Uncovering borderline features in a community sample of Portuguese adolescents

Diogo Carreiras[1], Paula Castilho[1] and Marina Cunha[1,2]

[1]*University of Coimbra, Center for Research in Neuropsychology and Cognitive and Behavioral Intervention (CINEICC), Coimbra, Portugal*
[2]*Miguel Torga Institute of Higher Education, Coimbra, Portugal*

Abstract: Borderline features can be identified in adolescence and may have a psychopathological expression. This study aimed to characterize borderline features in Portuguese adolescents from the general population. The sample included 1,005 adolescents (586 females), M_{age} = 15.35 years. Girls presented higher borderline features than boys, and no differences were found between age groups. The more prevalent features were feelings of abandonment and emotional intensity. Borderline features presented a negative correlation with school performance and positive correlations with psychopathological symptoms. The regression model indicated that impulsivity, suicide ideation, stress, and depression were the significant predictors of borderline personality symptoms. These results show the importance of assessing borderline features at an early age and prevention.

Keywords: Borderline features; psychopathology; adolescence.

Revelando rasgos del trastorno límite de la personalidad en una muestra comunitaria de adolescentes portugueses

Resumen: Los rasgos del trastorno límite de la personalidad se pueden identificar en la adolescencia y pueden poseer una expresión psicopatológica. Este estudio pretendió caracterizar los rasgos del trastorno límite de la personalidad en adolescentes portugueses de la población general. La muestra incluyó 1005 adolescentes (586 chicas), M_{edad} =15.35 años. Las chicas presentaron rasgos del trastorno límite más altos que los chicos y no se encontraron diferencias entre los grupos de edad. Los rasgos del trastorno límite más prevalentes fueron sentimientos de abandono e intensidad emocional. Los rasgos del trastorno límite mostraron una correlación negativa con el rendimiento escolar y correlaciones positivas con síntomas psicopatológicos. El modelo de regresión indicó que la impulsividad, la ideación suicida, el estrés y la depresión fueron los predictores significativos de la sintomatología de la personalidad límite. Estos resultados muestran la importancia de evaluar los rasgos del trastorno límite de personalidad en edades tempranas y de la prevención.

Palabras clave: Rasgos limite de la personalidad; psicopatología; adolescencia.

Introduction

Borderline personality disorder (BPD) is an impairing disorder with marked symptoms such as emotional instability, impulsivity, fear of abandonment, feelings of emptiness, and self-harm (American Psychiatric Association [APA], 2013; World Health Organization, 2019). The prevalence of BPD is between 1.6% and 5.9% in the general population (APA, 2013) and studies indicated a prevalence between 1.3% and 1.6% in

adolescents (Johnson et al., 2008; Lewinsohn et al., 1997). BPD has the developmental path of a personality disorder, which means that borderline symptoms tend to develop over time and have an early onset (Bozzatello et al., 2019). Accordingly, it seems crucial to identify and intervene as early as possible when borderline features start to manifest themselves, and not to wait until adulthood when these symptoms are usually more rigid and severe (Bozzatello et al., 2019). In fact, adolescence is identified as a vulnerable stage for the development of BPD (Sharp & Fonagy, 2015), and some adolescents might present borderline features without meeting the full criteria to be diagnosed. Adolescents' subclinical borderline symptoms are likely to culminate in the development of BPD years later (Carlson et al., 2009).

In the last decades, research on borderline features in adolescents has grown. Diagnosing BPD in youth faced some reluctance from psychologists and psychiatrists. Some reasons for this reluctance are that some borderline features might be normative features of adolescents, which will remit when they get older, and that the negative labeling might be stigmatizing for children (Sharp & Tackett, 2014). Additionally, adolescence is a transition period marked by turmoil, which might better explain some feelings and behaviors than a personality disorder (Larrivée, 2013). Nevertheless, the importance of early detection of borderline features has progressively gained strength as the first step to preventing the progression of these maladaptive and impairing symptoms with marked consequences and societal costs (Bozzatello et al., 2019; Hastrup et al., 2019; Sharp & Tackett, 2014; Swartz et al., 1990). In this line, it is necessary to correctly identify the most prevalent borderline features among adolescents and examine the association between borderline features, demographic variables, and psychopathological symptoms. The use of community adolescent samples is relevant because at this age some people might present subclinical symptoms that have not yet been diagnosed, thus being left unnoticed and/or underestimated until early adulthood.

Some sociodemographic variables have been discussed to be related to borderline symptoms. Several studies indicate higher borderline features in females than in males (Bradley et al., 2005; Carreiras, Loureiro et al., 2020; Sharp et al., 2015; Silberschmidt et al., 2015) and the DSM-5 (APA, 2013) suggests that BPD presents a female to male ratio of 3:1. The over-representation of women with BPD in mental health services may explain part of the gender prevalence differences (Sansone & Sansone, 2011). In adolescents, studies are scarcer, but some recent research has also demonstrated that girls present higher borderline features in comparison to boys (Carreiras,

Castilho et al., 2020). Moreover, a study by Swirsky-Sacchetti et al. (1993) suggested that BPD individuals seem to present lower verbal, performance and full scale IQ scores. Bagge et al. (2004) showed that BPD predicted poor academic performance two years later.

Considering that BPD is a disorder with marked emotional instability and that it often co-occurs with mood disorders, anxiety disorders, substance use disorders and other personality disorders (Tomko et al., 2014), often a strong association between borderline features and negative affect is reported (Rogers et al., 1995; Zanarini et al., 2019). Non-suicidal self-injury (NSSI) is also a common feature of BPD. NSSI is the self-directed and intentional behavior to harm or destroy body tissue without the intention to die (Klonsky & Moyer, 2008). Studies showed that approximately 78 % of adolescents who met the criteria for BPD regularly engage in NSSI (Glenn & Klonsky, 2013). Around 30 % of adults with BPD report onset of NSSI in childhood, and another 30 % report onset of NSSI in adolescence (Zanarini et al., 2006). Impulsive behaviors are a criterion for BPD, including NSSI, substance abuse, spending, promiscuous sex, reckless driving, and binge eating (APA, 2013). Fossati et al. (2014) showed that impulsivity (positive and negative urgency) and emotion dysregulation were unique predictors of adolescents' borderline features.

The present study aimed to map and characterize borderline features in Portuguese adolescents using a large sample, given that to date there has been no Portuguese study that has presented such results. Specifically, we intended to identify the most prevalent borderline features and explore differences concerning gender, age, socioeconomic status, school year, and school performance. We also intended to analyze the association between borderline features and risk factors such as impulsivity, self-harm, depression, anxiety and suicide ideation, and their predictive effect.

Method

Participants

The sample of the present study was composed of 1,005 Portuguese adolescents, 419 (42 %) males and 586 (58 %) females, aged between 12 and 19 years ($M = 15.35$, $SD = 1.38$) and $M = 9.65$ years of education ($SD = 1.08$). No significant differences between boys and girls were found for age ($t (1005) = 1.95$, $p = .05$) nor years of schooling ($t (1005) = 0.02$, $p = .98$). Further details are presented in Table 1.

Table 1. Sample characteristics (*N* = 1,005)

Characteristics	*n* (%)	*M* (*SD*)
Gender		
Female	586 (58.3%)	
Male	419 (41.7%)	
Age (years)		15.35 (1.38)
12	30 (3.0%)	
13	53 (5.3%)	
14	167 (16.6%)	
15	307 (30.5%)	
16	254 (25.3%)	
17	130 (12.9%)	
18	58 (5.8%)	
19	6 (0.6%)	
Years of education		9.65 (1.08)
7	41 (4.1%)	
8	99 (9.9%)	
9	271 (27.0%)	
10	362 (36.0%)	
11	223 (22.2%)	
12	9 (0.9%)	
Socioeconomic status		3.15 (0.51)
Very low (1)	3 (0.3%)	
Low (2)	37 (3.7%)	
Medium (3)	561 (55.8%)	
High (4)	140 (13.9%)	
Very high (5)	6 (0.6%)	
Missings	258 (25.7%)	
School performance		2.71 (0.70)
Insufficient (1)	21 (2.1%)	
Sufficient (2)	260 (25.9%)	
Good (3)	388 (38.6%)	
Very good (4)	84 (8.4%)	
Missings	252 (25.1%)	

Procedure

The current study is part of a broader PhD project of the first author. All procedures take into account the ethical standards of the Ministry of Education and the National Commission for Data Protection of Portugal (number: 6713/ 2018), the Ethics and Deontology Commission of the Faculty of Psychology and Educational Sciences of the University of Coimbra, and the Declaration of Helsinki (1964) and its later amendments, or comparable ethical standards. The sample was collected in eight schools in the north and center of Portugal after permission was granted by the schools' headteachers, and parents and adolescents gave written consent. Participants and parents were informed about the aims of the study, confidentiality, and voluntary participation. The self-report questionnaires were completed in the classroom with researchers and teachers present to provide any clarification necessary and guarantee an independent response.

Instruments

Sociodemographic questionnaire. Participants completed a sociodemographic questionnaire with questions about age, gender, socioeconomic status, grade, and school performance. The rating scale for socioeconomic status was a 5-point Likert scale (1 = *very low*, 2 = *low*, 3 = *medium*, 4 = *high*, and 5 = *very high*) as well as for school performance (1 = *insufficient*, 2 = *sufficient*, 3 = *good*, and 4 = *very good*). Adolescents responded according to their perception of socioeconomic status and school performance.

The Borderline Personality Features Scale for Children (BPFS-C; Sharp et al., 2014; Portuguese version by Carreiras, Loureiro et al., 2020). The BPFS-C is a unidimensional self-report questionnaire comprising 11 items to assess borderline features in adolescents. Items are rated on a 5-point Likert scale (1 = *never true*; 5 = *always true*) and the final score is a sum of all items, with higher sums reflecting a higher level of borderline features. The 11-item version presented good internal consistency (α = .85; Sharp et al., 2014) as well as the 10-item Portuguese version (α = .77; Carreiras, Loureiro et al., 2020). In the current study, Cronbach's alpha was .84.

The Depression Anxiety Stress Scale (DASS-21; Lovibond & Lovibond, 1995; Portuguese version by Pais-Ribeiro et al., 2004). The DASS-21 is a self-report questionnaire with 21 items to assess depression, anxiety and stress. Items are rated on a 4-point Likert scale (0 = *did not apply to me at all*; 3 = *applied to me very much, or most of the time*) and higher scores mean higher negative affect. The original version showed good internal consistency (α = .91 for depression, α = .84 for anxiety, α = .90 for stress) (Lovibond & Lovibond, 1995). The Portuguese version also showed good internal consistency (α = .85 for depression, α = .74 for anxiety and α = .81 for stress) (Pais-Ribeiro et al., 2004). In this study, Cronbach's alpha was .88 for depression, .82 for anxiety, and .86 for stress.

The Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents (ISSIQ-A; Carvalho et al., 2015). The ISSIQ-A is a self-report questionnaire with 56 items to assess impulsivity (e.g., «I do things without thinking about the consequences»), self-harm (e.g., «I cut some parts of my body on purpose»), risk behaviors (e.g., «I drink too much alcohol»), function of self-harm (e.g., «I hurt myself to feel less inferior»), and suicide ideation (e.g., «Sometimes I would like to disappear») in adolescents. Items of impulsivity self-harm and suicide ideation are rated on a 4-point Likert scale (0 = *never*; 3 = *always*). The original version showed good internal consistency for impulsivity (α = .77), self-harm (α = .90), risk behavior (α = .81) and suicide ideation (α = .89) (Carvalho et al., 2015). In the current study the internal consistency was acceptable for impulsivity (α = .78), self-harm (α = .81), risk behavior (α = .68) and suicide ideation (α = .83).

Statistical analysis

Data were analyzed with IBM SPSS Statistics version 23. The normality assumption was tested through Kolmogorov-Smirnov tests and skewness (*sk*) and kurtosis (*ku*) values (the normality assumption was assumed when *sk* < 3 and *ku* < 8; Kline, 2011). Outliers were explored with boxplot diagrams.

Descriptive statistics were used to characterize the sample according to gender, age, socioeconomic status, and other demographic variables. To test differences between groups, Student's t-tests for independent samples and one-way ANOVAs were conducted. Post hoc comparisons were explored using Tukey's HSD post hoc procedure. Effect sizes were analyzed according to Cohen (1988), considering *d* and eta squared (η^2) values between .20 and .49 small, between .50 and .79 medium, and above .80 large. Pearson correlation coefficients were used to explore the relationship between variables. The following references by Dancey and Reidy (2017) were used to interpret the correlation coefficients: values between .10 and .39 were considered weak; between .40 and .69 moderate; and above .70 strong. Correlation coefficients of two independent groups were compared using Fisher's z-test (Field, 2018).

The predictive model of borderline features was tested through regression analysis. The independence of errors was analyzed and validated through the Durbin–Watson statistic, considering values < 2.5 acceptable. Multicollinearity or singularity amongst variables was tested according to the Variance Inflation Factors (*VIF*)

indicating an absence of β estimation problems when < 5 (Kline, 2011).

Statistical significance was considered when *p* values were under .05.

Results

Preliminary analyses

Preliminary data analyses were completed to assure the assumptions of normality, linearity, homoscedasticity, and independence of residuals. No severe violations of normality were found (|*sk*| < 3 and |*ku*| < 8-10). Outliers were kept in order to maintain the natural variance and representation in the population, and considering that there was no change in the main results. In the regression analysis, a Durbin-Watson value of 1.27 and *VIF* < 5 assured independence of residuals and absence of multicollinearity problems.

Descriptives of borderline features

Descriptive statistics of borderline features in the present sample are presented in Table 2. It seems that the most prevalent traits were feelings of abandonment (item 9), emotional intensity (item 3) and an unstable self-image (item 10). The less reported trait was impulsivity (item 8). Differences between boys and girls were found for all items. Girls reported higher loneliness, wanting people to know they hurt them, intense feelings, emptiness, being let down, emotional instability and abandonment. Boys reported higher carelessness and getting into troubles for being impulsive.

Borderline features and sociodemographic variables

We tested differences in borderline features across gender and age, as well as associations between borderline features and socioeconomic status, grade, and school performance. In Table 3 are presented the means and standard deviations of borderline features by gender and age. Girls presented higher borderline features in comparison to boys (*t* (1003) = -5.99, *p* < .001), with a small effect size (*d* = 0.38). Nonsignificant differences were found between age groups for borderline features, *F* (3, 1001) = 1.76, *p* = .153.

The correlation results between borderline features and some sociodemographic variables showed that there was no association with age, socioeconomic status, or grade. Borderline features only presented a significant

Table 2. Descriptives of borderline features, Student's t-tests for independent samples (*t*) and effect sizes (Cohen's *d*) for gender differences (*N* = 1,005)

Borderline features (BPFS-C)	Total sample	Girls (*n* = 586)	Boys (*n* = 419)	*t* (*df*)	*p*	*d*
	M (SD)	*M (SD)*	*M (SD)*			
1. Feeling lonely.	2.29 (1.02)	2.45 (1.02)	2.06 (0.99)	-6.07 (1003)	< .001	0.39
2. Wanting to tell people how much they've hurt them.	2.68 (1.24)	2.83 (1.22)	2.47 (1.25)	-4.45 (1003)	< .001	0.29
3. Very strong and intense feelings.	3.04 (1.23)	3.15 (1.20)	2.87 (1.25)	-3.57 (1003)	< .001	0.23
4. Something important about the self is missing.	2.59 (1.25)	2.71 (1.17)	2.43 (1.22)	-3.48 (1003)	< .001	0.23
5. Being careless with things that are important.	2.12 (1.10)	2.05 (1.13)	2.22 (1.06)	2.35 (1003)	.019	0.16
6. Being let down by close people.	2.49 (1.15)	2.71 (1.17)	2.18 (1.06)	-7.53 (1003)	< .001	0.47
7. Emotional instability.	2.47 (1.16)	2.63 (1.15)	2.24 (1.13)	-5.44 (1003)	< .001	0.34
8. Getting into trouble for doing things impulsively.	1.92 (1.03)	1.82 (1.04)	2.05 (1.01)	3.53 (1003)	< .001	0.22
9. Feelings of abandonment.	3.59 (1.32)	3.82 (1.22)	3.27 (1.39)	-6.56 (1003)	< .001	0.42
10. Unstable self-image.	2.72 (1.22)	2.92 (1.20)	2.45 (1.19)	-6.14 (1003)	< .001	0.39

Note. BPFS-C = Borderline Personality Features Scale for Children.

Table 3. Means (*M*) and standard deviations (*SD*) of borderline features by gender and age. Student's t-tests (*t*), one-way ANOVAs (*F*) and effect sizes (Cohen's *d* and Eta squared (η^2)) for differences between groups (*n* = 1,005)

Gender differences	Boys (*n* = 419)		Girls (*n* = 586)		*t (df)*	*p*	*d*
	M (SD)		*M (SD)*				
Borderline features (BPFS-C)	24.25 (7.60)		27.09 (7.28)		- 5.99 (1003)	< .001	0.38
Age differences	12-13 (*n* = 83)	14-15 (*n* = 474)	16-17 (*n* = 384)	18-19 (*n* = 64)	*F (df)*	*p*	η^2
	M (SD)	*M (SD)*	*M (SD)*	*M (SD)*			
Borderline features (BPFS-C)	24.21 (9.24)	25.91 (7.42)	26.13 (7.33)	26.73 (7.13)	1.76 (3, 1001)	.153	0.01

Note. BPFS-C = Borderline Personality Features Scale for Children.

weak negative correlation with school performance (*r* = -.14, *p* < .001), which means that higher levels of borderline features were associated with lower school performance.

Borderline features and psychopathology

Pearson correlations were conducted to explore the association between borderline features and psychopathology constructs, such as depression, suicide ideation, anxiety symptoms, stress, self-harm, risk behaviors, and impulse. Considering gender differences, correlations were conducted separately for boys and girls. Regardless of gender, all correlations were moderate or strong and significant (*p* < .001). Only risk behaviors presented weak correlations with boys' and girls' borderline features. Moreover, the magnitude of correlations did not differ between gender groups (see Table 4).

Table 4. Comparisons of Pearson correlations (Fisher's z-tests) between boys' and girls' borderline features and other study variables (*n* = 1,005)

	Boys' borderline features (BPFS-C) (*n* = 419)	Girls' borderline features (BPFS-C) (*n* = 586)	*z*
Depression (DASS-21)	.58***	.59***	-0.24
Anxiety (DASS-21)	.46***	.52***	-1.23
Stress (DASS-21)	.56***	.58***	-0.46
Impulsivity (ISSIQ-A)	.58***	.59***	-0.24
Self-harm (ISSIQ-A)	.36***	.42***	-1.10
Risk behaviors (ISSIQ-A)	.24***	.23***	0.17
Suicide ideation (ISSIQ-A)	.59***	.61***	-0.49

Note. * *p* < .05; ** *p* < .01; *** *p* < .001. BPFS-C = Borderline Personality Features Scale for Children; DASS-21 = Depression Anxiety Stress Scale; ISSIQ-A = Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents.

Regression model to predict borderline features in adolescents

Considering the results above, a hierarchical regression model with all significant variables associated with borderline features was conducted (see Table 5). The sample for this analysis was composed of 753 adolescents because 252 participants did not provide information about their school performance. In a first step, gender and school performance were inserted and a significant model was achieved, $F(2, 723) = 27.67$, $p < .001$, with both variables being significant predictors. In a second step, depression, anxiety, and stress were also included, $F(5, 720) = 118.58$, $p < .001$. In this model, school performance, depression and stress showed a significant predictive effect. In the last step, impulsivity, self-harm, risk behaviors and suicide ideation were also added as predictors and the regression model was significant, $F(9, 715) = 101.88$, $p < .001$, explaining 56% of borderline features. Impulsivity ($\beta = .32$, $p < .001$), suicide ideation ($\beta = .24$, $p < .001$) stress ($\beta = .23$, $p < .001$), and depression ($\beta = .15$, $p = .001$) were the only significant predictors in this model.

Discussion

In the last decades, research on borderline features in adolescents has grown. Prospective studies concerning the development of BPD are beneficial to understand important variables to prevent the evolution of these maladaptive features. Based on our bibliographic review, there are very few Portuguese studies on borderline features in adolescents. In this line, the current study aimed to characterize borderline features in a large community sample of Portuguese adolescents.

Firstly, we examined which borderline features were most prevalent amongst the Portuguese adolescent population. Results revealed that feelings of abandonment, emotional intensity, and an unstable self-image were the most reported symptoms, which align with the intra- and interpersonal criteria suggested by Sharp et al. (2019) as the homotopic features of BPD. Fear of abandonment, unstable social relationships, identity disturbance, and feelings of emptiness are suggested as core borderline features across ages (Sharp et al., 2019). Moreover, our results indicated that girls

Table 5. Hierarchical regression model to predict borderline features (BPFS-C) in adolescents ($n = 753$)

	R^2	R^2 adjusted	B	β	t	VIF
Model 1	.07	.07				
Gender			3.57	.23***	6.22	1.02
School performance			-1.95	-.17***	-4.82	1.02
Model 2	.45	.45				
Gender			0.73	.05	1.58	1.12
School performance			-0.82	-.07*	-2.54	1.08
Depression (DASS-21)			0.58	.32***	7.22	2.51
Anxiety (DASS-21)			0.05	.03	0.57	2.80
Stress (DASS-21)			0.59	-.36***	7.45	3.04
Model 3	.56	.56				
Gender			0.81	.05	1.86	1.21
School performance			-0.18	-.02	-0.62	1.11
Depression (DASS-21)			0.27	.15**	3.20	3.35
Anxiety (DASS-21)			-0.04	-.02	-0.50	2.90
Stress (DASS-21)			0.37	.23***	5.09	3.24
Impulsivity (ISSQ-A)			0.59	.32***	10.34	1.59
Self-harm (ISSIQ-A)			0.01	.00	0.10	1.68
Risk behaviors (ISSIQ-A)			-0.33	-.05	-1.85	1.27
Suicide ideation (ISSIQ-A)			0.80	.24***	5.53	2.96

Note. * $p < .05$; ** $p < .01$; *** $p < .001$; Gender was coded as 0 = boy, 1 = girl; VIF = Variance Inflation Factor; BPFS-C = Borderline Personality Features Scale for Children; DASS-21 = Depression Anxiety Stress Scale; ISSIQ-A = Impulse, Self-harm and Suicide Ideation Questionnaire for Adolescents.

and boys differed in all the ten borderline features covered. While girls showed increased internal symptoms (e.g., abandonment, emptiness, loneliness, unstable self-image), boys showed increased behavioral symptoms such as impulsivity and carelessness. This is consistent with previous studies reporting that girls tend to exhibit higher internalizing problems, whereas boys tend to exhibit higher externalizing problems (Alarcón & Bárrig, 2015; Leadbeater et al., 1999). These findings made us reflect on gender differences in the phenotype of BPD that might be observed in adolescence. Girls seem to present more internalized difficulties such as feeling alone, abandoned, and empty. Boys might externalize their difficulties more, showing impulsive and reckless behaviors.

In general, adolescent girls presented higher borderline features than adolescent boys, corroborating previous studies (Carreiras et al., 2021; Carreiras, Castilho et al., 2020). It has been reported that women tend to have more borderline features and are diagnosed more often with BPD than men (APA, 2013; Swartz et al., 1990; Trull et al., 2010). These differences might be related to some aspects such as women being more likely to seek help, and men's borderline-like behaviors might be culturally seen as less pathological (Skodol & Bender, 2003).

Concerning age, a non-significant correlation with borderline features and no differences between age groups indicated that these variables seem unrelated. This finding suggests that, in adolescence, levels of borderline features tend to be identical across different ages. School performance was negatively associated with borderline features, indicating that having more developed academic skills and competencies is associated with lower levels of borderline traits. This finding supports previously identified protective variables such as superior school performance and above average intellectual skills (Helgeland & Torgersen, 2004). On the one hand, having intellectual skills might allow adolescents to develop a broader range of mechanisms and strategies to cope with borderline features; on the other, borderline features are disturbing and impairing, which might affect attention and performance while studying, doing homework or participating in class.

Borderline features were positively associated with depression, anxiety, and stress, which aligns with previous studies that identified neuroticism and emotional negativity as risk factors for borderline features (Zanarini et al., 2019). Indeed, BPD patients often experience feelings of emptiness, abandonment, self-criticism, self-condemnation, self-destructiveness, and hopelessness, which are also symptoms of depression (Rogers et al., 1995). Self-harm, impulsivity, and suicide ideation were positively associated with borderline features, as well. NSSI is strongly associated with BPD, with studies showing that around 80% of adolescents with BPD regularly engage in NSSI (Glenn & Klonsky, 2013). The association between impulsivity and borderline features in adolescents has already been identified and discussed (Carreiras, Castilho et al., 2020; Fossati et al., 2014). These emotional and behavioral difficulties are congruent with the lower life satisfaction and quality of life reported by people with BPD in comparison to healthy controls (Thadani et al., 2018).

The predictive model of borderline features in a community sample explained a high percentage of the variance of the referred symptoms (56%), thus contributing to increase knowledge about the possible risk factors for the development of these features in adolescence. The regression model showed that impulsivity, suicide ideation, stress, and depression had a unique effect on borderline features. Gender did not play a significant role in the final model, which might indicate that psychological variables and internal mechanisms better explain these dysfunctional traits. Having difficulties in controlling behaviors, experiencing stress and depressive symptoms, as well as thinking about ending life, seem to affect borderline features.

This study has some strengths, e.g., using a representative sample of Portuguese adolescents and conducting robust statistical analyses. Nevertheless, some limitations are also essential to acknowledge. Some sociodemographic variables were not explored, e.g., family variables (parenting styles, family history of mental health disorders, communication), sexual orientation, and living situation (rural or urban). In addition, the cross-sectional data limit establishing causality between variables under study and we did not use instruments to assess personality traits. Future researchers are encouraged to explore specific differences between girls and boys, and longitudinal studies are required and essential to understand specific mechanisms in the development of borderline features.

Conflicts of interest

The authors have no conflicts of interest to disclose.

Authors' contributions

DC: collected data, collaborated on the design, conducted the data analyses, and wrote the paper. PC: collaborated on the design and reviewed the final manuscript; MC: collaborated on the design and reviewed the final manuscript.

Data availability statement

The data that support the findings of this study are openly available at Figshare at https://doi.org/10.6084/m9.figshare.14036249.v1

References

Alarcón, D., y Bárrig, P. S. (2015). Conductas internalizantes y externalizantes en adolescentes. *Liberabit. Revista de Psicología*, *21*(2), 253–259.

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). American Psychiatric Publishing.

Bagge, C., Nickell, A., Stepp, S., Durrett, C., Jackson, K., & Trull, T. J. (2004). Borderline personality disorder features predict negative outcomes 2 years later. *Journal of Abnormal Psychology*, *113*(2), 279–288. https://doi.org/10.1037/0021-843X.113.2.279

Bozzatello, P., Bellino, S., Bosia, M., & Rocca, P. (2019). Early detection and outcome in borderline personality disorder. *Frontiers in Psychiatry*, *10*(710), 1–16. https://doi.org/10.3389/fpsyt.2019.00710

Bradley, R., Conklin, C. Z., & Westen, D. (2005). The borderline personality diagnosis in adolescents: Gender differences and subtypes. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *46*(9), 1006–1019. https://doi.org/10.1111/j.1469-7610.2004.00401.x

Carlson, E. A., Egeland, B., & Sroufe, L. A. (2009). A prospective investigation of the development of borderline personality symptoms. *Development and Psychopathology*, *21*, 1311–1334. https://doi.org/10.1017/S0954579409990174

Carreiras, D., Castilho, P., & Cunha, M. (2020). The effect of impulsivity, self-disgust and self-compassion in borderline features in adolescence: Study of sex differences. *Portuguese Journal of Behavioral and Social Research*, *6*(1), 50–63. https://doi.org/10.31211/rpics.2020.6.1.170

Carreiras, D., Cunha, M., & Castilho, P. (2021). Which self-compassion components mediate the relationship between adverse experiences in childhood and borderline features in adolescents? *European Journal of Developmental Psychology*, *19*(6), 847-868. https://doi.org/10.1080/17405629.2021.1981283

Carreiras, D., Loureiro, M., Cunha, M., Sharp, C., & Castilho, P. (2020). Validation of the Borderline Personality Features Scale for Children (BPFS-C) and for Parents (BPFS-P) for the Portuguese population. *Journal of Child and Family Studies*, *29*, 1–11. https://doi.org/10.1007/s10826-020-01800-7

Carvalho, C. B., Nunes, C., Castilho, P., da Motta, C., Caldeira, S., & Pinto-Gouveia, J. (2015). Mapping non suicidal self-injury in adolescence: Development and confirmatory factor analysis of the impulse, self-harm and suicide ideation questionnaire for adolescents (ISSIQ-A). *Psychiatry Research*, *227*(2–3), 238–245. https://doi.org/10.1016/j.psychres.2015.01.031

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Lawrence Erlbaum Associates, Publishers.

Dancey, C., & Reidy, J. (2017). *Statistics without maths for psychology* (7th ed.). Pearson Education.

Field, A. (2018). *Discovering statistics using IBM SPSS statistics* (5th ed.). Sage Publications.

Fossati, A., Gratz, K. L., Maffei, C., & Borroni, S. (2014). Impulsivity dimensions, emotion dysregulation, and borderline personality disorder features among Italian nonclinical adolescents. *Borderline Personality Disorder and Emotion Dysregulation*, *1*(1), 5. https://doi.org/10.1186/2051-6673-1-5

Glenn, C. R., & Klonsky, E. D. (2013). Nonsuicidal self-injury disorder: An empirical investigation in adolescent psychiatric patients. *Journal of Clinical Child and Adolescent Psychology*, *42*(4), 496–507. https://doi.org/10.1080/15374416.2013.794699

Hastrup, L. H., Jennum, P., Ibsen, R., Kjellberg, J., & Simonsen, E. (2019). Societal costs of Borderline personality disorders: A matched-controlled nationwide study of patients and spouses. *Acta Psychiatrica Scandinavica*, *140*(5), 458–467. https://doi.org/10.1111/acps.13094

Helgeland, M. I., & Torgersen, S. (2004). Developmental antecedents of Borderline personality disorder. *Comprehensive Psychiatry*, *45*(2), 138–147. https://doi.org/10.1016/j.comppsych.2003.09.001

Johnson, J. G., Cohen, P., Kasen, S., Skodol, A. E., & Oldham, J. M. (2008). Cumulative prevalence of personality disorders between adolescence and adulthood. *Acta Psychiatrica Scandinavica*, *118*(5), 410–413. https://doi.org/10.1111/j.1600-0447.2008.01231.x

Kline, R. (2011). *Principles and practice of structural equation modelling* (3rd ed.). The Guilford Press.

Klonsky, E. D., & Moyer, A. (2008). Childhood sexual abuse and non-suicidal self-injury: Meta-analysis. *British Journal of Psychiatry*, *192*(3), 166–170. https://doi.org/10.1192/bjp.bp.106.030650

Larrivée, M. P. (2013). Borderline personality disorder in adolescents: The He-who-must-not-be-named of psychiatry. *Dialogues in Clinical Neuroscience*, *15*(2), 171–179. https://doi.org/10.31887/DCNS.2013.15.2/mplarrivee

Leadbeater, B. J., Kuperminc, G. P., Blatt, S. J., & Hertzog, C. (1999). A multivariate model of gender differences in adolescents' internalizing and externalizing problems. *Developmental Psychology*, *35*(5), 1268–1282. https://doi.org/10.1037/0012-1649.35.5.1268

Lewinsohn, P. M., Rohde, P., Seeley, J. R., & Klein, D. N. (1997). Axis II psychopathology as a function of Axis I disorders in childhood and adolescence. *Journal of the American Academy of Child and Adolescent Psychiatry*, *36*(12), 1752–1759. https://doi.org/10.1097/00004583-199712000-00024

Lovibond, P. F., & Lovibond, S. H. (1995). The structure of negative emotional states: Comparison of the Depression Anxiety Stress Scales (DASS) with the Beck Depression and Anxiety Inventories. *Behaviour Research and Therapy*, *33*(3), 335–343. https://doi.org/https://doi.org/10.1016/0005-7967(94)00075-U

Pais-Ribeiro, J. L., Honrado, A., & Leal, I. (2004). Contribuição para o estudo da adaptação portuguesa das Escalas de Ansiedade, Depressão e Stress (EADS) de 21 itens de Lovibond e Lovibond [Contribution to the study of the Portuguese adaptation of the Lovibond and Lovibond Depression Anxiety Stress Scales (EADS) with 21 items]. *Psicologia, Saúde & Doenças*, *5*(2), 229–239.

Rogers, J. H., Widiger, T. A., & Krupp, A. (1995). Aspects of depression associated with borderline personality disorder. *American Journal of Psychiatry*, *152*(2), 268–270. https://doi.org/10.1176/ajp.152.2.268

Sansone, R. A., & Sansone, L. A. (2011). Gender patterns in borderline personality disorder. *Innovations in Clinical Neuroscience*, *8*(5), 16–20.

Sharp, C., & Fonagy, P. (2015). Practitioner Review: Borderline personality disorder in adolescence - Recent conceptualization, intervention, and implications for clinical practice. *Journal of Child Psychology and Psychiatry and Allied Disciplines*, *56*(12), 1266–1288. https://doi.org/10.1111/jcpp.12449

Sharp, C., Kalpakci, A., Mellick, W., Venta, A., & Temple, J. R. (2015). First evidence of a prospective relation between avoidance of internal states and borderline personality disorder features in adolescents. *European Child & Adolescent Psychiatry*, *24*, 283–290. https://doi.org/10.1007/s00787-014-0574-3

Sharp, C., Steinberg, L., Michonski, J., Kalpakci, A., Fowler, C., Frueh, B. C., & Fonagy, P. (2019). DSM Borderline criterion function across age groups: A cross-sectional mixed-method study. *Assessment*, *26*(6), 1014–1029. https://doi.org/10.1177/1073191118786587

Sharp, C., Steinberg, L., Temple, J., & Newlin, E. (2014). An 11-item measure to assess borderline traits in adolescents: Refinement of the BPFSC using IRT. *Personality Disorders: Theory, Research, and Treatment*, *5*(1), 70–78. https://doi.org/10.1037/per0000057

Sharp, C., & Tackett, J. L. (2014). *Borderline personality disorder in children and adolescents*. Springer New York. https://doi.org/10.1007/978-1-4939-0591-1

Silberschmidt, A., Lee, S., Zanarini, M., & Charles Schulz, S. (2015). Gender differences in borderline personality disorder: Results from a multinational, clinical trial sample. *Journal of Personality Disorders*, *29*(6), 828–838. https://doi.org/10.1521/pedi_2014_28_175

Skodol, A. E., & Bender, D. S. (2003). Why are women diagnosed borderline more than men? *Psychiatric Quarterly*, *74*(4), 349–360. https://doi.org/10.1023/A:1026087410516

Swartz, M., Blazer, D., George, L., & Winfield, I. (1990). Estimating the prevalence of borderline personality disorder in the community. *Journal of Personality Disorders*, *4*(3), 257–272. https://doi.org/10.1521/pedi.1990.4.3.257

Swirsky-Sacchetti, T., Gorton, G., Samuel, S., Sobel, R., Genetta-Wadley, A., & Burleigh, B. (1993). Neuropsychological function in borderline personality disorder. *Journal of Clinical Psychology*, *49*(3), 385–396. https://doi.org/10.1002/1097-4679(199305)49:3<385::aid-jclp2270490313>3.0.co;2-4

Thadani, B., Pérez-García, A. M., & Bermúdez, J. (2018). Quality of life in patients with borderline personality disorder: The mediating role of life satisfaction. *Revista de Psicopatología y Psicología Clínica*, *23*(2), 89–98. https://doi.org/10.5944/RPPC.VOL.23.NUM.2.2018.20954

Tomko, R. L., Trull, T. J., Wood, P. K., & Sher, K. J. (2014). Characteristics of borderline personality disorder in a community sample: Comorbidity, treatment utilization, and general functioning. *Journal of Personality Disorders*, *28*(5), 734–750. https://doi.org/10.1521/pedi_2012_26_093

Trull, T. J., Jahng, S., Tomko, R. L., Wood, P. K., & Sher, K. J. (2010). Revised NESARC personality disorder diagnoses: Gender, prevalence, and comorbidity with substance dependence disorders. *Journal of Personality Disorders*, *24*(4), 412–426. https://doi.org/10.1521/pedi.2010.24.4.412

World Health Organization (2019). *International statistical classification of diseases and related health problems* (11th ed.). https://icd.who.int/

Zanarini, M. C., Frankenburg, F. R., Ridolfi, M. E., Jager-Hyman, S., Hennen, J., & Gunderson, J. G. (2006). Reported childhood onset of self-mutilation among borderline patients. *Journal of Personality Disorders*, *20*(1), 9–15. https://doi.org/10.1521/pedi.2006.20.1.9

Zanarini, M. C., Temes, C. M., Magni, L. R., Aguirre, B. A., Hein, K. E., & Goodman, M. (2019). Risk factors for borderline personality disorder in adolescents. *Journal of Personality Disorders*, *33*, 17–24. https://doi.org/10.1521/pedi_2019_33_425