PSYCHOMETRIC PROPERTIES OF THE YOUNG'S EARLY MALADAPTIVE SCHEMA QUESTIONNAIRE - SHORT FORM (YSQ-S3) IN COLOMBIA

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Abstract

This article presents two studies evaluating the construct validity and reliability of the "Young's Early Maladaptive Schema Questionnaire - Short Version" (YSQ-S3; Young, 2005). The first study, with 1004 participants, showed that the YSQ-S3 had excellent overall reliability according (Cronbach's α= .97; ω= .97); while the factors showed acceptable to good reliability according to the range in which the minimum and maximum reliability coefficients of the 18 scales were placed (α from .67 to .89, and ω from .67 to .86). Confirmatory factor analysis (CFA) showed that the model with 18 first-order correlated factors had the best fit indices. In addition, using CFA with second-order factors, evidence was found to support the hierarchical organization of the instrument into five second-order domains. Study 2, with 806 participants, successfully replicated the best model of study 1 against an alternative one. It is concluded that the YSQ-S3 is a valid and reliable instrument for the Colombian adult population.

KEY WORDS: *factor structure, validity, reliability, early maladaptive schemas*.

Resumen

Este artículo presenta dos estudios que evalúan la validez de constructo y la fiabilidad del "Cuestionario de esquemas desadaptativos tempranos de Young - versión breve" (YSQ-S3; Young, 2005). El primer estudio, con 1004 participantes, mostró que el YSQ-S3 tenía una excelente fiabilidad global (α de Cronbach= 0,97; ω= 0,97); mientras que los factores mostraron una fiabilidad de aceptable a buena según el rango en que se ubicaron los coeficientes de fiabilidad mínimo y máximo de las 18 escalas (α de 0,67 a 0,89 y ω de 0,67 a 0,86). El análisis factorial confirmatorio (AFC) mostró que el modelo de 18 factores de primer orden correlacionados tenía los mejores índices de ajuste. Además, mediante el

AFC con factores de segundo orden, se halló evidencia que respalda la organización jerárquica del instrumento en cinco dominios de segundo orden. El estudio 2, con 806 participantes, replicó exitosamente el mejor modelo del estudio 1 frente a uno alternativo. Se concluye que el YSQ-S3 es un instrumento válido y fiable para la población adulta colombiana.
Palabras clave: *estructura factorial, validez, fiabilidad, esquemas desadaptativos tempranos*.

Introduction

Psychologist Jeffrey E. Young defined early maladaptive schemas (EMSs) as "extremely stable and enduring themes that develop during childhood, are elaborated throughout an individual's life, and are dysfunctional to a significant degree" (Young, 1999, p. 9). EMSs are maladaptive generalized life patterns or themes consisting of emotional and cognitive memories that have been learned early in the development of individuals and that refer to oneself and one's relationship with others. Early schemas are activated by events congruent with their contents and events similar to the frustrating or toxic early experiences that gave rise to them. EMSs are associated with an intense experience of negative emotions such as fear, sadness, anger, and shame. EMSs often generate counterproductive behavior or significant interpersonal problems (Young et al., 2015).

EMSs have been theoretically and empirically linked to personality disorders (Aloi et al., 2020a; Carr & Francis, 2010; Sempértegui et al., 2013), interpersonal problems (Janovsky et al., 2019, 2020; Mojallal et al., 2015; Thimm, 2013), emotional and affective symptomatology (Aloi et al., 2020a; Calvete, 2014), social phobia and automatic thoughts (Trip, 2006), psychoactive substance abuse (Bojed & Nikmanesh, 2013; Shaghaghy et al., 2011), behavioral addictions (Aloi et al., 2020b), and general psychiatric symptoms (Nordahl et al, 2005). The conceptualization of EMSs and the empirical evidence of their maladaptive role resulted in the creation of schema therapy (Young et al., 2015).

The instrument specifically designed to assess EMSs in schema therapy has been the Young's Schemas Questionnaire (YSQ) in its different versions. Through the YSQ, the clinician can identify the persistent characterological, emotional, and affective difficulties presented by individuals with interpersonal problems, personality disorders, and comorbidities (Young et al., 2014). The first version of the questionnaire was developed in 1990 and had 123 items measuring sixteen first-order schemas with a proposed hierarchical organization into three second-order domains. The first revision of the questionnaire was made in 1991, with two hundred and five items measuring sixteen schemas with a proposal of six second-order domains. The first short version of the questionnaire (YSQ-SF), developed in 1995, had 75 items measuring fifteen schemas and proposed a hierarchical organization in five domains (Herrera-Palacios et al., 2021; Young, 1999). The first

long version of the third edition of the instrument was launched in 2003. It comprised 232 items measuring 18 schemas and maintained the second-order organization of five domains. Finally, in 2005, the brief version of the third edition of the Young Schema Questionnaire - Short Form 3 "YSQ-S3" (Young, 2005) the object of the present instrumental study, was published.

The YSQ-S3 was constructed from the items with the highest factor loadings of the long version (YSQ-L3) and, therefore, is considered a theoretically purer and more factorially stable test (Young, 2005). The YSQ-S3 is essential to clinical case conceptualization and formulation in schema therapy. Additionally, the YSQ-S3 has the advantage that, in its short form, it contemplates the 18 EMSs formulated in schema therapy and, therefore, is a crucial instrument for investigating this integrative therapy approach (Bach et al., 2017).

According to schema therapy, early maladaptive schemas (EMSs) stem from the frustration of nuclear universal human needs, including secure attachment to others, development of autonomy, competence, and sense of identity, freedom to express emotions and needs, spontaneity and play, and the development of healthy boundaries (Young, 2015). Chronic thwarting of these needs can lead to the development of one or more EMSs. Each frustrated nuclear need corresponds to a set of EMSs. For example, abandonment/instability, distrust/abuse, emotional deprivation, imperfection, and shame may develop from the frustration of the need for secure attachment. Similarly, dependency/incompetence, vulnerability to danger and illness, confused attachment/immature self, and failure may result from unmet needs for autonomy, competence, and identity. Subjugation, self-sacrifice, and approval-seeking may arise from the frustration of the core need to express valid needs and emotions. Negativity/pessimism, emotional inhibition, unrelenting standards/hyper-criticalness, and punishment may develop from unmet needs for spontaneity and play. Entitlement/grandiosity and insufficient self-control/self-discipline may arise from unmet needs for realistic boundaries. Appendix 1 illustrates the complete theory structure that supports the Young Schema Questionnaire-Short Form 3 (YSQ-S3).

The psychometric properties of the YSQ-S3 have been studied in various languages and countries, including Denmark, Germany, and Italy, with good reliability and validity indices found (Aloi et al., 2020a; Bach et al., 2017; Kriston et al., 2012). In addition, some alternative factor structures have been analyzed across these studies. For example, some authors have found that the 18-factor first-order model showed adequate goodness-of-fit indices (Bach et al., 2017), whereas in other cases, hierarchical structures have been preferred with a general second-order factor (Kriston et al., 2012) or a hierarchical structure with four second-order factors (Aloi et al., 2020a).

The Spanish translation of the YSQ-S3, endorsed by J. E. Young, was carried out in Spain by Cid and Torrubia (2010), while the study of the psychometric properties was done by Calvete et al. (2013). These authors found evidence of adequate validity and reliability in a sample of 971 students. Cronbach's alpha

coefficients were found for the subscales in the range of .54 (Dependence) to .84 (Emotional Deprivation). Evidence of construct validity was obtained by conducting confirmatory factor analyses (CFA) using the maximum likelihood (ML) estimation method. The results supported the presence of the 18 first-order correlated schemas with adequate fit indicators of χ^2/df= 2.92 (relative chi-square ratio), a root mean squared error of approximation (RMSEA) of 0.046, a comparative fit index (CFI) of 0.96, a non-normed fit index (NNFI) of 0.96, and a standardized root mean square residual (SRMR) of 0.059. Although the results for the second-order hierarchical structure were inconclusive in this study, a better fit was suggested for the proposed three domains or second-order factors.

In Chile, Quiñones et al. (2018) analyzed the psychometric properties of the Spanish adaptation of the YSQ-S3 with a non-probabilistic mixed clinical and nonclinical sample of 292 participants. Alpha coefficients ranged from .64 (Grandiosity) to .88 (Abandonment). In addition, the CFA found acceptable indicators for the model of 18 first-order correlated schemas with a Tucker-Lewis index (TLI) of 0.93, CFI of 0.94, and RMSEA of 0.035. Factor loadings were equal to or greater than .40 for 89 for the 90 items. However, the sample size did not allow the evaluation of the hierarchical structure of the test through CFA.

Although some psychometric studies have been conducted with the Spanish version of the YSQ-S3, it is important to note that the psychometric properties of the adaptations cannot be assumed universal, and evidence of validity and reliability must be found for the specific populations of interest (Anastasi & Urbina, 1998). Therefore, this study aims to provide evidence of validity and reliability for the Spanish adaptation of the YSQ-S3 in samples of the general Colombian population, as no published study to date has covered the YSQ-S3 in Colombian samples. This paper presents two studies on the psychometric properties of the YSQ-S3. In study 1, we aimed to obtain general evidence of validity and reliability in Colombia and re-explore its structure through a novel technique called exploratory graph analysis (EGA; Golino & Epskamp, 2017). Study 2 was conducted to compare the best-fitting model in study 1 with the more parsimonious model obtained through EGA for the YSQ-S3.

Study 1

Participants

A non-probabilistic sample of 1004 participants who met the criteria of being Colombian, residing in Colombia and over 18 years of age was collected. The mean age was 27.33 (*SD*= 11.80), with a range of 18 to 84 years. There were 564 women, 438 men and two who identified themselves as other gender. The most frequent educational level was high school (*n*= 421), followed by technical or technological level (*n*= 239), 221 with a university degree, 114 with postgraduate training of specialization, master's or doctorate and finally 9 participants with

elementary school. The most frequent marital status was single (*n*= 732), followed by free union (*n*= 124), married (*n*= 118) and other (*n*= 30). The most frequent current occupation was university student (*n*= 425), employed (*n*= 256), self-employed (*n*= 139) and other (*n*= 184).

Instruments

a) *Ad hoc Sociodemographic Data Questionnaire*. Information on sex, age, educational level, occupation and marital status was obtained by means of closed questions in an online questionnaire elaborated in Microsoft forms whose first section was the sociodemographic data and the following sections were the psychometric instruments.

b) *Young's Schema Questionnaire, Short Form - 3* (YSQ-S3; Young, 2005). The YSQ-S3 is a self-report instrument with 90 items answered on a six-point Likert-type scale (1= completely untrue of me, 6= describes me perfectly). The YSQ-S3 assesses dysfunctional patterns of thinking, memories, and bodily sensations learned early in childhood and adolescence, in interaction mainly with the family of origin (Young et al., 2015). The questionnaire assesses 18 EMSs, and according to schema therapy, these are grouped into five domains: (a) Disconnection and Rejection, (b) Impairment in Autonomy and Performance, (c) Impaired Limits, (d) Other Directedness and (c) Overvigilance and Inhibition (Young., 2005).

c) *Depression, Anxiety, and Stress Scale* (DASS-21; Lovibond & Lovibond, 1995). The DASS-21 instrument consists of 21 symptom-oriented items describing negative emotions that are answered on a four-point Likert-type scale (0= applied to me very much or most of the time, 3= did not apply to me at all). The instrument has three subscales, each consisting of seven items: Depression, Anxiety, and Stress. The alpha coefficients of the original version were .94, .87, and .91 respectively (Antony et al., 1998). The psychometric properties of the Spanish version for Colombia were studied by Ruiz et al. (2017). They reported alpha coefficients of .88 for Depression, .83 for Anxiety, .83 for Stress, and .93 for the total scale. Alpha and Omega coefficients in the current study were .90 for Depression, .88 for Anxiety, .85 for Stress, and .95 for the total scale.

Procedure

An instrumental research design was carried out. An online survey was created in Microsoft Forms, placing the instruments in the order in which they were presented in the corresponding section. A single link was generated and disseminated in social networks, mainly WhatsApp and Facebook, thus seeking a snowball effect.

Cybersecurity measures were taken during data collection from participants. The Microsoft Forms survey was anonymous, ensuring that participants were not identifiable. However, participants had the option to provide an email address if they wished to be contacted for prevention and mental health promotion campaigns. The database was securely stored online and only the principal investigator had encrypted access to it. Once data collection was completed, the database was removed from the cloud and cleaned for analysis.

Data analysis

The descriptive psychometric analyses were performed with SPSS v. 26, and the CFAs were carried out with JASP v. 0.17.1 in its structural equation modeling (SEM) module that runs the R package lavaan. The internal consistency of the YSQ-S3 was estimated using Cronbach's alpha coefficient and McDonald's Omega coefficient. Given that the items are responded to on a six-point Likert-type scale, the alpha coefficient is adequate to evaluate the degree to which the test items covary (Muñiz, 1997). For the alpha coefficient, the interpretation ranges suggested by George and Mallery (2003) will be used as a reference, where > .90 is excellent, > .80 is good, > .70 is acceptable, > .60 is questionable, > .50 is poor, and < .50 is unacceptable. The coefficient Omega was calculated using the extension macro for SPSS. By choosing a method based on a factor analysis forced to a single factor, the procedure allows obtaining additional information about the approximation to the unidimensionality of each scale (Hayes & Coutts, 2020). The expected acceptable ranges of this coefficient go from .70 to .90 (Oviedo & Arias, 2005).

Undertaken that YSQ-S3 is based on Young's (2015) early maladaptive schema theory and that multiple authors have employed confirmatory factor analysis (CFA) with this instrument, providing sufficient evidence (Aloi et al., 2020a; Calvete et al., 2013; Hawke & Provencher, 2012; Quiñones et al., 2018; Sakulsriprasert et al., 2016), we consider a theory-guided CFA strategy to be appropriate and preferable. Therefore, we tested four theoretical models supported by evidence for this instrument. These models include: (a) the 18 Early Maladaptive Schemas (EMSs) model, which is generally regarded as the one that best fits the data (Sakulsriprasert et al., 2016); (b) the model of 18 EMTs and a single general second-order factor proposed by Kriston et al. (2012); (c) Young's (2005) original theoretical model consisting of 18 first-order EMTs and five second-order domains; and (d) the recent revision by Bach et al. (2018), which proposes 18 EMTs and four second-order domains.

A progressive CFA strategy was used to analyze the construct validity of the YSQ-S3. Hawke and Provencher (2012) initially proposed this strategy for this instrument and also followed by Sakulsriprasert et al. (2016). Thus, considering the instrument's complexity, unidimensional CFA was initially conducted for each schema, and the fit indicators of the individual scales were estimated using the

weighted least squares "WLS" method. This estimator is considered suitable for data from psychometric measurement instruments and data that do not conform to statistical normality (Lara, 2014; Li, 2016). Subsequently, a CFA was performed to analyze the fit of the 18-factor model, and finally, the analysis was performed including the second-order factors (domains). For the unidimensional models, the variances of the latent factors were scaled to one. It should be clarified that in all our analyses the variables observed were always the responses to the items, and although the analysis was done progressively, the models were not segmented, but rather gradually became more complex.

In the case of the models for the complete instrument, the unweighted least squares ULSMVS method was used as the estimator both for the model of 18 first-order schemes and for the analyses of the second-order factors; since this method is more suitable with ordinal data (Forero et al., 2009). For these models, the variance of the factors was scaled on the first indicator of the latent variable. Conventional chi-square, relative chi-square ratio (with expected values ≤2 good and ≤ 3 acceptable), significance test, and the goodness-of-fit indices CFI, TLI, NFI, PNFI, RMSEA, and SRMR were computed. Values ≥ .95 for CFI, TLI, PNFI and NFI were considered to show a good fit, and values ≥ .90 were an acceptable fit. Likewise, values ≤ .05 were considered to show a good fit according to the RMSEA and SRMR indices, while values ≤ .08 indicated an acceptable fit (Jordan-Muiños, 2021).

The R package EGAnet was used to conduct an EGA. EGA is a novel technique that aims to determine the dimensionality of measurement instruments by identifying the communities of items in a network with powerful visual support (Golino et al., 2020). To our knowledge, this approach to data analysis had not been used with the YSQ-S3 and might offer some insights for an instrument for which several factor structures have been proposed and analyzed (Brown et al., 2023). This analysis was conducted using the EBIC-glasso estimation method with walktrap algorithm to estimate the dimensions. Simulation studies have found that EGA performs as well as the most traditional methods based on exploratory factor analysis.

Finally, Pearson correlations were calculated between the YSQ-S3 and DASS-21 scales. These correlations were interpreted following Cohen's (1988) criteria: correlation sizes of .10 to .29 are small, .30 to .49 are medium, and ≥ .50 are large.

Results

Validity based on the internal structure

Table 1 shows that the unidimensional model obtained a good fit for twelve of the scales (CFI ≥ .95, TLI ≥ .95, NFI ≥ .95, and RMSEA ≤ .05) and an acceptable fit for five scales (CFI ≥ .90, TLI ≥ .90, NFI ≥ .90 and RMSEA ≤ .08). Regarding the

Mistrust/Abuse scale, the fit was acceptable for all but one of the four indicators (CFI= .92, TLI= .84, NFI= .91, and RMSEA= .079). The CFA performed using ULSMV estimator with the 18 correlated first-order factors showed an excellent fit (CFI= .988, TLI= .987, NFI= .981, and RMSEA= .042). A CFA was also performed on the 18 schemas assuming uncorrelated factors; however, in this case, the model was completely inadequate according to the goodness-of-fit indices: CFI= .080, TLI= .059, NFI= .079, and RMSEA= .362.

Table 1
Unidimensional confirmatory factor analysis by scales and 18-factor first-order model

Scheme	χ^2	p	χ^2/df	RMSEA	SRMR	CFI	TLI	NFI	ω
1. Abandonment/ Instability	18.55	.002	3.71	.052	.02	.97	.94	.96	.86
2. Mistrust/Abuse	35.97	<.001	7.19	.079	.04	.92	.84	.91	.80
3. Emotional deprivation	15.04	.01	3.00	.045	.02	.98	.95	.96	.77
4. Defectiveness/Shame	15.7	.008	3.14	.046	.03	.96	.92	.94	.81
5. SocialIsolation	29.27	>.001	5.85	.07	.03	.95	.91	.94	.74
6. Dependence/ Incompetence	3.1	.684	0.62	.00	.01	1.00	1.00	.99	.72
7. Vulnerability to harm and/or ilness	15.98	.007	3.2	.047	.03	.97	.94	.96	.77
8. Enmeshment/ Undeveloped self	14.59	.012	3.12	.044	.03	.96	.93	.95	.77
9. Failure	14.55	.012	2.91	.044	.02	.97	.94	.96	.86
10. Entitlement/ Grandiosity	9.44	.051	2.36	.037	.02	.98	.96	.97	.70
11. Insufficient self-monitoring	12.01	.035	2.4	.037	.02	.98	.95	.96	.74
12. Subjugation	4.3	.507	0.86	.00	.01	1.00	1.00	.99	.79
13. Self-sacrifice	11.65	.02	2.91	.044	.02	.98	.95	.97	.79
14. Approval/ Recognition seeking	7.18	.208	1.44	.021	.01	1.00	.99	.98	.78
15. Negativity /Pessimism	7.07	.07	2.36	.037	.01	.99	.97	.99	.80
16. Emotional inhibition	9.16	.057	2.29	.036	.02	.99	.98	.98	.73
17. Punitiveness/ Punishment	8.13	.043	2.71	.041	.02	.99	.96	.98	.75
18. Unrelenting standards/ Hypercriticalness	5.24	.26	1.31	.018	.02	1.00	.99	.98	.67
Eighteen first order schemes	10423	<.001	2.77	.042	.050	.99	.99	.98	.97

Notes: RMSEA= root mean squared error of approximation; SRMR= standardized root mean square residual; CFI= comparative fit index; TLI= Tucker-Lewis index; NFI= normed fit index. The order of the scales is presented according to Young's (2005) model: Domain I. Disconnection/Rejection groups scales 1 to 5; Domain II. Impaired Autonomy, scales 6 to 9; Domain III. Deficit Limits, scales 10 and 11; Domain IV. Driven by the Needs of Others, scales 12 to 14; and Domain V. Overvigilance and Inhibition, scales 15 to 18.

Given that the general model of 18 first-order correlated schemas showed goodness-of-fit indicators that meet the criteria for a good model, we analyzed the factor loadings of the items within this structure (see Table 2). It is observed that almost all factor loadings, except two items, were ≥ .40, meeting the recommended standard in psychometrics (Lloret-Segura et al., 2014). In the Social Isolation scale, item 22 ("I am fundamentally different from other people") has a factor loading of .32, which can still be considered acceptable, while in the Unrelenting Standards/Hypercriticalness scale, item 49 ("I must meet all my responsibilities") yielded a factor loading of .15, this being an item with low factor loading.

Table 2
Factor Loadings of the Items within the general model of 18 schemas

Scheme	Item 1	Item 2	Item 3	Item 4	Item 5
1. Abandonment	.71	.72	.82	.78	.86
2. Mistrust / Abuse	.70	.70	.77	.65	.76
3. Emotional deprivation	.56	.76	.88	.81	.51
4. Defectiveness / Shame	.74	.84	.74	.70	.83
5. Social isolation	.77	.32	.62	.81	.78
6. Dependence / Incompetence	.70	.51	.73	.71	.85
7. Vulnerability to harm and/or ilness	.79	.67	.73	.61	.64
8. Enmeshment /Undeveloped self	.61	.60	.70	.70	.75
9. Failure	.77	.83	.76	.83	.82
10. Entitlement / Grandiosity	.62	.56	.61	.59	.61
11. Insufficient self-control /Self-discipline	.56	.68	.65	.57	.65
12. Subjugation	.73	.80	.54	.58	.78
13. Self-sacrifice	.50	.71	.78	.58	.86
14. Approval / Recognition seeking	.65	.74	.87	.69	.53
15. Negativity / Pessimism	.73	.77	.81	.72	.59
16. Emotional inhibition	.74	.81	.81	.51	.57
17. Punitiveness / punishment	.64	.68	.62	.57	.74
18. Unrelenting standards / Hypercriticalness	.55	.54	.15	.85	.49

We then proceeded to contrast three hierarchical factorial models that include the 18 schemas: the model suggested by Young (2005), which proposes five second-order factors; the model indicated by Bach et al. (2018), which has four second-order factors; and the general maladaptativity model with a single second-order factor (Kriston et al., 2012). The observed variables were the instrument items, the first-order factors were the schemas, and the second-order factors were the domains. Table 3 shows two models that obtained incremental fit indicators greater than .95 and RMSEA ≤ .05. Unexpectedly, the CFA results on the second-order domains yielded an inadmissible solution for the four-domain model proposed most recently by Bach et al. (2018) due to a Heywood case. For

the other two models, the result indicates that the best fit for the data is for the original Young's model with five second-order domains.

Table 3
Confirmatory factor analysis of second order factors

Model fit indicators	Second order factors	
	Young's model	General single-factor model
χ^2	14225	14599
p	<.001	<.001
χ^2/df	3,65	3,74
RMSEA	.05	.05
SRMR	.053	.06
CFI	.981	.981
TLI	.981	.98
NFI	.975	.974
PNFI	.946	.948

Notes: RMSEA= root mean squared error of approximation; SRMR= standardized root mean square residual; CFI= comparative fit index; TLI= Tucker-Lewis index; NFI= normed fit index. The estimator used in all models was: unweighted least squares (ULSMV).

Validity based on relationships with other variables

Table 4 presents Pearson's correlations between the YSQ-S3 and DASS-21 scales. Overall, the EMSs that yielded the highest correlation sizes with the DASS-21 negative affect total score were Negativity/Pessimism ($r=$ .64), Vulnerability to Harm and/or Illness ($r=$ .64), Social Isolation ($r=$ .61) and Subjugation ($r=$ .61), while the smallest, but still moderate correlation sizes were with Unrelenting Standards/Hypercriticalness ($r=$ .35), Self-Sacrifice ($r=$. 41), Entitlement/Grandiosity ($r=$. 43), Emotional Inhibition ($r=$ .45) and Approval/Recognition Seeking ($r=$ .49). The other scales showed strong correlations (> .50). For the YSQ-S3 domains, all correlations were strong with the DASS-21 total score.

Table 4
Correlations between early maladaptive schemas and external criteria

YSQ-S3 schemas and domains	DASS-Depression	DASS-Anxiety	DASS-Stress	DASS-Total
1. Abandonment / Instability	.525**	.500**	.521**	.563**
2. Mistrust / Abuse	.542**	.516**	.555**	.586**
3. Emotional deprivation	.547**	.461**	.456**	.534**
4. Defectiveness / Shame	.603**	.542**	.493**	.597**
5. Social isolation	.617**	.524**	.528**	.608**
6. Dependence/ Incompetence	.532**	.511**	.449**	.544**
7. Vulnerability to harm and/or ilness	.566**	.599**	.591**	.638**
8. Enmeshment / Undeveloped self	.504**	.504**	.467**	.537**
9. Failure	.575**	.524**	.485**	.578**
10. Entitlement / Grandiosity	.382**	.376**	.413**	.425**
11. Insufficient self-control / Self-discipline	.572**	.492**	.552**	.588**
12. Subjugation	.589**	.556**	.516**	.605**
13. Self-sacrifice	.347**	.361**	.408**	.405**
14. Approval / Recognition seeking	.426**	.436**	.477**	.486**
15. Negativity / Pessimism	.605**	.574**	.579**	.640**
16. Emotional inhibition	.460**	.376**	.411**	.454**
17. Punitiveness / Punishment	.469**	.466**	.439**	.500**
18. Unrelenting standards / Hypercriticalness	.303**	.307**	.356**	.351**
D1. Disconnection and rejection	.680**	.612**	.615**	.694**
D2. Impaired autonomy and performance	.646**	.636**	.594**	.683**
D3. Impaired limits	.543**	.493**	.549**	.576**
D4. Other-Directedness	.554**	.552**	.781**	.611**
D5. Overvigilance and inhibition	.610**	.564**	.574**	.636**
Total YSQ-S3	.680**	.640**	.647**	.716**

Notes: YSQ-S3= Young's Schema Questionnaire, Short Form - 3; DASS= Depression, Anxiety, and Stress Scale. **$p <$ .01 level (bilateral).

Internal consistency

The alpha coefficients ranged from .67 to .89, with a total coefficient of .97. The omega coefficient ranged from .67 to .86, and a total omega of .97. The lowest discrimination index was .21 for item 22 ("I am fundamentally different from other people"). This was the only item with an index below .30, while the highest discrimination index was .77 for item 38 ("I worry that the people I feel close to will leave me or abandon me"). Additionally, alpha coefficients were calculated for the items grouped by domains according to Young´s model (2005), obtaining good to excellent coefficients between .81 to .93 (Table 5).

Descriptive analysis of the scales

Finally, a descriptive-comparative analysis of the behavior of the YSQ-S3 scales was performed. The means and standard deviations of the scales were

estimated for the total sample and the sample of men and women. The descriptive information of the scales is presented in Table 6.

Table 5
Item discrimination indices, internal consistency of the scales, and dimensions of the YSQ-S3 according to the Young´s model (2005)

| Domains (SO)	Scheme	Item 1	Item 2	Item 3	Item 4	Item 5	α	ω
I. Disconnection and Rejection (6) α=.93 and ω=.93.	1. Abandonment / Instability	.66	.66	.77	.69	.57	.85	.86
	2. Mistrust Abuse	.56	.59	.58	.57	.62	.80	.80
	3. Emotional Deprivation	.48	.59	.61	.65	.34	.76	.77
	4. Defectiveness/ Shame	.62	.70	.55	.54	.61	.89	.81
	5. Social Isolation	.48	.21	.51	.66	.59	.72	.74
II. Impaired autonomy and performance (6) α=.90 and ω=.90.	6. Dependence/ Incompetence	.48	.32	.55	.52	.60	.72	.72
	7. Vulnerability to harm or ilness	.60	.57	.59	.45	.52	.77	.77
	8. Confused attachment	.39	.54	.46	.53	.49	.72	.77
	9. Failure	.64	.61	.66	.73	.70	.85	.86
III. Impaired Limits (3) α=.81 and ω=.81	10. Entitlement / Grandiosity	.43	.47	.48	.42	.47	.70	.70
	11. Insufficient self-control/ Self-discipline	.50	.56	.51	.50	.44	.74	.74
IV. Other-Directedness (3) α=.87 and ω=.87	12. Subjugation	.55	.64	.42	.62	.62	.79	.79
	13. Self-sacrifice	.52	.60	.59	.52	.62	.79	.79
	14. Approval/ Recognition seeking	.48	.62	.57	.60	.54	.79	.78
V. Overvigilance and Inhibition (4) α=.89 and ω=.89	15. Negativity / Pessimism	.62	.60	.63	.59	.50	.80	.80
	16. Emotional inhibition	.55	.61	.58	.51	.56	.78	.73
	17. Punitiveness/ Punishment	.57	.47	.56	.53	.37	.74	.75
	18. Unrelenting Standards/ Hypercriticalness	.45	.53	.33	.40	.40	.67	.67

Exploratory graph analysis

This analysis yielded the following six-item communities: Community 1 consisted of 27 items, Community 2 consisted of 25, Community 3 consisted of 23, Community 4 consisted of 5, Community 5 consisted of 5, and Community 6 consisted of 5. The results of this analysis can be seen in Figure 1.

Table 6
Comparative descriptives of the schemas' scales and domains by gender

EMS	General		Men		Women	
	M	*SD*	*M*	*SD*	*M*	*SD*
1. Abandonment	2.45	1.22	2.45	1.19	2.44	1.24
2. Mistrust / Abuse	2.53	1.11	2.56	1.09	2.5	1.11
3. Emotional deprivation	2.25	1.06	2.26	1.03	2.23	1.08
4. Defectiveness / Shame	1.99	1.03	2.06	1.02	1.94	1.03
5. Social isolation	2.52	1.03	2.6	0.98	2.48	1.06
6. Dependence / Incompetence	1.96	0.91	1.98	0.87	1.93	0.94
7. Vulnerability to harm and/or illness	2.60	1.14	2.56	1.11	2.63	1.17
8. Enmeshment / Undeveloped self	2.04	0.96	2.03	0.9	2.04	1
9. Failure	2.14	1.1	2.13	1.03	2.15	1.14
10. Entitlement / Grandiosity	2.68	1.03	2.78	1.03	2.6	1.03
11. Insufficient self-control	2.63	1.08	2.59	1.03	2.66	1.11
12. Subjugation	2.24	1.03	2.21	0.98	2.25	1.06
13. Self-Sacrifice	3.19	1.14	3.10	1.21	3.25	1.14
14. Approval / Recognition seeking	2.65	1.13	2.69	1.12	2.62	1.13
15. Negativity / Pessimism	2.66	1.17	2.64	1.1	2.68	1.21
16. Emotional inhibition	2.68	1.18	2.74	1.14	2.63	1.21
17. Punitiveness / Punishment	2.51	1.03	2.64	1.03	2.40	1.02
18. Unrelenting standards	3.30	1.05	3.37	1.08	3.25	1.02
Domain I	2.34	0.90	2.37	0.88	2.31	0.92
Domain II	2.18	0.87	2.17	0.81	2.18	0.92
Domain III	2.65	0.93	2.68	0.89	2.63	0.96
Domain IV	2.69	0.89	2.66	0.88	2.71	0.89
Domain V	2.66	0.92	2.72	0.89	2.61	0.94
Total	2.50	0.81	2.52	0.77	2.48	0.83

Notes: Domain I= Disconnection and Rejection; Domain II= Impaired Autonomy and Performance; Domain III= Impaired Limits; Domain IV= Excessive Responsibility and High Standards. The mean and standard deviation is expressed as an average within the Likert scale.

Figure 1
Exploratory graph analysis (EGA)
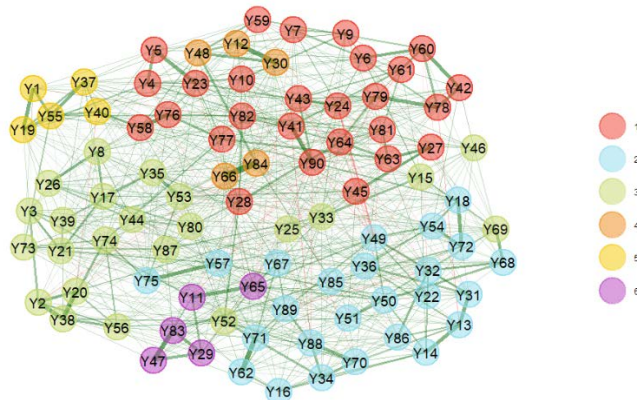
A theoretical analysis of the groupings of the EGA items allowed us to identify that Community 1 grouped all the items of the EMTs of defectiveness (5), confused attachment (5), and failure (5), and most of the subjugation (4), dependence (4) and social isolation (3). This community of items closely replicates a mixture of the second-order theoretical dimensions proposed for the YSQ-S3 of Disconnection-Rejection and Autonomy Impairment. Community 2 groups all the items of grandiosity (5), Unrelenting standards (5), most of approval-seeking (4), and punitiveness (4). This community closely replicates a mixture of the second-order theoretical dimensions of Insufficient Limits and Excessive Standards. Community 3 groups all the items of abandonment (5), and most of vulnerability (4), insufficient Self-Control (4), distrust (3), and negativity (3). This item-community has themes of threat, overvigilance and, insecure bounds with vital issues coming from different dimensions and would seem to reflect difficulties with attachment, behavioral regulation, and helplessness-hopelessness.

The remaining three communities reflect specific schemas and not clusters of EMTs. Thus, Community 4 captures all emotional inhibition items (5), Community 5 contains almost all emotional deprivation items (4), and Community 6 captures self-sacrifice items. In summary, the EGA analysis yielded three major dimensions that propose a new grouping of the scales and domains but left three unclustered.

Discussion

The results of study 1 provide support for the validity and reliability of the YSQ-S3 as a measure of EMSs in Colombia. The CFA supported the construct validity of the instrument, as they were consistent with the test structure reported by other authors and with the scientific literature available for the YSQ-S3 (Calvete et al., 2013; Kriston et al., 2012; Quiñones et al., 2018). Additionally, the validity of the YSQ-S3 with respect to external criteria was demonstrated, as the expected relationships between the constructs were found. Finally, the test's internal consistency was adequate for all but one scale. These findings indicate that the YSQ-S3 is a valid and reliable measure of EMSs for use in Colombia.

The EGA results suggest an alternative organization of the YSQ-S3 into three broad dimensions that integrate several EMSs. The groupings make sense if they are analyzed conceptually as mixtures of the theoretical dimensions of the YSQ-S3.

Study 2

Participants

For study 2, a non-probability sample of 806 Colombian adults was collected, using conditions similar to those of study 1. The mean age was 29 years (SD= 12.80), 464 were women, 340 were men and 2 people identified themselves as

another gender. Most participants had completed high school (*n*= 320), followed by those with a technical or technological level (*n*= 225), university degree (*n*= 174) and postgraduate training (*n*= 70). Only a small proportion of the sample had elementary school education (*n*= 17). The most common current occupation was university student (*n*= 282), followed by private sector worker (*n*= 207), self-employed (*n*= 126), public sector worker (*n*= 91), technical or technological student (*n*= 25) and other (*n*= 75).

Procedure

The procedure for study 2 was the same as in study 1.

Data Analysis
In this study, we compared the model with the best fit in study 1 with an alternative factor structure of the YSQ-S3: (a) the 18 correlated first-order EMSs model, (b) the 6-factor model suggested by the conducted EGA in study 1. These models were compared through CFA computed in the JASP's SEM module using the ULSMV estimator.

Results

The results showed that the two models had a good fit, with minimal differences (see Table 7). The 18 correlated first-order EMSs model was still superior due to slightly better incremental fit indices, its support by theory, lower error, and a relative chi-square ratio over the degrees of freedom below the alternative model. However, the 6-factor model performed very similarly being parsimonious, suggesting a direction for future research.

Table 7
Comparative fit of the 18-EMT theoretical model of the YSQ-S3 with an alternative model

Model fit indicators	Competing models	
	Eighteen factors models	Six-factors model
χ^2	10086	10764
p	< .001	< .001
χ^2/df	2.68	2.76
RMSEA	.046	.047
SRMR	.055	.057
CFI	.988	.987
TLI	.987	.986
NFI	.981	.979
PNFI	.921	.954

NoteS: RMSEA= root mean squared error of approximation; SRMR= standardized root mean square residual; CFI= comparative fit index; TLI= Tucker-Lewis index; NFI= normed fit index. The estimator used in all models was: unweighted least squares (ULSMV) and the factors were scaled by the first indicator.

Discussion

The results show that the two models have a good fit, with minimal differences. Overall, this study provides additional evidence on the structure of the YSQ-S3 and supports the validity of the model proposed by the EGA in study 1. However, the 18-factor model remains preferable due to its better performance, theoretical support, lower error, relative chi-square ratio over degrees of freedom below alternative the model, and largely because of its utility in clinical practice. Clearly, the 6-factor model is the most parsimonious of the models, suggesting a direction for future research.

General Discussion

The main objective of the two studies was to analyze the validity and reliability of the YSQ-S3 in Colombia. In study 1, CFAs were performed for both the 18-schema first-order model and the complete Young´s model et al. (2015) with satisfactory results, which allowed finding evidence of the construct validity of the questionnaire and allowed supporting the classical version of the second-order five-factor structure proposed for the YSQ-S3. Regarding the recent model proposed by Bach et al. (2018) the CFA results yielded an unacceptable solution because of a Heywood case. Overall, the psychometric performance of the instrument was found to be adequate in both construct validity and reliability.

The 18 correlated first-order schemas model demonstrated the best fit with the data, thereby validating the schemas and the theoretical structure underlying the YSQ-S3 (Young, 2005). The factor loadings for 88 out of 90 items were satisfactory in study 1, while one was acceptable and only one was questionable. These findings were consistent with a previous study conducted in Chile by Quiñones et al. (2018), who reported factor loadings above .40 for 89 out of 90 items, with only one item having a lower loading (although not the same item as in the current study).

However, item 49 ("I must meet all my responsibilities") requires revision as it may not sufficiently discriminate and may present interpretation difficulties in the Colombian context, probably because of cultural differences. In fact, an analysis of the response frequencies on the Likert scale of item 49 shows that 76.4% of responses are concentrated in the higher values of 4,5,6. The item does not discriminate likely because most people consider that all responsibilities must be fulfilled. In this case, it is proposed to rephrase the item to a more inflexible form that clearly shows the excessive standards.

According to the original Young´s theoretical model for YSQ-S3 (Young, 2015), and according to these results of the CFA, including the second-order structure, these results support the idea that the instrument could reflect a hierarchical construct, where indeed the grouping of the schemas into five second-order theoretical domains is acceptable. However, it is worth mentioning that the

18-factor first-order theoretical model without domains obtained the best fit. This is congruent with other studies that have tested various second-order structures using CFA (Calvete et al., 2013; Kriston et al., 2012).

In study 1, the reliability of the scales in Colombia was generally good, except for the Unrelenting Standards subscale, which had questionable reliability. These findings align closely with a study conducted in Chile (Quiñones et al., 2018). While the alpha coefficient for Unrelenting Standards falls below the desired minimum of .70, it can still be accepted as valid given the scale's fewer than ten items and the absence of a more precise measuring instrument for the same construct (Loewenthal, 2001; Oviedo & Arias, 2005). Comparable results were found by Calvete et al. (2013), reporting a questionable alpha coefficient of .61, and by Cid and Torrubia (2016), reporting a poor alpha coefficient of .52 for Unrelenting Standards/Hypercriticalness. The Omega coefficients, which provide additional information about internal consistency, were consistent with alpha values and ranged from .67 to .86. These findings are comparable to the validation of the instrument in Italian, which reported Omega coefficients ranging from .70 to .89 (Aloi et al., 2020a). Overall, the internal consistency of the YSQ-S3 obtained in study 1 is acceptable to good, corroborating the findings of other researchers for the same version in Spanish (Calvete et al., 2013; Quiñones et al., 2018). In addition, the psychometric performance in Colombia seems to be slightly better than that found in the study of the psychometric properties in Spain, given that, in Colombia, no scale yielded an alpha coefficient in the poor or unacceptable range.

Concerning study 2, in which the EGA results obtained in the first study were compared, the six-dimensions model proposed by the analysis was found to fit, almost as well as the alternative 18 EMSs theoretical model. A conceptual analysis suggests that this reflects the theoretical domains underlying the test. Community 1 clusters a negative self-schema background with a mixture of the life themes of disconnection, rejection, and autonomy impairment. Community 2 reflects the idea of superiority and a mixture of the vital themes of insufficient boundaries and excessive responsibility and standards. Community 3 was a very mixed theme from all domains, with a central overvigilance theme, insecure bonds, and insufficient self-control standing out. According to schema therapy theory, this latter dimension seems to involve a history of toxic frustration of multiple needs. In any case, this is a line of research to be deepened in further studies.

About the limitations of the present studies: the sampling was incidental online, which raises caution regarding the generalizability of population parameters and the lack of a clinical subsample. In addition, it is worth mentioning that we used only a brief emotional symptomatology assessment instrument as an external criterion. For future studies, it is suggested to use a well-established and adequate personality test to identify personality psychopathology, like, for example, the Exploratory Personality Questionnaire III "EPQ-III" (Caballo et al., 2011) that has also been validated for Colombia (González-Cifuentes & Vera-Maldonado, 2015). It is also suggested to improve the type of sampling, to conduct

studies of the instrument on pencil and paper, and to include a sample of patients, especially those with interpersonal problems, personality disorders and/or persistent emotional or affective problems.

In conclusion, the YSQ-S3 is a valid and reliable instrument for the general adult Colombian population. According to the CFA results, the presence of 18 correlated EMSs was validated with excellent goodness-of-fit indicators in both studies. In addition, evidence was obtained supporting the organization of the first-order factors in a hierarchical structure of five second-order factors or theoretical domains according to schema therapy. On the other hand, the reliability coefficients were between acceptable and excellent for 17 of the 18 subscales.

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Appendix

Synthesized Schema Therapy Theory underlying the YSQ-S3, based on Young et al. (2015)

Dimension	Early maladaptive schema	Definition
Disconnection and Rejection:

The belief that one's fundamental needs for safety. security. stability. empathy. and esteem may not be met consistently. | Abandonment / Instability | The belief that supportive people are unpredictable or unreliable. |
	Mistrust / Abuse	The belief that others are likely to cause harm abuse or manipulation.
	Emotional deprivation	The belief that emotional needs will not be fulfilled by others.
	Defectiveness / Shame	Feeling flawed or unlovable in some way.
	Social isolation / Alienation	Feeling disconnected from others and not belonging to any group or community.
Impaired Autonomy and Performance:

Beliefs that hinder one's perceived capacity to differentiate. survive. function autonomously. or accomplish tasks successfully. | Dependence / Incompetence | The belief that one cannot manage day-to-day responsibilities effectively without help. |
	Vulnerability to harm and/or illness	Excessive fear of impending disaster and being powerless to prevent it.
	Enmeshment / Undeveloped self	: Extreme emotional attachment to significant others that impedes normal social development.
	Failure	The belief of being inferior in achievement compared to peers.
Impaired Limits

Difficulty in respecting others' rights. cooperating with others. making commitments. or setting and achieving personal goals. | Entitlement / Grandiosity | The belief in entitlement to special rights or privileges. |
| | Insufficient self-control / Self-discipline | Persistent challenges with self-control or excessive display of emotions and impulses. |
| Other-Directedness:

Excessive preoccupation with the wants. emotions. and reactions of others at the expense of one's own needs. | Subjugation | Relinquishing of authority due to fear of anger or abandonment. |
| | Self-sacrifice | Excessive focus on satisfying others' needs to the detriment of one's own fulfillment. |
| | Approval-seeking / Recognition-seeking | Excessive preoccupation with gaining recognition. approval. or conforming to social norms. |
| Overvigilance and Inhibition

Excessive focus on suppressing natural | Negativity / Pessimism | Preoccupation with negative aspects of life while disregarding positive experiences. |
| | Emotional inhibition | Excessive restraint of behavior. emotions. or communication to avoid disapproval |

Dimension	Early maladaptive schema	Definition
impulses. feelings. and choices or meeting rigid internalized rules and expectations.		or losing control.
	Unrelenting Standards / Hypercriticalness	The belief in attaining extremely high self-imposed standards to prevent negative evaluation or criticism.
	Punitiveness	The belief in severe punishment for mistakes or failures. leading to anger and intolerance towards oneself and others.