



Early maladaptive schemas and perceived impact of COVID-19: the moderating role of sex and gambling

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Abstract

Ample evidence indicates that early maladaptive schemas play an important role in the perceived impact of COVID-19 on individuals. Likewise, people with gambling disorder (GD), as well as women, show more maladaptive schemas than people without an addictive condition and men. However, no research to date has investigated the interrelationship between maladaptive schemas and the perceived impact of COVID-19, and even fewer studies have disaggregated the results by sex and clinical condition. This study aimed to examine the relationship between maladaptive schemas and the perceived impact of COVID-19 (i.e., emotional, physical, occupational, social, care, and quality of life). Second, we assessed the moderating role of sex and clinical group (i.e., gambling vs. non-gambling) on this relationship. A case-control study was performed with 160 participants, specifically 80 people with GD and 80 non-gamblers. The findings showed that individuals with greater maladaptive schemas showed higher COVID-19 impact. Moreover, gamblers presented higher maladaptive schemas and lower COVID-19 impact. Finally, the outcomes indicated that the male sex moderates the failure and imperfection schemas and the perceived impact on occupational and physical health, while the female sex moderates the attachment schemas and the global impact. These findings underscore the necessity of incorporating variables such as sex and GD when tailoring strategies for prevention, evaluation, and intervention for individuals. Additionally, the significance of adopting a gender-inclusive perspective was emphasized.

Keywords Gambling disorder · COVID-19 · Maladaptive schemas · Sex differences

The COVID-19 pandemic, a global event associated with the SARS-CoV-2 virus (World Health Organization, 2020), resulted in the implementation of several measures that had a direct and significant impact on aspects related to personal health. The Spanish government implemented various restrictive measures, including reduced mass gatherings, travel abroad, school and university closures, and strict

long-term confinement (Royal Decree 463/2020), reducing freedom of movement, and restricting social interaction.

A large body of research has examined the impact of strict measures to reduce the spread of COVID-19 on people's health, in terms of physical, emotional, occupational, social, care, and quality of life (Birmingham et al., 2021; Camilleri et al., 2022; Flanagan et al., 2021; Ganesan et al., 2021; Heinberg & Steffen, 2021; Kolahchi et al., 2021; Serafini et al., 2020). Current evidence indicates that the effects of COVID-19 on people remain in the post-pandemic era, in physical and emotional terms (see e.g., Bajoulvand et al., 2022; Bughrara et al., 2023; Huerne et al., 2023). Additionally, it is noteworthy that the impact of COVID-19 is higher in some vulnerable populations, such as younger individuals (Birmingham et al., 2021), women (Birmingham et al., 2021; Camilleri et al., 2022), substance users (Martinotti et al., 2020), and gamblers (Donati et al., 2021; Sharman et al., 2021). Focusing on addictive behaviors, the impact of the pandemic on substance use is unclear, with some systematic reviews concluding that it increased significantly (Roberts

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et al., 2021) while other studies find a decrease (Layman et al., 2022). Concerning gambling, two recent systematic reviews conclude that gambling behavior decreased or remained the same for most gamblers during the pandemic (Brodeur et al., 2021; Sachdeva et al., 2022).

Previous studies have examined potential psychological predictors of this relationship, including coping strategies (Budimir et al., 2021; Camilleri et al., 2022; Riedel et al., 2021), social support (Budimir et al., 2021; Labrague, 2021), emotion regulation (Low et al., 2021; Mojsa-Kaja & Ivcevic, 2022), and less commonly, cognitive schemas. Evidence has found that early maladaptive schemas such as attachment style, shame, and mistrustfulness also play an important role in the perceived impact of COVID-19 (Fautino et al., 2022; Marčinko et al., 2021; Moccia et al., 2020; Rajkumar, 2020; Słysz & Urbańska, 2023). Within cognitive theory, schemas consist of stable, internalized patterns of behavior developed in childhood through early affective experiences with reference figures, which serve as a guide for interpreting information and solving problems, and directly influence our behavior and thoughts (see Arntz et al., 2021; Young et al., 2003 for review). In Young's model, there are 18 schemas grouped into five categories, namely domains: (1) disconnection and rejection (abandonment/instability, mistrust/abuse, emotional deprivation, defectiveness/shame, and social isolation/alienation); (2) impaired autonomy and performance (dependence/incompetence, vulnerability to harm or illness, enmeshment/undeveloped self, and failure); (3) impaired limits (entitlement/grandiosity, and insufficient self-control/self-discipline); (4) other-directedness (subjugation, self-sacrifice, and approval-seeking/recognition-seeking); and (5) over vigilance and inhibition (negativity/pessimism, emotional inhibition, unrelenting standards/hyper-criticalness, and punitiveness).

These schemas have been widely studied regarding depression (Bishop et al., 2022; Fatima & Hania, 2022; Tariq, Reid et al., 2021), suicidal ideation (Ha & Park, 2022), anxiety (Tariq et al., 2021), eating disorders (Maher et al., 2022), resilience (Momeñe & Estévez, 2019), interpersonal problems (Janovsky et al., 2020), as well as addictive behaviors (Cudo et al., 2020, 2022; Jalali et al., 2011; Shajari et al., 2016; Shorey et al., 2013a, b). It is worth noting that women generally report higher levels of early maladaptive schemas than men (Bilge & Balaban, 2021; Janson et al., 2019; Marengo et al., 2019; Shorey et al., 2013a). Regarding addictive behaviors, several studies have found that individuals with substance use disorders present more maladaptive schemas than individuals without substance use (see e.g., Jalali et al., 2011; Pauwels et al., 2018; Shorey et al., 2013a, b). However, little is known about the association between gambling and cognitive schemas as only three studies have addressed this issue. A pioneering Spanish

study found meaningful differences in maladaptive schemas between gamblers—as shown by the SOGS score—and the general population. In addition, no differences were found based on whether gamblers were in treatment (Estévez & Calvete, 2007). A study by Shorey et al. (2013) found a significant relationship between cognitive schemas and gambling in patients undergoing treatment for alcohol use. Nevertheless, the sample was composed entirely of men, and the group of “possible gambling” consisted of participants who met at least one of the DSM-IV criteria. Finally, Aloi et al. (2020) concluded that gamblers presented higher rates in the “impaired autonomy and performance” and “impaired limits” schema domains (see Bach et al., 2018). However, this study was conducted in an adolescent and young adult population; therefore, findings cannot be extrapolated to the general population. Additionally, the group of gamblers represented only 6.8% of the sample.

Amid this background, although maladaptive schemas have been broadly analyzed in the literature concerning COVID-19, to our knowledge, there are no studies examining the relationship in the Spanish context, where regulatory measures were meaningfully different. Furthermore, no study has assessed the moderating role of biological sex and clinical group (i.e., individuals with gambling disorder [GD]) in this association. For this purpose, the current study aims were two-fold: (1) to examine the relationship between early maladaptive schemas and COVID-19 impact, in terms of emotional, physical, occupational, social, care, and quality of life; and (2) to assess the moderating role of biological sex and clinical group (i.e., gambling vs. non-gambling diagnosis) in this relationship.

Method

Participants

A case-control study was performed with 160 participants with an average age of 35.46 years old ($SD = 15.26$). There were 80 clinical participants with GD diagnosis and 80 non-clinical participants without GD. 50% of the participants in each group were women, and 50% were men (i.e., 40 women and 40 men in each group). Both groups significantly differed in gambling problems measured by the SOGS [$\chi^2(1) = 152.19, p < .001$]. Specifically, none of the participants in the non-clinical sample described any level of gambling. According to the power analyses G*Power 3.1.9.4 (Faul et al., 2007), the abovementioned sample size guaranteed adequate power (80%) for testing the aims of the present study.

As displayed in Table 1, most of the sample reported university educational level or vocational training. The

Table 1 Sociodemographic Data of the Total Sample and by Clinical Group and Sex

Variable	Clinical group			Sex	
	Total sample (n = 160)	Non-clinical (n = 80)	Clinical (n = 80)	Women (n = 80)	Men (n = 80)
	n (%)	n (%)	n (%)	n (%)	n (%)
Educational level					
No studies	5 (3.1)	0 (0.0)	5 (6.3)	1 (1.2)	4 (5.1)
Primary studies	20 (12.6)	1 (1.2)	19 (24.1)	16 (20.0)	4 (5.1)
Secondary studies	5 (3.1)	0 (0.0)	5 (6.3)	2 (2.5)	3 (3.8)
High school	23 (14.5)	17 (21.2)	6 (7.6)	15 (18.8)	8 (10.1)
Vocational training	45 (28.3)	15 (18.8)	30 (38.0)	18 (22.5)	27 (34.2)
University studies	61 (38.4)	47 (58.8)	14 (17.7)	28 (35.0)	33 (41.8)
Occupational status					
Working	80 (50.0)	30 (37.5)	50 (62.5)	34 (42.5)	46 (57.5)
Unemployed	13 (8.1)	3 (3.8)	10 (12.5)	9 (11.2)	4 (5.0)
Student	34 (21.2)	29 (36.2)	5 (6.2)	21 (26.2)	13 (16.2)
Retired	11 (6.9)	1 (1.2)	10 (12.5)	6 (7.5)	5 (6.2)
Working and studying	17 (10.6)	17 (21.2)	0 (0.0)	6 (7.5)	11 (13.8)
Other	5 (3.1)	0 (0.0)	5 (6.2)	4 (5.0)	1 (1.2)
Civil status					
Single	60 (37.5)	32 (40.0)	28 (35.0)	30 (37.5)	30 (37.5)
Married	43 (26.9)	12 (15.0)	31 (38.8)	20 (25.0)	23 (28.7)
Legal partner	8 (5.0)	2 (2.5)	6 (7.5)	1 (1.2)	7 (8.8)
Divorced	14 (8.8)	3 (3.8)	11 (13.8)	7 (8.8)	7 (8.8)
Widowed	3 (1.9)	0 (0.0)	3 (3.8)	2 (2.5)	1 (1.2)
Other	32 (20.0)	31 (38.8)	1 (1.2)	20 (25.0)	12 (15.0)

participants were predominantly working, representing half of the sample, while the second most frequent occupational status was studying, with around a fifth of the sample. Regarding their marital status, around 40% of the sample reported being single, while around 25% reported being married.

Instruments

Early maladaptive schemas

The Young Schema Questionnaire (YSQ-3; Young, 2006), with excellent psychometric properties, was used to assess cognitive schemas. The short version used in this study (YSQ-3-SF; Calvete et al., 2013) was developed using all the items that make up the long version adapted to Spanish and showed excellent psychometric properties (α ranged from 0.54 to 0.80) and, revealed clinically relevant relationships between cognitive schemas and depression, social anxiety, and hostility. The YSQ-3-SF comprises 90 items evaluating 18 maladaptive schemas, each of which consists of 5 items rated on a 6-point Likert-type scale (1 = *completely untrue of me*; 6 = *describes me perfectly*). The total score ranged from 5 to 30, with higher scores indicating a greater presence of maladaptive schemas.

In this study, a total of 11 cognitive schemas were included, whose internal consistency was as follows:

attachment ($\alpha=0.78$), abandonment ($\alpha=0.87$), mistrust/abuse ($\alpha=0.85$), emotional deprivation ($\alpha=0.89$), emotional inhibition ($\alpha=0.84$), social isolation ($\alpha=0.78$), subjugation ($\alpha=0.83$), self-sacrifice ($\alpha=0.86$), failure ($\alpha=0.87$), imperfection/shame ($\alpha=0.80$), and dependence ($\alpha=0.78$).

Perceived impact of COVID-19

This was an ad-hoc questionnaire because, at the time of the research, we were in the pandemic period. The impact of COVID-19 was measured through a thermometer, rated from 0 to 10 their subjective feeling about the impact of COVID-19 on each of the six subscales: emotional impact, physical impact, occupational impact, social or interpersonal impact, care, and impact on quality of life. Higher scores indicate a greater impact on people's well-being. Cronbach's alpha was 0.78 for the global COVID-19 impact.

Gambling disorder

The South Oaks Gambling Screen (SOGS; Lesieur & Blume, 1987, adapted to Spanish by Echeburúa et al., 1994) is a screening tool to detect GD in clinical populations. The scale contains 20 items in a dichotomous scale (Yes/No). According to this questionnaire, scores of 4 or more indicate potential gambler, scores between 2 and 3 indicate gambling risk, while scores between 0 and 1 indicate no gambling

risk. Regarding its reliability, the SOGS has optimum internal consistency, with a Cronbach alpha of 0.94. In this study, the SOGS was also a screening tool used to exclude participants from the general population who might be at risk of GD or present GD scores.

Procedure

The clinical group consisted of participants diagnosed with GD who were receiving treatment in gambling treatment associations belonging to FEJAR (Spanish Federation of Rehabilitated Gamblers).

The non-clinical sample (i.e., without GD) was recruited from the general population. The inclusion criterion in the non-clinical group was not having GD, indicated by no risk in the SOGS (Lesieur & Blume, 1987), that is, participants had to score between 0 and 1 point. In the case of the non-clinical sample, the questionnaire was diffused on social networks (e.g., WhatsApp, Instagram, e-mail, Facebook, LinkedIn, university bulletin boards, journals for the diffusion of scientific divulgation articles, or websites with divulgation purposes).

The questionnaire was the same for both sample groups (i.e., the GD group and the non-GD group). However, the GD clinical sample completed the questionnaires both online and offline (pen and paper), whereas the non-GD group completed the survey only online with a link to the questionnaire or a QR code that accessed the questionnaire. According to Herrero-Fernández (2015), the method of application of the questionnaires (pencil and paper vs. online) does not affect the results obtained. The questionnaire included general information about the main goals of the study. It was compulsory to read the study information and provide informed consent to access the questionnaire. We ensured participants of their responses' confidentiality and anonymity and their voluntary participation. No compensation was provided for participation in this study.

The research obtained the ethics committee's approval from the first author's university. This study was performed following the principles of the Declaration of Helsinki.

Statistical analysis

We analyze data with the statistical package SPSS for Windows (version 27). First, descriptive statistics and the differences in early maladaptive schemas and perceived impact of COVID-19 by sex (i.e., women and men) and clinical group (i.e., gambling and non-gambling group) were explored. Student's *t*-test for independent samples was carried out, including the early maladaptive schemas and perceived impact of COVID-19 as dependent variables, and sex and clinical group as grouping variables.

Second, bivariate Pearson correlations were performed to test the relationships between the early maladaptive schemas and the perceived impact of COVID-19. Third, linear regression models were computed with the PROCESS macro v4.0 (Hayes, 2017) to test the moderation effects of sex and clinical group on the relationship between early maladaptive schemas and the perceived impact of COVID-19. Seven models were carried out, one per each dependent variable (i.e., Global, emotional, physical, occupational, social, care, and quality of life COVID-19 impact). In all models, early maladaptive schemas were included as independent variables and sex and clinical group as moderators. The hypotheses were tested with Model 3, so triple interactions were allowed (interaction effect between clinical group and sex). In those cases, in which the moderation effects were significant, the simple slopes were examined at each level of the dichotomous moderator/s (i.e., 0 = women, 1 = men, and/or 0 = non-clinical, 1 = clinical).

Results

First, the descriptive statistics and the differences in young maladaptive schemas and the perceived impact of COVID-19 were examined as a function of clinical/non-clinical group and sex (see Table 2). Results showed that the clinical group had significantly higher levels of maladaptive attachment, emotional deprivation, and failure than the non-clinical group. Conversely, the non-clinical group reported a higher global perceived impact of COVID-19 than the clinical group and, concretely, in their social life and quality of life.

The results of the differences by sex indicated that concerning early maladaptive schemas, men reported significantly higher levels of social isolation than women. Attending to the perceived impact of COVID-19, women described a higher emotional impact and workload in care tasks than men. No other differences were significant.

Second, the correlations between the early maladaptive schemas and the perceived impact of COVID-19 are displayed in Table 3. All the correlations between the early maladaptive schemas were significant except for the correlation between attachment and social isolation. Moreover, all the correlations between the indicators of the perceived impact of COVID-19 were significant. Abandonment was significantly and positively correlated to global COVID-19 impact and COVID-19 impact on physical, workload in care tasks, and quality of life. Mistrust/abuse and emotional deprivation were positively and significantly correlated to the physical impact of COVID-19. Self-sacrifice was positively and significantly related to the global, physical, and care impact of COVID-19. Finally, higher dependence was

Table 2 Differences in Early Maladaptive Schemas and perceived COVID-19 Impact by Clinical/Non-clinical Group and Sex

Variable	Total sample		Non-clinical		Clinical		Women		Men	
	M	SD	M	SD	M	SD	M	SD	M	SD
Early Maladaptive Schemas										
Attachment	9.36	5.07	8.41	3.90	10.50	6.04	9.85	5.58	8.85	4.46
Abandonment	12.27	6.25	11.56	5.55	13.12	6.95	12.53	6.49	12.00	6.03
Mistrust/abuse	11.37	5.81	10.74	5.33	12.14	6.30	10.97	5.77	11.78	5.86
Emotional deprivation	10.68	6.27	9.65	5.64	11.92	6.78	10.46	6.51	10.90	6.04
Emotional inhibition	11.62	6.12	10.88	5.82	12.52	6.40	11.84	6.72	11.39	5.49
Social isolation	8.99	4.43	8.49	3.38	9.61	5.40	8.07	3.63	9.94	4.97
Subjugation	10.17	5.00	9.55	4.53	10.92	5.48	10.03	5.35	10.31	4.66
Self-sacrifice	17.88	6.20	17.04	5.88	18.92	6.46	19.15	6.50	16.60	5.63
Failure	9.07	4.89	8.05	3.80	10.32	5.75	9.00	4.83	9.14	4.98
Imperfection/shame	9.23	5.04	9.43	5.67	9.00	4.18	9.36	5.06	9.11	5.06
Dependence	8.09	4.33	7.44	3.87	8.89	4.75	7.82	4.06	8.36	4.61
Global COVID impact	34.33	11.70	36.15	11.11	32.25	12.09	36.04	11.97	32.63	11.24
Emotional	6.44	2.42	6.69	2.34	6.13	2.50	6.89	2.29	5.97	2.48
Physical	5.39	2.80	5.13	2.84	5.70	2.74	5.51	2.88	5.26	2.73
Occupational	4.57	3.34	4.63	3.22	4.51	3.49	4.76	3.54	4.39	3.13
Social	6.64	2.64	7.24	2.37	5.96	2.78	6.83	2.69	6.45	2.60
Care	5.24	3.15	5.41	3.15	5.03	3.16	5.82	3.36	4.67	2.84
Quality of life	6.62	2.52	7.18	2.27	5.99	2.66	6.89	2.56	6.36	2.47

Note. * $p < .05$. ** $p < .01$

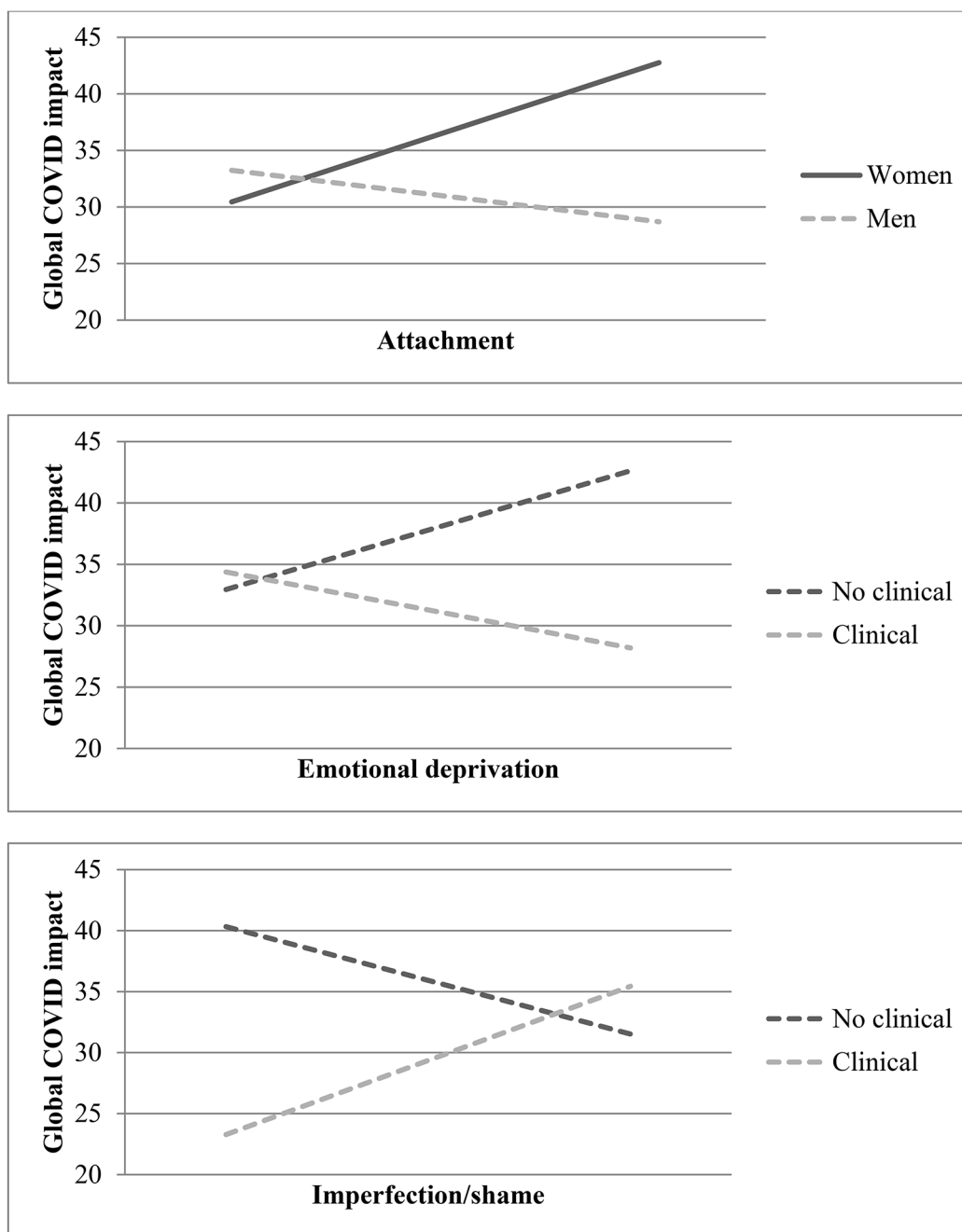


Fig. 1 Moderated Effects of Early Maladaptive Schemas on Global COVID-19 Impact

Note: Dash lines indicate non-significant simple slopes

related to higher global and physical COVID-19 impact. The other early maladaptive schemas (i.e., attachment, emotional inhibition, social isolation, subjugation, and failure) were not significantly correlated to any COVID-19 impact indicators.

Third, the hypotheses were tested by exploring the moderation effects of the clinical group (i.e., gambling vs. non-gambling disorder) and sex in the relationship between the

early maladaptive schemas and the perceived impact of COVID-19. The coefficients of the linear regressions computed with the PROCESS macro are shown in Table 4.

The model testing the predictors of the global perceived impact of COVID-19 showed that the effect of attachment was significantly moderated by sex. Concretely, dysfunctional attachment was related to a higher global COVID-19 impact for women ($\beta = 1.21$, $SE = 0.48$, $t = 2.50$, $p = .013$),

Table 3 Bivariate Correlations between Early Maladaptive Schemas and perceived COVID-19 Impact

Variable	Correlations																
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Early Maladaptive Schemas																	
1. Attachment																	
2. Abandon	0.48**																
3. Mistrust/abuse	0.29**	0.43**															
4. Deprivation	0.20*	0.38**	0.44**														
5. Inhibition	0.22**	0.41**	0.41**	0.39**													
6. Isolation	0.12	0.38**	0.48**	0.55**	0.39**												
7. Subjugation	0.33**	0.53**	0.44**	0.42**	0.34**	0.58**											
8. Self-sacrifice	0.26**	0.32**	0.42**	0.25**	0.18*	0.38**	0.38**										
9. Failure	0.25**	0.52**	0.38**	0.26**	0.41**	0.41**	0.44**	0.25**									
10. Imperf	0.17*	0.48**	0.46**	0.46**	0.54**	0.67**	0.53**	0.25**	0.58**								
11. Dependence	0.26**	0.63**	0.29**	0.33**	0.34**	0.55**	0.52**	0.23**	0.63**	0.54**							
Perceived COVID impact	0.09	0.20*	0.11	0.14	-0.02	0.13	0.06	0.17*	0.01	0.05	0.16*						
Emotional	0.10	0.11	0.08	0.11	-0.01	0.04	0.08	0.16	-0.03	-0.03	0.16	0.79**					
Physical	0.16	0.20*	0.21*	0.18*	0.03	0.12	0.02	0.20*	0.09	0.12	0.18*	0.70**	0.59**				
Occup	0.07	0.07	-0.08	-0.06	0.04	0.06	<0.01	0.01	-0.02	0.06	0.04	0.52**	0.23**	0.24**			
Social	0.09	0.11	0.05	0.13	-0.08	0.13	0.10	0.11	-0.01	0.02	0.15	0.67**	0.54**	0.31**	0.28**		
Care	0.15	0.16*	0.13	0.08	-0.04	0.10	0.04	0.23**	0.07	0.06	0.07	0.68**	0.47**	0.39**	0.20**	0.28**	
QOL	0.01	0.19*	0.09	0.14	<0.01	0.04	0.05	-0.04	-0.04	>-0.01	0.09	0.82**	0.67**	0.46**	0.26**	0.61**	0.54**

Note. Abandon = Abandonment; Deprivation = Emotional deprivation; Inhibition = Emotional inhibition; Isolation = Social isolation; Imperf = Imperfection/shame; COVID impact = Global COVID impact; Occup = Occupational; QOL = Quality of life

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

whereas it was not related to a global COVID-19 impact for men ($\beta = -0.44, SE = 0.66, t = -0.67, p = .500$). The effects of emotional deprivation and imperfection were significantly moderated by the clinical group (see Fig. 1).

The differences in the effects of the clinical versus non-clinical group were significant, with a higher impact of emotional deprivation but a lower impact of imperfection/shame in the non-clinical group compared to the clinical group. Nevertheless, the simple slopes of deprivation (non-clinical: $\beta = 0.77, SE = 0.43, t = 1.77, p = .079$; clinical: $\beta = -0.49, SE = 0.40, t = -1.21, p = .227$) and imperfection (non-clinical: $\beta = -0.90, SE = 0.82, t = -1.08, p = .280$; clinical: $\beta = 1.24, SE = 0.65, t = 1.88, p = .062$) were non-significant for both groups.

Regarding the emotional impact of COVID-19 (see Fig. 2), three moderation effects were significant. The effect of isolation on emotional impact affected men and women differentially. Nevertheless, none of the simple slopes was significant, indicating that isolation was not an important predictor either for men ($\beta = -0.25, SE = 0.16, t = -1.59, p = .113$) or women ($\beta = 0.31, SE = 0.21, t = 1.48, p = .140$). The same thing occurred in the moderated effect of imperfection on the emotional impact of COVID-19 by the clinical group. Although the effect of imperfection differed between groups, the simple slopes of the clinical ($\beta = 0.22, SE = 0.14, t = 1.53, p = .128$) and non-clinical groups were both non-significant ($\beta = -0.30, SE = 0.17, t = -1.70, p = .090$).

The effect of failure on the emotional impact of COVID-19 also differed by clinical group. In this case, the simple slopes showed that higher failure levels were significantly

related to a lower emotional impact of COVID-19 in the clinical group ($\beta = -0.33, SE = 0.14, t = -2.40, p = .018$) but the relationship was non-significant for the non-clinical group ($\beta = 0.04, SE = 0.11, t = 0.37, p = .708$).

Regarding the occupational impact of COVID-19, the higher dysfunctional attachment was related to higher occupational impact for all groups (see Table 4). The moderated effects of failure and deprivation by sex and clinical group, respectively, were significant. As displayed in Fig. 2, the simple slopes showed that higher failure was related to higher occupational impact for men ($\beta = 0.45, SE = 0.19, t = 2.31, p = .022$) but not for women ($\beta = -0.20, SE = 0.16, t = -1.20, p = .230$). Furthermore, higher social deprivation was related to the lower occupational impact of COVID-19 for the clinical group ($\beta = -0.35, SE = 0.15, t = -2.29, p = .024$) but not for the non-clinical group ($\beta = 0.11, SE = 0.13, t = 0.84, p = .400$).

Regarding the social impact of COVID-19, the regression coefficients indicated that the clinical group had a lower social impact than the clinical group (see Table 4). Besides, the moderation of sex on the attachment-social impact relationship was significant. As displayed in Fig. 2, although men ($\beta = -0.31, SE = 0.16, t = -1.93, p = .055$) and women ($\beta = 0.21, SE = 0.11, t = 1.79, p = .075$) differed in this relationship, none of the simple slopes was significant.

The model of the physical impact of COVID-19 (see Table 4) showed that emotional inhibition was related to a lower physical impact for all groups. In this model, the triple interaction of self-sacrifice per clinical group and sex was significant, and the interaction effect of imperfection with

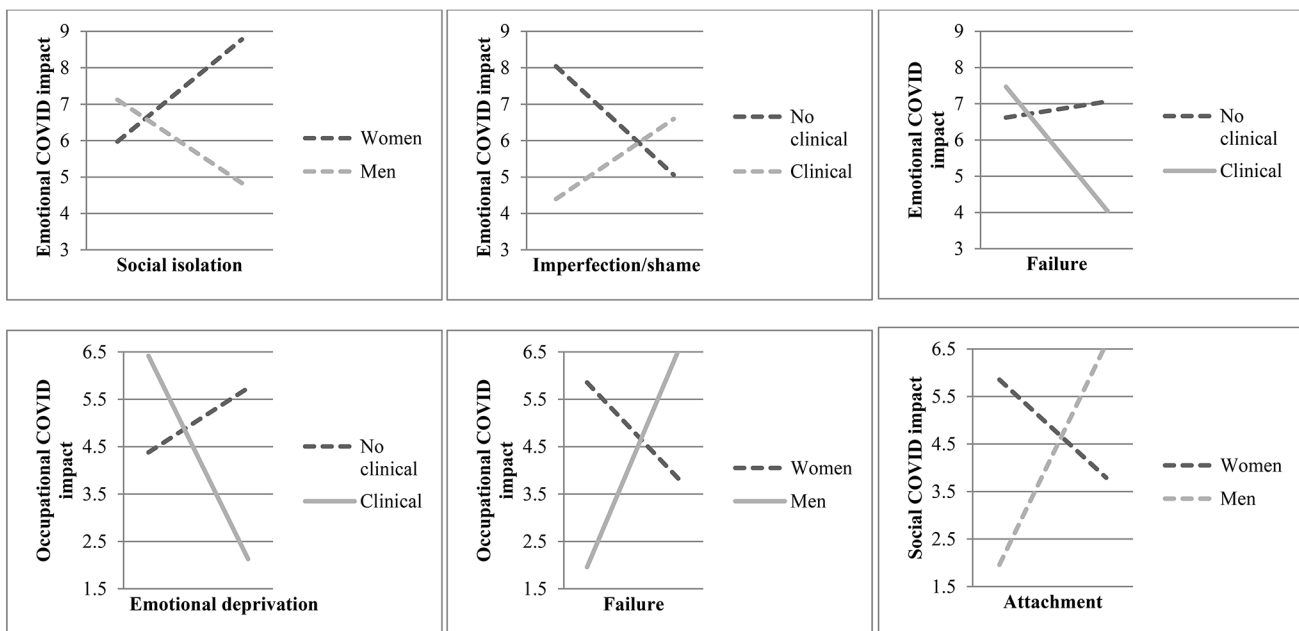


Fig. 2 Moderated Effects of Early Maladaptive Schemas on Emotional, Occupational, and Social COVID-19 Impact
Note: Dash lines indicate non-significant simple slopes

sex was also significant. The triple interaction indicated that there were differences in the slopes between the clinical women ($\beta = 0.14$, $SE = 0.08$, $t = 1.67$, $p = .097$), the non-clinical-women ($\beta = -0.09$, $SE = 0.08$, $t = -1.06$, $p = .290$), the clinical-men ($\beta = 0.01$, $SE = 0.11$, $t = 0.12$, $p = .899$), and the non-clinical-men ($\beta = 0.19$, $SE = 0.10$, $t = 1.79$, $p = .076$) in the effects of self-sacrifice on the physical impact of COVID. Despite these differences, the slopes of the four groups were non-significant, showing that self-sacrifice was not a significant predictor of the physical impact of

COVID-19 for any of the groups (see Fig. 3). The simple slopes of the relationship of imperfection and physical impact by sex showed that this effect was only significant for men ($\beta = -0.54$, $SE = 0.16$, $t = -3.36$, $p = .001$) but not for women ($\beta = -0.01$, $SE = 0.19$, $t = -0.04$, $p = .964$). Concretely, higher imperfection was related to a lower physical impact of COVID-19 only for men (see Fig. 3).

None of the predictors of the care impact of COVID-19 was significant when including the moderation effects, whereas only the clinical group was significant in predicting

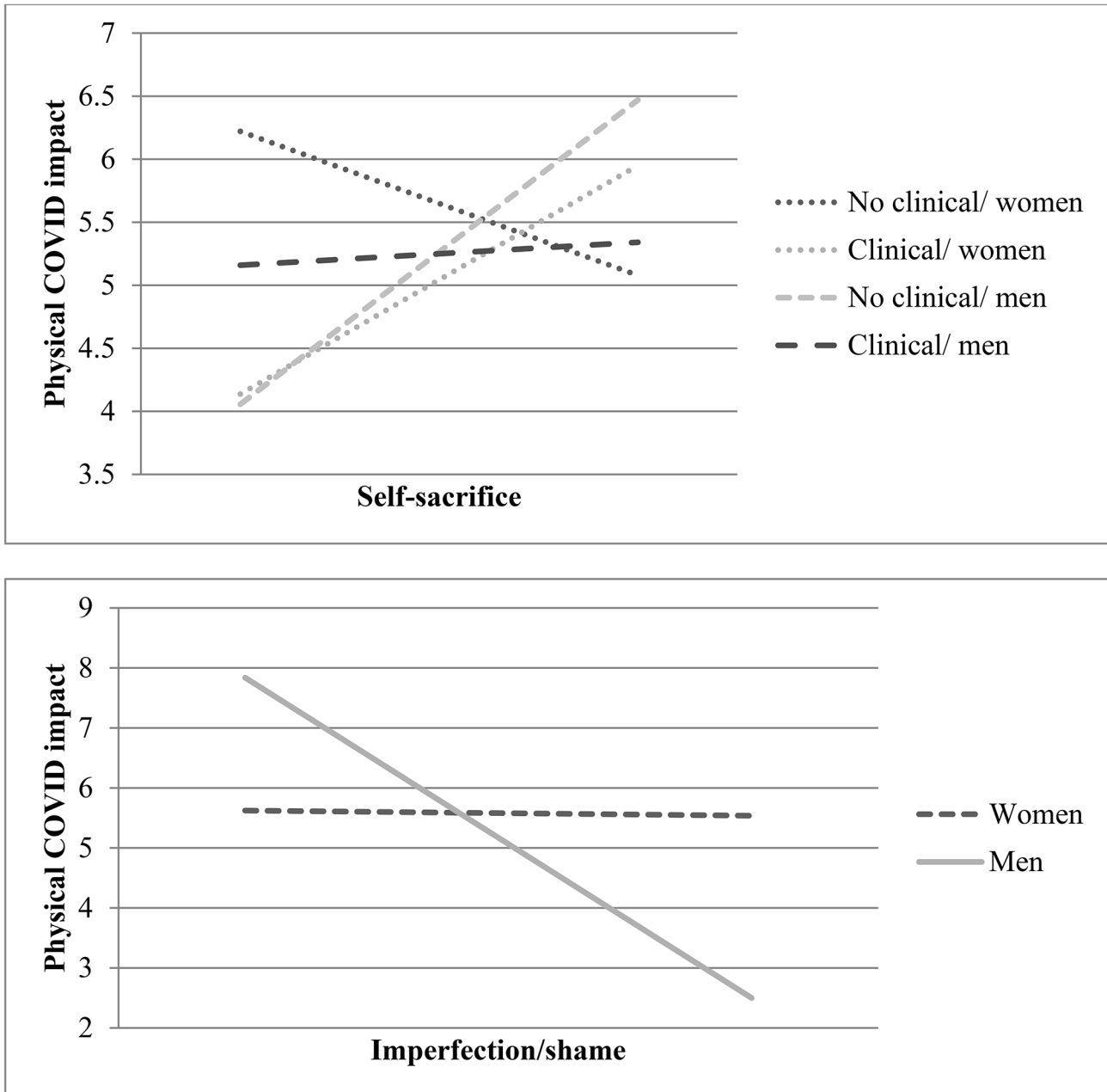


Fig. 3 Moderated Effects of Early Maladaptive Schemas on Physical COVID-19 Impact
 Note: Dash lines indicate non-significant simple slopes

Table 4 Regression Moderation Models of the Effects of Early Maladaptive Schemas on the perceived COVID-19 Impact by Clinical Group and Sex

	COVID impact																						
	Global			Emotional			Physical			Occupational			Social			Care			Quality of life				
	β	SE		β	SE		β	SE		β	SE		β	SE		β	SE		β	SE			
Clinical group (Clinical)	-6.56	3.69		-1.07	0.79	-0.60	-0.94	1.18	-2.40**	0.82	-0.65	0.98	-2.44**	0.85									
Sex (Men)	-5.71	3.07		-1.38*	0.65	-0.38	-0.47	1.02	-1.04	0.77	-0.84	0.91	-1.28	0.71									
Attachment	1.22*	0.48		0.12	0.10	0.14	0.34*	0.14	0.21	0.11	0.26	0.14	0.06	0.11									
Abandonment	0.26	0.50		0.01	0.10	0.20	0.14	0.15	<0.01	0.12	-0.06	0.15	0.05	0.11									
Mistrust/abuse	0.79	0.59		<0.01	0.12	0.16	<0.01	0.18	0.13	0.14	0.22	0.17	0.19	0.13									
Emotional deprivation	0.77	0.43		0.06	0.09	0.18	0.11	0.13	0.08	0.10	0.12	0.12	0.18	0.10									
Emotional inhibition	-0.68	0.34		-0.03	0.07	-0.18*	0.01	0.10	-0.09	0.08	-0.19	0.10	-0.10	0.08									
Social isolation	1.57	0.99		0.31	0.21	0.30	0.45	0.30	0.23	0.24	0.21	0.29	0.12	0.23									
Subjugation	-0.40	0.65		-0.03	0.13	-0.30	0.02	0.21	0.05	0.16	-0.23	0.19	-0.09	0.15									
Self-sacrifice	-0.01	0.36		0.04	0.07	-0.09	0.03	0.11	-0.06	0.20	0.08	0.10	> -0.01	0.08									
Failure	-0.23	0.82		0.04	0.11	0.02	-0.20	0.16	-0.14	0.13	0.12	0.16	-0.10	0.12									
Imperfection/shame	-0.90	0.54		-0.30	0.17	> -0.01	-0.13	0.25	-0.21	0.20	-0.05	0.24	-0.06	0.19									
Dependence	-0.30	0.80		0.05	0.17	<0.01	-0.32	0.25	0.08	0.20	-0.07	0.24	0.05	0.18									
CG * Sex	0.81	4.48		0.44	0.97	0.59	-1.32	1.46	0.59	1.11	-0.56	1.33	1.01	1.04									
Attachment * CG	-1.23	0.64		-0.07	0.14	-0.15	-0.39	0.22	-0.09	0.16	-0.28	0.21	> -0.01	0.15									
Attachment * Sex	-1.66*	0.83		-0.13	0.17	> -0.01	-0.25	0.31	-0.53*	0.20	-0.02	0.24	-0.12	0.19									
Attachment * CG * Sex	1.66	1.02		> -0.01	0.22	-0.05	0.53	0.37	0.41	0.25	0.07	0.31	<0.01	0.23									
Abandonment * CG	0.42	0.68		0.08	0.14	0.01	-0.12	0.24	0.07	0.17	0.31	0.23	0.07	0.15									
Abandonment * Sex	-0.41	0.95		-0.11	0.20	-0.32	-0.39	0.32	0.09	0.23	0.23	0.28	-0.14	0.22									
Abandonment * CG * Sex	0.05	1.14		<0.01	0.24	0.08	0.43	0.39	-0.26	0.28	-0.30	0.36	0.20	0.26									
Mistrust * CG	-0.33	0.78		0.04	0.16	-0.13	0.20	0.29	-0.08	0.19	-0.34	0.24	> -0.01	0.18									
Mistrust * Sex	-0.87	0.72		0.05	0.15	-0.07	-0.21	0.22	-0.20	0.18	-0.15	0.21	-0.21	0.16									
Mistrust * CG * Sex	0.11	0.99		-0.07	0.21	0.11	-0.08	0.34	0.19	0.25	0.13	0.30	-0.10	0.23									
Deprivation * CG	-1.26*	0.59		-0.13	0.12	-0.26	-0.46*	0.20	-0.19	0.14	-0.06	0.17	-0.27	0.13									
Deprivation * Sex	0.05	0.62		0.25	0.13	-0.12	0.07	0.21	0.08	0.15	0.02	0.18	-0.06	0.14									
Deprivation * CG * Sex	0.25	0.90		-0.12	0.19	0.36	0.05	0.30	> -0.01	0.22	-0.31	0.27	0.18	0.20									
Inhibition * CG	0.47	0.48		<0.01	0.10	0.14	-0.05	0.16	-0.08	0.12	0.21	0.14	0.02	0.11									
Inhibition * Sex	0.18	0.55		-0.12	0.11	0.05	-0.13	0.18	0.11	0.13	-0.08	0.16	0.09	0.12									
Inhibition * CG * Sex	-0.52	1.01		-0.11	0.25	> -0.01	0.06	0.32	0.04	0.25	0.05	0.30	0.02	0.23									
Isolation * CG	-0.82	1.20		-0.19	0.25	-0.08	-0.51	0.38	-0.17	0.30	0.25	0.36	-0.07	0.27									
Isolation * Sex	-1.52	1.24		-0.57*	0.26	-0.40	-0.48	0.39	-0.18	0.31	-0.05	0.37	-0.03	0.28									
Isolation * CG * Sex	1.81	1.70		-0.11	0.25	0.10	0.83	0.53	0.26	0.42	-0.20	0.50	0.01	0.39									
Subjugation * CG	0.10	0.81		0.03	0.17	0.15	-0.09	0.29	-0.04	0.20	0.08	0.24	0.10	0.19									
Subjugation * Sex	-0.40	0.83		0.01	0.17	0.17	-0.14	0.28	-0.14	0.20	-0.15	0.24	-0.09	0.19									
Subjugation * CG * Sex	0.64	1.18		<0.01	0.25	-0.42	0.29	0.39	0.15	0.29	0.49	0.35	0.11	0.27									
Self-sacrifice * CG	0.38	0.51		0.01	0.11	0.24	-0.01	0.16	0.19	0.12	0.07	0.15	0.04	0.12									
Self-sacrifice * Sex	0.83	0.59		0.01	0.12	0.28*	0.14	0.18	0.20	0.14	0.03	0.17	0.19	0.13									
Self-sacrifice * CG * Sex	-0.97	0.80		0.01	0.18	-0.42*	0.20	0.25	-0.37	0.20	-0.12	0.24	-0.27	0.18									

Table 4 (continued)

Independent variables	COVID impact													
	Global		Emotional		Physical		Occupational		Social		Care		Quality of life	
	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE	β	SE
Failure * CG	-1.09	0.85	-0.38*	0.18	-0.36	0.20	0.18	0.26	-0.04	0.21	-0.39	0.25	-0.30	0.19
Failure * Sex	1.22	0.78	0.11	0.16	0.20	0.18	0.65*	0.26	0.14	0.19	0.07	0.23	0.30	0.18
Failure * CG * Sex	0.46	1.39	0.23	0.29	0.44	0.33	-0.44	0.44	0.04	0.34	0.10	0.41	-0.04	0.32
Imperfection * CG	2.14*	1.04	0.52*	0.22	0.39	0.25	0.56	0.33	0.49	0.26	0.09	0.31	0.33	0.24
Imperfection * Sex	-1.18	1.07	-0.04	0.23	-0.53*	0.25	-0.31	0.32	-0.05	0.26	-0.07	0.31	-0.32	0.24
Imperfection * CG * Sex	-1.09	1.68	-0.43	0.36	0.03	0.40	-0.42	0.52	-0.25	0.42	-0.04	0.50	-0.11	0.39
Dependence * CG	-0.25	1.09	-0.11	0.23	-0.21	0.26	0.08	0.38	-0.19	0.27	-0.07	0.33	-0.21	0.25
Dependence * Sex	0.55	1.39	-0.02	0.29	0.30	0.33	0.47	0.47	-0.02	0.34	-0.24	0.41	0.01	0.32
Dependence * CG * Sex	1.03	1.73	0.49	0.37	0.14	0.41	-0.04	0.60	0.26	0.43	0.30	0.52	0.28	0.40

Note. CG = Clinical group; Mistrust = Mistrust/abuse; Deprivation = Emotional deprivation; Inhibition = Emotional inhibition; Isolation = Social isolation; Imperfection = Imperfection/ shame
 Significant effects are highlighted in bold
 * $p < .05$. ** $p < .01$

the perceived impact of COVID-19 on the quality of life (see Table 4). Concretely, the clinical group showed a lower impact on the quality of life than the non-clinical group.

Discussion

To our knowledge, the current study is the first to examine the relationship between early maladaptive schemas and the perceived impact of COVID-19 in a Spanish context, considering biological sex and clinical group of GD as moderator variables. Four main findings are highlighted: (1) Individuals with greater maladaptive schemas showed a higher perceived impact of COVID-19; (2) Gamblers presented higher maladaptive schemas and a lower COVID-19 impact; (3) Men displayed higher social isolation and lower self-sacrifice, as well as a lower emotional and care COVID-19 impact; and (4) Sex and clinical group significantly moderate the relationship between early maladaptive schemas and perceived impact of COVID-19.

According to previous research, one of the cognitive variables most studied about the perceived impact of COVID-19 are early maladaptive schemas (Faustino et al., 2022; Marčinko et al., 2021; Moccia et al., 2020; Pietrabissa & Simpson, 2020; Rajkumar, 2020). Our outcomes confirm this association between maladaptive schemas and the perceived impact of COVID-19. It is well-known that maladaptive schemas are related to poorer health, evidenced by lower quality of life (Mannan et al., 2022; Słysz & Urbańska, 2023) and, particularly, poorer mental health (Sójtá & Strzelecki, 2023). This could be explained by a reduction in physical activity, social relationships, and excessive concern about the pandemic (Leibovitz et al., 2021; Marroquín et al., 2020; Pietrabissa & Simpson, 2020).

Gamblers presented higher maladaptive schemas, specifically attachment, emotional deprivation, and failure, than non-gamblers. Following prior studies, people with addictive disorders, both substance users (see e.g., Jalali et al., 2011; Pauwels et al., 2018; Shorey et al., 2013a) and gamblers (see e.g., Aloi et al., 2020; Shorey et al., 2012), present remarkable maladaptive schemas. This association can be explained by the need for gamblers with a high failure and emotional deprivation schema to find a source of reinforcement, as well as a coping strategy for depressive feelings. It is worth mentioning that gamblers could benefit from treatments based on cognitive restructuring, given that cognitive distortions, based on cognitive schemas, play an important role in the understanding and treatment of gambling (Chrétien et al., 2017; Fortune & Goodie, 2012).

Unlike previous studies (see e.g., Donati et al., 2021; Sharman et al., 2021), our findings indicated that individuals with GD showed a lower perceived impact of COVID-19 in

terms of social, quality of life, and global impact. Whereas the non-clinical group was represented mainly by students who were younger and with higher education, most of the clinical group (i.e., gamblers) were working, older, and had primary or secondary studies. This may explain why gamblers suffered a lower impact of the COVID-19 pandemic, whereas young people suffered a greater social impact (Daly et al., 2021; Gloster et al., 2020; Lemuel et al., 2021; Lindert et al., 2021).

Results indicated that men presented higher social isolation and lower self-sacrifice than women. Prior evidence has concluded that women report higher early maladaptive schemas (Bilge & Balaban, 2021; Janson et al., 2019; Marengo et al., 2019; Shorey et al., 2013a), especially those schemas relative to care (e.g., self-sacrifice, subjugation). Additionally, women were more impacted by the COVID-19 pandemic in terms of emotional and workload of care tasks. Following previous studies, women suffered a greater impact in terms of mental health (e.g., anxious and depressive symptomatology) during the COVID-19 pandemic (Connor et al., 2020; Poudel et al., 2021). Based on gender roles, females mostly assume a 'caregiver role', even more so when confined at home. These two findings indicate the relevance of adopting a gender perspective in GD and, more broadly, in mental health problems.

Regarding the moderator role of sex and clinical group, generally, these variables influenced the relationship between schemas and the perceived impact of COVID-19. Specifically, sex played a moderator role in the association between attachment and global and social COVID-19 impact, between social isolation and emotional COVID-19 impact, between failure and occupational COVID-19 impact, and between imperfection and physical COVID-19 impact. On the other hand, the clinical group played a moderator role in the relationship between emotional deprivation and global and occupational COVID-19 impact, between failure and emotional COVID-19 impact, and between imperfection and global and emotional COVID-19 impact. Jointly, sex and GD played a moderator role in the relationship between self-sacrifice and physical COVID-19 impact.

Notwithstanding, significant associations were only observed in the following findings: (1) In men, there was an inverse relationship between the imperfection schema and physical impact; (2) In men, there was a direct relationship between the levels of the dysfunctional failure schema and occupational impact; (3) women showed a direct relationship between the attachment schema and the global impact of COVID-19; and (4) the gambling group showed an inverse relationship between the levels of emotional deprivation and occupational impact, as well as between the failure schema and emotional impact. In general, findings indicate that the male sex moderates the failure and

imperfection schemas and the impact on occupational and physical health, whereas the female sex moderates the attachment schemas and the global impact. Conversely, presenting GD moderates the emotional deprivation and failure schemas and the occupational and emotional COVID-19 impact. These findings underscore the necessity of taking variables such as sex into account to tailor strategies for prevention, assessment, and intervention.

This study contributes significantly to the study of gambling and the perceived impact of COVID-19. By analyzing the moderating influence of sex and gambling, we achieve a comprehensive understanding of this phenomenon. Firstly, to our knowledge, limited investigation has been conducted on cognitive schemas as a potential factor related to the perceived impact of COVID-19 (see e.g., Faustino et al., 2022; Marčinko et al., 2021; Moccia et al., 2020; Rajkumar, 2020; Słysz & Urbańska, 2023). This finding facilitates the development of therapies based on the cognitive-behavioral model to improve interventions that address the effects of COVID-19, including vulnerable populations, such as gamblers. Previous studies have demonstrated the effectiveness of these therapies based on cognitive schemas across the spectrum of psychological disorders (see e.g., Beck & Haigh, 2014; Roscoe & Taylor, 2023).

On the other hand, females' perspectives and experiences are underrepresented in gambling-related research (see e.g., Allami et al., 2021). Previous studies have found significant gender differences in gambling profile (e.g., gambling motives, severity) and treatment outcomes (e.g., relapse, dropouts) (Dunsmuir et al., 2018; Jiménez-Murcia et al., 2020; Lara-Huallipe et al., 2022). Therefore, examining the differences between men and women in variables relevant to the study of the perceived impact of COVID-19 and gambling (e.g., maladaptive schemas), allows us to adapt to the characteristics of the individuals, and thus improve the effectiveness of the treatments. For instance, our results suggest the importance of considering the relationship between failure and imperfection in the impact of COVID-19 especially in men, while in women the attachment schema is particularly important. Consequently, these variables should be considered in the study of the perceived impact of COVID-19.

These outcomes should be interpreted under several limitations. Firstly, while the questionnaire used in this study demonstrated excellent psychometric properties within the study sample, it is important to note that the perceived impact of COVID-19 was not assessed using a standardized questionnaire. Furthermore, due to the data collection taking place during the pandemic, it is essential to consider the potential need for replication of these findings in a post-pandemic era. Additionally, it is crucial to acknowledge that there existed a slight procedural difference between

the clinical and non-clinical groups. This distinction should be carefully considered when interpreting the results. On the other hand, some relevant variables in this field, such as impulsive choice or cognitive distortions, were not collected. Lastly, it is important to highlight that the cross-sectional nature of this study prevents us from establishing causality between variables.

Conclusion

Despite aforementioned shortcomings, the present study indicated that men presented higher social isolation and lower self-sacrifice, as well as lower perceived impact of COVID-19. Regarding the clinical group, gamblers presented higher maladaptive schemas and lower COVID-19 impact. Also, sex and gambling moderate the association between cognitive schemas and the perceived impact of COVID-19. These outcomes highlight the importance of conducting cognitive techniques to modify cognitive variables, such as maladaptive schemas, in the study of COVID-19's impact. They also emphasize the moderator role of participants' sex and gambling behavior in the relationship between maladaptive schemas and COVID-19 impact.

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Data Availability The datasets generated during the current study are not publicly available due to confidentiality reasons.

Declarations

Conflict of interest All authors declare no conflicts of interest or financial interest.

Ethics approval The Institutional Review Board of the University of Deusto approved the study (ETK-40/21–22). This study was performed following the principles of the Declaration of Helsinki.

Consent Informed consent was obtained from all the individual participants included in the study.

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