



# The Forms of Self-Criticising & Self-Reassuring Scale - Short Form for Adolescents: Psychometric Properties in Clinical and Non-Clinical Portuguese Samples

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Accepted: 21 July 2023  
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## Abstract

**Background** Self-criticism is a psychological process largely studied as a vulnerability factor for several psychological difficulties in the adult population and, to a lower extent, in adolescent samples. Thus, the availability of instruments to effectively capture this construct is important, especially for younger populations.

**Objective** This study examined the factor structure, measurement invariance to group samples, and psychometric properties of the short version of the Forms of Self-criticism and Self-reassuring Scale (FSCRS-SF) in Portuguese adolescents in non-clinical and clinical samples.

**Methods** Two non-clinical samples (N=1224 and N=140) and a clinical sample (N=103) were used. Participants' ages ranged between 12 and 18 years old for both genders. Participants voluntarily completed a set of self-report questionnaires in the classroom. 418 adolescents completed the FSCRS 6-weeks after the first administration.

**Results** Confirmatory factor analyses showed that the factor structure of the FSCRS-SF was similar to the one found in the adults' version, with three factors (inadequate self, hated self, and reassured self). The measurement invariance was established for both samples. The FSCRS-SF revealed adequate to good construct validity, reliability, and temporal stability. Gender differences were found for the three subscales. Similarly, adolescents from the clinical sample reported higher levels of inadequate self and hated self and lower levels of reassured self in comparison with the non-clinical sample, as expected.

**Conclusions** The FSCRS-SF was revealed to be a valid and reliable measure of self-criticism and self-reassurance for adolescents and seems to be a useful tool for research and clinical purposes.

**Keywords** Self-criticism · Self-reassuring · Assessment · Short form · Adolescents

Self-criticism may be defined as the belittling way in which a person perceives themselves in comparison to others in difficult situations or when facing perceived failure. Overall, self-criticism is a common phenomenon concerning a hostile internal self-to-self relationship,

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therefore presenting a large individual variability (Gilbert, 2020, 2021). This is to say that people differ in how they think about themselves, how they assess themselves, and how they behave towards themselves (Gilbert et al., 2004; Tibubos et al., 2022). In clinical research, self-criticism, characterized by a set of intrusive or repetitive thoughts, has been studied as a transdiagnostic process and a risk factor for developing or worsening emotional and health problems (Zuroff et al., 2021). In particular, the transdiagnostic model supports that emotional disorders (e.g., depression, and anxiety disorders) share common aspects inherent to symptomatology (Barlow et al., 2016). According to this perspective, self-criticism might be a vulnerability factor for psychopathology and a harmful transdiagnostic psychological process in various clinical conditions (Werner et al., 2019), which has justified the increasing interest in this construct.

Research has shown that high levels of self-criticism are associated with various indicators of psychopathology and with poor therapeutic change (Loew et al., 2020). For instance, in non-clinical samples, high levels of self-criticism have been positively associated with negative affect, social anxiety, depressive symptoms, difficulties in interpersonal relationships, non-suicidal self-injury (NSSI), lower educational levels, and lower personal well-being (Gregory & Peters, 2017; Shahar, 2015; Xavier et al., 2016; Zuroff et al., 2005). Additionally, in clinical samples, self-criticism has been shown to increase the severity of different conditions, such as depression (Ehret et al., 2015), social anxiety disorder (Iancu et al., 2015), and eating disorders (Noordenbos et al., 2014). Together, data confirms the transdiagnostic nature of self-criticism and the clinical importance of this construct as a therapeutic target in psychological interventions that aim to prevent or decrease psychological suffering (Wakelin et al., 2022). Some of these studies were conducted in adolescent samples, which may highlight the importance of assessing and addressing self-criticism in this age group.

The transition to adolescence is characterized by rapid changes including biological, emotional, cognitive, and social areas (Siegel, 2015). The normative developmental tasks of adolescence (e.g., independence from parents and behavioral shift towards peer groups, and reliance on peer support) may imply an increased need to use their personal resources, which may make adolescents more vulnerable to the emotional impact of stressful events (Larson & Sheeber, 2009; Siegel, 2015). Indeed, this developmental stage is a critical period for the onset of several emotional and behavioral problems (Polanczyk et al., 2015; World Health Organization, 2018). The normative cerebral development is characterized by an asynchronous development of the affective, reward-focused processing system and the deliberative, cognitive-control system (Steinberg, 2005, 2010; Smith et al., 2013), which may explain the increased social motivations and the hypersensitivity to social cues (Nelson et al., 2016). For example, adolescents are more susceptible to rejection/acceptance from their peers; hence, the comparison with others and the critical way they perceive themselves may put them in a more vulnerable position when facing disappointing experiences, leading to feelings of shame and self-criticism (Gilbert & Irons, 2009; Xavier et al., 2016). Regarding gender differences in self-criticism, there are mixed results (Cunha et al., 2021a, b; Xavier et al., 2017), and when significant differences were found, female adolescents are more likely to report higher levels of hated self than male adolescents (Xavier et al., 2016). Thus, the early identification of vulnerability factors, such as self-criticism, is useful and beneficial for research and clinical purposes.

In conformity with the different theoretical models, various instruments to assess self-criticism (SC) have been developed. According to a systematic review conducted by Rose and Rimes (2018) on SC assessment instruments, the Forms of Self-criticising/Attacking and Self-reassuring scale (FSCRS; Gilbert et al., 2004) and the Self-Critical Rumination Scale (SCRS; Smart et al., 2016) were identified as the best scales for research, based on the quality of their psychometric properties and validation studies. While other assessment instruments are available, the FSCRS has been selected for the present study based on its theoretical background and reliability and validity, making it a suitable choice for this study's objectives.

Gilbert and colleagues (2004) developed the FSCRS to capture the two forms of self-criticism (Inadequate self – IS; and Hated self – HS) and the reassured self (RS). The Inadequate Self reflects the feeling of inadequacy and the tendency of the self to dwell upon its past weaknesses or eventual future mistakes. In turn, the Hated self translates into a more pathological feeling, the desire to hurt aspects of the self. Both forms of self-criticism are a result of an apparent longing for self-improvement (IS) or of the pursuit to take revenge on oneself (HS). The Inadequate self and the Hated self, whilst indicators of self-criticism, are negatively correlated with self-esteem, life satisfaction, and self-compassion and discriminate between clinical and non-clinical adult populations (Biermann et al., 2020; Castilho et al., 2015). Finally, Self-reassurance, alternatively to self-criticism, is defined as the capacity of the self to be able to keep calm, encourage itself, and have feelings of warmth towards itself in moments of setbacks or adversity (Gilbert et al., 2004). Contrary to self-criticism, self-reassurance is associated with mental health and psychological well-being through the promotion of confrontational, resilient, and persevering qualities (Ehret et al., 2015; Hermanto & Zuroff, 2016; Hermanto et al., 2016; Kirby, 2016; Kotera et al., 2021).

FSCRS has largely been used in research with adults and has revealed good psychometric properties and adequate convergent and divergent validity (e.g., Baião et al., 2015; Gilbert et al., 2004; Halomová et al., 2018). Regarding the FSCRS' factorial structure, Halamová et al. study (2018), using 13 samples from different countries (eight language versions), showed the plausibility of the three-factor structure (Hated self, Inadequate self, and Reassured self) and of the bi-factor structure (Self-criticism and Self-reassurance). Nevertheless, in non-clinical samples, the bi-factor model presented a better alignment suggesting that in non-clinical contexts, the Inadequate self and the Hated self might not be distinctive factors (Halamová et al., 2018). In Portugal, the FSCRS has been amply used in adults (e.g., Baião et al., 2015; Castilho et al., 2015;), adolescents (e.g., Cunha and Paiva, 2012; Silva and Salvador, 2010; Xavier et al., 2016, 2017), and children (Carvalho et al., 2019), corroborating the factorial structure and the psychometric properties of FSCRS applied to different age groups.

Recently, Sommers-Spijkerman et al. (2018), based on the original FSCRS version, developed a short form (FSCRS-SF) made up of 14 items that evidenced good results in adults. This brief version was tested in non-clinical and clinical samples of Dutch participants. RCT data from compassion-based intervention suggest that FSCRS-SF allows for detecting differences in self-to-self relating processes (Sommers-Spijkerman et al. 2018). Generally, the FSCRS-SF, compared to the extended version, presents internal consistency values somewhat lower, although still adequate ( $>0.70$ ). Also, very similar results were found for factorial validity (3 factors), temporal stability, convergent validity, and sensitivity to change.

Considering the need to broaden research on the phenomenon of self-criticism in adolescence (Gilbert et al., 2004; Gilbert & Irons, 2009; Xavier et al., 2016, 2017) and the pertinence of brief research protocols that avoid the burden and the consequent response's biasing (Ziegler et al., 2014), the exploration of the utility of the FSCRS-SF in adolescents has been considered relevant. The present study contributes to testing the reliability of this psychological instrument to assess self-criticism and self-reassuring in adolescence, which may function as a screening measure of psychological distress for preventive actions in clinical and school settings. Moreover, the FSCRS-SF may be an assessment tool for testing the efficacy of psychological interventions focused on reducing self-criticism and increasing self-compassion skills.

The present study aimed to test the factor structure of the FSCRS-SF through confirmatory factor analysis in non-clinical and clinical adolescent samples and to analyze the invariance measurement between these group samples. In addition, this study intended to analyze the temporal stability of the FSCRS-SF and its internal reliability. Moreover, the convergent validity of the FSCRS-SF dimensions with self-compassion, life satisfaction, depression, anxiety, and stress symptoms was studied. Also, the mean differences of FSCRS-SF dimensions between gender and age correlations were explored in a non-clinical sample. Finally, mean differences in the FSCRS-SF dimensions between sample groups were conducted to test discriminant validity.

Based on the literature review, we expected to find an acceptable model fit for both the three-factor model (Hated self, Inadequate self, and Reassured self) and the two-factor model, composed of Self-criticism and Self-reassurance (Halamová et al., 2018). We also expected that this two-factor model had a better model fit for non-clinical sample, as previously demonstrated by Halamová et al. (2018). In addition, we expected that the factor structure found would be invariant for the non-clinical and clinical samples. Considering that the brief version tends to present lower internal consistencies compared to longer versions (Halamová et al., 2018), we expected that this tendency would be confirmed by the present study, although we still counted on finding acceptable internal consistency values for each of the factors. We hypothesized that we would find very similar values to the long FSCRS version in terms of the analysis of the quality of the items and the temporal reliability.

According to previous studies (Cunha & Paiva, 2012; Cunha et al., 2021a, b; Xavier et al., 2016, 2017), we expected to find positive associations between self-criticism (inadequate self and hated self) and symptoms of anxiety, depression, and stress, and negative associations with life satisfaction and self-compassion qualities. On the contrary, we hypothesize negative correlations between reassuring self and symptoms of anxiety, depression, and stress and positive correlations with life satisfaction and self-compassion (Cunha et al., 2021a, b). Regarding gender, we expected that girls would present significantly higher values of self-criticism and lower values of self-reassurance, compared to boys (Xavier et al., 2016). In relation to age, we expected that middle adolescents (15 to 16 years old) presented more self-critical views and less reassuring self than younger, considering the developmental tasks typical in that stage. Regarding analysis in a clinical sample, we expected to obtain higher levels of self-criticism (inadequate self and hated self) and lower levels of self-reassured compared to the non-clinical sample.

## Method

### Participants

The non-clinical sample was composed by 1224 adolescents, 729 girls (59.6%) and 495 boys (40.4%), with ages between 12 and 18 years old ( $M=15.06$ ,  $SD=1.73$ ). These adolescents attended 7th to 12th grade ( $M=9.45$ ,  $SD=1.58$ ) from middle and secondary schools in the district of Coimbra, Portugal. Gender differences were found for age,  $t_{(1222)} = -3.42$ ,  $p = .001$ , and years of education,  $t_{(1222)} = -3.89$ ,  $p < .001$ . Girls were older ( $M=15.20$ ,  $SD=1.71$ ) and had more years of education ( $M=9.60$ ,  $SD=1.58$ ) than boys (age:  $M=14.86$ ,  $SD=1.74$ ; years of education:  $M=9.24$ ,  $SD=1.56$ ).

The clinical sample was composed by 103 adolescents, with 83 girls (80.6%) and 20 boys (19.4%), with ages between 14 and 18 years old ( $M=16.17$ ,  $SD=1.20$ ). The years of education mean was 10.31 ( $SD=1.09$ ), ranging between the 9th grade to the first year of university. In this clinical sample, the age and grade of both genders are similar,  $t_{(101)} = -0.72$ ,  $p = .471$ ,  $t_{(101)} = -0.73$ ,  $p = .467$ . The clinical sample had the following primary diagnosis: 41 had depressive disorder (39.8%); 37 had a social anxiety disorder (35.9%); nine had specific phobias (8.7%); six had generalized anxiety disorder (5.8%); five had PTSD (4.9%); two had panic disorder (1.9%); two had agoraphobia (1.9%); and two had obsessive-compulsive disorder (1.9%).

For the test-retest reliability, another sample was obtained from a previous study (Xavier et al., 2017). The large sample and longitudinal design of this study were advantageous in analyzing the temporal stability of the FSCRS-SF. Thus, this sample ( $N=418$ ; 57.7% female) was used for test-retest reliability purposes. These adolescents were aged between 12 and 18 years old ( $M=14.92$ ,  $SD=1.47$ ) and had a mean year of education of 9.48 ( $SD=1.41$ ).

One last adolescent sample answered the FSCRS-SF, consisting of 140 adolescents, 75 girls (53.6%) and 65 boys (46.4%). This sample is aged from 12 to 17 years old ( $M=15.16$ ,  $SD=1.68$ ) and attended from the 6th to 12th grades.

### Measures

**The Forms of Self-criticism and Self-reassuring Scale - Short Form (FSCRS-SF;** Sommers-Spijkerman et al., 2018) was developed based on the 22 items of the original scale (Gilbert et al., 2004). The short form includes 14 items, which aims to assess the level of self-criticism and the ability to self-reassure when one faces setbacks and failure. Participants use a 5-point Likert scale to rate the extent to which various statements are true about them (0=*not at all like me*; 4=*extremely like me*) when facing difficult events. The scale comprises three subscales: (i) inadequate self (5 items); (ii) hated self (4 items); (iii) reassured self (5 items). In the original study with an adult community sample, the internal reliability was adequate, with Cronbach's alphas of 0.73 for inadequate self, 0.78 for hated self, and 0.76 for reassured self subscales. The study of psychometric characteristics of this questionnaire was the aim of this study.

**The Self-Compassion Scale (SCS;** Neff, 2003; Portuguese version for adolescents: Cunha et al., 2016). This self-report questionnaire is composed by 26 items and six subscales:

Self-kindness (5 items), Self-judgment (5 items), Common Humanity (4 items), Isolation (4 items), Mindfulness (4 items), and Over-identification (4 items). Items are rated on a 5-point scale (1=*almost never* to 5=*almost always*), with higher scores indicating greater self-compassion or self-criticism, respectively. In the present study, the internal reliability was adequate for the overall score and subscales with the following Cronbach's alphas: 0.79 for the overall self-compassion, 0.83 for Self-kindness, 0.84 for Self-judgment, 0.74 for Common humanity, 0.83 for Isolation, 0.73 for Mindfulness, and 0.81 for Over-identification.

**The Satisfaction with Life Scale** (SWLS; Pavot and Diener, 1993). This is a short 5-item instrument designed to measure global cognitive judgments of satisfaction with one's life. Participants answered the items based on a 7-point Likert-style response scale, ranging from *strongly disagree* (1) to *strongly agree* (7). In the present study, the internal reliability was good, with a Cronbach's alpha of 0.80.

**The Depression Anxiety and Stress Scale** (DASS-21; Lovibond and Lovibond, 1995; Portuguese version: Pais-Ribeiro et al., 2004). This is a self-report measure composed of 21 items and designed to assess depression, anxiety, and stress symptoms, that represent three factors, each with seven items. The items indicate negative emotional symptoms and are rated on a 4-point scale (0=*Did not apply to me at all* to 3=*Applied to me very much or most of the time*). In the present study, Cronbach's alphas obtained were 0.90 for depression, 0.84 for anxiety, and 0.89 for stress.

## Procedure

The non-clinical sample was recruited as part of broader research on the relative impact of different emotion regulation processes on psychopathological symptoms. This sample of adolescents was collected from middle and secondary schools in the center region of Portugal. The study was approved by the ethics committee of the Faculty of Psychology and Educational Sciences of the University of Coimbra, as well as the Ministry of Education (register number 0082000009) and the National Commission for Data Protection of Portugal. Additionally, ethics approvals were granted by the school's Director, and parents were informed of the goals of the research and gave their written informed consent. Adolescents were informed of the purpose of the study and the confidential and anonymized nature of the study. They assented to participate in the research voluntarily. The questionnaires were administered in the classroom in the presence of a teacher and the researcher. Participants completed the questionnaires on their own, and the researcher was only allowed to help them if they had any doubts about the instructions or content of the questionnaires' items. In data collection, the original FSCRS scale for Portuguese language adolescents (Silva & Salvador, 2010; Castilho et al., 2015) was used, and the items that compose the short form were selected for the present study's purpose. Thus, in non-clinical and clinical samples, the full 22-item scale was used, and analyses of the 14 items that constitute the short version (FSCRS-SF) were conducted later. Additionally, 140 adolescents answered directly to the short version and not the long version of 22 items in order to test its applicability.

The clinical sample was recruited from several child psychiatry departments, primary care centers, and private clinics in Portugal, which were contacted and invited to participate.

In those agreeing to collaborate, we contacted the clinical psychologists and asked them to deliver a description of the study and informed consent to the parents (or other legal guardians) of adolescents identified with anxiety and depressive symptoms and to these adolescents themselves. All the adolescents agreeing to participate (and with informed consent from their legal guardians) were asked to fill out the questionnaires and were interviewed with the ADIS-C for DSM-IV (Silverman & Albano, 1996) by a junior researcher with training to use this interview and supervised by one of the senior researchers. Inclusion criteria were: ages between 14 and 18 years old, having an internalizing disorder (anxiety disorder or depressive disorder) as a primary diagnosis, and filling all the questionnaires.

## Data Analysis

Statistical analyses were carried out using PASW Software (Predictive Analytics Software, version 27, SPSS, Chicago, IL, USA) and the JASP software package version 0.16.4 (JASP Team, 2022). Descriptive statistics were computed to explore demographic variables, and independent sample *t*-tests were performed when conducting between-group analyses (Field, 2013). The Bonferroni correction was used to control type-1 error by adjusting the level of significance at  $p \leq .02$  (Field, 2013). The effect size for the differences *t*-test was analyzed based on Sawilowsky's recommendations (2009): effect sizes  $d = 0.01$  are considered very small,  $d = 0.20$  as small,  $d = 0.50$  as medium,  $d = 0.80$  as large,  $d = 1.20$  as very large and  $d = 2.00$  as huge. In the reliability analysis, Cronbach's alpha with a cut-off of 0.70 was considered suitable, and the item-total correlations equal to or above 0.42 was considered appropriate (Field, 2013). We also assessed the Composite Reliability using a calculator from Colwell (2016), which estimates the internal reliability of each construct and indicates the degree to which the individual indicators are all consistent with their common latent construct. Composite Reliability values equal to or higher than 0.70 are considered acceptable reliability (Hair et al., 2010). Another measure of reliability is the Variance Extracted Measure (VEM), which reflects the overall amount of variance in the indicators accounted for by the latent construct. The VEM values should be equal to or higher than 0.50 (Hair et al., 2010). Pearson product-moment correlation coefficients were performed to analyze the relationship between FSCRS-SF dimensions and self-compassion (measured by SCS) and satisfaction with life (measured by SWLS) and depression, anxiety, and stress symptoms (measured by DASS-21).

A Confirmatory Factorial Analysis (CFA) was performed to test the factor structure of the FSCRS-SF with a Maximum Likelihood Robust (MLR) parameter estimation (Kline, 2005). In the evaluation of the model, we used the chi-square goodness-of-fit, which measures the discrepancy between the predicted model and the data (Kline, 2005) and which smaller values were required. However, since this index is very sensitive to sample size (Schermelleh-Engel et al., 2003), we used simultaneously other global fit indices. The following goodness-of-fit indices and recommended cut-off points were used to evaluate overall model fit: Comparative Fit Index (CFI  $\geq 0.90$ , acceptable, and  $\geq 0.95$ , desirable; Hu and Bentler, 1999), Tucker-Lewis Index (TLI  $\geq 0.90$ , acceptable, and  $\geq 0.95$ , desirable; Hu and Bentler, 1999), Root Mean Square Error of Approximation (RMSEA  $\leq 0.05$ , good fit;  $\leq 0.08$ , acceptable fit;  $\geq 0.10$ , poor fit; Hu and Bentler, 1999), Standardized Root Mean Square Residual (SRMR  $< 0.10$  favorable; Kline, 2005). Additionally, the Expected Cross-Validation Index (ECVI) index was used to compare alternative models, with smaller ECVI



values indicating superior models and a more stable model for the population under study (Kline, 2005).

To analyze local adjustment, all factor loadings should be significant ( $p < .05$ ), and the standardized factor loadings for each item should present values of  $\lambda \geq 0.50$ . We also considered the Squared Multiple Correlations of the factor loadings ( $R^2 \geq 0.25$ ), which provides the amount of variance in the observed variable that the underlying construct is able to explain (Hair et al., 2010). Finally, the measurement invariance across sample groups (non-clinical vs. clinical samples) was assessed through a multiple-group CFA approach using JASP software. Some indexes were considered for configural model analysis, such as the Standardized Root Mean Square Residual ( $SRMR \leq 0.08$ , good fit; = 0, perfect fit; Hu and Bentler, 1999). This multiple-group CFA procedure was conducted according to Chen's (2007) and Dimitrov's (2010) recommendations, which indicates that metric measurement invariance is determined when  $\Delta CFI \leq -0.01$  combines with  $\Delta RMSEA \leq 0.015$  or with  $\Delta SRMR \leq 0.03$  and scalar invariance is established when  $\Delta CFI \leq -0.01$  combines with  $\Delta RMSEA \leq 0.015$  or with  $\Delta SRMR \leq 0.01$ .

## Results

### Preliminary Data Analysis

The Little's Test of Missing Completely at Random (MCAR) was performed for missing data and results indicate a non-MCAR,  $\chi^2_{(117)} = 176.545$ ,  $p < .001$ . The percentage of missing values across the fourteen items of the FSCRS varied between 0.1% and 0.3%. However, we address missing data using the Multiple Imputation Technique, as a recommended modern missing data treatment (Lang & Little, 2018). The assumptions of univariate and multivariate normality were examined, and all items showed acceptable values of asymmetry and kurtosis ( $Sk < |3|$  and  $Ku < |8| - |10|$ ; Kline, 2005).

### Confirmatory Factor Analyses – Non-Clinical and Clinical Samples

Two-factor models were tested in both samples by comparing the three-factor model as the original FSCRS-SF (Sommers-Spijkerman et al., 2018) to the two-factor model (including items of the inadequate-self and hated-self subscales into a single-factor and the items of the self-reassurance as another factor) as suggested by Halamová et al., (2018). As can be seen in Table 1, results indicate that in both samples, the three-factor model showed an adequate fit to the data. Results from model comparison through ECVI indicate that the three factors model seems to fit better in the present data than the two factors model.

In regard to local adjustment, all factor loadings were significant ( $p < .001$ ), and all items had good loading coefficients ( $\lambda \geq 0.50$ , ranging between 0.53 and 0.83 for the non-clinical sample, and ranging between 0.54 and 0.80 for the clinical sample) and good squared multiple correlations ( $R^2 \geq 0.25$ ; ranging between 0.28 and 0.69 for the non-clinical sample, and ranging between 0.29 and 0.63 for the clinical sample) (Figs. 1 and 2).

In the non-clinical sample, the Composite Reliability obtained for inadequate self was 0.79, for hated self was 0.76 and for reassured self was 0.81. The variance extracted measure (VEM) values for each three dimensions were 0.55, 0.57, and 0.58, respectively, suggest-



**Table 1** Goodness-of-fit statistics for comparative models of the FSCRS-SF

Models	$\chi^2$	df	GFI	CFI	TLI	RMSEA (90% CI)	SRMR	ECVI
Non-clinical sample ( $N=1224$ )								
Three factors	3094.86***	74	0.94	0.91	0.89	0.08*** (0.07–0.08)	0.05	0.43
Two factors	4307.05***	76	0.91	0.88	0.85	0.09*** (0.09–0.09)	0.06	0.60
Clinical sample ( $N=103$ )								
Three factors	106.270**	74	0.87	0.94	0.93	0.07 (0.03–0.09)	0.07	1.63
Two factors	133.987***	76	0.84	0.90	0.87	0.09* (0.06–11)	0.07	1.86

Note. \* $p < .05$  \*\* $p < .01$  \*\*\* $p < .001$ . df=degrees of freedom; GFI=Goodness-of-fit index; CFI=Comparative Fit Index; TLI=Tucker-Lewis Index; RMSEA=Root Mean Error of Approximation; C.I. = Confidence Interval; SRMR=Standardized Root Mean Square Residual; ECVI=Expected Cross-Validation Index;

ing that individual indicators are truly representative of the latent construct. In the clinical sample, the Composite Reliability were 0.81, 0.81, and 0.82 for inadequate self, hated self, and reassured self, respectively for the three subscales, respectively. The VEM values were 0.58, 0.65, and 0.60 for the three subscales, respectively.

### Measurement Invariance for Sample Groups (Non-Clinical and Clinical Samples)

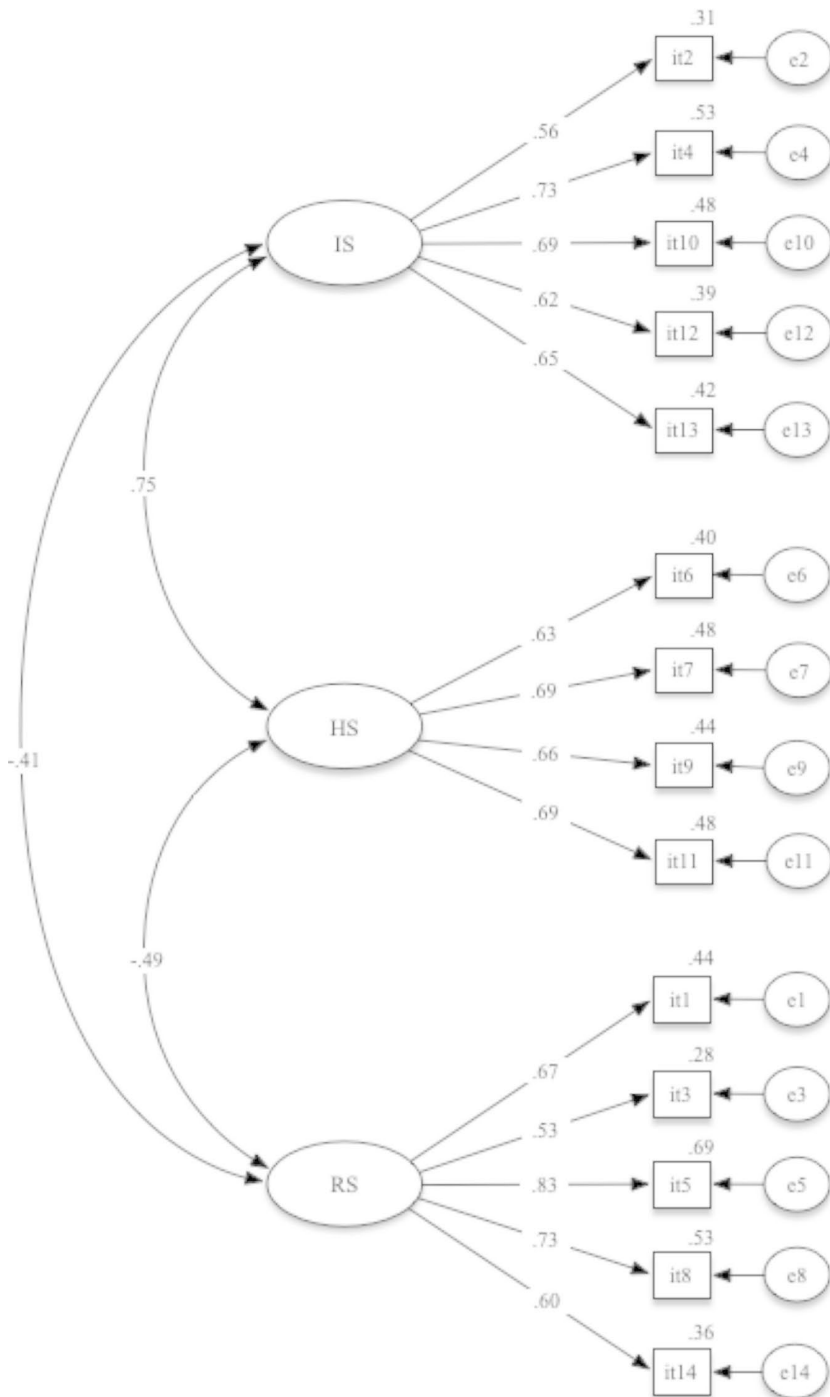
Table 2 shows the measurement invariance groups analysis results of the FSCRS-SF in two samples (non-clinical and clinical samples). The first step aimed to test for configural invariance, that is, to fit a baseline model for each group separately (Dimitrov, 2010). In this first step, the three-factor model previously found as a better fit to our data reveals an acceptable fit. The second step involved metric invariance, meaning that equal factor loadings across groups were required to ensure equivalent relationships between the latent factor and its indicators (items) in the factorial model (Dimitrov, 2010). Results from this second step indicated metric measurement invariance, as can be seen in Table 2 for the  $\Delta CFI \leq -0.01$  combined with  $\Delta SRMR \leq 0.03$  (Chen, 2007). Finally, the scalar invariance (i.e., equal factor loadings and equal indicator intercepts across groups are required) was also established, according to  $\Delta CFI \leq -0.01$  combined with  $\Delta SRMR \leq 0.01$  (Chen, 2007).

### Test-Retest Reliability

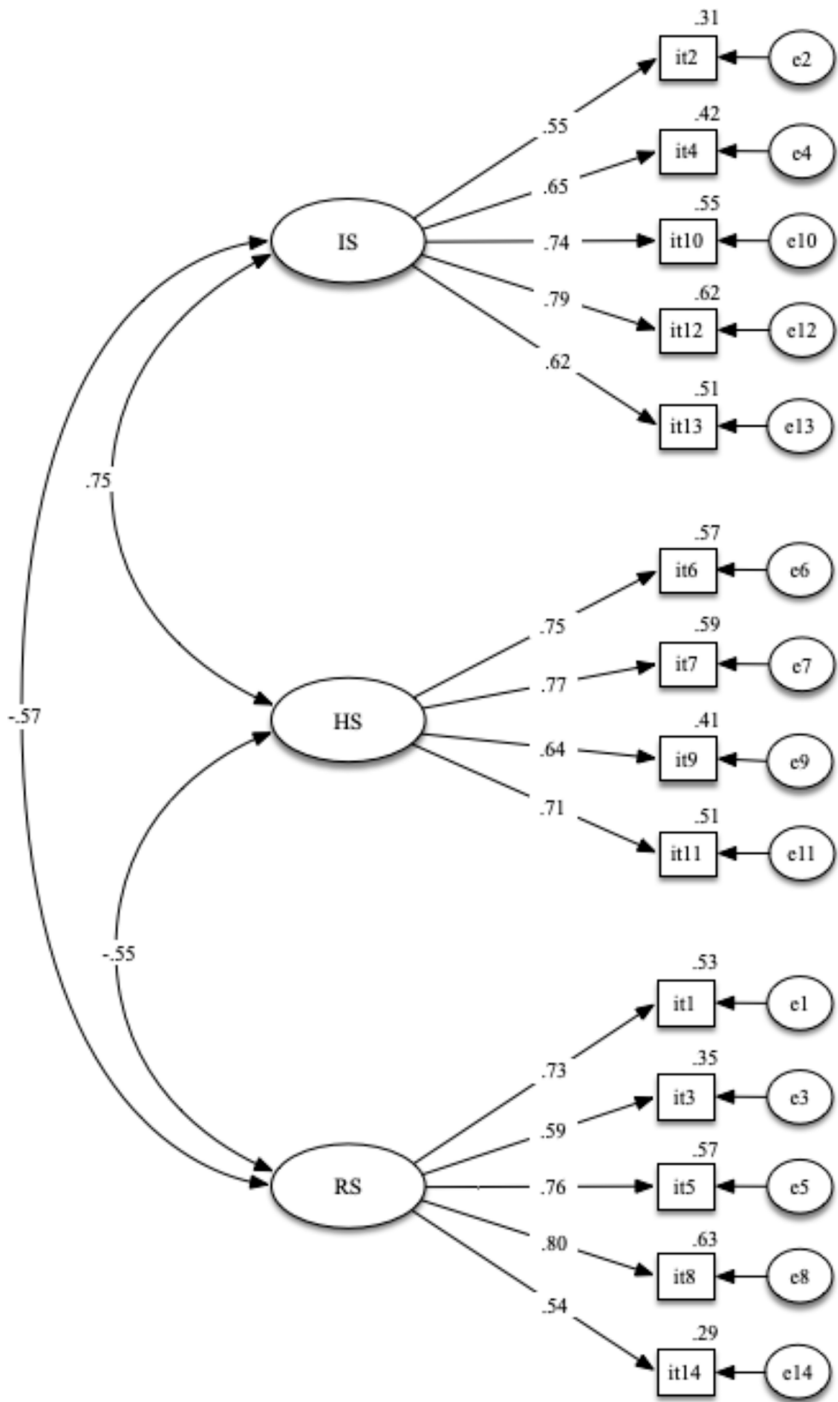
In the test-retest reliability analysis (Pearson product-moment  $r$ ), 418 adolescents filled out a retest of the FSCRS after a 6-months interval. Results showed good temporal stability with correlation coefficients of  $r = .71$ ,  $p < .001$  for the Inadequate-self,  $r = .67$ ,  $p < .001$  for the Hated-self, and  $r = .57$ ,  $p < .001$  for the Reassured-self subscales. Overall, the FSCRS-SF for adolescents produced consistent results over time.

### Descriptive Statistics and Reliability Analysis

Means, standard deviations, and corrected item-total correlations for the three FSCRS-SF dimensions in the non-clinical and clinical samples are presented in Table 3. For the non-



**Fig. 1** Confirmatory Factor Analysis of the three-factor of the FSCRS-SF for non-clinical adolescents (N=1224). Standardized coefficients are shown; all paths are statistically significant ( $p < .001$ )



**Fig. 2** Confirmatory Factor Analysis of the three-factor of the FSCRS-SF for clinical adolescents (N=103). Standardized coefficients are shown; all paths are statistically significant ( $p < .001$ )

**Table 2** Multigroup confirmatory factor analysis of FSCRS-SF in community (N=1224) and clinical samples (N=103)

	CFI	SRMR	$\Delta$ CFI	$\Delta$ SRMR
Configural invariance	0.923	0.050	-	-
Metric invariance	0.921	0.056	-0.002	0.006
Scalar invariance	0.919	0.053	-0.002	-0.003

*Note.* Configural invariance = fit a baseline model for each group separately; metric invariance = equal factor loadings across groups; scalar invariance = equal item intercepts across groups; CFI=Comparative Fit Index; SRMR=Standardized Root Mean Square Residual;  $\Delta$ CFI = Comparative Fit Index Difference;  $\Delta$ SRMR=Standardized Root Mean Square Residual Difference;

**Table 3** Means (M), standard deviations (SD), corrected item-total correlations for FSCRS-SF dimensions in adolescents' community and clinical samples (N=1224; N=103)

	Non-clinical sample (N=1224)			Clinical sample (N=103)		
	M	SD	Item-total <i>r</i>	M	SD	Item-total <i>r</i>
Inadequate self	1.64	0.93		2.26	0.95	
2	1.46	1.25	0.47	2.00	1.38	0.47
4	1.90	1.28	0.63	2.40	1.22	0.58
10	1.90	1.25	0.61	2.38	1.22	0.70
12	1.17	1.18	0.51	1.89	1.20	0.65
13	1.78	1.42	0.56	2.63	1.22	0.65
Reassured self	2.35	0.89		1.90	0.91	
1	2.28	1.11	0.61	1.76	1.09	0.67
3	1.80	1.16	0.48	1.44	1.13	0.51
5	2.56	1.28	0.70	1.94	1.35	0.63
8	2.54	1.19	0.62	2.24	1.23	0.71
14	2.55	1.20	0.55	2.13	1.24	0.49
Hated self	0.68	0.77		1.30	1.11	
6	0.49	0.94	0.56	1.25	1.49	0.66
7	0.38	0.84	0.62	0.90	1.34	0.68
9	0.81	1.03	0.54	1.37	1.30	0.58
11	1.03	1.21	0.52	1.66	1.40	0.59

clinical sample, results showed high item-total correlations, ranging between 0.47 (item 2) and 0.70 (item 5), which confirmed the adequacy of the items to the measure and its internal consistency (Tabachnick & Fidell, 2013). The Cronbach's alpha obtained for the three dimensions ranged between adequate to good: 0.81 for the Reassured self, 0.78 for the Inadequate self, and 0.75 for the Hated self. Additionally, all items positively contributed to the internal consistency of the Portuguese version of the FSCRS-SF for adolescents, given that the reliability would not improve if any item was deleted (alpha if item deleted ranged from 0.67 to 0.80). As can be seen in Table 3, for clinical sample the item-total correlations range between 0.47 and 0.71. The internal reliability was 0.81 for the three subscales.

A similar analysis was performed in the sample of 140 adolescents (who filled out the FSCRS-SF), and results indicate both good item-total correlations and internal reliability for the three subscales: 0.80 for reassured self, 0.77 for inadequate self and 0.82 for hated self.

## Convergent Validity

Table 4 presents Pearson correlation coefficients between FSCRS-SF dimensions and overall and components of self-compassion, anxiety, stress, and depression symptoms and life satisfaction for the non-clinical sample. Results showed significant negative associations of inadequate self with overall self-compassion, self-kindness, common humanity, mindfulness, and satisfaction with life. Inadequate self positively correlated with self-judgment, isolation, over-identification, depression, anxiety, and stress. Results also indicated negative correlations between hated self and overall self-compassion, self-kindness, common humanity, mindfulness, and satisfaction with life. Hated self positively correlated with self-judgment, isolation, over-identification, depression, anxiety, and stress. There were positive correlations between reassured self and overall self-compassion, self-kindness, common humanity, mindfulness, and satisfaction with life. Reassured self had negative correlations with self-judgment, isolation, over-identification, depression, anxiety, and stress.

Regarding the correlations between the FSCRS-SF subscales, results indicated a significantly positive association between the inadequate self and the hated self. In contrast, there were negative correlations between the reassured self and the inadequate self and the hated self.

## Gender Differences and Association with Age in FSCRS-SF Dimensions

In this multiple comparison study, the Bonferroni method was used and the  $p$ -value is considered at  $p \leq .02$ . Results show significant gender differences for inadequate self,  $t_{(1222)} = -6.79$ ,  $p < .001$ ,  $d = -0.39$ , hated self,  $t_{(1222)} = -3.60$ ,  $p < .001$ ,  $d = -0.21$ , and reassured self,  $t_{(1222)} = 6.03$ ,  $p < .001$ ,  $d = 0.34$ . All effect sizes are small. On average, girls tend to report more levels of inadequate self ( $M = 1.78$ ,  $SD = 0.92$  vs.  $M = 1.43$ ,  $SD = 0.91$ ) and hated self than boys ( $M = 0.74$ ,  $SD = 0.79$  vs.  $M = 0.58$ ,  $SD = 0.72$ ). In contrast, boys tend to report more levels of self-reassuring than girls ( $M = 2.53$ ,  $SD = 0.89$  vs.  $M = 2.23$ ,  $SD = 0.88$ ).

Concerning correlations between age and FSCRS-SF dimensions, results indicated a positive and a weak association with the inadequate self,  $r = .12$ ,  $p < .001$ , which means that

**Table 4** Pearson correlation coefficients for the relationship between inadequate self, hated self, reassured self, components of self-compassion ( $N = 1224$ ), anxiety, stress and depression symptoms ( $n = 882$ ), and life satisfaction ( $n = 336$ ) for the non-clinical sample

	Inadequate self	Hated self	Reassured self
Hated self	0.60		
Reassured self	-0.31	-0.37	
Self-kindness	-0.37	-0.34	0.53
Self-judgment	0.71	0.58	-0.44
Common Humanity	-0.17	-0.17	0.37
Isolation	0.66	0.51	-0.44
Mindfulness	-0.29	-0.28	0.49
Over-identification	0.66	0.49	-0.41
Overall Self-compassion	-0.66	-0.55	0.60
Depression	0.61	0.55	-0.45
Anxiety	0.45	0.43	-0.27
Stress	0.58	0.45	-0.34
Life Satisfaction	-0.36	-0.36	0.30

*Note.* All presented Pearson correlation coefficients are statistically significant at a  $p \leq .001$

higher scores of inadequate self were associated with higher ages. Results also indicated a negative and very weak association with the reassured self,  $r = -.08$ ,  $p = .004$ , suggesting that higher scores of reassured self were associated with lower ages. Age and hated self had no significant correlation,  $r = .004$ ,  $p = .902$ .

### Discriminant Validity

Independent samples t-tests were conducted to analyze mean differences in the FSCRS-SF between non-clinical ( $n = 101$ ) and clinical ( $N = 103$ ) samples. In this multiple comparison study, the Bonferroni method was used and the  $p$ -value is considered at  $p \leq .02$ . Results indicated significant differences in the three dimensions of the FSCRS-SF. For inadequate self,  $t_{(202)} = -4.41$ ,  $p < .001$ ,  $d = -0.62$ , the effect size is medium. For hated self,  $t_{(180.607)} = -3.89$ ,  $p < .001$ ,  $d = -0.54$ , the effect size is medium. For reassured self,  $t_{(202)} = 3.26$ ,  $p = .001$ ,  $d = 0.46$ , the effect size is small. Particularly, the clinical sample reported higher levels of inadequate self and hated self than the non-clinical sample (inadequate self:  $n = 103$ ,  $M = 2.26$ ,  $SD = 0.95$ ;  $n = 101$ ,  $M = 1.68$ ,  $SD = 0.93$ ; hated self:  $n = 103$ ,  $M = 1.30$ ,  $SD = 1.11$ ;  $n = 101$ ,  $M = 0.78$ ,  $SD = 0.76$ ). On the contrary, the non-clinical sample revealed higher levels of reassured self than the clinical sample ( $n = 101$ ,  $M = 2.31$ ,  $SD = 0.89$ ;  $n = 103$ ,  $M = 1.90$ ,  $SD = 0.91$ ).

### Discussion

The present study aimed mainly to analyze the factor structure of a short version of the FSCRS (FSCRS-SF) for adolescents in a non-clinical and clinical sample. This measure intends to capture the forms of self-criticism and self-reassuring as psychological processes associated with psychological distress or well-being (Gilbert et al., 2004). Overall, results indicate that the three-factor model was replicated in this sample of adolescents, the internal reliability was adequate, and the theoretical validity was confirmed. The findings of reliability and validity of the FSCRS-SF for adolescents may be important for providing a screening measure in diverse contexts such as clinical, educational, and research.

In the present study, the factor structure of the 14-item short form of the FSCRS (FSCRS-SF) of both clinical and non-clinical samples was examined. Two alternative models were tested using a CFA approach, as suggested by previous studies on both the original and long version of the FSCRS (Gilbert et al., 2004; Halamová et al., 2018) and its short version (Sommers-Spijkerman et al., 2018). Our results were generally consistent with these previous studies. Both two and three-factor models were adequate, although the three-factor model seemed to be a better fit to our data for both samples. This result for the non-clinical sample is not in line with our hypothesis based on a previous study from Halamová et al. (2018), but it is in accordance with the theoretical background (Gilbert et al., 2004). Noteworthy that the study by Halamová et al. (2018) was conducted in an adult population.

In addition, our results showed that the three-factor structure of the FSCRS-SF was equivalent for both non-clinical and clinical samples, supporting the invariance of measurement across samples. These results are in accordance with other countries, albeit in the adult population (Bellur et al., 2023; Sommers-Spijkerman et al., 2018). Overall, our findings seem to indicate the distinction between the forms of self-criticism (inadequate self and

hated self) and self-reassuring. This distinction may inform about the forms and related emotions of the internal dialogue in adolescents.

Regarding the internal reliability of the FSCRS-SF in these adolescents' samples, results revealed adequate internal consistency for the three subscales in both samples. Although these results were obtained based on the long version, the short version was applied to a sample of 140 adolescents allowing to confirm the internal reliability of the measure. The temporal stability of the measure was also good. Previous studies analyzing self-criticism and self-reassuring in adolescent samples had also found adequate internal reliability, albeit testing its psychometric qualities was not these studies' main aim (Cunha & Paiva, 2012; Cunha et al., 2021a, 2021b; Xavier et al., 2016, 2017).

Concerning the convergent validity, results show that adolescents with a sense of self as inadequate, worthless, disgusting, and hated tend to report lower levels of self-kindness, common humanity, mindfulness, and life satisfaction. They also tend to present higher levels of self-judgment, isolation, over-identification, depression, anxiety, and stress. These results are in accordance with empirical research in adolescent populations that showed that higher levels of self-criticism and lower levels of self-reassured were associated with psychopathology (Cunha & Paiva, 2012; Cunha et al., 2021a, b; Xavier et al., 2016, 2017). On the contrary, adolescents who are able to focus on their positives and be reassuring to themselves when things go wrong tend to be more self-kind, mindful, seeing failures and distress/suffering as part of common humanity and being more satisfied with their own life. These results are similar to other studies conducted with adolescents that showed the positive role of self-reassuring in mental health (Cunha et al., 2021a, 2021b; Marsh et al., 2018).

In line with our hypotheses and with previous studies (Cunha & Paiva, 2012; Cunha et al., 2021a, 2021b; Xavier et al., 2016, 2017), our results showed that female adolescents reported higher levels of self-criticism and lower levels of self-reassuring compared to male adolescents, despite its small effect size. Indeed, the literature consistently points out gender differences in the prevalence of internalizing disorders and psychological processes focused on criticism and rumination, with a clear tendency to be higher in females (Nolen-Hoeksema & Girgus, 1994; Shahar et al., 2004). Regarding the correlations between FSCRS-SF's dimensions and age, our findings seem to be in line with our hypothesis, indicating that older adolescents tend to report more feelings of inadequacy and failure than younger. Inversely, younger people are more able to keep calm, encourage themselves, and have feelings of warmth towards themselves in moments of setbacks or adversity than older adolescents. These findings may be understood based on the developmental tasks during adolescence. The most striking challenge is the emancipation from parents and the connection to peers group. Peers become a new source of social support with implications for structuring self-identify (Siegel, 2015). Thus, the perceived pressure to be accepted and approved by peers increases adolescents' concerns with self-other evaluations and self-presentation. These concerns may render them more vulnerable to emotional disorders (Polanczyk et al., 2015; World Health Organization, 2018).

Results from the FSCRS-SF subscales comparing non-clinical and clinical samples were also in line with what was expected: adolescents from the clinical sample tended to report higher levels of self-criticism and lower levels of self-reassuring compared to adolescents from the non-clinical sample. This result is warranted since self-criticism is considered a vulnerability factor for psychopathology in clinical samples, in both adults (Castilho et al., 2015) and adolescents (Zuroff et al., 2021; Xavier et al., 2017). The effect sizes for those



differences were medium for inadequate self and hated self, while it was small for reassured self. These results seem to suggest that what may distinguish between clinical and non-clinical samples are the forms of self-criticism focused on the inadequate and hated self. Thus, these findings may inform on the importance of developing intervention actions fostering reassuring and compassionate attitudes and decreasing harsh, judgmental, and hatred tendencies in both educational and clinical settings. Particularly, our findings suggest that interventions should focus on not only developing positive and soothing self-talk in response to failure or difficult situations but also targeting self-criticism. For instance, in compassion-based approaches (Gilbert, 2020; Matos & Steindl, 2020) several sessions include the psychoeducation of the functions of self-criticism (focused on self-protection and survival evolutionary motives) and the identification of this hostile and judgmental self-talk linked to difficult emotions. Additionally, experiential exercises focused on activating the soothing system and reassuring self-talk (with a kind voice tone and body expression) were trained to decrease self-criticism (Gilbert, 2020; Matos & Steindl, 2020).

Some limitations should be considered in the current study. The cross-sectional design of the study does not allow to establish a causal direction between variables. Our data are constrained by the limitations linked to the exclusive use of self-report measures, and therefore other assessment methodologies (e.g., ecological momentary assessment) are required in future research. The small clinical sample size may limit robust conclusions about CFA results. Another limitation of this study is that the analyses of the short version (FSCSR-SF) were based on items extracted from the full version of the FSCRS. Participants' responses to items may be slightly different depending on whether the 14 items are administered alone or embedded within 22 other items. However, the uniformity of the findings with an additional sample ( $N=140$ ) does provide some guarantee that this potential limitation has not adversely impacted the conclusions drawn from the present findings.

Despite these limitations, the current study has some strengths. One of the strengths relates to the large non-clinical sample. Also, another strength is the study of the factor structure in a non-clinical and clinical sample and the confirmation of measurement invariance in both samples. Although most of the present results were extracted from the long version, an independent sample with the FSCRS-SF was used to test its applicability, which is a strong point.

This study provides a validation of the FSCRS-SF, a brief self-report questionnaire designed to measure how adolescents think and emotionally react when dealing with failures or setbacks in a Portuguese population. This validation study contributes to a deeper understanding of self-criticism and self-reassuring on mental health during adolescent development. Additionally, the results on the reliability and validity of the measure suggest that the FSCRS-SF might be helpful for intervention research with adolescents. However, further studies would be required to confirm whether it can detect changes over time and if those changes are related to expected outcomes, such as lower levels of depression, anxiety, or improved self-esteem. Early identification of adolescents with higher levels of self-criticism and initial referral to adequate intervention may prevent worsening psychological distress. In conclusion, this measure is of potential interest and use by researchers and practitioners, contributing to a broader understanding of the role self-criticism plays in the crucial developmental phase of adolescence.

**Acknowledgements** The authors would like to thank all participants for their cooperation.

**Data Analysis** The authors take responsibility for the integrity of the data and the accuracy of the data analysis.

**Funding Information** Open access funding provided by FCT|FCCN (b-on).

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