**ORIGINAL ARTICLE**

# Evidence of Validity for the Brazilian Version of the Young Schema Questionnaire—Short Form (YSQ-S3)

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## Abstract

Early maladaptive schemas (EMS) are dysfunctional structures formed by emotions, cognitions, memories, and physical sensations. The Young schema questionnaire—short form (YSQ-S3), a 90-item self-report instrument with a 6-point Likert scale, was developed to measure the 18 EMS. This study aimed to present evidence of the validity of the YSQ-S3 instrument for use in Brazil, involving a general population sample of 1,050 individuals. The YSQ-S3 and symptom checklist (SCL-90) forms were applied. Confirmatory factor analysis was used to assess the factor structure and validity evidence based on relations to other variables through correlating with clinical psychological symptoms. The results indicated good evidence of validity. Cronbach's alpha was satisfactory for all EMS ($\alpha$ between 0.74 and 0.94). The fit of the factor model were shown to be adequate and the instrument had good validity. It was possible to verify satisfactory evidence of validity for use of the instrument in the Brazilian population. The importance of future studies involving clinical samples is emphasized.

**Keywords** Young schema questionnaire · Schema therapy · Early maladaptive schemas · Factorial structure · Validity · Reliability

## Abbreviations
| | |
|---|---|
| $\alpha$ | Cronbach's alpha |
| $\lambda$ | Standardized factorial loads |
| $\chi^2$ | Chi-squared test |
| AB | Abandonment |
| AS | Approval-seeking |
| CFA | Confirmatory factor analysis |
| CFI | Comparative fit index |

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CR          Composite reliability
df          Degrees of freedom
DP          Dependence
DS          Defectiveness/shame
DWLS        Diagonally weighted least squares
ED          Emotional deprivation
EI          Emotional inhibition
EM          Enmeshment
EMS         Early maladaptive schemas
EN          Entitlement
FA          Failure to achieve
IS          Insufficient self-control
ISST        International Society of Schema Therapy
MA          Mistrust/abused
NE          Negativity
RMSEA       Root mean square error of approximation
SB          Subjugation
SCL-90      Symptom checklist
SD          Standard deviation
SI          Social isolation
SP          Punitiveness
SRMR        Standardized root mean square residual index
SS          Self-sacrifice
ST          Schema therapy
TLI         Tucker-Lewis index
US          Unrelenting standards
VH          Vulnerability to harm
YSQ         Young schema questionnaire

## Introduction

The "early maladaptive schemas" (EMS; Young, 1990; Young et al., 2003) are dysfunctional cognitive structures formed of emotions, cognitions, memories, and sensations. They particularly develop in childhood and adolescence from a failure by parents, caregivers, family members, teachers, and peers to meet basic emotional needs, and generally encompass harmful experiences (Lockwood & Perris, 2012; Young et al., 2003). EMS give meaning to experiences and are perpetuated throughout life, influencing how one thinks, feels, acts, and relates to others. Thus, this process implies the maintenance of emotional and cognitive maladaptive patterns, as well as the use of dysfunctional behavioral strategies, which often reinforce these patterns (Young, 1990; Young et al., 2003).

EMS are often at the center of different psychological disorders (Arntz & Jacob, 2012; Bach & Bernstein, 2019; Davoodi et al., 2018; Frías et al., 2017; Hawke & Provencher, 2011; Khodarahimi, 2017; Philipsen et al., 2017; van Vreeswijk et al., 2012; Young et al., 2003). The theoretical model proposes the existence of 18 EMS

(Table 1), which exhibit distinct characteristics and presentations. According to the theoretical model (Young et al., 2003), the 18 EMS are distributed into five schema domains, corresponding to five categories of unmet basic needs. The five domains were originally labeled as follows: "I—disconnection and rejection"; "II—impaired autonomy and performance"; "III—impaired limits"; "IV—other-directedness"; and "V—overvigilance and inhibition" (Young, et al., 2003). In recent years, there has been a lengthy theoretical and empirical discussion about the nomenclature and distribution of the EMS in these domains. Several studies have presented different possibilities and understandings of this phenomenon (Aloi et al., 2020; Bach et al., 2017a; Calvete et al., 2013; Lavergne et al., 2015; Sakulsriprasert et al., 2016; Saritas & Gençöz, 2011; Soygüt et al., 2009).

The term EMS was proposed by Young and is one of the central concepts of schema therapy (ST; Young, 1990; Young et al., 2003). ST is an integrative psychotherapeutic approach based on cognitive behavioral therapy, which

**Table 1** Brief descriptions of the 18 Early Maladaptive Schemas

| Schema | Brief description |
| --- | --- |
| Abandonment | Expectation and constant fear that people close to you will abandon you or leave your life |
| Mistrust/abuse | Expectation that other people will hurt and take advantage of you |
| Emotional deprivation | Feeling that one's need for affection, care and attention will not be met |
| Defectiveness/shame | Involves the belief of being defective, inadequate, inferior, and unworthy of love. |
| Social isolation | Feeling of alienation from society and of not belonging |
| Dependence | The individual requires constant help, and does not feel able to take care of him/herself or their daily routine alone |
| Vulnerability | Feeling that the world is dangerous and that one is excessively vulnerable to harm and sickness |
| Enmeshment | Tendency to merge personality with significant figures at the expense of individuation |
| Failure | Perception of one's self as incompetent and less successful in many areas |
| Entitlement/grandiosity | Involves the belief of being special, superior to others and deserving of special privileges |
| Insufficient self-control | Difficulty in self-control to achieve goals, complete tasks, control impulses and emotions |
| Subjugation | The individual subjugates their own needs and emotions to avoid punishment, retaliation or abandonment |
| Self-sacrifice | Denial of one's own needs to meet the needs of others |
| Approval seeking | Constant search for approval, attention, and recognition from others |
| Negativity | Focus on negative aspects of life, with constant expectation that something bad will happen |
| Emotional inhibition | Excessive inhibition of expression of emotions and excessive impulse control |
| Unrelenting standards | Perfectionism, seeking to maintain rigid standards and achieve high standards |
| Punitiveness | To make errors is intolerable and punishable. The punishment can be directed at oneself and others |

contemplates the fundamentals of several approaches, such as Bowlby's attachment theory, cognitive analytic therapy, psychodynamic models, emotion-focused therapy, and gestalt therapy. ST was initially developed for the treatment of personality disorders and persistent clinical conditions; however, it provides explanatory models for different psychopathologies (Arntz & Jacob, 2012; Taylor et al., 2017; Young et al., 2003). The approach has been growing in recent years (van Vreeswijk et al., 2012) and has presented good results for the treatment of different psychopathologies, including complex cases (Masley et al., 2012; Peeters et al., 2021).

Recent studies have presented promising but as yet inconclusive results on the applicability of ST for changing EMS and clinical psychological symptoms in borderline personality, and eating, anxiety, and post-traumatic stress disorders (Arntz & van Genderen, 2021; Boterhoven et al., 2019; Hawke & Provencher, 2011; Taylor et al., 2017). In general, ST aims to identify and diminish activation of the EMS, including the intensity of emotions and bodily sensations elicited by them, as well as to modify related cognitions. In addition, it seeks to help the patient develop more functional behavioral strategies to cope with and meet their needs (Arntz & Jacob, 2012; Young et al., 2003).

The Young schema questionnaire (YSQ) was developed for the evaluation of EMS and is a self-report instrument scored on a 6-point Likert scale. The first version of the instrument consisted of 205 items and evaluated 16 EMS, theoretically identified at the time. It was developed by Young and Brown (1990), with two studies of psychometric properties indicating satisfactory reliability and validity indices, although neither study confirmed the factor structure initially proposed by the authors (Lee et al., 1999; Schmidt et al., 1995).

A 75-item short version of the instrument was developed, called YSQ-S2, based on research by Schmidt et al. (1995), which theoretically measured a new EMS structure (Young & Brown, 1999). The YSQ-S2 was adapted for use in Brazil and presented good evidence of validity. The study was conducted with 372 participants from the general population, with the results indicating excellent total internal consistency ($\alpha = 0.95$) and satisfactory levels for the 15 EMS measured by the instrument ($\alpha$ between 0.72 and 0.90), with the exception of dependence/incompetence ($\alpha = 0.57$). In addition, it was possible to verify good convergent validity, considering the positive and significant correlation of the YSQ-S2 total with the factorial scale of emotional adjustment/neuroticism (Cazassa & Oliveira, 2012).

Further development of the YSQ-S2 led Young (2003) to propose the addition of three more EMS, namely, negativity/pessimism, punitiveness, and approval-seeking/recognition-seeking, arriving at the current model that considers 18 EMS. This model gave rise to a new 232-item long version of the YSQ (YSQ-L3—Young, 2003) and a new short version with 90 items (YSQ-S3—Young, 2005). The YSQ-S3, the focus of this study, has been the most widely used instrument for both research and clinical practice. The instrument stands out in these areas because it includes the 5 items selected as being the best for measuring each EMS, and as such, it is also called "YSQ—standardized items, 3rd version." In addition, it is a complete and quick-to-apply instrument, in which the 5 items related to each EMS are presented in a non-sequential way.

Several studies have analyzed the first-order factor structure of the YSQ-S3, corresponding to identification of the EMS. In general, research analyzing the first-order used confirmatory factor analysis (CFA), considering the 18 factors (Young, 2005) (Aloi et al., 2020—Italian version; Bach et al., 2017b—Danish version; Calvete et al., 2013—Spanish version; Hawke & Provencher, 2012—Canadian-French version; Jain & Singh, 2019—Indian version; Kriston et al., 2013—German version; Lee et al., 2015—Korean version; Rijo, 2009—Portuguese version; Sakulsriprasert et al., 2016—Thai version; Saritas & Gençöz, 2011—Turkish version). A recent study with Brazilian and Portuguese adolescents also evidenced good fit for the 18-factor model and acceptable internal consistency values (Borges et al., 2020). Some exceptions are the Turkish (Soygüt et al., 2009), French (Bouvard et al., 2018), and Palestinian (Alfasfos, 2009) versions that found solutions for 14, 14, and 17 factors, respectively, using exploratory factor analysis.

The validity evidence based on relations to other variables of the YSQ-S3 has been researched in many countries, with studies demonstrating good evidence from the correlation between EMS and psychological symptoms, such as anxiety, depression, and interpersonal sensitivity, among others (Alfasfos, 2009; Aloi et al., 2020; Borges et al., 2020; Bouvard et al., 2018; Calvete et al., 2013; Hawke & Provencher, 2012; Jain & Singh, 2019; Janovsky et al., 2020; Kriston et al., 2013; Lee et al., 2015; Oettingen et al., 2018; Phillips et al., 2017; Rijo, 2009; Saritas & Gençöz, 2011; Soygüt et al., 2009).

The YSQ-S3 was first adapted to the Portuguese language spoken in Portugal (Rijo, 2009) and subsequently adapted to Brazilian Portuguese, for linguistic and cultural reasons (Souza et al., 2020). The YSQ-S3 was adapted for use in Brazil following the requirements of the International Society of Schema Therapy (ISST), and a preliminary analysis of instrument reliability was performed. The results indicated adequate understanding of the items by the participants and a high level of agreement among the experts who evaluated the adapted instrument. The preliminary analysis sample for the instrument consisted of 200 participants from the general population. Results indicated excellent overall internal consistency ($\alpha = 0.965$) and satisfactory consistency for the 18 EMS ($\alpha = 0.77$ and 0.92), with the exception of entitlement/grandiosity, which presented a borderline score ($\alpha = 0.67$). This first study evaluated its internal consistency, but, as it is based on a small sample size, the internal structure and validity based on evidences in relation to other variables were not evaluated.

The present study aimed to investigate the validity evidence for the Brazilian version YSQ-S3, in relation to internal and external validity. We evaluated the first-order factor structure for identifying the EMS using confirmatory factor analysis, based on the model proposed by Young et al. (2003), and the reliability of each subscale was investigated. In addition, the results from the YSQ-S3 and SCL-90 subscales were correlated to examine validity evidence based on relations to other variables.

## Materials and Methods

### Study Design

This is a cross-sectional and quantitative study, with an observational design.

### Participants

A total of 1,050 Brazilians from the general population and internet users participated in this study. The sample consisted of 846 (80.7%) female and 203 (19.3%) male participants, with a mean (± SD) age of 30.69 (± 11.26) years. The educational levels of the participants were as follows: incomplete higher education (40.4%), complete postgraduation (32.5%), complete higher education (21.6%), and complete and incomplete high school (5.5%). Regarding racial grouping, the participants identified as follows: white (89.5%), black (2.6%), mixed-race (7.2%), Asian (0.4%), and indigenous (0.3%). The social class in line with *Critério Brasil* of participants were as follows: A1 (31%), A2 (23.5%), B1 (30.5%), B2 (11.7%), C (2.9%), and D (0.5%). Each social stratum corresponds to the following: A ≥ 4,240 dollars (or 3,580 euros); B between 2,120 and 4,240 dollars (or 1,790 and 3,580 euros); C between 848 and 2,120 dollars (or 716 and 1,790 euros); D between 424 and 358 euros (or 716 and 358); and E ≤ 424 dollars (or 358 euros). The proportion of survey type were 19.3% paper and pencil and 80.7% online.

Data collection took place between June and October 2018, with the protocol applied online using Qualtrics Survey Software and paper-pen printed versions. For the sake of convenience, the social networks of research group members, their acquaintances, and other groups were used to recruit volunteers. Participants in the survey were asked to complete the protocol instruments as described below. This study followed all standard ethical procedures and was approved by the Research Ethics Committee of the Pontifícia Universidade Católica do Rio Grande do Sul, CAAE: 80,925,517.0.0000.5336. All participants signed an informed consent form after reading about the research and having any questions answered.

### Instruments

#### Young Schema Questionnaire—Short Form (YSQ-S3)

Souza et al. (2020) adapted the official version of the YSQ-S3 for use in Brazil. The instrument underwent a rigorous adaptation process and presented good preliminary evidence of reliability, as described in the "Introduction" section. The instrument consists of 90 self-report items using a 6-point Likert scale, from 1 (completely untrue of me) to 6 (describes me perfectly). The items present themes related to cognition, emotion, and behavior that correspond to the theoretically proposed 18 EMS. Each EMS in the original proposal is considered using five items.

## Symptom Checklist (SCL-90)

The SCL-90 instrument was developed by Derogatis (1994) and adapted for use in Brazil by Laloni (2001). The instrument presents good evidence of internal consistency by factor analysis ($\alpha$ between 0.75 and 0.88), adequate temporal stability, concurrent validity, and discriminant power with a mental health outpatient population (Laloni, 2001). The SCL-90 consists of 90 self-report items using a 5-point Likert scale, from 0 (not at all) to 4 (very). With correction, it is possible to measure the presence of general clinical psychological symptoms, as well as specific symptoms according to nine subscales: somatization, obsessive–compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, and psychoticism (Derogatis, 1994).

## Data Analysis

Considering the measurement level of the variables, and the visual and statistical descriptive inspection, we conducted further analyses with robust estimators for non-normal, categorical data. Confirmatory factor analysis was performed using the Lavaan R package (Rosseel, 2012) to investigate the fit of the original model (Young, 2005) of 18 EMS to the sample data. The variance–covariance structure between empirical indicators and latent traits (factors) in the CFA was specified by the researcher. Subsequently, the fit of the specified model to the variance–covariance structure of the sample data was calculated.

Several fit indices can be used to indicate goodness of fit, with the most common being the comparative fit index (CFI) and Tucker-Lewis index (TLI), with expected values $\geq 0.95$ indicating the amount of variance in comparison to an independent model. Residual indices are also used, such as the root mean square error of approximation (RMSEA), with expected values $\leq 0.06$, which indicates the mean square error of the model in relation to empirical data, and the standardized root mean square residual index (SRMR), with expected values $\leq 0.1$ (Schreiber et al., 2006). An 18 EMS model was initially tested, considering a theoretical framework (Young et al., 2003). The diagonally weighted least squares (DWLS) estimation method was employed, which is specifically designed for ordinal variables, with means and variances fit from the polychoric correlation matrix of the items (Li, 2016).

The reliability of instrument subscales was estimated using composite reliability (CR) indices (Valentini & Damásio, 2016) and Cronbach's alpha coefficient for ordinal data (Gadermann et al., 2012). Values $\geq 0.7$ were expected for the reliability indices. The average variance extracted was also calculated for items in each subscale, with values $\geq 0.5$ being desirable. Finally, Pearson's correlation coefficient was applied to evaluate the validity evidence based on relations to other variables through the pattern of correlations between the EMS factor scores and SCL-90 dimensions, with bivariate correlations $\geq 0.3$ being considered relevant (Hinkle et al., 2003; Tabachnic & Fidell, 2001).

# Results

## First-order Factor Analysis

CFA indicated a good fit for the original 18 EMS model (Young, 2005), with the model indices being satisfactory, $\chi^2$ (3.762)=15.481.55, CFI=0.98, TLI=0.98, RMSEA=0.054, SRMR=0.055. Table 2 indicates the fit for each of the subscale factor models. It can be seen that, similarly to the general model, the subscale items had a high level of explained variance, as indicated by the CFI and TLI indices. However, some subscales presented high residue levels. The standardized factor loadings were all statistically different from zero and higher than 0.4, representing more than 10% of shared variance with their respective factors. Table 3 displays the standardized factor intercorrelation coefficients. The measures of composite and ordinal alpha reliability indicated the internal consistency of the measurements, with both indices being above the cutoff point of 0.7 in all subscales. The factor intercorrelations are presented in Table 3.

The factor analysis of the YSQ-S3 considering the 18 EMSs separately is presented as Supplementary Material.

Subsequent analyses investigated the relationship between EMS and the SCL-90 subscales (Table 4). Bivariate correlation analysis revealed a strong association

**Table 2** Factor loadings and reliability of confirmatory factor analysis

| Early maladaptive schemas | λ1 | λ2 | λ3 | λ4 | λ5 | α | CR | AVE | Mean (SD) |
|---|---|---|---|---|---|---|---|---|---|
| Emotional deprivation | 0,63 | 0,80 | 0,90 | 0,79 | 0,70 | 0,87 | 0,81 | 0,59 | 1.84(0.97) |
| Abandonment | 0,75 | 0,80 | 0,87 | 0,80 | 0,87 | 0,91 | 0,87 | 0,67 | 2.55(1.26) |
| Mistrust/abused | 0,72 | 0,82 | 0,86 | 0,76 | 0,63 | 0,86 | 0,80 | 0,58 | 2.55(1.13) |
| Social isolation | 0,80 | 0,55 | 0,85 | 0,92 | 0,87 | 0,89 | 0,86 | 0,65 | 2.51(1.21) |
| Defectiveness/shame | 0,83 | 0,89 | 0,89 | 0,88 | 0,85 | 0,93 | 0,92 | 0,75 | 1.71(0.97) |
| Failure to achieve | 0,83 | 0,88 | 0,93 | 0,91 | 0,84 | 0,94 | 0,93 | 0,77 | 2.31(1.30) |
| Dependence | 0,74 | 0,71 | 0,61 | 0,65 | 0,82 | 0,81 | 0,72 | 0,50 | 1.82(0.80) |
| Vulnerability to harm | 0,85 | 0,84 | 0,50 | 0,66 | 0,55 | 0,79 | 0,69 | 0,48 | 2.39(1.08) |
| Enmeshment | 0,67 | 0,55 | 0,56 | 0,79 | 0,86 | 0,81 | 0,70 | 0,48 | 2.03(0.99) |
| Subjugation | 0,77 | 0,84 | 0,59 | 0,80 | 0,72 | 0,86 | 0,78 | 0,56 | 2.34(1.11) |
| Self-sacrifice | 0,48 | 0,73 | 0,86 | 0,54 | 0,83 | 0,83 | 0,71 | 0,50 | 3.33(1.12) |
| Emotional inhibition | 0,77 | 0,80 | 0,93 | 0,63 | 0,71 | 0,86 | 0,82 | 0,60 | 2.55(1.07) |
| Unrelenting standards | 0,56 | 0,58 | 0,39 | 0,85 | 0,79 | 0,78 | 0,62 | 0,43 | 3.53(1.12) |
| Entitlement | 0,68 | 0,60 | 0,59 | 0,65 | 0,58 | 0,74 | 0,54 | 0,38 | 2.64(0.91) |
| Insufficient self-control | 0,71 | 0,80 | 0,63 | 0,66 | 0,84 | 0,85 | 0,76 | 0,54 | 2.81(1.18) |
| Approval-seeking | 0,58 | 0,80 | 0,90 | 0,67 | 0,59 | 0,84 | 0,73 | 0,52 | 3.07(1.16) |
| Negativity | 0,85 | 0,84 | 0,83 | 0,63 | 0,60 | 0,84 | 0,79 | 0,57 | 2.67(1.13) |
| Self-punitiveness | 0,80 | 0,86 | 0,78 | 0,77 | 0,95 | 0,88 | 0,89 | 0,69 | 2.20(1.13) |

*Note*. λ = standardized factorial loads, ordinal α = ordinal Cronbach's Alpha, CR = Composite Reliability; AVE = Average Variance Explained; SD = Standard Deviation

**Table 3** Factor intercorrelations

| | ED | AB | MA | SI | DS | FA | DP | VH | EM | SB | SS | EI | US | EN | IS | AS | NE | SP |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| ED | | | | | | | | | | | | | | | | | | |
| AB | 0,52 | | | | | | | | | | | | | | | | | |
| MA | 0,56 | 0,69 | | | | | | | | | | | | | | | | |
| SI | 0,71 | 0,58 | 0,64 | | | | | | | | | | | | | | | |
| DS | 0,78 | 0,66 | 0,64 | 0,80 | | | | | | | | | | | | | | |
| FA | 0,47 | 0,53 | 0,44 | 0,58 | 0,70 | | | | | | | | | | | | | |
| DP | 0,49 | 0,67 | 0,53 | 0,61 | 0,69 | 0,78 | | | | | | | | | | | | |
| VH | 0,48 | 0,69 | 0,68 | 0,54 | 0,57 | 0,51 | 0,60 | | | | | | | | | | | |
| EM | 0,37 | 0,55 | 0,46 | 0,49 | 0,53 | 0,47 | 0,71 | 0,53 | | | | | | | | | | |
| SB | 0,57 | 0,69 | 0,56 | 0,62 | 0,70 | 0,66 | 0,76 | 0,61 | 0,72 | | | | | | | | | |
| SS | 0,35 | 0,53 | 0,42 | 0,27 | 0,31 | 0,30 | 0,33 | 0,41 | 0,41 | 0,60 | | | | | | | | |
| EI | 0,51 | 0,39 | 0,53 | 0,69 | 0,61 | 0,46 | 0,44 | 0,42 | 0,38 | 0,58 | 0,23 | | | | | | | |
| US | 0,35 | 0,47 | 0,53 | 0,45 | 0,41 | 0,36 | 0,34 | 0,53 | 0,36 | 0,46 | 0,47 | 0,44 | | | | | | |
| EN | 0,38 | 0,51 | 0,67 | 0,49 | 0,41 | 0,26 | 0,46 | 0,57 | 0,48 | 0,42 | 0,36 | 0,34 | 0,59 | | | | | |
| IS | 0,46 | 0,55 | 0,48 | 0,56 | 0,56 | 0,70 | 0,72 | 0,56 | 0,53 | 0,61 | 0,31 | 0,43 | 0,35 | 0,67 | | | | |
| AS | 0,35 | 0,64 | 0,49 | 0,40 | 0,46 | 0,49 | 0,54 | 0,51 | 0,42 | 0,56 | 0,33 | 0,29 | 0,55 | 0,64 | 0,62 | | | |
| NE | 0,51 | 0,70 | 0,74 | 0,57 | 0,65 | 0,57 | 0,62 | 0,88 | 0,52 | 0,65 | 0,46 | 0,47 | 0,60 | 0,54 | 0,62 | 0,57 | | |
| SP | 0,41 | 0,42 | 0,50 | 0,50 | 0,62 | 0,51 | 0,48 | 0,46 | 0,37 | 0,49 | 0,36 | 0,42 | 0,67 | 0,39 | 0,42 | 0,39 | 0,59 | |

*Note.* ED = Emotional deprivation; AB = Abandonment; MA = Mistrust/abused; SI = Social isolation; DS = Defectiveness/shame; FA = Failure to achieve; DP = Dependence; VH = Vulnerability to harm; EM = Enmeshment; SB = Subjugation; SS = Self-sacrifice; EI = Emotional inhibition; US = Unrelenting standards; EN = Entitlement; IS = Insufficient self-control; AS = Approval-seeking; NE = Negativity; SP = Self-punitiveness

**Table 4** Correlations between EMSs (YSQ-S3) and psychological symptoms (SCL-90)

| EIDs | Somatization | Obsessive-compulsive | Interpersonal Sensitivity | Depression | Anxiety | Hostility | Phobic Anxiety | Paranoid Ideation | Psychoticism | Total SCL-90 |
|---|---|---|---|---|---|---|---|---|---|---|
| ED | 0.29 | 0.33 | **0.44** | **0.47** | 0.32 | 0.27 | 0.23 | 0.39 | 0.43 | 0.45 |
| AB | 0.42 | 0.49 | **0.60** | **0.56** | **0.50** | 0.40 | 0.42 | **0.46** | **0.51** | 0.60 |
| MA | 0.38 | 0.43 | **0.55** | 0.49 | 0.44 | **0.46** | 0.41 | **0.64** | 0.49 | 0.59 |
| SI | 0.33 | 0.44 | **0.58** | **0.59** | 0.39 | 0.36 | 0.38 | **0.48** | **0.54** | 0.55 |
| DS | 0.33 | 0.42 | **0.57** | **0.54** | 0.41 | 0.35 | 0.34 | **0.45** | **0.55** | 0.54 |
| FA | 0.29 | **0.51** | **0.51** | **0.52** | 0.37 | 0.31 | 0.33 | 0.35 | 0.43 | 0.50 |
| DP | 0.31 | **0.53** | **0.53** | **0.56** | 0.40 | 0.35 | **0.42** | 0.41 | 0.47 | 0.57 |
| VH | **0.48** | **0.54** | **0.55** | **0.57** | **0.62** | 0.42 | **0.49** | **0.49** | **0.54** | 0.64 |
| EM | 0.30 | 0.41 | **0.42** | 0.43 | 0.33 | 0.29 | 0.29 | 0.40 | 0.41 | 0.44 |
| SB | 0.39 | 0.53 | **0.56** | **0.56** | 0.46 | 0.33 | 0.35 | **0.47** | 0.50 | 0.57 |
| SS | 0.38 | 0.36 | **0.39** | **0.39** | 0.35 | 0.25 | 0.26 | 0.35 | 0.33 | 0.42 |
| EI | 0.22 | 0.33 | **0.40** | 0.35 | 0.26 | 0.24 | 0.25 | 0.34 | 0.37 | 0.51 |
| US | 0.22 | 0.29 | 0.31 | 0.32 | 0.25 | 0.23 | 0.20 | 0.29 | 0.27 | 0.37 |
| EN | 0.26 | 0.35 | 0.36 | 0.34 | 0.27 | **0.34** | 0.30 | **0.43** | 0.37 | 0.41 |
| IS | 0.29 | **0.53** | 0.45 | 0.51 | 0.36 | 0.35 | 0.33 | 0.38 | 0.42 | 0.51 |
| AS | 0.16 | 0.31 | **0.39** | 0.37 | 0.24 | 0.24 | 0.21 | 0.33 | 0.30 | 0.36 |
| NE | 0.44 | **0.55** | **0.56** | **0.60** | **0.57** | 0.42 | **0.45** | 0.52 | **0.54** | 0.65 |
| SP | 0.24 | 0.32 | 0.36 | **0.34** | 0.28 | 0.27 | 0.25 | **0.33** | 0.34 | 0.40 |
| α | 0.87 | 0.88 | 0.86 | 0.91 | 0.88 | 0.82 | 0.81 | 0.81 | 0.81 | 0.98 |

*Note.* ED = Emotional deprivation; AB = Abandonment; MA = Mistrust/abused; SI = Social isolation; DS = Defectiveness/shame; FA = Failure to achieve; DP = Dependence; VH = Vulnerability to harm; EM = Enmeshment; SB = Subjugation; SS = Self-sacrifice; EI = Emotional inhibition; US = Unrelenting standards; EN = Entitlement; IS = Insufficient self-control; AS = Approval-seeking; NE = Negativity; SP = Self-punitiveness. α = ordinal Cronbach's Alpha. The main expected correlations of theoretical importance were highlighted

($r \geq 0.60$) between abandonment and interpersonal sensitivity; negativity and depression; vulnerability and anxiety; and mistrust/abuse and paranoid ideation. Of the remaining EMS, a large number showed moderate positive correlation ($r \geq 0.30$ and $< 0.60$) with clinical symptoms. This data illustrates that the greater the activation of EMS, the greater the presence of psychological symptoms, and vice versa. Taken together, the results indicate the validity evidence based on relations to other variables of the YSQ-S3.

## Discussion and Conclusion

The results obtained through CFA indicated a fit for the model and satisfactory evidence of its factor structure. Measures of internal consistency for all factors were adequate. The CFI and TLI indices were excellent for all EMS, while the SRMR was also adequate. Similar results were found by other studies that verified the factorial structure of the instrument through the use of the CFA considering the original model. Studies that showed similar results were conducted with non-clinical populations, with 1372 Italian students (Aloi et al., 2020), 702 Indian participants from the general population (Jain, & Singh, 2019), 542 Korean medical students (Lee et al., 2015), 622 Thailand graduate students (Sakulsriprasert et al., 2016), and a sample of 1013 adolescents, including Brazilian ($n = 560$) and Portuguese ($n = 453$) (Borges et al., 2020).

In addition, three studies performed with mixed samples also obtained similar results in the CFA. One was done with the Danish population, with 567 non-clinical participants and 142 clinical participants as a diagnostic of personality disorders (Bach et al., 2017b). Another study was conducted with a Canadian French population, including 973 non-clinical participants and 96 axis I patients (Hawke & Provencher, 2012). And the third study was conducted with a German population of 1,150 non-clinical participants and 30 psychiatric inpatients (Kriston et al., 2013).

The portion of variance extracted was satisfactory for most EMS, except for the schemas: unrelenting standards (AVE = 0.43) and entitlement (AVE = 0.38). This result is similar to those encountered in research of the Danish (Bach et al., 2017b) and German (Kriston et al., 2013) versions. The AVE of less than desirable may indicate poor cohesion between some items that measure the cited EMS. In other words, these factors share items with different contents, but are theoretically explained by the same latent phenomenon. For example, the EMS "entitlement" is represented by items such as "14. I have a hard time accepting a 'no' when I want something from others" and "86. I feel that what I have to offer is much more valuable than what others have to give." The EMS "unrelenting standards" is represented by items like "13. I have to be the best at most of the things I do; I can't accept second place." and "49. I have to take care of all my responsibilities." However, in general, the AVE was satisfactory, which indicates good cohesion between the contents of the items of each EMS.

With regard to the intercorrelation between the factors, it is possible to observe a strong correlation (0.88) between the EMS "negativity" and "vulnerability to harm." This significant correlation can be justified by the overlap of contents in some items,

such as item "8. It can't seem to stop feeling that something bad is about to happen" from "vulnerability to harm" and item "35. If something good happens, I become worried and keep thinking that something bad is likely to happen later." from "negativity." Another strong correlation (0.80) can be seen between the EMS "defectiveness/shame" and "social isolation." This data can be justified by the similarity in content of these two EMS, as they both refer to the idea of not belonging, feeling inadequate, and different from other people.

All the EMS presented good results with respect to Cronbach's alpha, as was also found in the Danish (Bach et al., 2017b), Italian (Aloi et al., 2020), and Palestinian (Alfasfos, 2009) versions. Composite reliability was also classified as suitable for all factors. Taken together, these findings suggest that the instrument presents satisfactory evidence of validity through its internal structure. The predominant EMS found in the evaluated sample were unrelenting standards, self-sacrifice, and approval-seeking. These results are expected findings, as they are based on a sample coming from the general population, and these EMS are frequently found in type of group (Aloi et al., 2020; Bach et al., 2017b; Shorey et al., 2013).

The results obtained through correlation with the SCL-90 factors confirmed good validity. Similar results have been found by other studies that also investigated this type of validity (Alfasfos, 2009; Aloi et al., 2020; Calvete et al., 2013; Hawke & Provencher, 2012; Kriston et al., 2013; Lee et al., 2015; Oettingen et al., 2018; Phillips et al., 2017; Rijo, 2009; Saritas & Gençöz, 2011; Soygüt et al., 2009).

"Somatization" is characterized by the presence of physical symptoms, such as pain, and cardiovascular, gastrointestinal, and respiratory alterations (Laloni, 2001). The EMS presenting the highest correlation with this subscale was vulnerability, which is expected as it is characterized by a sense of imminent catastrophe, including hypervigilance for physical sensations and negative health expectations (Young et al., 2003). A similar correlation result ($r = 0.47$) was found in another study (Alfasfos, 2009) involving the Korean version of the instrument, with this same EMS being one of those with the highest effect ($r = 0.34$) for this dimension (Lee et al., 2015).

The factor "obsessive–compulsive" refers to the presence of undesirable thoughts and repetitive impulses, also including difficulty with concentration and memory in completing tasks, and insecurity in decision-making (Laloni, 2001). As expected, this factor showed strong correlation with the EMS of negativity, vulnerability, dependence, insufficient self-control, subjugation, and failure. These correlations are expected considering that some of the cited EMS involve frequent thoughts and concerns about the future and loss of control (Young et al., 2003). Other EMS relate more to difficulties in achieving objectives and making decisions autonomously (Young et al., 2003), as presented in the SCL-90 subscale.

The "interpersonal sensitivity" measure centers on feelings of inferiority, inadequacy, self-deprecation, low self-esteem, emotional hypersensitivity, hypervigilance, and negative expectations of one's own behavior and interpersonal relations (Laloni, 2001). The aspects evaluated in this subscale are central to several EMS, since many relate to difficulties in bonding and in relationships with others, and/or hypervigilance in relation to one's own behavior (Young et al., 2003). This dimension correlated strongly with abandonment, social isolation, defectiveness, subjugation,

negativity, mistrust/abuse, vulnerability, dependency, and failure. Other studies share similar results to this (Lee et al., 2015; Soygüt et al., 2009).

The factor "depression" reflects clinical manifestations of this psychopathology. It includes symptoms such as depressed mood, withdrawal, anhedonia, lack of motivation and energy, suicidal thoughts, and feelings of despair and hopelessness (Laloni, 2001). Given the dysfunctional characteristics of EMS, many showed strong correlation with these symptoms, including negativity, social isolation, vulnerability, abandonment, subjugation, dependence, defectiveness, failure, and insufficient self-control. Similar results have been found in other studies (Alfasfos, 2009; Calvete et al., 2013; Lee et al., 2015; Oettingen et al., 2018; Phillips et al., 2017; Soygüt et al., 2009).

The subscale "anxiety" involves the presence of nervousness, tension, panic attacks, apprehension, and intense fear. It can relate to physical symptoms, such as trembling, tachycardia, and motor agitation (Laloni, 2001). The principle EMS correlated to this dimension were vulnerability, negativity, and abandonment. These correlations are consistent as these EMS are generally linked to negative and catastrophic predictions, intense fear, and feelings of instability, apprehension, and vulnerability (Young et al., 2003). Similar results have been found by some studies in particular (Alfasfos, 2009; Lee et al., 2015; Phillips et al., 2017; Soygüt et al., 2009).

The dimension "hostility" refers to thoughts, feelings, or actions involving anger, such as aggression, arguments, irritability, and resentment (Laloni, 2001). The EMS presenting the greatest correlation effect with this subscale was mistrust/abuse. Individuals with this EMS are accustomed to believing that others will betray and take advantage of them, feeling that others will humiliate and abuse them. It involves the belief that people are bad, dishonest, and unreliable, which often leads the individuals to be constantly suspicious and defensive. It can involve feelings of anger, injustice, and resentment (Young et al., 2003). This correlation was also identified in a study of the Spanish version (Calvete et al., 2013).

"Phobic anxiety" refers to an intense and irrational fear of specific places, people, objects, or situations. This often includes symptoms of panic and/or agoraphobia, and these emotional responses may lead to flight or avoidance (Laloni, 2001). The highest correlation of this subscale was with vulnerability. This EMS involves a constant sensation of fear, hypervigilance of physical sensations, phobias, catastrophic predictions regarding health and natural disasters, and may impact on avoidance behaviors (Young et al., 2003). This EMS was also the most correlated to phobic anxiety in a study of the Polish version (Oettingen et al., 2018).

The subscale "paranoid ideation" is defined by the presence of paranoid thoughts and behaviors that may involve mistrust, hostility, guilt and shame, grandiosity, and centrality (Laloni, 2001). The EMS most strongly correlated with this factor were mistrust/abuse and negativity. The strong correlation with the first cited EMS relates to a constant feeling of mistrust that others will take advantage of you if permitted. This often leads to hypervigilance to the intentions of others and possible signs of abuse. However, correlation with the second cited EMS may occur due to an expectation that very bad things will happen, leading to excessive caution, vigilance, and focus on negative situations (Young et al., 2003). These results are similar to those encountered in another study measuring this dimension (Alfasfos, 2009).

"Psychoticism" relates to social withdrawal and isolation, often involving symptoms associated with schizotypy and/or schizophrenia. It may include the presence of delusions and hallucinations, a sense of inadequacy, and of there being something wrong with one's body or mind (Laloni, 2001). The EMS with the highest correlation strength were defectiveness, social isolation, negativity, vulnerability, abandonment, and enmeshment. These correlations are expected when considering the theoretical model, since these EMS may be related to feelings of inadequacy, negative prediction, and hypervigilance in relation to rejection and/or catastrophes (Young et al., 2003). Some of the results resemble those found in another study (Alfasfos, 2009).

In general, consistent correlations were found between the EMS with the psychological symptoms measured by the SCL-90. In addition, it was possible to compare the findings with other studies measuring similar variables. The data indicated good external validity of the instrument, in other words, there are strong or moderate correlations between the measures of the investigated instrument with the empirical and theoretical constructs.

Looking only at the SCL-90 totals, it is possible to verify a greater correlation between general symptoms and the EMS of vulnerability, negativity, and abandonment. This data may indicate that these EMS are the most critical for mental health in general and risk indicators of psychopathology. The main study limitation lies in the data collection strategy, based on the non-probabilistic sample selection. Another limitation is the homogeneity of the sample in relation to participant gender, color, and educational level, making it important to exercise caution when interpreting the results. It is essential that future researches evaluate evidence of both the convergent and discriminant validity of the YSQ-S3 instrument with clinical populations.

The present study indicated that the Brazilian version of the YSQ-S3 exhibited satisfactory evidence of internal and external validity. It is an instrument with adequate internal consistency and has a good-fit factor structure and good evidence of external validity with clinical psychological symptoms.

**Data Availability** The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

## Declarations

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

**Conflict of Interest** The authors declare no competing interests.

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