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Measuring self-disgust in adolescence: Adaptation and validation of a new instrument for the Portuguese adolescent population

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ABSTRACT

Self-disgust is a complex emotion related to feeling aversion or revulsion about internal and personal physical attributes, personality, functioning and behaviours. The aim of the present study was to adapt, validate and examine the psychometric properties of the Multidimensional Self-Disgust Scale, in a sample of Portuguese adolescents (MSDS-A). Participants were 540 adolescents ($n = 308$females, 57%), with ages between 13 and 18 years. Data were analysed through SPSS and MPLUS was used to perform a Confirmatory Factor Analysis (CFA). Self-report questionnaires were used to assess several indicators of psychopathology and self-compassion. Results from the CFA showed that a 4-factor model with a second order factor presented good fit indices. The full scale and its factors showed good internal consistency, adequate temporal stability, and good convergent, divergent and incremental validity. The MSDS-A seems a valid measure to assess self-disgust in adolescents, with important implications to clinical context and research.

KEYWORDS

Adolescence; self-disgust; confirmatory factor analysis; assessment

Adolescence is a crucial developmental stage involving several biological, emotional, cognitive, and social changes with unique implications for adulthood functioning (Nelson et al. 2005). In this stage, people tend to be more aware of what people think about themselves and relationships with peers become more significant (Gilbert 2005). Indeed, people develop their emotional and cognitive systems in interaction with others. Self-disgust and self-criticism are psychological phenomena associated with interpersonal scripts. In other words, we learn to relate to ourselves (for example, with self-criticism or self-disgust) based on the way other people have related and interacted with us (Baldwin 1992, 1997). Having negative interactions of rejection with parents and friends might result in feeling excluded, embarrassed, humiliated, or ridiculed, which in turn can contribute to the development of a sense of self as undesirable, unwanted and with feelings of self-directed disgust (Carreiras et al. 2023; Gilbert and Irons 2009; Guiomar 2015). All these possibilities make the adolescent more vulnerable to developing different and multiple problems in the present and future (Wolfe and Mash 2006).

Despite various concepts and disagreements, disgust or aversion is considered a basic, universal, and innate emotion (Darwin 1972/1965; Ekman 1992). It is irrational, devoid of cognitive, behavioural and situational flexibility, and it is associated with negative moral consequences (Russell and Giner-Sorolla 2013). Disgust has the evolutionary function of protecting human beings from getting intoxicated and has a complex role in differentiating

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what is considered repugnant or attractive in society (interpersonal/moral disgust; Nussbaum 2004). The acquisition of a disgust repertoire is shaped by sociocultural factors and learning (Rozin, Haidt, and McCauley 1999; Sawchuk 2009). Disgust involves a set of physiological sensations (e.g. nausea, vomiting, revulsion), an expressive component that comprises multiple manifestations in the hands, face and body, behavioural reactions (e.g. withdrawal, escape, rejection, freezing) and a variety of distinct negative cognitions (e.g. 'It makes me sick'; Ekman 1992; Overton et al. 2008; Powell, Simpson, and Overton 2015; Rozin, Haidt, and McCauley 1999).

Self-disgust can be assumed as a self-focused, maladaptive, and persistent generalisation of disgust, in which integral and stable characteristics of the self are the aversive object (Olatunji, David, and Ciesielski 2012; Powell, Simpson, and Overton 2015). That said, self-disgust involves a devaluation of physical appearance, personality, and behaviour patterns (Ille et al. 2014; Ypsilanti et al. 2019). It is not an isolated phenomenon, and instead, it exhibits different degrees of association with emotional and cognitive events (Powell, Simpson, and Overton 2015). Power and Dalgleish (2008) argued that self-disgust is a dominant psychological mechanism to the origin and maintenance of negative cognitions. It may create distortions that perpetuate vicious cycles of global dysfunctional cognitive patterns, in which ruminations and negative thoughts precede experiences of self-disgust (Davey et al. 1998).

Recently, there has been a growing interest in the clinical utility of self-disgust in different populations (Clarke, Simpson, and Varese 2019), including adolescents (Christensen and Lewis 2022). The relationship between self-disgust and depression is well established (Ille et al. 2014; Overton et al. 2008; Powell, Simpson, and Overton 2013; Powell, Overton, and Simpson 2014). Perceiving the self as undesirable and repulsive seems to contribute to explain depressive symptoms, which might also contribute to understand suicide risk (Akram et al. 2019; Schienle et al. 2020). More recently, the potential clinical relevance of disgust and self-disgust in the treatment of eating disorders has been considered (Bektas et al. 2022). Also, new evidence has been added to the relationship between self-disgust and borderline personality symptoms in adolescence (Carreiras, Castilho, and Cunha 2020, 2021; Carreiras, Cunha, and Castilho 2022). Self-disgust influenced the evolution of borderline features in adolescence across one year (Carreiras, Cunha, and Castilho 2022). Several studies showed that self-disgust is related to specific psychological problems (Clarke, Simpson, and Varese 2019; Powell, Simpson, and Overton 2013; Ypsilanti et al. 2019), which consequently leads to a decrease of psychological wellbeing (Azlan et al. 2017; Brake et al. 2017). Given that high levels of self-disgust are a risk factor for the onset and maintenance of various mental disorders and associated symptoms, it is imperative to assess and understand this phenomenon in adolescence (Christensen and Lewis 2022).

The growing interest in self-disgust research led to the development of specific self-report questionnaires, namely, Self-Disgust Scale (SDS; Overton et al. 2008), Disgust Scale-Revised in Adolescents (DS-R; Kim et al. 2012), Questionnaire for the Assessment of Self-Disgust (QASD; Schienle et al. 2014), and Multidimensional Self-Disgust Scale (MSDS; Carreiras et al. 2023). The DS-R (Kim et al. 2012) consists of 22 items divided into three factors (contagion, mortality, and contact disgust) and the QASD (Schienle et al. 2014) is composed of two factors (personal and behavioural disgust). The SDS (Overton et al. 2008) was studied in a sample of university students and has two factors: disgusting self (disgust directed towards stable aspects, independent of appearance or personality) and disgusting ways (disgust to the behaviour of others). The SDS evidenced a strong internal consistency ($\alpha = .91$), a strong test-retest reliability and positive correlations with other theoretically related measures. However, the items mainly cover thoughts and evaluations leaving out other relevant dimensions (e.g. physiological). To fill this gap, Carreiras et al. (2023) developed a new instrument, the Multidimensional Self-Disgust Scale (MSDS), which allow the evaluation of four factors of the emotional response of self-disgust: defensive activation, cognitive-emotional, avoidance and the exclusion. This scale was developed and validated with a sample of university students and workers aged 18–60

years. The results showed that the final version consists of 32 items, with good internal consistency, convergent validity and good predictive effect on psychopathology and suicidal ideation. The self-disgust subscales presented moderate correlation between one another (*r* between .47 and .64).

Since there are currently no measures developed or adapted to assess self-disgust in adolescents, the present study proposes to adapt and validate the Multidimensional Self-Disgust Scale for Adolescents (MSDS-A). Specifically, we confirmed the original factorial structure and examined items' properties, convergent, divergent, and incremental validity, internal consistency, and temporal stability. Moreover, we analysed gender differences in adolescents' self-disgust.

Methods

Participants

The sample of the present study consisted of 540 adolescents, 232 males (43%) and 308 females (57%), aged between 13 and 18 years ($M = 15.53$; $SD = 1.08$). They were attending middle and high school and had an average of 10.15 years of schooling ($SD = 0.89$). Of these, 17.8% were under the 10th grade, 47% were in the 10th grade, 31.3% were in the 11th and 3.1% were in the 12th grade. Girls had more years of education than boys ($t_{(405)} = -2.77$, $p = .01$), with a small effect size ($d = -.25$; $r = -.12$; Cohen 1988). Additionally, 79% of participants reported a medium socioeconomic status, while 2.6% reported a low and 18.4% a high socioeconomic status.

Procedures

The present study was authorised by the Ministry of Education and the National Commission for Data Protection of Portugal (number: 6713/2018). All ethical principles of the Helsinki declaration (1964) and its later amendments or comparable ethical standards were followed. A convenience sample was collected in public schools in the north and centre regions of Portugal. Inclusion criteria were having between 12 and 18 years old and Portuguese nationality. The schools' headteachers, parents and adolescents were informed about the study's aims, confidentiality, and voluntary participation, and gave their written informed consent. Then, adolescents anonymously completed the questionnaires in the classroom, with the presence of the teacher and the researcher to clarify any questions and assure independent responses. They took an average of 30 minutes to complete the questionnaires in paper form. For test-retest analysis, 65 adolescents from three random classes were selected to complete the MSDS-A a second time, four weeks later. Questionnaires with missing items were excluded from the analyses.

Adapting the MSDS for adolescents

Initially, items were adapted from the original version, considering adolescents' linguistic and developmental stage. We tried to use simple terms and a more juvenile language; for example, 'conceal' was replaced by 'hide', and 'expose' was replaced by 'show'. We also added examples to clarify some of the items, for example, 'I get aroused (e.g. more alert)'. Generally, the content of the items and the original structure of the scale were preserved. Every item was preceded with 'When I feel self-disgust . . . ' so the adolescents had in mind that they were responding about the emotion of self-disgust in every statement. Subsequently, a convenience sample of 31 adolescents (ages between 12 and 18 years) was asked to complete this first adapted version of the questionnaire and give feedback about the semantic comprehensibility of instructions and items. Slight changes were made to improve understandability, for example, using other words more broadly used amongst youth.

Measures

The Multidimensional Self-Disgust Scale (MSDS; Carreiras et al. 2023) is a self-report questionnaire designed to measure disgust towards the self, regarding physical, behavioural and functional aspects. The scale consists of 32 items organised into four factors: defensive activation (physiological component of emotion), cognitive-emotional (thoughts and feelings that reflect the relationship of aversion, hostility and disgust with self), avoidance (actions and behaviours that aim to hide and avoid aspects of the self that are considered disgusting and toxic) and exclusion (behaviours that seek to exclude and eliminate the disgusting and aversive aspects of the self). Items are rated on a 5-point Likert scale (0 = *never*; 4 = *always*), with higher scores indicating higher levels of self-disgust. The original version is Portuguese and showed good internal consistency across all factors, ranging from .77 to .97, and good convergent and incremental validity (Carreiras et al. 2023). The psychometric properties of the adolescent version are presented in this article.

The Self-Compassion Scale (SCS; Neff 2003; Portuguese version for adolescents by Cunha, Xavier, and Castilho 2016) is a self-report questionnaire to assess self-compassion through six subscales: self-kindness, self-judgement, common humanity, isolation, mindfulness and over-identification. Each item is rated on a 5-point Likert scale (1 = *almost never*; 5 = *almost always*) and higher scores mean higher levels of self-compassion. In the Portuguese version for adolescents, the measure showed good levels of internal consistency for the total scale (α = .88), for the six subscales the values ranged from .70 to .79 (Cunha, Xavier, and Castilho 2016). In the present study, SCS-A had α = .90for the total scale.

The Stress, Depression, and Anxiety Scale (DASS-21; Lovibond and Lovibond 1995; Portuguese version by Pais-Ribeiro, Honrado, and Leal 2004) consists of 21 items organised in 3 subscales: stress, depression, and anxiety. Each item is 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*) about the last week. The original version presented good internal consistency (α = .91 for depression, α = .84for anxiety and α = .90for stress; Lovibond and Lovibond 1995). In the Portuguese version, the internal consistency obtained was equally good (α = .85, α = .74and α = .81, respectively; Pais-Ribeiro, Honrado, and Leal 2004). The internal consistency obtained in the present study was α = .90 (depression), α = .86 (anxiety) and α = .89 (stress).

The Impulse, Self-Harm, and Suicide Ideation Questionnaire for Adolescence (ISSIQ-A; Carvalho et al. 2015) is a self-report questionnaire composed by four modules: impulse; self-harm, risk behaviours, and suicide Ideation. The ISSIQ-A also assesses functions of self-harm in a nominal scale (*yes* or *no*). Items of the four modules are rated on a 4-point Likert scale (0 = *never happens to me*; 3 = *it always happens to me*). In the original study, the different subscales presented good internal consistency (α = .77 for impulse, α = .90 for self-harm, α = .81for risk behaviours, α = .82for suicide ideation; Carvalho et al. 2015). In the present study, the following Cronbach's alphas were obtained: .77 for impulse, .81 for self-harm, .73 for risk behaviours, and .83 for suicide ideation.

Data analyses

The present study has a cross-sectional design and statistical procedures were performed using IBM SPSS Statistics 22.0 (IBM SPSS; Chicago, IL). Additionally, MPLUS version 8 (Muthén and Muthén 1998–2017) was used to perform a CFA. Normality was tested through Kolmogorov-Smirnov test and Skewness (Sk) and Kurtosis (Ku) analysis. No severe violations were considered for $Sk < 3$ and $Ku < 10$ (Kline 1998). Parametric tests were used due to their robustness and the high number of subjects in our sample (Marôco 2010). Student's t-tests for independent samples were performed to explore mean differences.

A Confirmatory Factor Analysis (CFA) was performed using the Robust Maximum Likelihood (MLR) estimation method, considering that the data did not follow a normal distribution. To analyse the overall quality of CFA, the chi-square test ($\chi 2$) was observed, and the following cut-off points indicated by Hair et al. (2010) were analysed: RMSEA < .07; CFI > .90; TLI > .90; SRMR < .08. The re-specification of the model was made from the modification indices (greater than 11; $p < .001$),

respecting the theoretical considerations (i.e. item content). For model comparison purposes, AIC (Akaike) and BIC (Bayesian) were used. The quality of local adjustment was assessed by factor weights and individual item reliability (which indicates the consistency and reproducibility of the measurement). As recommended, all items with factor saturation < .3 were eliminated (Tabachnick and Fidell 2013). Cronbach's alphas were calculated to test internal reliability. We used as reference values the indices suggested by Pestana and Gageiro (2008): less than .60 inadmissible alphas; between .61 and .70 weak alphas; between .71 and .80 reasonable alphas; between .81 and .90 good alphas; and over .90 very good alphas.

Pearson's correlation coefficients were calculated to analyse test-retest reliability and convergent validity, using as reference the indices described by Dancey and Reidy (2017): coefficients between .10 and .39 weak; between .40 and .69 moderate; higher than .70 strong. Incremental validity was analysed through hierarchical regression models. The assumptions of normality, homogeneity (analysis of the normal probability graph) and residue independence were considered (Durbin-Watson test). Absence of multicollinearity problems between the variables were considered when Variance Inflation Factor (VIF) were < 5 (Marôco 2010; Pestana and Gageiro 2008).

Results

Preliminary data analysis

Kolmogorov-Smirnov test showed that our data did not follow a normal distribution. Nevertheless, no variable presented asymmetry and kurtosis values indicating severe violations to the normal distribution ($Sk < 3$ and $Ku < 10$; Kline 1998). Outliers were analysed with Mahalanobis square distance (D2), and by the graphical representation of the results (Extremes Diagram and Box-Plot Quartiles). Few extreme values were identified, but we decided to maintain them to keep the natural variability and because removing them did not interfere with the statistical analyses performed (Tabachnick and Fidell 2013). In the hierarchical regression analysis, Durbin-Watson values ranged from 1.91 to 1.97 and there was no evidence of multicollinearity between variables (VIF <5; Marôco 2010).

Confirmatory factor analysis of the MSDS-A

The factorial structure of the MSDS-A scale was analysed through a CFA, testing the hypothesis that this data would fit the factorial structure of four factors (defensive activation, cognitive-emotional, avoidance and exclusion) and 32 observed variables, as indicated by the original work of Carreiras et al. (2023). Thus, the following models were compared (Table 1): Model 1, the four intercorrelated latent factors; Model 2, the four intercorrelated latent factors, with the elimination of items 9 and 4 and the correlation of the errors of items 3 and 7; Model 3, Second-order hierarchical model, with a global latent factor 'Total Self-Disgust', four interrelated latent factors and 30 manifest variables (elimination of items 4 and 9; correlation of errors of items 3 and 7).

Table 1. Comparison of the fit indices of the models tested through Confirmatory Factor Analysis.

Models tested	χ^2	df	χ^2/df	SRMR	TLI	CFI	RMSEA	90% CI RMSEA	AIC	BIC
Model 1 (4 factors)	1172.61*	456	2.57	.051	.88	.89	.054	[.050, .058]	38264.16	38701.90
Model 2 (4 factors: elimination of items 9 and 4; correlation of errors of items 3 and 7)	911.25*	398	2.28	.048	.91	.92	.049	[.045, .053]	36273.35	36689.64
Model 3 (1 second order factor, 4 first order factors, elimination of items 9 and 4, correlation of errors of items 3 and 7)	924.96*	400	2.31	.050	.91	.91	.049	[.045, .053]	36297.62	36705.32

Note. *$p < .001$. df = degrees of freedom; SRMR = Standardized Root Mean Residual; TLI = Tucker-Lewis Index; CFI = Comparative Fit Index; RMSEA = Root Mean Square Error of Approximation; AIC = Akaike; BIC = Bayesian.

Initially, the adjusted model (Model 1) revealed a reasonable fit quality in some indicators (X^2/df = 2.57, χ^2 = 1172.61; df = 456; $p < .001$; CI RMSEA 90% [.050, .058]; P(rmsea) $p < .005$ = .052; RMSEA = .054; CFI = .89; TLI = .88; SRMR = .051; AIC = 38264.160; BIC = 38701.900). Subsequently, the modification indices were analysed and considered to improve the adjustment, and Model 2 was tested. In the second model, item 9 ('When I feel self-disgust, I feel an urge to burp') was eliminated due to the low factor loading (.256). Item 4 ('When I feel self-disgust, I get inhibited') was also eliminated because it saturated in the Defensive Activation subscale (instead of Avoidance subscale), which was not theoretically sustained, considering the item's content. Additionally, and according to the modification indices obtained in Model 1, the error of item 3 ('When I feel self-disgust, I have shortness of breath') and 7 ('When I feel self-disgust, my heart beats fast') were correlated. These correlations are justified since the content of the items is similar and both belong to the same factor (Defensive Activation).

After these modifications, we verified that Model 2 showed a better adjustment, with adequate CFI and RMSEA values (CFI ≥0.90 and RMSEA ≤ 0.08). AIC and BIC values were below to those of the original model. Additionally, by testing Chi-square differences, it was found that Model 2 had a significantly higher quality of adjustment than Model 1.

Second-order factor analysis

According to the assumptions of factor analysis, the previously obtained results suggest the existence of a superior hierarchical factor. Thus, a second-order model named 'Self-Disgust' was tested, based on certain criteria (a) the theoretical conceptualisation of self-disgust as an emotion predicts the existence of a latent factor, and (b) the significant correlations observed between the four multidimensional components of MSDS-A. Based on Model 2, which had better adjustment indices, a second order hierarchical model with a latent Self-Disgust factor was tested (Model 3). The adjustment indices are presented in Table 1. The adjusted model showed a good fit (X^2/df = 2.31; χ^2 = 924.96; df = 400; $p < .001$; CI RMSEA 90% [.045, .053]; P(rmsea) $p < .005$ = .60; RMSEA = .049; CFI = .91; TLI = .91; SRMR = .050; AIC = 36297.620; BIC = 36705.319). Comparing Model 2 and Model 3, we observed that some adjustment values underwent unfavourable changes, however the results indicated that the paths between the second-order factor 'Self-Disgust' and the subscales were significant and had high factor weights, specifically, self-disgust for defensive activation λ = .83, self-disgust for cognitive-emotional λ = .99, self-disgust for avoidance λ = .94 and self-disgust for exclusion λ =. 82. Thus, although there were some minor changes in the adjustment quality indices, the addition of the second-order factor is supported by the correlational structure observed.

After the constitution of Model 3, we analysed the factor loadings of the items (λ) associated with the four factors to ascertain the amount of variance observed that the underlying construct explained. All items met the assumption of λ ≥ .3 (Tabachnick and Fidell 2013) and the factor loadings of the 30 items are presented in Table 2. All items revealed high factor loadings, ranging between .51 (item 27) and .85 (item 12).

Item's properties and internal consistency

Descriptive statistics for each item, correlation with the total scale and Cronbach's Alpha if item deleted are presented in Table 2. Cronbach's Alpha of each factor and total scale are also presented. These results showed that removing the item 27 ('When I feel self-disgust, I drink, take drugs and take pills') would increase the internal consistency of Exclusion subscale. However, we found that this item had an acceptable factor loading and it was theoretically plausible, so it was retained. In summary, the total scale had a Cronbach's Alphas of .97 and the four factors had Cronbach's Alphas ranging between .75 and .94, which were reasonable and very good values (Pestana and Gageiro 2008).

Table 2. Factors and factor loadings (λ). Mean (M), standard deviation (SD), item-total correlations (r) and Cronbach's alpha if the item was deleted (α) ($N = 540$).

Factors	λ	*M*	*SD*	*r*	*α*
Defensive Activation (α=.93)		**7.16**	**9.37**		
1. . . . shivers in my body.	.67*	0.59	0.91	.64	.93
3. . . . breathing fast.	.73*	0.64	1.04	.73	.92
7. . . . heart beats fast.	.77*	0.72	1.07	.76	.92
10. . . . I feel facial tension . . .	.56*	0.62	0.97	.54	.93
13. . . . fainting or losing the strength. . .	.79*	0.50	0.90	.75	.92
14. . . . body contracts.	.73*	0.47	0.87	.71	.93
15. . . . body trembles.	.81*	0.43	0.90	.78	.92
17. . . . feeling in my stomach.	.74*	0.68	1.04	.71	.93
19. . . . I feel dizzy.	.72*	0.32	0.73	.69	.93
22. . . . gastrointestinal changes . . .	.70*	0.37	0.87	.66	.93
23. . . . get aroused.	.54*	0.55	0.92	.52	.93
24. . . . going to vomit.	.64*	0.28	0.77	.62	.93
28. . . . knot in my throat.	.78*	0.67	1.09	.74	.92
32. . . . tingling sensations. . .	.67*	0.31	0.73	.66	.93
Cognitive-emotional factor (α=.94)		**9.44**	**9.87**		
2. . . . run away from myself.	.80*	0.89	1.20	.77	.94
5. . . . deep grief.	.83*	1.05	1.24	.81	.94
8. . . . feel diminished, inferior . . .	.79*	1.18	1.28	.78	.94
11. . . . something 'bad about me'.	.84*	1.21	1.31	.82	.94
16. . . . I feel dirty.	.66*	0.49	0.97	.63	.94
18. . . . cannot stop thinking . . .	.75*	1.39	1.32	.73	.94
21. . . . I feel hate.	.82*	0.83	1.17	.80	.94
24. . . . I feel angry.	.80*	1.00	1.27	.78	.94
29. . . . I am a 'stain/blot'.	.84*	0.67	1.11	.81	.94
31. . . . criticise myself . . .	.79*	0.72	1.19	.76	.94
Exclusion (α=.75)		**2.64**	**2.93**		
12. . . . urge to cut, burn or eliminate . . .	.85*	0.48	1.01	.65	.59
20. . . . hurt or eliminate some parts . . .	.78*	0.39	0.95	.69	.53
27. . . . I drink, take drugs . . .	.51*	0.22	0.66	.46	.80
Avoidance (α=.77)		**1.09**	**2.18**		
6. . . . I disguise those aspects . . .	.66*	1.08	1.22	.54	.75
25. . . . I avert my eyes from. . .	.71*	0.59	1.05	.59	.70
30. . . . I avoid exposing myself . . .	.82*	0.96	1.27	.68	.58
Total Self-Disgust (α=.97)		**20.33**	**22.16**		

Note. *$p < .001$.

Convergent and divergent validity

Pearson's correlation coefficients between the MSDS-A and other variables were tested (Table 3). The results showed significant correlations between self-disgust and other variables, specifically, higher levels of self-disgust were associated with higher levels of depression, anxiety, stress, impulse, self-harm and suicide ideation and with lower levels of self-compassion.

Gender differences

Independent sample t-tests were computed to explore gender differences in total self-disgust and in the different components (Table 4). Significant gender differences were found in self-disgust, with females revealing higher scores for the total scale and subscales. According to Cohen (1988), the effect size was large for the total self-disgust ($d = -.53$; $r = -.26$), medium for the defensive activation factor ($d = -.38$; $r = -.19$), large for cognitive-emotional factor ($d = -.59$; $r = -.28$), medium for exclusion factor ($d = -.22$; $r = -.11$) and large for factor avoidance ($d = -.64$; $r = -.31$).

Table 3. Pearson's correlation coefficients between the variables under study ($N = 540$).

Variables	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. Total Self-Disgust (MSDS-A)	1											
2. Defensive Activation (MSDS-A)	.92**	1										
3. Cognitive-emotional (MSDS-A)	.95**	.78**	1									
4. Exclusion (MSDS-A)	.87**	.73**	.84**	1								
5. Avoidance (MSDS-A)	.76**	.68**	.68**	.60**	1							
6. Depression (DASS-21)	.67**	.58**	.68**	.58**	.52**	1						
7. Anxiety (DASS-21)	.68**	.65**	.62**	.59**	.51**	.73**	1					
8. Stress (DASS-21)	.65**	.59**	.64**	.59**	.44**	.75**	.80**	1				
9. Impulse (ISSIQ-A)	.47**	.41**	.44**	.41**	.46**	.45**	.44**	.46**	1			
10. Self-harm (ISSIQ-A)	.50**	.46**	.44**	.37**	.66**	.41**	.49**	.38**	.46**	1		
11. Suicidal Ideation (ISSIQ-A)	.72**	.58**	.73**	.65**	.60**	.74**	.63**	.62**	.47**	.49**	1	
12. Self-Compassion (SCS-A)	−.62**	−.49**	−.66**	−.54**	−.46**	−.62**	−.51**	−.57**	−.42**	−.36**	−.66**	1

Note. ** $p < .01$ MSDS-A = Multidimensional Self-Disgust Scale for Adolescents.; DASS-21 = Stress, Depression and Anxiety Scale; ISSIQ-A = Impulse Questionnaire, Self-Harm, and Suicidal Ideation for Adolescence; SCS-A = Self-Compassion Scale for Adolescents.

Table 4. Means (M), standard deviations (SD), and student's t-tests of self-disgust and subscales for the total sample ($N = 540$), and differences between males ($n = 232$) and females ($n = 308$).

Variables	Total sample ($N = 540$)	Males ($n = 232$)	Females ($n = 308$)	t	p
	M (SD)	*M (SD)*	*M (SD)*		
Total Self-disgust (MSDS-A)	20.33 (22.16)	13.96 (18.67)	25.13 (23.37)	−6.17	<.001
Defensive activation (MSDS-A)	7.16 (9.87)	5.20 (7.89)	8.64 (10.11)	−4.44	<.001
Cognitive-emotional (MSDS-A)	1.09 (2.18)	6.30 (8.13)	11.80 (10.41)	−6.89	<.001
Exclusion (MSDS-A)	1.09 (2.93)	0.83 (1.92)	1.30 (2.34)	−2.55	.001
Avoidance (MSDS-A)	2.64 (2.93)	1.63 (2.37)	3.40 (3.09)	−7.52	<.001

Note. MSDS-A = Multidimensional Self-Disgust Scale for Adolescents.

Incremental validity

To explore the contribution of self-disgust, self-harm and impulse in predicting depression and anxiety, hierarchical regressions were computed. Considering the gender differences previously found, gender was inserted in the first step of both regression equations. Model 1 [$F_{(1,\ 538)} = 14.49$, $p < .001$], with gender as the only independent variable, explained 2% of the variance of depressive symptoms. Subsequently, in the second step, self-harm, impulse and self-disgust were inserted as predictors, producing a significant model, [$F_{(3,\ 535)} = 155.20$, $p < .001$], explaining 48% of depressive symptoms. Self-disgust was a significant predictor ($\beta = .57$, $p < .001$) followed by impulse ($\beta = .16$, $p < .001$).

Regarding anxiety, the same procedure was done. The first model [$F_{(1,\ 538)} = 27.35$, $p < .001$] explained 5% of anxiety. In the second step, the predictor variables produced a significant model [$F_{(3,\ 535)} = 166.59$, $p < .001$], explaining 51% of the dependent variable. Self-disgust was a significant predictor ($\beta = .51$, $p < .001$), as well as self-harm ($\beta = .19$, $p < .001$), impulse ($\beta = .12$, $p < .001$), and gender ($\beta = .10$, $p < .001$).

Test-retest reliability

Temporal stability of the MSDS-A was calculated for each factor and for the total scale. For this purpose, we invited a group of adolescents ($N = 65$) to respond to the MSDS-A in two moments with a 4-week interval. High correlation coefficients were obtained for defensive activation ($r = .85$, $p < .001$), cognitive-emotional ($r = .89$, $p < .001$), exclusion ($r = .82$, $p < .001$) and avoidance ($r = .83$, $p < .001$), as well as for the total scale ($r = .89$, $p < .001$).

Discussion

Literature has identified self-disgust as a persistent feeling of revulsion, aversion and repugnance towards some parts of the self (physical, psychological and behavioural), which includes defensive responses related to innate mechanisms of freeze and flight (Roberts and Goldenberg 2007). People can focus excessively on these disgusting perceived parts (Powell, Simpson, and Overton 2013) and try to avoid them to reach a more socially accepted and valued self (Gilbert 2015). Although research with adolescents has been adding important contributions of internal processes such as shame, shame memories (Cunha et al. 2012) and self-criticism (Xavier et al. 2016), there is a lack of studies about the pervasive role of self-disgust in this population.

In this regard, the present study tested the factorial structure of the MSDS-A through a CFA, in a sample of 540 Portuguese adolescents. Results showed a 4-factor model with the following

intercorrelated factors: defensive activation, cognitive-emotional subscale, avoidance and exclusion, aligning with previous results attained by Carreiras et al. (2023). However, some changes were made. Firstly, item 9 ('When I feel self-disgust, I feel an urge to burp.') was deleted due to a low loading value, as well as item 4 ('When I feel self-disgust, I get inhibited.') because it saturated in defensive activation subscale, which is not theoretically supported. The content of the item seems to assess a specific behavioural response associated to the threat system (fight, flight, freeze; Gilbert 2005; LeDoux 1998) and not to a physiological sensation. According to Powell, Simpson, and Overton (2015), self-disgust is a unique dysfunctional phenomenon with a stable pattern of cognitive-affective responses based on disgust and repugnance. Thus, when feeling self-disgust, a person activates a set of physical sensations (e.g. nausea, vomit, repulse), a specific facial expression, behavioural reactions (e.g. escape, flight, rejection, freeze, blocked) and several distinct negative cognitions about the self (Overton et al. 2008; Rozin, Haidt, and McCauley 1999). Secondly, error of item 3 ('When I feel self-disgust, I have shortness of breath.') and 7 ('When I feel self-disgust my heart beats fast.') were correlated due to their similar content and fitting in the same factor (Defensive Activation). Thirdly, a second-order factor named 'Self-Disgust' was tested because the four factors were highly and significantly intercorrelated. They were also strongly correlated with the second-order factor.

After the modifications described, a final solution of 30 items showed good fit indices, indicating good construct validity. Subsequently, the factor loadings of the items were analysed, and all were above the recommended references. These results confirm the original multidimensional structure of the MSDS (Carreiras et al. 2023) in adolescents. In terms of reliability, results presented good internal consistency for all subscales and good temporal stability (test-retest analysis).

Convergent validity was tested, and as expected results indicated that adolescents with higher levels of self-disgust report higher levels of psychopathology: symptoms of depression and anxiety (Ille et al. 2014; Overton et al. 2008; Powell, Simpson, and Overton 2013; Powell, Overton, and Simpson 2014). On the other hand, divergent validity was confirmed through a negative correlation between self-disgust and self-compassion. These results are in line with previous results that suggested that people with high levels of self-disgust present higher psychological inflexibility and higher self-criticism (Carreiras et al. 2023). A significant negative relationship has previously been reported between self-disgust and self-compassion in adolescents (Carreiras, Castilho, and Cunha 2021). Gilbert (2005, 2009) had suggested that disgust activates the threat system, preventing the development of a compassionate attitude towards the self.

Regarding self-harm, impulsivity and suicide ideation, results suggested that adolescents with higher levels of self-disgust report more self-injurious behaviours, more impulsivity and thoughts about suicide, which align with previous research (Akram et al. 2019; Carreiras, Castilho, and Cunha 2020; Schienle et al. 2020). Some studies added evidence that self-disgust had a unique role in self-harm behaviours and that patients with personality disorders, with thoughts and feelings of disgust towards the self, feel the urge to hurt and punish themselves and struggle to generate feelings of self-warmth and self-acceptance (Guiomar 2015; Smith et al. 2015). A strong association between hated-self and self-harm in adolescents was already evidenced (Xavier, Pinto-Gouveia, and Cunha 2016).

In this study, gender seemed to influence the levels of self-disgust since girls presented higher levels in comparison to boys. Specifically, girls presented higher physiological activation, more thoughts about self-disgust, more ways to exclude disgusting parts of the self and more avoiding behaviour, such as inhibition, avert of the eyes and hide from others. Other studies have already indicated that women, from clinical and non-clinical samples, present higher levels of self-disgust than men (Ille et al. 2014; Palmeira, Pinto Gouveia, and Cunha 2019). Overall, our results align with literature that showed that female adolescents appear to have higher risk to develop psychopathology and negative emotions than male adolescents (Kim et al. 2012; Xavier et al.2016). Possibly, the societal pressure on girls to conform to specific behaviours and meet certain body and beauty standards contributes to heightened feelings of self-disgust. Self-disgust may function as a protective mechanism against social

rejection, especially when an individual's physical characteristics do not align with the prevailing norms of a particular group. Consequently, individuals may resort to behaviours such as excessive control of eating habits, extreme dieting, excessive physical exercise, or other harmful behaviours, possibly to avoid social rejection and meet the favoured norms. These behaviours align with eating disorder pathology, which might be one of the reasons for the growing number of studies on self-disgust in eating disorders, on which most samples include only women (Bektas et al. 2022). In both healthy women and women diagnosed with anorexia nervosa, self-disgust was positively associated with drive for thinness, body dissatisfaction, ineffectiveness, interpersonal distrust, and interoceptive awareness (Kot et al. 2021).

The incremental validity of the MSDS-A was tested through linear regression and self-disgust showed to be a significative predictor of depression and anxiety symptoms, when controlling the effect of gender. This is congruent with previous studies (Overton et al. 2008; Power & Dalgleish, 2008; Powell, Simpson, and Overton 2013) that showed that self-disgust is a stable predictor of depression. Moreover, it might explain the association between dysfunctional patterns of thinking, the negative evaluation of the self and the world, and depressive mood. Additionally, two studies have also exposed that self-disgust had a predictive role in the development and maintenance of depression (Powell et al. 2016; Azlan et al. 2016).

Some limitations are now presented. Firstly, the cross-sectional design of this study does not allow to infer causality and, in the future, longitudinal studies on self-disgust, depression and anxiety symptoms are encouraged. Secondly, our sample was collected from the general population and clinical samples would be interesting to analyse and compare. Thirdly, to assess adolescents with an interview could be useful to collect more detailed data. Notwithstanding these limitations, our results showed that the MSDS-A has good psychometric properties and seems to be a valid and valuable instrument to assess self-disgust in adolescents.

Disclosure statement

No potential conflict of interest was reported by the authors.

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Compliance with Ethical Standards

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References

Akram, U., A. Ypsilanti, J. Drabble, and L. Lazuras. 2019. "The Role of Physical and Behavioral Self-Disgust in Relation to Insomnia and Suicidal Ideation." *Journal of Clinical Sleep Medicine* 15 (3): 525–527. https://doi.org/10.5664/jcsm.7698.

Azlan, A., G. Overton, J. Simpson, and A. Powell. 2017. "Effect of Partners Disgust Responses on Psychological Wellbeing in Cancer Patients." *Journal of Clinical Psychology in Medical Settings* 24 (3–4): 355–364. https://doi.org/10.1007/s10880-017-9521-z.

Azlan, A., P. Overton, J. Simpson, and A. Powell. 2016. "Differential Disgust Responding in People with Cancer and Implications for Psychological Wellbeing." *Psychology & Health* 32 (1): 19–37. https://doi.org/10.1080/08870446.2016.1235165.

Baldwin, M. W. 1992. "Relational Schemas and the Processing of Social Information." *Psychological Bulletin* 112 (3): 461–484. https://doi.org/10.1037/0033-2909.112.3.461.

Baldwin, M. W. 1997. "Relational Schemas as a Source of Item-Then Self-Inference Procedures." *Review of General Psychology* 1 (4): 326–335. https://doi.org/10.1037/1089-2680.1.4.326 .

Bektas, S., J. L. Keeler, L. M. Anderson, H. Mutwalli, H. Himmerich, and J. Treasure. 2022. "Disgust and Self-Disgust in Eating Disorders: A Systematic Review and Meta-Analysis." *Nutrients* 14 (9): 1–30. https://doi.org/10.3390/nu14091728.

Brake, A., M. Rojas, L. Badour, E. Dutton, and T. Feldner. 2017. "Self-Disgust as a Potential Mechanism Underlying the Association Between PTSD and Suicide Risk." *Journal of Anxiety Disorders* 47: 1–9. https://doi.org/10.1016/j.janxdis.2017.01.003.

Carreiras, D., P. Castilho, and M. Cunha. 2020. "O efeito da impulsividade, autoaversão e autocompaixão nos traços borderline na adolescência: Estudo das diferenças entre sexos [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., P. Castilho, and M. Cunha. 2021. "What Stands Between Self-Disgust and Borderline Features? The Need to Cultivate Self-Compassion in Adolescents from Portugal." *Psychologica* 64 (2): 51–64. https://doi.org/10.14195/1647-8606_64-2_2.

Carreiras, D., M. Cunha, and P. Castilho. 2022. "Trajectories of Borderline Features in Adolescents: A Three-Wave Longitudinal Study Testing the Effect of Gender and Self-Disgust Over 12 Months." *Personality & Individual Differences* 191: 111577. https://doi.org/10.1016/J.PAID.2022.111577.

Carreiras, D., A. Pinto, P. Castilho, and P. Castilho. 2023. "The Toxicity of the Self: Development and Validation of the Multidimensional Self-Disgust Scale (MSDS) for the Portuguese Population." *Personality and Mental Health*. Manuscript submitted for publication. https://doi.org/10.1002/pmh.1586 .

Carvalho, C., C. Nunes, P. Castilho, C. Motta, S. Caldeira, and J. Pinto-Gouveia. 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 1–8. https://doi.org/10.1016/j.psychres.2015.01.031.

Christensen, R. E., and M. Lewis. 2022. "The Development of Disgust and Its Relationship to Adolescent Psychosocial Functioning." *Child Psychiatry and Human Development* 53 (6): 1309–1318. https://doi.org/10.1007/s10578-021-01208-4.

Clarke, A., J. Simpson, and F. Varese. 2019. "A Systematic Review of the Clinical Utility of the Concept of Self-Disgust." *Clinical Psychology & Psychotherapy* 26 (1): 110–134. https://doi.org/10.1002/cpp.2335.

Cohen, J. 1988. *Statistical Power Analysis for the Behavioral Sciences*. 2nd ed. New York: Lawrence Erlbaum Associates.

Cunha, M., M. Matos, D. Faria, and S. Zagalo. 2012. "Shame Memories and Psychopathology in Adolescence: The Mediator Effect of Shame." *International Journal of Psychology & Psychological Therapy* 12 (2): 203–218.

Cunha, M., A. Xavier, and P. Castilho. 2016. "Understanding Self-Compassion in Adolescents: Validation Study of the Self-Compassion Scale." *Personality & Individual Differences* 93: 56–62. https://doi.org/10.1016/j.paid.2015.09.023.

Dancey, C. P., and Reidy J. 2017. *Statistics without Maths for Psychology*. 7th ed. United Kingdom: Pearso.

Darwin, C. 1972/1965. *The Expression of the Emotion in Man and Animals*. Chicago: Chicago University Press. Original work published 1872. https://doi.org/10.1037/10001-000.

Davey, C., G. Buckland, B. Tantow, and R. Dallos. 1998. "Disgust and Eating Disorders." *European Eating Disorders Review* 6 (3): 201–211. https://doi.org/10.1002/(SICI)1099-0968(199809)6:3<201:AID-ERV224>3.0.CO;2-E.

Ekman, P. 1992. "An Argument for Basic Emotions." *Cognition & Emotion* 6 (3–4): 169–200. https://doi.org/10.1080/02699939208411068.

Gilbert, P. 2005. *Compassion: Conceptualizations, Research and Use in Psychotherapy*. London: Routledge.

Gilbert, P. 2009. "Introducing Compassion-Focused Therapy." *Advances in Psychiatric Treatment* 15 (3): 199–208. https://doi.org/10.1192/apt.bp.107.005264.

Gilbert, P. 2015. "Self-Disgust, Self-Hatred, and Compassion Focused Therapy." In *The Revolting Self: Perspectives on the Psychological, Social, and Clinical Implications of Self-Directed Disgust*, edited by P. A. Powell, P. G. Overton, and J. Simpson, 223–242. London: Karnak. https://doi.org/10.4324/9780429483042-12.

Gilbert, P., and C. Irons. 2009. "Shame, Self-Criticism and Self-Compassion in Adolescence." In *Adolescent Emotional Development and the Emergence of Depressive Disorders*. edited by N. B. Allen and L. B. Sheeber, 195–214. Cambridge University Press. https://doi.org/10.1017/CBO9780511551963.011.

Guiomar, R. 2015. "The impact of self-disgust on psychopathology" Master's thesis., University of Coimbra. https://estudogeral.sib.uc.pt/handle/10316/31912?locale=pt

Hair, J. F., W. C. Black, B. J. Babin, and R. E. Anderson. 2010. *Multivariate Data Analysis*. 7th ed. Edinburgh: Pearson Prentice Hall.

Ille, R., H. Schögglb, H. Kapfhammerb, M. Arendasya, M. Sommera, and A. Schienlea. 2014. "Self-Disgust in Mental Disorders — Symptom-Related or Disorder-Specific?" *Comprehensive Psychiatry* 53 (4): 938–943. https://doi.org/10.1016/j.comppsych.2013.12.020.

Kim, E., C. Ebesutani, J. Young, and B. Olatunji. 2012. "Factor Structure of the Disgust Scale-Revised in an Adolescent Sample." *Assessment* 20 (5): 620–631. https://doi.org/10.1177/1073191111434200.

Kline, R. B. 1998. "Software Review: Software Programs for Structural Equation Modeling: Amos, EQS, and LISREL." *Journal of Psychoeducational Assessment* 16 (4): 343–364. https://doi.org/10.1177/073428299801600407 .

Kot, E., P. Grzegorzewski, B. Kostecka, and K. Kucharska. 2021. "Self-Disgust and Disgust Sensitivity are Increased in Anorexia Nervosa Inpatients, but Only Self-Disgust Mediates Between Comorbid and Core Psychopathology." *European Eating Disorders Review* 29 (6): 879–892. https://doi.org/10.1002/erv.2862.

LeDoux, J. 1998. "Fear and the Brain: Where Have We Been, and Where are We Going?" *Biological Psychiatry* 44 (12): 1229–1238. https://doi.org/10.1016/S0006-3223(98)00282-0.

Lovibond, P., and S. Lovibond. 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/10.1016/0005-7967(94)00075-U.

Marôco, J. 2010. *Análise estatística: Com utilização do SPSS*. 3 ed. Lisboa: Edições Silabo, Lda.

Muthén, L., and B. Muthén. 1998-2017. *Mplus User's Guide*. 8th ed. Los Angeles, CA: Muthén & Muthén.

Neff, K. 2003. "The Development and Validation of a Scale to Measure Self-Compassion." *Self and Identity* 2 (3): 223–250. https://doi.org/10.1080/15298860309027.

Nelson, E. E., E. Leibenluft, E. B. McClure, and D. S. Pine. 2005. "The Social Re-Orientation of Adolescence: A Neuroscience Perspective on the Process and Its Relation to Psychopathology." *Psychological Medicine* 35 (2): 163–174. https://doi.org/10.1017/S0033291704003915.

Nussbaum, M. C. 2004. *Hiding from Humanity: Disgust, Shame, and the Law*. New Jersey: Princeton University Press.

Olatunji, O., B. David, and B. G. Ciesielski. 2012. "Who Am I to Judge? Self-Disgust Predicts Less Punishment of Severe Transgressions." *Emotion* 12 (1): 169–173. https://doi.org/10.1037/a0024074.

Overton, P., F. Markland, H. Taggart, G. Bagshaw, and J. Simpson. 2008. "Self-Disgust Mediates the Relationship Between Dysfunctional Cognitions and Depressive Symptomatology." *American Psychological Association* 8 (3): 379–385. https://doi.org/10.1037/1528-3542.8.3.379.

Pais-Ribeiro, J., A. Honrado, and I. Leal. 2004. "Contribuição para o estudo da adaptação portuguesa das Escalas de Ansiedade, Depressão e Stress (EADS) de 21 itens de Lovibond e Lovibond." *Psicologia, Saúde & Doenças* 5 (2): 229–239.

Palmeira, L., J. Pinto Gouveia, and M. Cunha. 2019. "The Role of Self-Disgust in Eating Psychopathology in Overweight and Obesity: Can Self-Compassion Be Useful?" *Journal of Health Psychology* 24 (13): 1–10. https://doi.org/10.1177/1359105317702212.

Pestana, M. H., and J. N. Gageiro. 2008. Análise de Dados para Ciências Sociais. A complementaridade do SPSS *[Data analyses for Social Sciences. The complementarity of SPSS]*. 5th ed. Lisboa: Edições Sílabo.

Powell, P. A., H. A. Azlan, J. Simpson, and P. G. Overton. 2016. "The Effect of Disgust Related Side-Effects on Symptoms of Depression and Anxiety in People Treated for Cancer: A Moderated Mediation Model." *Journal of Behavioral Medicine* 39 (4): 560–573. https://doi.org/10.1007/s10865-016-9731-0.

Powell, P., P. Overton, and J. Simpson. 2014. "The Revolting Self: An Interpretative Phenomenological Analysis of the Experience of Self-Disgust in Females with Depressive Symptoms." *Journal of Clinical Psychology* 70 (6): 562–578. https://doi.org/10.1002/jclp.22049.

Powell, P. A., J. Simpson, and P. G. Overton. 2013. "When Disgust Leads to Dysphoria: A Three-Wave Longitudinal Study Assessing the Temporal Relationship Between Self-Disgust and Depressive Symptoms." *Cognition & Emotion* 27 (5): 900–913. https://doi.org/10.1080/02699931.2013.767223.

Powell, P., J. Simpson, and P. Overton. 2015. "An Introduction to the Revolting Self: Self-Disgust as an Emotion Schema." In *The Revolting Self. Perspectives on the Psychological, Social, and Clinical Implications of Self-Directed Disgust*, edited by P. Powell, P. Overton, and J. Simpson, 1–24. London: Karnac Books. https://doi.org/10.4324/9780429483042-1.

Power, M., and T. Dalgleish. 2008. *Cognition and Emotion: From Order to Disorder*. 2nd ed. United Kingdom: Psychology Press.

Roberts, T. A., and J. L. Goldenberg. 2007. "Wrestling with Nature: An Existential Perspective on the Body and Gender in Self-Conscious Emotions." In *The Self-Conscious Emotions: Theory and Research*, edited by J. L. Tracy, R. W. Robins, and J. P. Tangney, 389–406. New York: Guilford Press.

Rozin, P., J. Haidt, and R. McCauley. 1999. "Disgust: The Body and Soul Emotion." In *Handbook of Cognition and Emotion*, edited by T. Dalgleish and M. J. Power, 430–445. Chichester: John Wiley.

Russell, P. S., and R. Giner-Sorolla. 2013. "Bodily Moral Disgust: What It Is, How It is Different from Anger, and Why It is an Unreasoned Emotion." *Psychological Bulletin* 139 (2): 328–351. https://doi.org/10.1037/a0029319.

Sawchuk, C. N. 2009. "Acquisition and Maintenance of Disgust: Developmental and Learning Perspectives." In *Disgust and Its Disorders: Theory, Assessment, and Treatment Implications*, edited by B. O. Olatunji and D. Mckay, 77–97. Washington, DC: APA. https://doi.org/10.1037/11856-004.

Schienle, A., R. Ille, M. Sommer, and M. Arendasy. 2014. "Diagnosis of Self-Disgust in the Context of Depression." *Verhaegen's Therapies* 24 (1): 15–20. https://doi.org/10.1159/000360189.

Schienle, A., D. Schwab, C. Höfler, and H. H. Freudenthaler. 2020. "Self-Disgust and Its Relationship with Lifetime Suicidal Ideation and Behavior." *The Crisis* 41 (5): 344–350. https://doi.org/10.1027/0227-5910/a000645 .

Smith, N. B., Steele, A. M., Weitzman, M. L., Trueba, A. F., & Meuret, A. E. 2015. "Investigating the Role of Self-Disgust in Nonsuicidal Self-Injury." *Archives of Suicide Research* 19 (1): 60–74. https://doi.org/10.1080/13811118.2013.850135

Tabachnick, B., and L. Fidell. 2013. *Using Multivariate Statistics*. 6th ed. Boston: Pearson.

Wolfe, D. A., and E. J. Mash. 2006. *Behavioural and Emotional Disorders in Adolescents: Nature, Assessment, and Treatment*. New York: Guilford Press .

Xavier, A., J. Pinto-Gouveia, and M. Cunha. 2016. "Non-Suicidal Self-Injury in Adolescence: The Role of Shame, Self-Criticism and Fear of Self-Compassion." *Child & Youth Care Forum* 45 (4): 571–586. https://doi.org/10.1007/s10566-016-9346-1.

Ypsilanti, A., L. Lazarus, P. Powell, and P. Overton. 2019. "Self-Disgust as a Potential Mechanism Explaining the Association Between Loneliness and Depression." *Journal of Affective Disorders* 243: 108–115. https://doi.org/10.1016/j.jad.2018.09.056.