Original

Transdiagnostic Study of Impulsivity and Self-Injurious Behaviour in Unstable and Impulsive Disorders

Marina Díaz-Marsa[1,2,3]
Alejandra Gálvez-Merlín[1,2*]
Ana I. Guillén[4]
Alejandro de la Torre-Luque[2,3]
José M. López-Villatoro[1,2]
Luis Beato-Fernández[5]
Filomena Polo-Montes[5]
Magdalena León-Velasco[5]
Andrés Gómez-del Barrio[3,6,7]
Isabel Santos-Carrasco[8,2]
Álvaro Carrasco-Díaz[9]
José L. Carrasco[1,2,3]

[1] Instituto de Investigación Sanitaria del Hospital Clínico San Carlos (IdISSC), Madrid, Spain.
[2] Departamento de Medicina Legal, Psiquiatría y Patología, Universidad Complutense de Madrid, Madrid, Spain.
[3] Centro de Investigación Biomédica en Red de Salud Mental (CIBERSAM), Madrid, Spain.
[4] Departamento de Personalidad, Evaluación y Psicología Clínica, Universidad Complutense de Madrid, Madrid, Spain.
[5] Hospital General Universitario de Ciudad Real, Ciudad Real, Spain.
[6] Unidad de Trastornos de la Conducta Alimentaria, Hospital Universitario Marqués de Valdecilla, Santander, Spain.
[7] Instituto de Investigación Valdecilla (IDIVAL) Santander, Spain.
[8] Hospital Universitario Infanta Cristina, Madrid, Spain.
[9] Universidad Francisco de Vitoria, Madrid, Spain.

ABSTRACT

Introduction. High comorbidity between borderline personality disorder (BPD) and eating disorders (ED) shows the necessity of developing transdiagnostic models, where impulsivity could play a relevant role in the manifestations of self-injurious behaviour. Objectives: 1) To compare the levels of impulsivity and self-injurious behaviour among people with BPD, people with ED and controls. 2) To predict the presence of self-injurious behaviour based on impulsivity and other relevant clinical variables, such as the experience of traumatic events and sensitivity to rejection.

Methods. 108 women (23 controls; 29 with a diagnosis of restrictive ACT (rED); 21 with a diagnosis of purgative ACT (pED); and 35 with a diagnosis of BPD) were assessed using the Barratt Impulsivity Scale, the Traumatic Experiences Questionnaire and the Sensitivity to Rejection Questionnaire. Information about self-injurious behaviour was collected through interview and clinical history.

Results. Differences in impulsivity and self-injurious behaviour scores were found between the groups, with higher impulsivity in the BPD and pED groups, and higher rates of self-injurious behaviour in the BPD group followed by both ED groups. On the other hand, impulsivity predicted suicide attempts, and together with sensitivity to interpersonal rejection predicted nonsuicidal self-harm (NSSH).

Conclusion. Impulsivity is a dimensional variable in BPD and ED, which in turn plays a relevant role in the prediction of self-injurious behaviour.

Keywords. Eating disorders; Borderline personality disorder; Impulsivity; Sensitivity to interpersonal rejection; Self-injurious behaviour.

Actas Esp Psiquiatr 2023;51(3): 120-28 | ISSN: 1578-2735

ESTUDIO TRANSDIAGNÓSTICO DE LA IMPULSIVIDAD Y DE LA CONDUCTA AUTOLÍTICA EN LOS TRASTORNOS IMPULSIVOS E INESTABLES

RESUMEN

Introducción. La elevada comorbilidad entre el trastorno límite de la personalidad (TLP) y los trastornos de la conducta alimentaria (TCA) pone de manifiesto la necesidad de establecer modelos transdiagnósticos, donde la impulsividad podría tener un papel relevante en las manifestaciones de la conducta autolítica. Objetivos: 1) Comparar los niveles de impulsividad y conducta autolítica entre personas con TLP, personas con TCA y controles. 2) Predecir la presencia de conductas autolíticas a partir de la impulsividad y otras variables clínicas relevantes, como la vivencia de acontecimientos traumáticos y la sensibilidad al rechazo.

*** Correspondence address:**
Alejandra Gálvez Merlín.
Department of Legal Medicine, Psychiatry and Pathology.
School of Medicine. Universidad Complutense de Madrid.
2 Seneca Avenue. ZIP CODE: 28046. Madrid (Spain).
Telephone: +(00) (34) 91 394 15 00
email: alegalve@ucm.es

Actas Esp Psiquiatr 2023;51(3): 120-28 | ISSN: 1578-2735

Método. 108 mujeres (23 controles; 29 con diagnóstico de TCA restrictivo (TCAr); 21 con diagnóstico de TCA purgativo (TCAp); y 35 con diagnóstico de TLP) fueron evaluadas a través de la Escala de Impulsividad de Barratt, el Cuestionario para Experiencias Traumáticas y el Cuestionario de Sensibilidad al Rechazo. La información sobre conducta autolítica fue recogida a través de entrevista e historia clínica.

Resultados. Se encontraron diferencias en las puntuaciones de impulsividad y conducta autolítica entre los grupos, encontrándose mayor impulsividad en los grupos TLP y TCAp, y mayores índices de conducta autolítica en el grupo TLP seguido de ambos grupos de TCA. Por otro lado, la impulsividad predecía los intentos de suicidio, y junto con la sensibilidad al rechazo interpersonal predecía las autolesiones no suicidas (ANS).

Conclusión. La impulsividad es una variable dimensional en el TLP y en los TCA, que a su vez juega un papel relevante en la predicción de las conductas autolíticas.

Palabras clave. Trastornos de la conducta alimentaria; Trastorno límite de la personalidad; Impulsividad; Sensibilidad al rechazo interpersonal; Conducta Autolítica.

INTRODUCTION

Impulsive and unstable disorders such as borderline personality disorder (BPD) and eating disorders (ED) are severe clinical conditions with high prevalence rates in clinical and health care settings. These disorders entail a high economic impact, a high degree of suffering and loss of quality of life, and a significant deterioration in the family and social environment[1,2].

Despite the heterogeneity of both clinical conditions, they have high rates of comorbidity and common symptoms such as affective, interpersonal, self-concept and impulse control problems[3,4,5]. This shared symptomatology, combined with the presence of common etiological factors such as the experience of traumatic events, has led to the development of dimensional and transdiagnostic approaches that focus on the symptomatology and common underlying processes of both clinical conditions. In this regard, impulsivity is a variable present in multiple disorders, which some authors have proposed as a transdiagnostic variable for borderline symptomatology and ED[6,7].

In the same line, impulsivity has been described as a critical risk factor of self-injurious behaviour (i.e., nonsuicidal self-harm[8] and suicide attempts[9]), that are frequently present in both mental conditions. Nonsuicidal self-harm (NSSH) refers to self-injurious behaviours (self-poisoning, stabbing, etc.) without suicide intent[10]. Specifically, in BPD, NSSH has been reported in 90% of cases, and suicide attempts in 75%[11]. In BPD, suicide attempts range from 25-33%[12] and 21% show NSSH[13].

One of the most relevant models to explain and predict suicidal behaviour is the Interpersonal Theory of Suicide[14]. According to this model, interpersonal variables associated with the perception of interpersonal rejection, and the history of poor and traumatic interpersonal relationships would be relevant predictors of NSSH, suicidal ideation and suicide attempts[15]. At the same time, studies show that sensitivity to rejection predicts an increase in eating symptomatology[16] and has been frequently associated with borderline symptomatology[17], being a mediating variable between borderline and eating symptomatology[18]. Regarding the history of traumatic events, they have been reported both in patients with ED[19,20] and in patients with BPD[21,22]. Some models establish the existence of traumatic events as a common etiological factor in both clinical conditions[7].

In short, impulsivity is a variable of general interest in psychopathology, but its study as a transdiagnostic mechanism in people with BPD and people with ED seems particularly relevant. On the other hand, due to the significant presence of suicide attempts and NSSH in people with a diagnosis of BPD and ED and their complicated clinical approach, it is also of interest to study the potential connection of impulsivity and other relevant clinical variables -such as sensitivity to interpersonal rejection and the experience of traumatic events- with self-injurious and suicidal behaviour in these patients.

Therefore, the aims of this study were to compare levels of impulsivity and self-injurious behaviour (suicide attempts and NSSH) between individuals with BPD, individuals with ED -considering their clinical subtypes (i.e., restrictive vs. purgative ED)- and healthy controls, and to predict the presence of self-injurious behaviour from impulsivity and other relevant clinical variables such as the experience of traumatic events and sensitivity to rejection.

METHOD

Participants

The sample was composed of 35 women with a primary diagnosis of BPD, 29 women with a diagnosis of restrictive eating disorder (rED) -restrictive anorexia nervosa (rAN), 21 women with a diagnosis of purging-type eating disorder (pED)- purging-type anorexia nervosa (pNA) or bulimia nervosa (BN), and 22 healthy controls. The clinical groups were defined according to DSM-5[23] diagnostic criteria.

Exclusion criteria for the sample were: 1) previous history of schizophreniform disorders, bipolar disorder or neuropsychiatric disorders or any medical illness that may interfere with the conduct of the study, 2) IQ below 85.

Patients were recruited from three hospitals in Spain (i.e., Hospital Clínico San Carlos in Madrid, Hospital General Universitario in Ciudad Real and Hospital Marqués de Valdecilla in Santander). They were in ambulatory treatment and were offered to participate in the study. The control group was composed of healthy women from different settings (hospital, educational and other), with similar socio-demographic characteristics to the clinical groups.

All participants signed an informed consent form stating the aims of the study, the voluntary nature of their participation, and the anonymous treatment of their data. The study was approved by the Ethics Committee for Human Research of the participating hospitals.

Data collection instruments and procedure

The collection of relevant clinical variables was conducted by experienced psychologists and psychiatrists. All assessment instruments were administered to all participants. Information regarding age, body mass index (BMI), presence or absence of NSSH and number of suicide attempts was collected through an ad hoc interview and clinical history.

To assess the presence of Axis I and Axis II mental disorders, the International Neuropsychiatric Interview (MINI)[24] and the Structured Clinical Interview for DSM-IV Axis II Personality Disorders (SCID-II)[25] were used, respectively. The Barratt Impulsivity Scale (BIS-11)[26] was used to assess the degree of impulsivity. Experiencing traumatic events was assessed using the Traumatic Experiences Questionnaire (TQ)[27], and sensitivity to interpersonal rejection was assessed using the Rejection Sensitivity Questionnaire (RSQ)[28].

Statistical Analysis

First, the sample was described using means and standard deviations for quantitative scores and proportion of cases for categorical variables. The groups were compared with each other across clinical characteristics, using analysis of covariance (ANCOVA) for impulsivity, the Kruskal-Wallis *H*-test for the variable number of suicide attempts, and the Chi-Square test for the dichotomous variable of NSSH. The effect size indicator was η^2_p for the impulsivity variable, and Cramer's *V* for the NSSH variable.

Finally, two generalised linear regression analyses were realized to identify predictor variables for self-injurious behaviour. For the first analysis, the criterion variable "suicide attempts" was dichotomised (0 = absence of suicide attempts, 1 = presence of suicide attempts) and for the second analysis the dichotomous criterion variable "NSSH" was used (0 = absence of NSSH, 1 = presence of NSSH). For each regression analysis, the following were entered as possible predictor variables: total score on the BIS-11, total score on the TQ, and score on the Rejection Expectancy subscale of the RSQ. The Rejection Expectancy subscale of the RSQ was selected because the questionnaire does not have an overall total test score. Clinical diagnosis was entered as a covariate in the two regression models. Statistical analyses were performed using IBM SPSS version 27.0 and R Core software, version 4.0.2.

RESULTS

Sociodemographic and clinical characteristics of the sample are described in Table 1. Regarding the descriptive information on the clinical variables, the means for the number of suicide attempts are very similar between the two groups of ED, and lower with respect to patients with BPD. The group of patients with BPD is the one that most frequently presents suicide attempts (91.4%), followed by the group of patients with pED (61.9%), and patients with rED (31%). The group of people with BPD is the most prevalent in terms of NSSH (45.7%), followed by both groups of people with ED (around 10% in both groups). Finally, no suicide attempts or NSSH were found in the control group.

For impulsivity scores, the results represented in Table 2 show that there are statistically significant differences in impulsivity scores between the groups ($p < .01$), with a large effect size ($\eta^2_p = .18$). As can be seen in Table 2, the control group has the lowest scores, followed by the rED group, while the BPD group has the highest scores, followed by the pED group. In the *post hoc* tests for comparison between groups, the Bonferroni test shows that the BPD group has a significantly higher score than the rED group ($p = .003$) and the control group ($p < .001$); but there are no significant differences between the BPD group and the pED group ($p = .909$). In turn, the group of patients with pED did not show significant differences with the group of patients with rED ($p = .486$), nor with the control group, although in the latter case the difference is close to statistical significance ($p = .08$). Finally, there are also no statistically significant differences in impulsivity between the group of patients with rED and the control group ($p = 1$).

To compare suicide attempts between groups, the non-parametric Kruskal-Wallis *H*-test was used, because the variable number of suicide attempts does not follow a

Actas Esp Psiquiatr 2023;51(3): 120-28 | ISSN: 1578-2735

Table 1 Socio-demographic and clinical characteristics of the sample

	Group							
	Control (*n*=23)		rED (*n*=29)		pED (*n*=21)		BPD (*n*=35)	
	m	*sd*	*m*	*sd*	*m*	*sd*	*m*	*sd*
Age	23.35	2.53	26.34	6.61	26.90	6.03	30.51	10
BMI	20.11	1.96	17.34	2.3	21.18	5.56	24.40	5.19
Number of suicide attempts	0	0	1.03	2.49	0.90	0.83	2.86	2.76
Marital status								
Single/Separated	87%		84.6%		91.3%		74.4%	
Married/Partnered	13%		15.4%		8.7%		25.7%	
Educational level								
Secondary education/Vocational training	4.5%		22.7%		36.3%		65.7%	
Higher education	95.5%		77.2%		63.6%		31.5%	
Current activity								
Unemployed	0%		10%		4.8%		54.8%	
Employed	9.5%		25%		42.9%		12.9%	
Studying	90.5%		50%		47.6%		9.7%	
Sick leave/Disability	0%		10%		4.8%		22.6%	
Self-Injurious Behaviour								
NSSH	0%		10.3%		9.5%		45.7%	
Suicide attempts	0%		31%		61.9%		91.4%	

Nota. Note. rED: patients with a diagnosis of restrictive eating disorder. pED: patients with purging-type eating disorder. BPD: patients with borderline personality disorder. BMI: body mass index. NSSH: nonsuicidal self-harm. *n*: sample size. *m*: mean. *dt*: standard deviation.

Table 2 Analysis of covariance (ANCOVA) results for the impulsivity variable

Group	*n*	*m*	*sd*	*F*	η^2_p
Control	23	35.39	16.65	7.736**	.18
rED	29	40.66	19.67		
pED	21	51.05	20.30		
BPD	35	59.26	24.42		

Nota. *rED:* patients with a diagnosis of restrictive eating disorder. *pED:* patients with purging-type eating disorder. *BPD:* patients with borderline personality disorder. *n:* sample size. *m:* mean. *dt:* standard deviation. *F:* variance ratio. η^2p: effect size. **: $p < .01$.

normal distribution. Differences were found between the groups, with the statistic $H = 50.12$ ($p < .001$), with the BPD group having the highest number of suicide attempts, followed by the rED and pED groups. The control group had no suicide attempts. In *post hoc* tests for comparison between groups, the Bonferroni test shows that differences are significant between the control group and all clinical groups ($p = .042$ for rED; $p = .001$ for pED; and $p < .001$ for BPD). The BPD group also shows significant differences compared to rED ($p < .001$) and pED ($p = .003$). However, no significant differences were found between the rTCA and pTCA groups. ($p = .141$).

To evaluate the differences in the presence or absence of NSSH between the groups, Pearson's Chi-square test was used. The test was significant with a value of $\chi^2 = 45.02$ ($p < .001$), with a moderate effect size (Cramer's $V = .47$). The BPD group is the one with the highest frequency of NSSH (45.7%), followed by the rED and pED groups (10.3% and 9.5%). NSSH was not found in the control group.

For the predictor variables of self-injurious behaviour, according to the Akaike information criterion (*AIC*), the model with covariates is the one that best explains the probability of suicide attempts (*AIC* = 683.35), as it has a lower AIC index than the model without covariates (*AIC*

Table 3 Results of the generalised linear regression analysis for the suicide attempt variable

	OR	C.I. 95%	*t*
Intercept	2,84	[2,41, 3,37]	12,3**
Age	1,21	[1,02, 1,44]	2,39*
Expectations of rejection	0,97	[0,81, 1,14]	- 0,41
Impulsivity	1,21	[1,01, 1,44]	2,27*
Traumatic experiences	0,89	[0,74, 1,09]	- 1,19

Note. OR: odds ratio. C.I.: confidence interval. *t:* Student's t-test. **: p < .01. *: p < .05.

= 705.9). As shown in Table 3, the variables found to be significant predictors of suicide attempts were age (*OR* = 1.21, C.I. = [1.02, 1.44], *t* = 2.39, *p* < .05) and impulsivity (*OR* = 1.21, C.I. = [1.01, 1.44], *t* = 2.27, *p* < .05).

The results of the generalised linear regression analysis for the NSSH variable also indicate that the model with covariates is the one that best explains the probability of NSSH (*AIC* = 201.27), as it has a lower *AIC* index than the model without covariates (*AIC* = 220.62). As shown in Table 4, the variables found to be significant predictors of NSSH were age (*OR* = 1.87, C.I. = [1.35, 2. 67], *t* = 3.61, *p* < .01), impulsivity (*OR* = 1.95, C.I. = [1.3, 2.91], *t* = 3.15, *p* < .01) and rejection expectancy (*OR* = 0.59, C.I. = [0.4, 0.86], *t* = - 2.72, p < .05).

Table 4 Results of the generalised linear regression analysis for the variable nonsuicidal self-harm

	OR	C.I. 95%	*t*
Intercept	0.33	[0.22. 0.48]	- 5.57**
Age	1.87	[1.35. 2.67]	3.61**
Expectations of rejection	0.59	[0.4. 0.86]	- 2.72*
Impulsivity	1.91	[1.3. 2.91]	3.15**
Traumatic experiences	1.15	[0.71. 1.74]	0.62

Note. OR: odds ratio. C.I.: confidence interval. *t:* Student's t-test. **: *p* < .01. *: *p* < .05.

DISCUSSION

The aims of this study were to compare levels of impulsivity and self-injurious behaviour (suicide attempts and NSSH) between people with BPD, people with ED -considering their clinical subtypes (i.e., restrictive vs. purgative ED)- and healthy controls, and to predict the presence of self-injurious behaviour from impulsivity and other relevant clinical variables such as experience of traumatic events and sensitivity to rejection.

Results for impulsivity show that patients with BPD have the highest scores, followed by patients with pED, rED and, lastly, the control group. That is, there are three clinical profiles: one markedly more impulsive, with a prevalence of borderline symptomatology, another moderately impulsive, with a prevalence of purgative symptomatology, and another less impulsive, with more restrictive symptomatology. The results of this study partially support Newton's approach[7], where impulsivity could be considered as a possible transdiagnostic element between both pathologies. However, the levels of impulsivity are more similar between patients with BPD and patients with pED, finding a dimensionality in the impulsive continuum.

Comparing our results with the available scientific literature, numerous studies confirm the presence of high impulsivity scores in people with BPD[29,30]. However, for ED the evidence is more inconsistent and exists variations depending on the type of ED. It seems that the purgative subtype would be the ED with the greatest deficit in impulse control as opposed to the restrictive subtype[31,32,33].

As for the known biological correlates of impulsivity, alterations in the amygdala and the prefrontal system have been reported when impulsivity is high[34]. These alterations in the limbic and prefrontal systems have been confirmed in other studies both in BPD[35,36] and in ED[37,38], as well as their relationship with impulsive behaviour. With these data and based on the results of this study, we could suggest that the high levels of impulsivity in patients with BPD and pED may be related to a common alteration in limbic and frontal functions, and that this alteration may be more severe in patients with BPD.

To continue with the objectives of the study, comparing the levels of self-injurious behaviour between the different clinical groups, we found that the BPD group is the one with the highest frequency of suicide attempts and NSSH. These results are consistent with the current scientific literature, as both problems are frequent in BPD[11]. Among the subtypes of ED, pED has a higher frequency of suicide attempts than the rED subgroup, although in the case of NSSH there do not appear to be major differences between the two subgroups. These results coincide with those of Mandelli, et al.[39], who had also found a higher incidence of suicide attempts in patients with pED compared to rED, but not with Riva et al.[40], who had also found these same differences between subgroups for NSSH. Although suicide attempts and NSSH are

Actas Esp Psiquiatr 2023;51(3): 120-28 | ISSN: 1578-2735

often concurrent phenomena[41], they do not always have to occur together. NSSH generally has an emotional regulation function[42]. Therefore, perhaps the higher levels of impulsivity in patients with pED may lead to a higher prevalence of suicide attempts, while NSSH may be modulated by other variables, as it fulfils a function associated with emotional regulation and psychological distress.

The results of this study on impulsivity and self-injurious behaviour have relevant clinical implications. The conception of impulsivity as a common variable in BPD and ED may guide mental health professionals to solve the frequent problems of comorbidity between BPD and bulimia nervosa, orienting them towards a more transdiagnostic treatment approach, which takes into account the role of impulsive symptomatology, and which in turn allows a direct approach to NSSH and the reduction of suicide attempts. This helps to improve the phenotypic knowledge of this group of patients and could lay the basis for the application of common treatments in both disorders, especially those focused on impulsive and self-injurious behaviours, improving the effectiveness of intervention work for these behaviours that are causing the collapse of current healthcare systems. For example, Acceptance and Commitment Therapy (ACT)[43] has demonstrated to be effective in significantly reducing impulsive problem behaviour[44]. ACT is considered a transdiagnostic treatment because it is based on the functionality of behaviours. Although the evidence is insufficient to affirm the efficacy of ACT on NSSH and suicide attempts, due to the small number of studies available, the results are promising[45]. On the other hand, Dialectical Behavioural Therapy (DBT)[46] is a therapy that was designed for the treatment of BPD but has also demonstrated its efficacy in ED[47]. Although the basis of therapy focuses on emotional regulation, the reduction of impulsivity can also be a target, e.g., in the Mindfulness module. Regarding suicidal behaviour, in the meta-analysis by Wong et al.[48] they found that psychotherapy significantly reduced BPD symptomatology (with a large effect size) and NSSH, although they did not find a significant reduction in the number of suicide attempts.

Finally, in relation to the last objective (predicting the presence of self-injurious behaviour from impulsivity and other relevant clinical variables such as the experience of traumatic events and sensitivity to rejection), according to the results obtained in the regression analyses, impulsivity and age are variables that are directly related to both suicide attempts and NSSH. As a possible explanation, impulsivity could lead to hasty decisions, which may not take into account all the negative consequences of suicide. It seems to be expected that older patients have accumulated more suicide attempts. As for NSSH, the results do not coincide with those of Cipriano et al.[49], who establish that NSSH behaviours are more frequent in the young and adolescent population. However, our results could be explained by the characteristics of the sample (people with BPD are older on average, and at the same time, it is the subgroup of patients who present more suicide attempts and NSSH).

Sensitivity to rejection was apparently not related to suicide attempts in our study. These results are contrary to those expected according to the Interpersonal Theory of Suicide[14,15]. One possible explanation is the type of instrument used to assess the perception of interpersonal rejection. In the Interpersonal Theory of Suicide model, the perception of rejection is discussed from the constructs of Frustrated Belonging and Perceived Burden, two constructs that are not measured in the Rejection Sensitivity Questionnaire[30] used in our study. In the case of NSSH, there seems to be an inverse relationship, with those who show higher expectations of rejection being less likely to commit NSSH. These results could be explained by the presence of other intermediate variables that could be the focus of future research. On the other hand, the presence of past traumatic events does not seem to predict the presence of NSSH or suicide attempts. These results do not resemble those obtained in previous research, where past traumatic events appear to be a critical risk factor for both suicide attempts[50] and NSSH[51]. Again, one possible explanation is the type of instrument used, as the Traumatic Experiences Questionnaire[28] was developed for screening for post-traumatic stress disorder.

In conclusion, impulsivity seems to be a relevant variable in the study and intervention of BPD and ED and may play an important role in the high comorbidity between both disorders. It has been demonstrated the predictive value of impulsivity in self-injurious behaviour, a clinical problem of significant severity and prevalence in various clinical conditions, but especially frequent in BPD. The results of this work point towards a dimensional line of intervention for BPD and ED, which takes into account the role of impulsive symptomatology as a relevant variable for the intervention of both clinical conditions, and, specifically, for the reduction of NSSH and suicide attempts. According to the currently available scientific literature, Acceptance and Commitment Therapy and Dialectical Behavioural Therapy are proposed as effective transdiagnostic interventions for the reduction of impulsivity levels, with promising results in the reduction of self-injurious behaviour.

Regarding the limitations of this work, the design of this study (retrospective cross-sectional), and the data analysis (mean difference and regressions), does not allow causal explanations to be established. Moreover, although the diagnostic groups were established on the basis of the

DSM-5[23], the instruments used for the screening of Axis I and Axis 2 mental disorders are instruments based on the categories established in the DSM-IV-TR[52]. Finally, the sample is composed exclusively of women, so the results cannot be extrapolated to men. However, ED is a disorder that affects mostly women (4:5)[53]. Limitations on the sample were consequence of the difficulties in recruiting males with ED.

Acknowledgements and conflicts of interest. T

his work has been supported by the project PI16/01949, integrated in the Plan Nacional de I+D+I, AES 2013-2016; funded by the ISCIII and co-financed by the Fondo Europeo de Desarrollo Regional (FEDER). "Una forma de hacer Europa".

Bibliography

1. Grupo de trabajo de la guía de práctica clínica sobre trastorno límite de la personalidad. Fórum de Salud Mental y AIAQS, coordinadores. Guía de práctica clínica sobre trastorno límite de la personalidad. Barcelona: Agència d'Informació, Avaluació i Qualitat en Salut. Servei Català de la Salut. Pla Director de Salut Mental i Addiccions. Departament de Salut. Generalitat de Catalunya; 2011. https://consaludmental.org/publicaciones/GPCTrastornoLimitePersonalidad.pdf

2. Grupo de trabajo de la Guía de Práctica Clínica sobre Trastornos de la Conducta Alimentaria. Guía de Práctica Clínica sobre Trastornos de la Conducta Alimentaria. Madrid: Plan de Calidad para el Sistema Nacional de Salud del Ministerio de Sanidad y Consumo. Agència d'Avaluació de Tecnologia i Recerca Mèdiques de Cataluña; 2009. Guías de Práctica Clínica en el SNS: AATRM Núm. 2006/05-01. http://www.aeesme.org/wp-content/uploads/docs/GPC_440_TCA_Cataluya.pdf

3. Góngora, VC. Trastornos de personalidad en pacientes con desórdenes de la conducta alimentaria. Psicodebate. *Psicología, Cultura y Sociedad.* 2002;2:75-96. doi:10.18682/pd.v2i0.512

4. Moliner-Albero, R. Comorbilidad entre trastornos de la conducta alimentaria y los trastornos de personalidad. *Proyecto Hombre: Revista la Asociación Proyecto Hombre*. 2011;75:72–75.

5. Marucci S, Ragione LD, De Iaco G, et al. Anorexia Nervosa and Comorbid Psychopathology. *Endocr Metab Immune Disord Drug Targets*. 2018;18(4):316-324. doi:10.2174/1871530318666180213111637

6. Hasking P, Claes L. Transdiagnostic mechanisms involved in nonsuicidal self-injury, risky drinking and disordered eating: Impulsivity, emotion regulation and alexithymia. *J Am Coll Health*. 2020;68(6):603-609. doi:10.1080/07448481.2019.1583661

7. Newton JR. Borderline personality disorder and eating disorders: a trans-diagnostic approach to unravelling diagnostic complexity. *Australas Psychiatry*. 2019;27(6):556-558. doi:10.1177/1039856219852297

8. Hamza CA, Willoughby T, Heffer T. Impulsivity and nonsuicidal self-injury: A review and meta-analysis. *Clin Psychol Rev*. 2015;38:13-24. doi:10.1016/j.cpr.2015.02.010

9. Gvion Y, Levi-Belz Y. Serious Suicide Attempts: Systematic Review of Psychological Risk Factors. *Front Psychiatry*. 2018;9:56. Published 2018 Mar 7. doi:10.3389/fpsyt.2018.00056

10. Silverman MM, Berman AL, Sanddal ND, O'carroll PW, Joiner TE. Rebuilding the tower of Babel: a revised nomenclature for the study of suicide and suicidal behaviors. Part 2: Suicide-related ideations, communications, and behaviors. *Suicide Life Threat Behav*. 2007;37(3):264-277. doi:10.1521/suli.2007.37.3.264

11. Goodman, M., Tomas, I. A., Temes, C. M., Fitzmaurice, G. M., Aguirre, B. A., & Zanarini, M. C. (2017). Suicide attempts and self-injurious behaviours in adolescent and adult patients with borderline personality disorder. *Personality and mental health*, *11*(3), 157–163. https://doi.org/10.1002/pmh.1375

12. Smith, A. R., Zuromski, K. L., & Dodd, D. R. (2018). Eating disorders and suicidality: what we know, what we don't know, and suggestions for future research. *Current opinion in psychology*, *22*, 63–67. https://doi.org/10.1016/j.copsyc.2017.08.023

13. Islam, M. A., Steiger, H., Jimenez-Murcia, S., Israel, M., Granero, R., Agüera, Z., Castro, R., Sánchez, I., Riesco, N., Menchón, J. M., & Fernández-Aranda, F. (2015). Non-suicidal Self-injury in Different Eating Disorder Types: Relevance of Personality Traits and Gender. *European eating disorders review: the journal of the Eating Disorders Association*, *23*(6), 553–560. https://doi.org/10.1002/erv.2374

14. Joiner T. Why people die by suicide. Cambridge, MA, US: Harvard University Press; 2005.

Actas Esp Psiquiatr 2023;51(3): 120-28 | ISSN: 1578-2735

15. Van Orden KA, Witte TK, Cukrowicz KC, Braithwaite SR, Selby EA, Joiner TE Jr. The interpersonal theory of suicide. *Psychol Rev*. 2010;117(2):575-600. doi:10.1037/a0018697

16. Bondü R, Bilgin A, Warschburger P. Justice sensitivity and rejection sensitivity as predictors and outcomes of eating disorder pathology: A 5-year longitudinal study. *International Journal Eating Disorder*. 2020;53(6):926-936. doi: https://doi.org/10.1002/eat.23273

17. Sato M, Fonagy P, Luyten P. Rejection Sensitivity and Borderline Personality Disorder Features: The Mediating Roles of Attachment Anxiety, Need to Belong, and Self-Criticism. *J Pers Disord*. 2020;34(2):273-288. doi:10.1521/pedi_2019_33_397

18. Al-Salom P, Boylan K. Borderline Personality Disorder and Disordered Eating Behaviour: The Mediating Role of Rejection Sensitivity. *J Can Acad Child Adolesc Psychiatry*. 2019;28(2):72-81.

19. Brustenghi F, Mezzetti FAF, Di Sarno C, Giulietti C, Moretti P, Tortorella A. Eating Disorders: the Role of Childhood Trauma and the Emotion Dysregulation. *Psychiatr Danub*. 2019;31(Suppl 3):509-511.

20. Gomez F, Kilpela LS, Middlemass KM, Becker CB. Sexual trauma uniquely associated with eating disorders: A replication study. *Psychol Trauma*. 2021;13(2):202-205. doi:10.1037/tra0000586

21. de Aquino Ferreira LF, Queiroz Pereira FH, Neri Benevides AML, Aguiar Melo MC. Borderline personality disorder and sexual abuse: A systematic review. *Psychiatry Res*. 2018;262:70-77. doi:10.1016/j.psychres.2018.01.043

22. Newnham EA, Janca A. Childhood adversity and borderline personality disorder: a focus on adolescence. *Curr Opin Psychiatry*. 2014;27(1):68-72. doi:10.1097/YCO.0000000000000028

23. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (5ª ed.). Washington, DC: Autor; 2013.

24. Sheehan DV, Lecrubier Y, Sheehan KH, et al. The Mini-International Neuropsychiatric Interview (M.I.N.I.): the development and validation of a structured diagnostic psychiatric interview for DSM-IV and ICD-10. *J Clin Psychiatry*. 1998;59(20):22-57.

25. First MB, Gibbon M, Spitzer RL, Williams JBW, Benjamin LS. *Use's Guide for the Strcutured Clinical Interview for DSM-IV Axis II. Personality Disorders*. Washington: American Psychiatric Press; 1997.

26. Barratt E S. Impulsiveness and agression. En Monahan, J., Steadman, H. J. (Eds.), *Violence and mental disorder. Development in risk assessment*. (pp. 61-79). Chicago: The University of Chicago Press; 1995.

27. Davidson JRT, Hughes D., Blazer DG. Traumatic experiences in psychiatric patients. *Journal Trauma Stress*. 1990;*3*:459-475.

28. Downey, G., y Feldman, S. I. (1996). Implications of rejection sensitivity for intimate relationships. *Journal of Personality and Social Psychology, 70*(6), 1327–1343. https://doi.org/10.1037/0022-3514.70.6.1327

29. Linhartová P, Látalová A, Barteček R, et al. Impulsivity in patients with borderline personality disorder: a comprehensive profile compared with healthy people and patients with ADHD. *Psychol Med*. 2020;50(11):1829-1838. doi:10.1017/S0033291719001892

30. Zamalloa, I., Iraurgi, I., Maruottolo, C., Mascaró, A., Landeta, O., y Malda, J. Impulsividad y función ejecutiva en el trastorno límite de personalidad. *Actas Esp Psiquiatr*. 2016;44(3),113-8.

31. Castro-Zamudio S, Castro-Barea J. Impulsividad y búsqueda de sensaciones: factores asociados a síntomas de anorexia y bulimia nerviosas en estudiantes de secundaria. *Escritos de Psicología*. 2016;*9*(2).

32. Espel HM, Muratore AF, Lowe MR. An investigation of two dimensions of impulsivity as predictors of loss-of-control eating severity and frequency. *Appetite*. 2017;117:9-16. doi:10.1016/j.appet.2017.06.004

33. Claes L, Nederkoorn C, Vandereycken W, Guerrieri R, Vertommen H. Impulsiveness and lack of inhibitory control in eating disorders. *Eat Behav*. 2006;7(3):196-203. doi:10.1016/j.eatbeh.2006.05.001

34. Williams WA, Potenza MN. Neurobiologia dos transtornos do controle dos impulsos [The neurobiology of impulse control disorders]. *Braz J Psychiatry*. 2008;30 Suppl 1(0 1):S24-S30. doi:10.1590/s1516-44462008005000003

35. Mak AD, Lam LC. Neurocognitive profiles of people with borderline personality disorder. *Curr Opin Psychiatry*. 2013;26(1):90-96. doi:10.1097/YCO.0b013e32835b57a9

36. Sicorello M, Schmahl C. Emotion dysregulation in borderline personality disorder: A fronto-limbic imbalance?. *Curr Opin Psychol*. 2021;37:114-120. doi:10.1016/j.copsyc.2020.12.002

37. Simon JJ, Stopyra MA, Mönning E, et al. Neuroimaging of hypothalamic mechanisms related to glucose metabolism in anorexia nervosa and obesity. *J Clin Invest*. 2020;130(8):4094-4103. doi:10.1172/JCI136782

38. Veit R, Schag K, Schopf E, et al. Diminished prefrontal cortex activation in patients with binge eating disorder associates with trait impulsivity and improves after impulsivity-focused treatment based on a randomized controlled IMPULS trial. *Neuroimage Clin*. 2021;30:102679.

39. Mandelli L, Arminio A, Atti AR, De Ronchi D. Suicide attempts in eating disorder subtypes: a meta-analysis of the literature employing DSM-IV, DSM-5, or ICD-10 diagnostic criteria. *Psychol Med*. 2019;49(8):1237-1249. doi:10.1017/S0033291718003549.

40. Riva A, Pigni M, Bomba M, Nacinovich R. Adolescents with anorexia nervosa with or without non-suicidal self-injury: clinical and psychopathological features. *Eat Weight Disord*. 2022;27(5):1729-1737. doi:10.1007/s40519-021-01311-4

41. Voss C, Hoyer J, Venz J, Pieper L, Beesdo-Baum K. Non-suicidal self-injury and its co-occurrence with suicidal behavior: An epidemiological-study among adolescents and young adults. *Acta Psychiatr Scand*. 2020;142(6):496-508. doi:10.1111/acps.13237

42. Taylor PJ, Jomar K, Dhingra K, Forrester R, Shahmalak U, Dickson JM. A meta-analysis of the prevalence of different functions of non-suicidal self-injury [published correction appears in J Affect Disord. 2019 Dec 1;259:440]. *J Affect Disord*. 2018;227:759-769. doi:10.1016/j.jad.2017.11.073

43. Hayes SC, Luoma JB, Bond FW, Masuda A, Lillis J. Acceptance and commitment therapy: model, processes and outcomes. *Behav Res Ther*. 2006;44(1):1-25. doi:10.1016/j.brat.2005.06.006

44. Morrison KL, Smith BM, Ong CW, et al. Effects of Acceptance and Commitment Therapy on Impulsive Decision-Making. *Behav Modif*. 2020;44(4):600-623. doi:10.1177/0145445519833041

45. Tighe J, Nicholas J, Shand F, Christensen H. Efficacy of Acceptance and Commitment Therapy in Reducing Suicidal Ideation and Deliberate Self-Harm: Systematic Review. *JMIR Ment Health*. 2018;5(2):10732. doi:10.2196/10732

46. Linehan M. Cognitive-Behavioral Treatment of Borderline personality Disorder. New York: The Guilford Press; 1993.

47. García-Palacios A, Navarro Haro MV, Guillén-Botella V, Marco JH., Botella-Arbona C. Estudio preliminar sobre la eficacia de la terapia dialéctico comportamental en personas diagnosticadas de trastorno límite de la personalidad y bulimia nerviosa. *Behavioral psychology,* 2010;18(1):197-216.

48. Wong J, Bahji A, Khalid-Khan S. Psychotherapies for Adolescents with Subclinical and Borderline Personality Disorder: A Systematic Review and Meta-Analysis. *Can J Psychiatry*. 2020;65(1):5-15. doi:10.1177/0706743719878975

49. Cipriano A, Cella S, Cotrufo P. Nonsuicidal Self-injury: A Systematic Review. *Front Psychol*. 2017;8:1946. Published 2017 Nov 8. doi:10.3389/fpsyg.2017.01946

50. Zatti C, Rosa V, Barros A, et al. Childhood trauma and suicide attempt: A meta-analysis of longitudinal studies from the last decade. *Psychiatry Res*. 2017;256:353-358. doi:10.1016/j.psychres.2017.06.082

51. Shao C, Wang X, Ma Q, Zhao Y, Yun X. Analysis of risk factors of non-suicidal self-harm behavior in adolescents with depression. *Ann Palliat Med*. 2021;10(9):9607-9613. doi:10.21037/apm-21-1951

52. American Psychiatric Association. Diagnostic and statistical manual of mental disorders (4ª ed. Revised Text). Washington, DC: Autor; 2000.

53. Santomauro DF, Melen S, Mitchison D, Vos T, Whiteford H, Ferrari AJ. The hidden burden of eating disorders: an extension of estimates from the Global Burden of Disease Study 2019. *Lancet Psychiatry*. 2021;8(4):320-328. doi:10.1016/S2215-0366(21)00040-7

Actas Esp Psiquiatr 2023;51(3): 120-28 | ISSN: 1578-2735