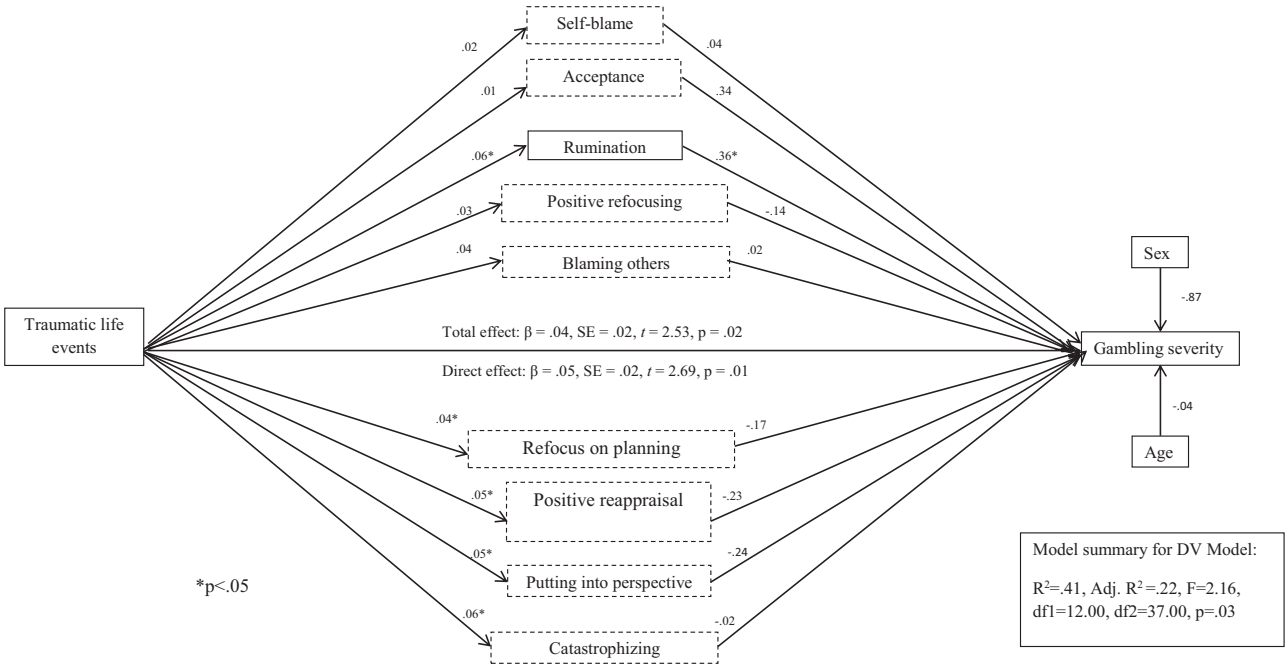

Fig. 1. Mediational effect of emotion regulation between traumatic life events and gambling severity

spectrum, gambling behaviour has high levels of obsessive-compulsive traits (Black, Shaw, & Blum, 2022). A decrease in the level of negative emotions may therefore decrease negative thoughts and their pervasiveness as well, so it could be an interesting target for further interventions in individuals with adverse life events and gambling disorder (Selby, Kranzler, Panza, & Fehling, 2016).

This result merits further analysis. Previous studies had noted how ER could mediate TLE and a series of addictive behaviours such as alcohol use disorder (Dutcher et al., 2017) and anorexia nervosa (Racine & Wildes, 2015). In the case of gambling, ER has also been observed to play a fundamental role in mediating gambling disorder and depression (Marchica et al., 2019), alexithymia (Elmas, Cesur, & Oral, 2017), and anxiety (Jáuregui, Estévez, & Urbiola, 2016). However, there is a shortage of studies exploring the role of rumination between TLE and gambling problems in emerging adults, which makes these results innovative. It also merits attention the fact that the mediational model did not work when controlling for negative affect, which indicates that negative affect is a significant etiological determinant of gambling problems among adolescents and young adults who have suffered TLE.

The present study comes with a series of limitations. First, this is a cross-sectional study that does not allow to establish causal relationships. Second, the samples were recruited from different locations, which may result in sociodemographic differences. The fact that the gamblers' sample was recruited from a clinical setting might make problematic the generalisation of these results to other community-level groups of gamblers. Additionally, the sample of gamblers comprised adolescents and young adults; even though we have controlled for the effect of age in the mediation analysis, the differences in those two periods of lifespan may impact in the variables of the study. Finally, TLE are considered here in general, without detailing how many TLE a participant suffered, the characteristics of such TLE, which calls for more nuanced approaches to TLE in future studies.

CONCLUSION

In conclusion, the present paper found a relationship between gambling severity and traumatic life events mediated by a specific emotion regulation strategy – rumination. The model was not replicated when run again controlling for negative affect. These results are of significant interest for clinical practitioners working in the prevention of gambling disorder because it identifies specific vulnerabilities. The results suggest that reducing rumination and negative affect when treating adolescents and young adults who have experienced traumatic life events, sounds like a reasonable method to decrease their risk of developing gambling problems. Similarly, secondary prevention specialists could use this information to identify vulnerable groups. A better understanding of the risk factors involved in the exposure to traumatic events, and the training of emotion regulation skills could serve as guiding principles for professionals preventing and/or treating gambling-related problem (Messerlian, Derevensky, & Gupta, 2005).

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