

Problematic Gaming among Adolescents and Youth: The Role of Alexithymia, Emotion Regulation, and Attachment Based on Sex

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ABSTRACT

Background: Given the increase in video games among adolescents and young adults, it is imperative to examine the risk factors to implement effective prevention and intervention strategies. The study aims were two-fold: 1) to examine the differences in attachment, alexithymia, and emotion regulation between individuals with and without problematic gaming, differentiated by sex, and 2) to investigate the predictive role of attachment, alexithymia, and emotion regulation on gaming. *Method:* A total of 933 individuals (50.6% male), aged between 12 and 18 years ($M = 15.24$, $SD = 1.44$), participated in the study. Student's t -tests, Pearson's bivariate correlations, and a hierarchical multiple linear regression were conducted. *Results:* Significant differences were found based on the gaming status in both men and women, particularly in alexithymia, parental, and maternal attachment, and some emotion regulation strategies. Furthermore, age and paternal attachment were significantly related to increased gaming severity among men, whereas age and maternal attachment were identified as risk factors for problematic gaming in female participants. *Conclusions:* This study entails important clinical and research implications, as it underscores the importance of considering alexithymia and attachment in the field of gaming, especially among adolescents and youth.

El uso problemático de los videojuegos en los adolescentes y jóvenes: el papel de la alexitimia, la regulación emocional y el apego en función del sexo

RESUMEN

Introducción: Dado el aumento de los videojuegos entre adolescentes y jóvenes, es crucial examinar los factores de riesgo para implementar estrategias eficaces de prevención e intervención. Los objetivos del estudio han sido: 1) examinar las diferencias en el apego, la alexitimia y la regulación emocional entre individuos con y sin uso problemático de videojuegos en función del sexo y 2) investigar el papel predictor del apego, la alexitimia y la regulación emocional en el uso de videojuegos. *Método:* Un total de 933 personas (50.6% hombres), en edades comprendidas entre los 12 y 18 años ($M = 15.24$, $DT = 1.44$), participaron en el estudio. Se realizaron pruebas t de Student, correlaciones bivariadas de Pearson y regresión lineal múltiple jerárquica. *Resultados:* Se encontraron diferencias significativas entre las personas que presentaban un uso problemático de videojuegos y aquellas que no, tanto en hombres como en mujeres, en concreto en los niveles de alexitimia, en el apego parental y materno, y en algunas estrategias de regulación emocional. Además, la edad y el apego paterno se relacionaban significativamente con una mayor gravedad del juego en los hombres, mientras que la edad y el apego materno se identificaron como factores de riesgo para el uso problemático de videojuegos en las mujeres. *Conclusiones:* El estudio tiene importantes implicaciones clínicas y de investigación, ya que subraya la importancia de considerar la alexitimia y el apego en el ámbito del juego, especialmente en los adolescentes y los jóvenes.

The use of video games among adolescents and young adults has experienced a significant increase in recent decades, becoming a popular form of entertainment and recreation (Sixto-Costoya et al., 2021). Gaming presents some positive aspects, both in terms of

academic and learning outcomes, such as enhancing problem-solving skills, quick decision-making, and coordination (López-Gómez et al., 2022; Przybylski, 2014). However, the potential adverse effects of video games have recently been emphasized, with a significant

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impact on physical (e.g., obesity) and mental health (e.g., depression) (Alanko, 2023; Macur & Pontes, 2021; von der Heiden et al., 2019), including gaming disorder.

The gaming disorder is characterized by maladaptive videogame playing behavior (Wang et al., 2019). It has been classified in the International Classification of Diseases (ICD-11; World Health Organization [WHO, 2018]), and in the Diagnostic and Statistical Manual of Mental Disorders (DSM-5-TR; American Psychiatry Association [APA, 2023]). According to the ICD-11, there should be a lack of control over gaming behavior, gaming should be the focal point of one's activities, and there should be a progression of these behaviors for at least one year. Similarly, in addition to these criteria, the DSM-5-TR emphasizes the presence of emotional traits such as concern, irritability, and unsuccessful attempts at emotional relief.

Although the prevalence of gaming disorder varies considerably, meta-analytical studies conclude that its prevalence among children, adolescents, and young adults ranges from 3.3% to 8.8% and it is higher than in adults, and more common in males than in females (Fam, 2018; Gao et al., 2022; H. S. Kim et al., 2022; Stevens et al., 2021). One of the most controversial aspects of diagnostic manuals is that they are primarily oriented toward adults, as exemplified by the required duration of time for a diagnosis. Similarly, another criticism related to gaming is that studies have predominantly focused on males, leading to potential oversight or underdiagnosis of females with this disorder (Dong et al., 2018; Kuss & Griffiths, 2014; Lopez-Fernandez, Williams, & Kuss, 2019). This is attributed to women's and men's different reasons for engaging in gaming (Infanti et al., 2024). For instance, in the case of women, aspects such as competition, hostility, poor body image, and social phobia are motivating factors. In contrast, for men, gaming is often considered a coping strategy to deal with stress and a means of achieving success by winning in the game. Nevertheless, there are also common factors such as escape and avoidance that have been identified as predictors of problem gaming (Lopez-Fernandez, Williams, Griffiths, et al., 2019).

Regarding risk factors for gaming, it has been observed that alexithymia is a predictor of the severity of gaming issues (Pape et al., 2022). Alexithymia is characterized by difficulties in identifying, analyzing, and verbalizing the emotions of oneself and others (Kandri et al., 2014). That is, alexithymia not only affects one's own emotional experiences but also interferes with the recognition of others' emotions, thus affecting interpersonal relationships (Parker et al., 2013; Pisani et al., 2021). Specifically, despite women dealing with greater challenges in identifying and describing emotions, while also externalizing feelings less than men (Germani et al., 2023), men with alexithymia have a higher risk of experiencing gaming disorder (Bonnaire & Baptista, 2019).

Another variable associated with alexithymia and gaming is emotion regulation (Bonnaire et al., 2017; Hollett & Harris, 2020). Emotion regulation refers to the ability to control emotional arousal and to act independently of one's emotional state (Gratz & Roemer, 2004). Studies have indicated that low levels of emotion regulation can be a risk factor for problematic video gaming (Estévez et al., 2017; Uçur & Dönmez, 2021).

One of the variables that has received the greatest attention in recent years in relation to addictive behaviors is attachment (Estévez et al., 2022). The results in this regard are mixed, with some finding a significant relationship with gaming (Estévez et al., 2019; Teng et al., 2020), while others do not (see e.g., S. Kim & Chun, 2022). According to Estévez et al. (2021), individuals exhibiting addictive behaviors may have an insecure attachment to their parents. Therefore, a secure attachment to parents appears to act as a protective factor against addictive behaviors. It has also been noted that, on one hand, maternal and paternal attachments differ. On the other hand, paternal attachment seems to be only related to the analysis and verbalization of emotions.

Moreover, it has been observed that alexithymia is related to attachment because identifying and describing feelings is learned during childhood through the relationship with caregivers or parents (Luminet et al., 2018). This relationship has been previously noted in studies on other types of addictions (Andres et al., 2014; Ding et al., 2022; Estévez et al., 2021; Zakhour et al., 2020; Zdankiewicz-Ścigała & Ścigała., 2018). Previous studies have noted the mediating role of alexithymia between attachment and gaming (Estévez et al., 2021; Jauregui et al., 2023). However, Macía et al. (2023) found that insecure attachment to the mother's figure predicted problematic video gaming in a sample of young women and adolescents. Therefore, previous research shows mixed results regarding the influence of attachment figures in gaming development. Further studies are needed to explore this issue.

Consequently, the current study aimed to analyze problematic video gaming in adolescents and young adults to gain a better understanding of this addictive behavior. Specifically, the study aimed to examine the differences in attachment, alexithymia, and emotion regulation between individuals with and without problematic gaming, as well as based on sex. Additionally, the study aimed to investigate the predictive role of attachment, alexithymia, and emotion regulation on gaming severity.

Method

Participants

The sample consists of 933 individuals, of whom 50.6% were male ($n = 469$), with ages ranging from 12 to 18 years ($M = 15.24$, $SD = 1.44$). Among the male participants, 34.97% ($n = 164$) exhibit problematic video gaming, while in the female group, the percentage is 19.69% ($n = 90$).

Regarding the educational level, 8.4% ($n = 78$) had completed high school, 6.3% ($n = 59$) had completed vocational training, 42.2% ($n = 393$) had completed secondary school, 42.1% ($n = 392$) had completed primary school, and 1% ($n = 9$) had no studies. Regarding occupational status, 98.3% ($n = 912$) were studying, 0.6% ($n = 6$) were working, 0.1% ($n = 1$) were unemployed, and 1.0% ($n = 9$) were working and studying. Finally, 97.6% of the participants were single ($n = 878$).

Instruments

Sociodemographic data, such as age, sex, educational level, occupational status, and marital status, were collected.

The MULTICAGE CAD-4 instrument (Pedrero-Pérez et al., 2007) was used to assess problematic gaming. The instrument comprises 32 dichotomous items assessing eight subscales (4 items each): alcohol, drugs, gambling, Internet, gaming, compulsive buying, eating disorders, and sexual behavior. The reliability of the test is adequate, as Cronbach's alpha coefficient exceeds .70 for all subscales. Although this instrument has eight subscales, only the video gaming subscale was used in this study. To classify the sample based on the absence or presence of problematic gaming and dichotomize the variable, the presence of gaming was considered for scores equal to or greater than 2 (Pedrero-Pérez et al., 2007). In the present study, Cronbach's α was .76 for the gaming subscale.

The Toronto Alexithymia Scale (TAS-20; Bagby et al., 1994; adapted by Sánchez, 1996) was employed to measure alexithymia. The questionnaire comprises 20 items measuring three subscales: difficulties in identifying feelings, difficulties in describing feelings, and externally oriented thinking. Response options range across 6 Likert-type scale choices (0 = *strongly disagree*, 5 = *strongly agree*). This instrument has good internal consistency

Table 1. Differences between Male and Female Participants in Attachment, Emotion Regulation and Alexithymia Differentiated by Gaming Status

	Non-problematic gaming (n = 672)					Problematic gaming (n = 252)					
	Men (n = 305)		Women (n = 367)		t (df)	Men (n = 164)		Women (n = 90)		p-value	Cohen's d
	M (SD)	M (SD)	M (SD)	M (SD)		M (SD)	M (SD)				
Attachment											
Maternal attachment	62.68 (13.91)	63.74 (14.01)	- .905	.366	0.076	61.41 (14.53)	57.50 (15.36)	1.865	.064	0.264	
Paternal attachment	60.76 (14.46)	58.19 (16.15)	1.988	.047	0.167	57.42 (17.31)	55.59 (16.63)	0.762	.447	0.107	
Peer attachment	61.76 (14.88)	67.52 (14.21)	-4.700	< .001	0.397	60.17 (15.50)	64.46 (13.30)	-2.154	.033	0.291	
Emotion regulation											
Self-blame	4.56 (2.25)	4.47 (2.17)	.532	.595	0.041	4.69 (2.15)	5.39 (2.46)	-2.239	.026	0.309	
Acceptance	6.16 (2.62)	6.80 (2.52)	-3.068	.002	0.249	6.66 (5.06)	7.17 (2.43)	-0.869	.386	0.118	
Rumination	5.33 (2.41)	6.03 (2.37)	-3.609	< .001	0.293	5.59 (2.32)	6.52 (2.32)	-2.942	.004	0.401	
Positive refocusing	4.98 (2.39)	5.23 (2.43)	-1.242	.215	0.104	5.05 (2.49)	5.48 (2.48)	-1.257	.210	0.173	
Planning	6.06 (2.46)	6.42 (2.48)	-1.803	.072	0.146	5.83 (2.45)	6.46 (2.33)	-1.891	.060	0.262	
Positive reappraisal	6.33 (3.74)	6.78 (2.49)	-1.759	.079	0.144	6.24 (2.40)	6.41 (2.62)	-0.499	.618	0.069	
Putting into perspective	5.50 (2.44)	6.07 (2.48)	-2.860	.004	0.232	5.42 (2.31)	5.73 (2.36)	-0.989	.324	0.133	
Catastrophizing	4.37 (2.12)	4.71 (2.39)	-1.857	.064	0.150	4.72 (2.38)	5.59 (2.44)	-2.640	.009	0.362	
Blaming others	4.19 (2.11)	4.05 (2.19)	0.789	.431	0.065	4.26 (2.15)	4.56 (2.36)	-0.964	.336	0.135	
Alexithymia											
Difficulties in identifying feelings	13.57 (6.00)	17.15 (6.68)	-6.950	< .001	0.561	15.36 (7.22)	19.93 (6.80)	-4.766	< .001	0.646	
Difficulties in describing feelings	12.45 (4.33)	14.20 (4.90)	-4.656	< .001	0.376	13.33 (4.66)	17.24 (4.59)	-6.296	< .001	0.844	
Externally oriented thinking	22.91 (3.81)	21.09 (4.07)	5.682	< .001	0.460	23.21 (4.14)	21.18 (4.76)	3.374	.001	0.465	
Total	48.69 (10.04)	52.58 (11.44)	-4.326	< .001	0.360	52.09 (11.37)	58.38 (11.24)	-3.986	< .001	0.555	

Note. M = mean; SD = standard deviation.

with a Cronbach's alpha value of .81. In this study, Cronbach's alpha was .87 for the entire questionnaire and ranged from .71 to .84 for the subscales.

The Cognitive Emotion Regulation Questionnaire (CERQ-18; Garnefski et al., 2002; adapted by Domínguez-Lara & Merino-Soto, 2015) assesses the cognitive regulation of emotions in response to stressful events. It is an 18-item self-report instrument rated on a 5-point Likert-type response scale (1 = *almost never*, 5 = *almost always*). This questionnaire comprises nine subscales: self-blame, acceptance, rumination, positive refocusing, planning, positive reappraisal, putting into perspective, catastrophizing, and blaming others. It exhibits adequate psychometric properties ($\alpha > .70$). In this study, Cronbach's alpha was .90 for the overall scale, and for the subscales, the values were as follows: .91 for self-blame, .64 for acceptance, .75 for rumination, .80 for positive refocusing, .79 for planning, .51 for positive reappraisal, .76 for putting into perspective, .86 for catastrophizing, and .82 for blaming others.

Finally, the Inventory of Parent and Peer Attachment (IPPA; Armsden & Greenberg, 1987; adapted by Gallarín & Alonso-Arbiol, 2013 and by Maya et al., 2023 in the adolescent population) assesses attachment styles toward one's father, mother, and peers. This questionnaire comprises 48 items rated on a 5-point Likert-type response scale (from 1 = *never* to 5 = *always*). These items are divided into three subscales of 16 items each, measuring attachment to the mother, father, or peers. A high score indicates secure attachment, whereas a low score indicates insecure attachment. The Spanish version shows a good level of Cronbach's alpha in all three subscales (.87 for mother attachment, .88 for father attachment, and .93 for peer attachment). Regarding internal reliability in this study, a value between .90 and .96 was obtained.

Procedure

The sample was obtained through a convenience sampling process, wherein we contacted the managers of educational and vocational training centers, inviting them to participate. Participants

were included in the study if they were between 12 and 18 years old from high schools or vocational training centers.

Participants completed the questionnaires in a paper-and-pencil format or, if not feasible, online under a teacher's supervision. Additionally, participants signed an informed consent form, and for minors parental consent was obtained. Anonymity, confidentiality, and voluntariness were ensured and, in case any participant required additional information, the contact details of the researchers were provided. Participants did not receive any compensation for their participation. This study followed the principles of the Declaration of Helsinki and received approval from the ethics committee of the University of [blinded] [ref. blinded].

The data that support the findings of this study are available from the corresponding author, upon reasonable request.

Data Analysis

Firstly, differences based on sex were analyzed in the sample with and without problematic gaming regarding attachment, emotion regulation, and alexithymia using a Student's *t*-test. The effect size was calculated by using Cohen's (1992) *d*, with index values below 0.20 corresponding to a small effect size, around 0.50 indicating a medium effect size, and values exceeding 0.80 indicating a large effect size.

Furthermore, bivariate correlations between the study variables were calculated using Pearson's *r*. Subsequently, hierarchical linear regression analyses were conducted to examine the predictive role of age, emotion regulation, alexithymia, and attachment in gaming severity. In the first step age was introduced, in the second step emotion regulation was added, in the third step alexithymia, and, in the fourth step attachment was included, assessing changes in *R*² at each step. Given the exploratory nature of the study, all variables of interest were included in the linear regression, regardless of their correlation with the dependent variable.

All analyses were conducted using the statistical software IBM SPSS Statistics 28, with a confidence level of 95%.

Results

Sex Differences in Attachment, Emotion Regulation, and Alexithymia

Firstly, in both participants with and without problematic gaming, females showed higher peer attachment and greater levels of alexithymia in total scores and in the subscales of difficulties identifying and describing emotions, albeit lower scores in the externally oriented thinking subscale. On the other hand, concerning emotion regulation strategies, within the group of participants

with non-problematic gaming, women obtained higher scores in acceptance, rumination, and putting into perspective ($d \geq 0.232$). Conversely, within the problematic gaming group, women exhibited higher scores in self-blame, rumination, and catastrophizing ($d \geq 0.309$) (see Table 1).

Differences in Attachment, Emotion Regulation, and Alexithymia Based on Gaming Status

Secondly, mean differences in attachment, emotion regulation, and alexithymia were analyzed between the sample with and

Table 2. Differences between Participants with and without Problematic Gaming in Attachment, Emotion Regulation and Alexithymia Differentiated by Sex

	Men (n = 469)					Women (n = 457)				
	Non-problem- atic gaming (n = 305)	Problematic gaming (n = 164)	t	p-value	Cohen's d	Non-problem- atic gaming (n = 367)	Problematic gaming (n = 90)	t(df)	p-value	Cohen's d
Attachment										
Maternal attachment	62.68 (13.91)	61.41 (14.53)	0.850	.396	0.090	63.74 (14.01)	57.50 (15.36)	3.482	.001	0.437
Paternal attachment	60.76 (14.46)	57.42 (17.31)	1.924	.056	0.215	58.19 (16.15)	55.59 (16.63)	1.280	.201	0.160
Peer attachment	61.76 (14.88)	60.17 (15.50)	1.002	.317	0.105	67.52 (14.21)	64.46 (13.30)	1.731	.084	0.218
Emotion regulation										
Self-blame	4.56 (2.25)	4.69 (2.15)	-0.561	.575	0.059	4.47 (2.17)	5.39 (2.46)	-3.321	.001	0.413
Acceptance	6.16 (2.62)	6.66 (5.06)	-1.329	.184	0.137	6.80 (2.52)	7.17 (2.43)	-1.209	.227	0.148
Rumination	5.33 (2.41)	5.59 (2.32)	-1.056	.291	0.109	6.03 (2.37)	6.52 (2.32)	-1.705	.089	0.208
Positive refocusing	4.98 (2.39)	5.05 (2.49)	-0.264	.792	0.029	5.23 (2.43)	5.48 (2.48)	-0.833	.405	0.102
Planning	6.06 (2.46)	5.83 (2.45)	0.893	.373	0.094	6.42 (2.48)	6.46 (2.33)	-0.142	.887	0.016
Positive reappraisal	6.33 (3.74)	6.24 (2.40)	0.268	.789	0.027	6.78 (2.49)	6.41 (2.62)	1.196	.232	0.147
Putting into perspective	5.50 (2.44)	5.42 (2.31)	0.314	.754	0.033	6.07 (2.48)	5.73 (2.36)	1.109	.268	0.138
Catastrophizing	4.37 (2.12)	4.72 (2.38)	-1.530	.127	0.158	4.71 (2.39)	5.59 (2.44)	-2.964	.003	0.367
Blaming others	4.19 (2.11)	4.26 (2.15)	-0.312	.755	0.033	4.05 (2.19)	4.56 (2.36)	-1.823	.069	0.229
Alexithymia										
Difficulties in identifying feelings	13.57 (6.00)	15.36 (7.22)	-2.600	.010	0.277	17.15 (6.68)	19.93 (6.80)	-3.422	.001	0.415
Difficulties in describing feelings	12.45 (4.33)	13.33 (4.66)	-1.961	.051	0.198	14.20 (4.90)	17.24 (4.59)	-5.260	<.001	0.628
Externally oriented thinking	22.91 (3.81)	23.21 (4.14)	-0.748	.455	0.076	21.09 (4.07)	21.18 (4.76)	-0.178	.859	0.021
Total	48.69 (10.04)	52.09 (11.37)	-3.094	.002	0.323	52.58 (11.44)	58.38 (11.24)	-4.107	<.001	0.509

Note. M = mean; SD = standard deviation.

Table 3. Relationship between Gaming, Attachment, Emotion Regulation, and Alexithymia in Men

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	
1. Gaming severity																	
Attachment																	
2. Maternal attachment		-.040															
3. Paternal attachment		-.104*	.643**														
4. Peer attachment		-.042	.464**	.421**													
Emotion regulation																	
5. Self-blame		.047	.061	-.014	.120*												
6. Acceptance		.051	.158**	.127*	.206**	.336**											
7. Rumination		.081	.049	.061	.104*	.360**	.421**										
8. Positive refocusing		.043	.154**	.061	.169**	.337**	.305**	.393**									
9. Planning		-.010	.220**	.181**	.270**	.349**	.420**	.500**	.421**								
10. Positive reappraisal		-.015	.161**	.113*	.137**	.212**	.289**	.382**	.261**	.525**							
11. Putting into perspective		.009	.174**	.087	.221**	.285**	.217**	.383**	.497**	.503**	.351**						
12. Catastrophizing		.071	.047	.040	.081	.295**	.282**	.542**	.361**	.225**	.162**	.225**					
13. Blaming others		.027	-.039	-.042	-.026	.213**	.083	.380**	.267**	.181**	.184**	.333**	.493**				
Alexithymia																	
14. Difficulties in identifying feelings		.141**	-.132**	-.144**	-.014	.315**	.163**	.341**	.199**	.126*	.072	.140**	.342**	.267**			
15. Difficulties in describing feelings		.105*	-.144**	-.217**	-.063	.164**	.122*	.317**	.182**	.109*	.120*	.157**	.233**	.156**	.650**		
16. Externally oriented thinking		.052	-.125*	-.113*	-.142**	-.010	-.064	-.141**	-.077	-.213**	-.154**	-.118*	.018	.035	-.030	.012	
17. Total		.170**	-.198**	-.234**	-.094	.254**	.135**	.302**	.158**	.054	.041	.109*	.300**	.236**	.866**	.817**	.358**

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

Table 4. Relationship between Gaming, Attachment, Emotion Regulation, and Alexithymia in Women

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Gaming severity																
Attachment																
2. Maternal attachment	-.195**															
3. Paternal attachment	-.046	.442**														
4. Peer attachment	-.080	.361**	.349**													
Emotion regulation																
5. Self-blame	.150**	-.167**	-.104*	-.081												
6. Acceptance	.062	.030	.078	.154**	.354**											
7. Rumination	.079	.016	-.065	.076	.366**	.496**										
8. Positive refocusing	.052	.048	.061	.080	.165**	.308**	.249**									
9. Planning	.023	.126*	.088	.128*	.303**	.304**	.427**	.235**								
10. Positive reappraisal	-.031	.142**	.095	.222**	.142**	.421**	.376**	.357**	.541**							
11. Putting into perspective	-.039	.079	.032	.156**	.189**	.383**	.293**	.410**	.369**	.455**						
12. Catastrophizing	.160**	-.050	-.068	-.008	.382**	.238**	.501**	.108*	.391**	.196**	.075					
13. Blaming others	.088	-.030	-.108*	-.072	.223**	.099*	.279**	.209**	.198**	.198**	.217**	.381**				
Alexithymia																
14. Difficulties in identifying feelings	.184**	-.155**	-.264**	-.064	.422**	.229**	.442**	.040	.082	.111*	.142**	.343**	.269**			
15. Difficulties in describing feelings	.256**	-.182**	-.200**	-.114*	.297**	.196**	.317**	.084	.019	.031	.098*	.271**	.185**	.640**		
16. Externally oriented thinking	.006	-.116*	-.105*	-.125*	-.037	-.221**	-.213**	-.010	-.209**	-.310**	-.249**	-.024	-.006	-.012	.078	
17. Total	.213**	-.194**	-.261**	-.111*	.362**	.145**	.318**	.045	-.007	-.032	.034	.295**	.229**	.856**	.829**	.386**

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

without problematic video gaming, differentiated by sex. In the case of men, those with problematic video gaming showed higher levels of alexithymia, specifically in the difficulty identifying feelings subscale ($d = 0.277$) and the total score ($d = 0.323$).

For women, those with problematic video game use exhibited lower maternal attachment ($d = 0.437$) and differences in emotion regulation, particularly higher self-blame ($d = 0.413$), and catastrophizing ($d = 0.367$). Regarding alexithymia, women with problematic video gaming obtained higher scores in alexithymia, both in the total score ($d = 0.509$) and the subscales of difficulty identifying feelings ($d = 0.415$) and difficulty describing feelings ($d = 0.628$) (see Table 2).

Relationship between Attachment, Emotion Regulation, and Alexithymia

Thirdly, the correlation between gaming, attachment, emotion regulation, and alexithymia was analyzed separately according to the participants' sex. Regarding men (see Table 3), a positive correlation was found between gaming and alexithymia ($r \geq .105$). However, no significant relationship was found between gaming and emotion regulation ($r \leq .081$). On the other hand, maternal and paternal attachment negatively correlated with alexithymia ($r \geq -.113$). Additionally, (maternal, paternal, and peer) attachment showed a positive correlation with emotion regulation ($r \geq .104$).

In the case of women (see Table 4), problematic gaming correlated negatively with maternal attachment ($r = -.195$), difficulties in identifying and describing feelings ($r \geq .184$) and emotion regulation, specifically with self-blame ($r = .150$) and catastrophizing ($r = .160$). Moreover, maternal and paternal attachment correlated negatively with alexithymia ($r \geq -.105$) and emotion regulation, specifically self-blame ($r \geq -.104$), planning ($r = .126$), and positive reappraisal ($r = .142$). Finally, emotion regulation strategies correlated positively with difficulties in identifying and describing feelings ($r \geq .98$) and negatively with externally oriented thinking ($r \geq -.209$).

Predictors of Gaming Severity

Finally, a hierarchical multiple linear regression analysis was conducted to examine the predictive role of age, emotion regula-

tion, alexithymia, and attachment on gaming differentiated by sex (see Table 5). Regarding the male participants, lower age ($\beta = -.158$) and poorer paternal attachment ($\beta = -.189$) were related to greater gaming severity. Concerning women, lower age ($\beta = -.129$) and maternal attachment ($\beta = -.263$) were significant risk factors for increased problematic video gaming.

Discussion

The present study investigated the predictive role of attachment, emotion regulation, and alexithymia in problematic gaming, the differences in these variables, and the sex differences between participants with and without problematic gaming. Age and paternal attachment were identified as risk factors for problematic gaming in male participants, whereas age and maternal attachment were risk factors in female participants.

Results demonstrate that regardless of gaming status, women present greater difficulties in identifying and describing feelings and less externally oriented thinking than men (both in groups with problematic and non-problematic gaming). On the other hand, the findings suggest sex differences depending on gaming status specifically women with problematic gaming tend to employ emotion regulation strategies related to self-blame, rumination, and catastrophizing, whereas women without problematic gaming tend to utilize strategies of acceptance, rumination, and putting into perspective. Except for the rumination strategy, women without problematic gaming tend to employ more adaptive emotion regulation strategies, such as acceptance and putting into perspective (Kököneyi et al., 2019).

Both males and females with problematic gaming obtained higher scores in alexithymia, primarily in the subscale of difficulties in identifying feelings. This finding has been previously reported in gamers undergoing treatment (Pape et al., 2022), children (Ahmed et al., 2022), and young adults (Bonnaire & Baptista, 2019), although most prior studies did not differentiate sex. This result is also found in other behavioral addictions, such as gambling, where problem gamblers present more alexithymia issues than non-problematic gamblers (Estévez et al., 2021) or smartphone addiction (Ding et al., 2022).

Problematic gamers also displayed different emotion regulation strategies. Particularly, women with problematic gaming presented

Table 5. Hierarchical Multiple Linear Regression with Emotion Regulation, Alexithymia, and Attachment as Predictors of Gaming Severity in Men and Women

	Men			Women		
	β	<i>p</i> -value	<i>R</i> ²	β	<i>p</i> -value	<i>R</i> ²
Step 1			.004			.006
Age	-.087	.150		-.097	.113	
Step 2			.013			.027
Age	-.094	.128		-.107	.090	
Self-blame	-.069	.315		.108	.126	
Acceptance	.028	.694		.102	.190	
Rumination	.097	.254		-.027	.736	
Positive refocusing	.059	.436		.067	.327	
Planning	-.009	.910		.014	.860	
Positive reappraisal	-.038	.588		-.079	.330	
Putting into perspective	-.061	.428		-.055	.461	
Catastrophizing	.156	.048		.100	.198	
Blaming others	-.067	.358		.033	.619	
Step 3			.032*			.054*
Age	-.125	.048		-.128	.040	
Self-blame	-.104	.144		.057	.437	
Acceptance	.029	.680		.086	.265	
Rumination	.050	.561		-.116	.175	
Positive refocusing	.054	.475		.091	.187	
Planning	.006	.942		.062	.435	
Positive reappraisal	-.035	.612		-.079	.334	
Putting into perspective	-.046	.542		-.076	.312	
Catastrophizing	.136	.083		.070	.365	
Blaming others	-.084	.252		.020	.763	
Difficulties in identifying feelings	.128	.134		.086	.319	
Difficulties in describing feelings	.085	.295		.168	.044	
Externally oriented thinking	.001	.993		-.062	.362	
Step 4			.045			.094**
Age	-.158	.016		-.129	.043	
Self-blame	-.125	.079		.015	.836	
Acceptance	.041	.560		.090	.237	
Rumination	.065	.449		-.097	.247	
Positive refocusing	.056	.458		.088	.193	
Planning	.018	.828		.074	.347	
Positive reappraisal	-.031	.652		-.069	.392	
Putting into perspective	-.047	.539		-.082	.272	
Catastrophizing	.131	.095		.064	.404	
Blaming others	-.086	.238		.016	.809	
Difficulties in identifying feelings	.133	.116		.089	.299	
Difficulties in describing feelings	.054	.506		.148	.070	
Externally oriented thinking	-.005	.942		-.060	.369	
Maternal attachment	.033	.680		-.263	<.001	
Paternal attachment	-.189	.018		.094	.198	
Peer attachment	.046	.510		.023	.722	

**p* ≤ .05, ** *p* ≤ .01.

higher self-blame, catastrophizing, and blaming others. Previous studies have pointed out the strong relationship between cognitive emotion regulation strategies, particularly maladaptive strategies (e.g., self-blame) and problematic gaming (Kököneyi et al., 2019; Yen et al., 2018), but, to our knowledge, no studies have analyzed this association based on participants' sex.

Furthermore, our results indicated a strong relationship between gaming and attachment, specifically maternal attachment among women. Recently, attachment has been extensively examined in addictive behaviors, particularly in gaming. Studies in this area yield mixed findings: whereas many studies have found no significant relationship between attachment and gaming (Grajewski & Dragan., 2020; S. Kim & Chun, 2022; Liese et al., 2020; Scalone et al., 2023), other studies have found a significant relationship only with peer attachment (Teng et al., 2020). In line with our findings, many

studies report a strong relationship between attachment and gaming (Estévez et al., 2019; Monacis et al., 2017; Warburton et al., 2022), noting that Estévez et al.'s (2019) study found that attachment was more closely related to gaming than other behavioral addictions, such as gambling or problematic Internet use. Notwithstanding, to our knowledge, no studies have analyzed the relationship between gaming and attachment based on sex.

Unlike previous studies that reported a strong association between emotion-regulation strategies and gaming, our study found this relationship only in the female population. Previous evidence has pointed to the role of emotion regulation in gaming, both in adolescents (Kököneyi et al., 2019; Uçur & Dönmez, 2021) and young adults (P. Y. Lin et al., 2020; S. Lin et al., 2023). Other studies have examined the mediating role of emotion regulation between childhood experiences and gaming (H. S. Kim et al., 2023).

The regression results indicate that lower age and poorer paternal attachment were related to gaming severity in men. Conversely, in women, age and maternal attachment played an important predictive role. These results suggest that sex should be taken into account when intervening and preventing the gaming disorder in adolescents and young adults.

Previous studies have shown that the adolescent population has higher rates of problematic video game use compared to young adults and adults (Darvesh et al., 2020; Gao et al., 2022; Gentile et al., 2017). This is particularly important because an earlier age of onset is associated with greater severity of gaming disorder (Beard et al., 2017).

On the other hand, concerning attachment, relationships with primary caregivers play a crucial role in shaping personal development. Individuals with insecure attachment patterns may be more inclined to seek fulfillment of their attachment needs through video games rather than through real-life relationships (Bowditch et al., 2024; Flores, 2004; Suárez et al., 2012). In other words, when someone experiences emotional neglect and develops a negative self-concept due to adverse childhood relationships, they may turn to addictive behaviors as a way to escape feelings of rejection, emotional distance, and abandonment, as well as a lack of trust and intimacy (Estévez et al., 2022).

The results of this study should be interpreted in light of several limitations. Firstly, a convenience sample of the Spanish population was used, so the findings may not be generalizable to the global population due to cultural differences. Additionally, as the data were collected through self-reported questionnaires, a social desirability bias cannot be discarded. On one hand, the MULTICAGE questionnaire is not the most suitable for assessing the severity of gaming, as it has only four items, and future studies should consider other validated instruments for this purpose. On the other hand, the cross-sectional design of the present study precludes establishing interpretations regarding causality and the direction of the effects. Moreover, findings obtained in this study are based on sex differences, so it would be appropriate to carry out studies based on gender differences. Finally, this study includes individuals aged between 12 and 32 years, so age-dependent variables such as emotion regulation may not have been fully accounted for in the results.

Conclusions

Despite the mentioned limitations, this study highlights the differences between young adults with and without problematic gaming, both in men and women, as well as the relationship of alexithymia, emotion regulation, and attachment with gaming. The study suggests that lower age and attachment may play a crucial role in gaming among men and women. Further large-scale research is needed to elucidate the role of these variables in the development, maintenance, and treatment of problematic gaming. This study entails important clinical and research implications, as it underscores the importance of considering alexithymia and attachment in the assessment, prevention, and intervention of gaming disorder in both men and women.

Conflict of Interest

The authors of this article declare no conflict of interest.

Highlights

- Age and paternal attachment were identified as risk factors for problematic gaming in male participants.
- Age and maternal attachment were risk factors for problematic gaming among women participants.

- This study underscores the importance of considering attachment in the assessment, prevention, and intervention of gaming disorder based on sex.

References

- Ahmed, G. K., Abdalla, A. A., Mohamed, A. M., Mohamed, L. A., & Shamaa, H. A. (2022). Relationship between time spent playing internet gaming apps and behavioral problems, sleep problems, alexithymia, and emotion dysregulations in children: A multicentre study. *Child and Adolescent Psychiatry and Mental Health*, 16(1), Article 67. <https://doi.org/10.1186/s13034-022-00502-w>
- Alanko D. (2023). The health effects of video games in children and adolescents. *Pediatrics in review*, 44(1), 23–32. <https://doi.org/10.1542/pir.2022-005666>
- American Psychiatric Association (APA, 2023). *Diagnosis and statistical manual of mental disorders - Fifth Edition Text Revision. DSM-5-TR*. American Psychiatric Association.
- Andres, F., Castanier, C., & Le Scanff, C. (2014). Attachment and alcohol use amongst athletes: The mediating role of conscientiousness and alexithymia. *Addictive Behaviors*, 39(2), 487-490. <https://doi.org/10.1016/j.addbeh.2013.10.022>
- Armsden, G. C., & Greenberg, M. T. (1987). The inventory of parent and peer attachment: Individual differences and their relationship to psychological well-being in adolescence. *Journal of Youth and Adolescence*, 16(5), 427-454. <https://doi.org/10.1007/BF02202939>
- Bagby, R. M., Parker, J. D., & Taylor, G. J. (1994). The twenty-item Toronto alexithymia scale I. Item selection and cross-validation of the factor structure. *Journal of Psychosomatic Research*, 38(1), 23-32. [https://doi.org/10.1016/0022-3999\(94\)90005-1](https://doi.org/10.1016/0022-3999(94)90005-1)
- Beard, C. L., Haas, A. L., Wickham, R. E., & Stavropoulos, V. (2017). Age of initiation and internet gaming disorder: The role of self-esteem. *Cyberpsychology, Behavior and Social Networking*, 20(6), 397-401. <https://doi.org/10.1089/cyber.2017.0011>
- Bonnaire, C., & Baptista, D. (2019). Internet gaming disorder in male and female young adults: The role of alexithymia, depression, anxiety and gaming type. *Psychiatry Research*, 272(2), 521-530. <https://doi.org/10.1016/j.psychres.2018.12.158>
- Bonnaire, C., Barrault, S., Aïte, A., Cassotti, M., Moutier, S., & Varescon, I. (2017). Relationship between pathological gambling, alexithymia, and gambling type. *The American Journal on Addictions*, 26(2), 152-160. <https://doi.org/10.1111/ajad.12506>
- Bowditch, L., Naweed, A., Signal, T., & Chapman, J. (2024). More than just a game: Understanding how internet games are used in times of stress. *Entertainment Computing*, 49, Article 100617. <https://doi.org/10.1016/j.entcom.2023.100617>
- Cohen, J. (1992). A power primer. *Psychological Bulletin*, 112(1), 155-159. <https://doi.org/10.1037/0033-2909.112.1.155>
- Darvesh, N., Radhakrishnan, A., Lachance, C. C., Nincic, V., Sharpe, J. P., Ghassemi, M., Straus, S. E., & Tricco, A. C. (2020). Exploring the prevalence of gaming disorder and Internet gaming disorder: A rapid scoping review. *Systematic Reviews*, 9(1), Article 68. <https://doi.org/10.1186/s13643-020-01329-2>
- Ding, Y., Huang, H., Zhang, Y., Peng, Q., Yu, J., Lu, G., Wu, H., & Chen, C. (2022). Correlations between smartphone addiction and alexithymia, attachment style, and subjective well-being: A meta-analysis. *Frontiers in Psychology*, 13, Article 971735. <https://doi.org/10.3389/fpsyg.2022.971735>
- Dominguez-Lara, S. A., & Merino-Soto, C. A. (2015). Una versión breve del cognitive emotion regulation questionnaire: análisis estructural del CERQ-18 en estudiantes universitarios limeños. *Revista Peruana de Psicología y Trabajo Social*, 4(1), 25-36.
- Dong, G., Wang, L., Du, X., & Potenza, M. N. (2018). Gender-related differences in neural responses to gaming cues before and after gaming: Implications for gender-specific vulnerabilities to Internet gaming disorder. *Social Cognitive and Affective Neuroscience*, 13(11), 1203-1214. <https://doi.org/10.1093/scan/nsy084>
- Estévez, A., Jauregui, P., & Lopez-Gonzalez, H. (2019). Attachment and behavioral addictions in adolescents: The mediating and moderating role of coping strategies. *Scandinavian Journal of Psychology*, 60(4), 348-360. <https://doi.org/10.1111/sjop.12547>
- Estévez, A., Jauregui, P., Macía, L., & López-González, H. (2021). Gambling and attachment: The mediating role of alexithymia in adolescents and young adults. *Journal of Gambling Studies*, 37(2), 497-514. <https://doi.org/10.1007/s10899-020-09965-y>
- Estévez, A., Jauregui, P., Sanchez-Marcos, I., López-González, H., & Griffiths, M. D. (2017). Attachment and emotion regulation in substance addictions and behavioral addictions. *Journal of Behavioral Addictions*, 6(4), 534-544. <https://doi.org/10.1556/2006.6.2017.086>
- Estévez A., Macía L., Momeñe J., & Etxaburu N. (2022) Attachment and behavioral addictions. In V. B. Patel & V. R. Preedy (Eds.), *Handbook of substance misuse and addictions*. Springer. https://doi.org/10.1007/978-3-030-67928-6_7-1
- Fam, J. Y. (2018). Prevalence of internet gaming disorder in adolescents: A meta-analysis across three decades. *Scandinavian Journal of Psychology*, 59(5), 524-531. <https://doi.org/10.1111/SJOP.12459>

- Flores, P. J. (2004). *Addiction as an attachment disorder*. Jason Aronson.
- Gallarín, M., & Alonso-Arbiol, I. (2013). Dimensionality of the inventory of parent and peer attachment: Evaluation with the Spanish version. *The Spanish Journal of Psychology*, 16, 1-14. <https://doi.org/10.1017/sjp.2013.47>
- Gao, Y. X., Wang, J. Y., & Dong, G. H. (2022). The prevalence and possible risk factors of internet gaming disorder among adolescents and young adults: Systematic reviews and meta-analyses. *Journal of Psychiatric Research*, 154, 35-43. <https://doi.org/10.1016/j.jpsychires.2022.06.049>
- Garnefski, N., Kraaij, V., & Spinhoven, P. (2002). *Manual for the use of the Cognitive Emotion Regulation Questionnaire*. DATEC, 23(3), 141-149. <https://doi.org/10.1027/1015-5759.23.3.141>
- Gentile, D. A., Bailey, K., Bavelier, D., Brockmyer, J. F., Cash, H., Coyne, S. M., Doan, A., Grant, D. S., Green, C. S., Griffiths, M., Markle, T., Petry, N. M., Prot, S., Rae, C. D., Rehbein, F., Rich, M., Sullivan, D., Woolley, E., & Young, K. (2017). Internet gaming disorder in children and adolescents. *Pediatrics*, 140(Suppl 2), S81-S85. <https://doi.org/10.1542/peds.2016-1758H>
- Germani A, Lopez A., Martini E., Cicchella S., De Fortuna A. M., Dragone M., Pizzini B., Troisi G., & De Luca Picione R. (2023). The relationships between compulsive internet use, alexithymia, and dissociation: Gender differences among Italian adolescents. *International Journal of Environmental Research and Public Health*, 20(14), Article 6431. <https://doi.org/10.3390/ijerph20146431>
- Grajewski, P., & Dragan, M. (2020). Adverse childhood experiences, dissociation, and anxious attachment style as risk factors of gaming disorder. *Addictive Behaviors Reports*, 11, Article 100269. <https://doi.org/10.1016/j.abrep.2020.100269>
- Gratz, K. L., & Roemer, L. (2004). Multidimensional assessment of emotion regulation and dysregulation: Development, factor structure, and initial validation of the difficulties in emotion regulation scale. *Journal of Psychopathology and Behavioral Assessment*, 26(1), 41-54. <https://doi.org/10.1023/B:JOBA.0000007455.08539.94>
- Hollett, K. B., & Harris, N. (2020). Dimensions of emotion dysregulation associated with problem video gaming. *Addiction Research & Theory*, 28(1), 38-45. <https://doi.org/10.1080/16066359.2019.1579801>
- Infanti, A., Valls-Serrano, C., Billieux, J., & Perales, J. C. (2024). Psychometric properties of the Spanish motives for Online Gaming Questionnaire in a sample of college students. *The Spanish Journal of Psychology*, 27, Article e16. <https://doi.org/10.1017/SJP.2024.16>
- Jauregui, E., Estévez, A., Rodríguez, M., López-González, H., & Etxaburu, N. (2023). Interplay between alexithymia, emotion regulation, and positive and negative affect as predictors of gambling and gaming disorder in adolescents and young adults. *Revista Latinoamericana de Psicología*, 55, 149-159. <https://doi.org/10.14349/rlp.2023.v55.17>
- Kandri, T. A., Bonotis, K. S., Floros, G. D., & Zafiropoulou, M. M. (2014). Alexithymia components in excessive internet users: A multi-factorial analysis. *Psychiatry Research*, 220(1), 348-355. <https://doi.org/10.1016/j.psychres.2014.07.066>
- Kim, H. S., Son, G., Roh, E. Bin, Ahn, W. Y., Kim, J., Shin, S. H., Chey, J., & Choi, K. H. (2022). Prevalence of gaming disorder: A meta-analysis. *Addictive Behaviors*, 126, Article 107183. <https://doi.org/10.1016/j.addbeh.2021.107183>
- Kim, H. S., Vieira, J. L., Parmar, P. K., Hodgins, D. C., Will Shead, N., & Keough, M. T. (2023). Emotion dysregulation mediates the relationship between adverse childhood experiences and problematic gaming. *Addictive Behaviors*, 136, Article 107473. <https://doi.org/10.1016/j.addbeh.2022.107473>
- Kim, S., & Chun, J. (2022). The impact of parental and peer attachment on gaming addiction among out-of-school adolescents in South Korea: The mediating role of social stigma. *International Journal of Environmental Research and Public Health*, 20(1), Article 72. <https://doi.org/10.3390/ijerph20010072>
- Kököneyi, G., Kocsel, N., Király, O., Griffiths, M. D., Galambos, A., Magi, A., Paksi, B., & Demetrovics, Z. (2019). The role of cognitive emotion regulation strategies in problem gaming among adolescents: A nationally representative survey study. *Frontiers in Psychiatry*, 10, Article 273. <https://doi.org/10.3389/fpsy.2019.00273>
- Kuss, D., & Griffiths, M. (2014). *Internet addiction in psychotherapy*. Springer.
- Liese, B. S., Kim, H. S., & Hodgins, D. C. (2020). Insecure attachment and addiction: Testing the mediating role of emotion dysregulation in four potentially addictive behaviors. *Addictive Behaviors*, 107, Article 106432. <https://doi.org/10.1016/j.addbeh.2020.106432>
- Lin, P. Y., Lin, H. C., Lin, P. C., Yen, J. Y., & Ko, C. H. (2020). The association between emotion regulation and internet gaming disorder. *Psychiatry Research*, 289, Article 113060. <https://doi.org/10.1016/j.psychres.2020.113060>
- Lin, S., Tan, L., Chen, X., Liao, Z., Li, Y., Tang, Y., Shi, Y., Hao, J., Wang, X., Huang, Q., & Shen, H. (2023). Emotion dysregulation and internet gaming disorder in young people: Mediating effects of negative affect and metacognitions. *Journal of Affective Disorders*, 341, 104-111. <https://doi.org/10.1016/j.jad.2023.08.077>
- Lopez-Fernandez, O., Williams, A. J., Griffiths, M. D., & Kuss, D. J. (2019). Female gaming, gaming addiction, and the role of women within gaming culture: A narrative literature review. *Frontiers in Psychiatry*, 10, Article 454. <https://doi.org/10.3389/fpsy.2019.00454>
- Lopez-Fernandez, O., Williams, A. J., & Kuss, D. J. (2019). Measuring female gaming: Gamer profile, predictors, prevalence, and characteristics from psychological and gender perspectives. *Frontiers in Psychology*, 10, Article 898. <https://doi.org/10.3389/fpsy.2019.00898>
- López-Gómez, S., Rial-Boubeta, A., Marín-Suelves, D., & Rodríguez-Rodríguez, J. (2022). Videojuegos, salud, convivencia y adicción. ¿Qué dice la evidencia científica? *Psychology, Society & Education*, 14(1), 45-54. <https://doi.org/10.21071/psye.v14i1.14178>
- Luminet, O., Taylor, G. J., & Bagby, R. M. (2018). *Alexithymia. Advances in research, theory, and clinical practice*. Cambridge University Press.
- Macía, L., Estévez, A., & Jáuregui, P. (2023). Gambling: Exploring the role of gambling motives, attachment and addictive behaviours among adolescents and young women. *Journal of Gambling Studies*, 39(1), 183-201. <https://doi.org/10.1007/s10899-022-10124-8>
- Macur, M., & Pontes, H. M. (2021). Internet gaming disorder in adolescence: Investigating profiles and associated risk factors. *BMC Public Health*, 21(1), Article 1547. <https://doi.org/10.1186/S12889-021-11394-4>
- Maya, J., Arcos-Romero, A. I., & Hidalgo, V. (2023). Psychometric properties of the Inventory of Parents-Peer Attachment (IPPA) in adolescents with behavioural problems. *Clínica y Salud*, 34(3), 131-137. <https://doi.org/10.5093/clysa2023a13>
- Monacis, L., de Palo, V., Griffiths, M. D., & Sinatra, M. (2017). Exploring individual differences in online addictions: The role of identity and attachment. *International Journal of Mental Health and Addiction*, 15(4), 853-868. <https://doi.org/10.1007/s11469-017-9768-5>
- Pape, M., Reichrath, B., Bottel, L., Herpertz, S., Kessler, H., & Dieris-Hirche, J. (2022). Alexithymia and internet gaming disorder in the light of depression: A cross-sectional clinical study. *Acta Psychologica*, 229(2), Article 103698. <https://doi.org/10.1016/j.actpsy.2022.103698>
- Parker, J. D., Summerfeldt, L. J., Taylor, R. N., Kloosterman, P. H., & Keefer, K. V. (2013). Problem gambling, gaming and Internet use in adolescents: Relationships with emotional intelligence in clinical and special needs samples. *Personality and Individual Differences*, 55(3), 288-293. <https://doi.org/10.1016/j.paid.2013.02.025>
- Pedro-Pérez, E. J., Rodríguez-Monje, M. T., Gallardo-Alonso, F., Fernández-Girón, M., Pérez-López, M., & Chicharro-Romero, J. (2007). Validación de un instrumento para la detección de trastornos de control de impulsos y adicciones: El MULTICAGE CAD-4. *Trastornos Adictivos*, 9(4), 269-278. [https://doi.org/10.1016/S1575-0973\(07\)75656-8](https://doi.org/10.1016/S1575-0973(07)75656-8)
- Pisani, S., Murphy, J., Conway, J., Millgate, E., Catmur, C., & Bird, G. (2021). The relationship between alexithymia and theory of mind: A systematic review. *Neuroscience & Biobehavioral Reviews*, 131, 497-524. <https://doi.org/10.1016/j.neubiorev.2021.09.036>
- Przybylski, A.K. (2014) Electronic gaming and psychosocial adjustment. *Pediatrics*, 134(3), e716-e722. <https://doi.org/10.1542/peds.2013-4021>
- Sánchez, F. M. (1996). Adaptación española de la escala de Alexitimia de Toronto (TAS-20). *Clínica y Salud*, 7(1), 19-32. <https://journals.copmadrid.org/clysa/art/8d5e957f297893487bd98fa830fa6413>
- Scalone, A., Santoro, G., Cavallo, J., Melita, A., Gori, A., & Schimmenti, A. (2023). Press play to feel: The role of attachment styles and alexithymic features in problematic gaming. *International Journal of Environmental Research and Public Health*, 20(20), Article 6910. <https://doi.org/10.3390/ijerph20206910>
- Sixto-Costoya, A., Castelló-Cogollos, L., Aleixandre-Benavent, R., & Valderrama-Zurián, J. C. (2021). Global scientific production regarding behavioral addictions: An analysis of the literature from 1995 to 2019. *Addictive Behaviors Reports*, 14, Article 10371. <https://doi.org/10.1016/j.abrep.2021.100371>
- Stevens, M. W. R., Dorstyn, D., Delfabbro, P. H., & King, D. L. (2021). Global prevalence of gaming disorder: A systematic review and meta-analysis. *Australian and New Zealand Journal of Psychiatry*, 55(6), 553-568. <https://doi.org/10.1177/0004867420962851>
- Suárez, L., Thio, Cephaz F.W., & Singh, S. (2012). Attachment styles, motivations, and problematic use of massively multiplayer online games. *International Proceedings of Economics Development and Research*, 53, 45-49.
- Teng, Z., Griffiths, M. D., Nie, Q., Xiang, G., & Guo, C. (2020). Parent-adolescent attachment and peer attachment associated with Internet Gaming Disorder: A longitudinal study of first-year undergraduate students. *Journal of Behavioral Addictions*, 9(1), 116-128. <https://doi.org/10.1556/2006.2020.00011>
- Uçur, Ö., & Dönmez, Y. E. (2021). Problematic internet gaming in adolescents, and its relationship with emotion regulation and perceived social support. *Psychiatry Research*, 296, Article 113678. <https://doi.org/10.1016/j.psychres.2020.113678>
- von der Heiden, J. M., Braun, B., Müller, K. W., & Egloff, B. (2019). The association between video gaming and psychological functioning. *Frontiers in Psychology*, 10, Article 1731. <https://doi.org/10.3389/fpsy.2019.01731/BIBTEX>
- Wang, Q., Ren, H., Long, Y., & Liu, T. (2019). Research progress and debates on gaming disorder. *General Psychiatry*, 32(3), 1-6. <https://doi.org/10.1136/gpsych-2019-100071>
- Warburton, W. A., Parkes, S., & Sweller, N. (2022). Internet gaming disorder: Evidence for a risk and resilience approach. *International Journal of Environmental Research and Public Health*, 19(9), Article 5587. <https://doi.org/10.3390/ijerph19095587>

- World Health Organization (WHO, 2018). *The ICD-11 classification of mental and behavioral disorders: Diagnostic criteria for research*. World Health Organization.
- Yen, J. Y., Yeh, Y. C., Wang, P. W., Liu, T. L., Chen, Y. Y., & Ko, C. H. (2018). Emotion regulation in young adults with internet gaming disorder. *International Journal of Environmental Research and Public Health*, 15(1), Article 30. <https://doi.org/10.3390/ijerph15010030>
- Zakhour, M., Haddad, C., Salameh, P., Akel, M., Fares, K., Sacre, H., Hallit, S., & Obeid, S. (2020). Impact of the interaction between alexithymia and the adult attachment styles in participants with alcohol use disorder. *Alcohol*, 83, 1-8. <https://doi.org/10.1016/j.alcohol.2019.08.007>
- Zdankiewicz-Ścigała, E., & Ścigała, D. K. (2018). Relationship between attachment style in adulthood, alexithymia, and dissociation in alcohol use disorder inpatients. Mediation model. *Frontiers in Psychology*, 9, Article 2039. <https://doi.org/10.3389/fpsyg.2018.02039>

