

# Internal consistency and factorial validity of the Slovak Version of the Young Schema Questionnaire – Short Form 3 (YSQ-S3)

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## Abstract

**OBJECTIVE:** Young schema questionnaire – short form (YSQ-S3) represents a useful method for the identification of early maladaptive schemas in clinical and non-clinical samples. The study aimed to examine the internal consistency and factorial structure of the recently adapted Slovak version of YSQ-S3 in a non-clinical sample.

**METHODS:** The sample consisted of 302 healthy participants from the general population in Slovakia. Slovak version of YSQ-S3 was used. Reliability analysis and confirmatory factor analysis were performed.

**RESULTS:** The results suggest an acceptable internal consistency of early maladaptive schemas (EMSs). The Cronbach's alpha coefficients of YSQ-S3 subscales ranged from 0.54 to 0.85. Confirmatory factor analysis supports the factor structures of 18 unifactorial EMSs. The results partially support Young's theoretical schema clusters and fail to support the second-order factor model.

**CONCLUSION:** In conclusion, the Slovak version of the YSQ-S3 is a psychometrically sound questionnaire that can be utilized for assessing EMS, both for research and clinical purposes.

## INTRODUCTION

The development in cognitive therapies is characterized by focusing attention on schematic processing, where the central goals for transformation are the “core beliefs” or “early maladaptive

schemas” (Padesky 1994; Young 2014). They are assumed to develop as a result of mainly (but not exclusively) early developmental experiences and are resistant against present evidence. Jeffrey E. Young formed a psychotherapeutic approach “on schema oriented cognitive therapy” as an alter-

native treatment for patients with strong maladaptive schemas, where standard cognitive behavioral therapy was not effective enough (Young et al. 2003). In contrast to cognitive therapy, he puts the main emphasis on emotions. Young schema theory assumes that adult emotional responses are formed by childhood experiences, whether positive or negative. If the child's basic needs are not met in early childhood, "early maladaptive schemas", are formed. The "schemas" according to Young represent deep attitudes, extremely stable patterns of thought linked to emotional reactions, behavioral stimuli, physical responses, relations to other people, as well as cognitive processes including the focus of attention, all of which are the source of inappropriate and dysfunctional thinking and behavior (Young et al. 2003).

Young defined 18 schemas and grouped 15 of the schemas into four "schema clusters" based primarily on factor analytic studies of Young schema questionnaire (YSQ) (Young 2014). He mentioned that these four higher-order clusters are not consistent enough to be categorized as factors, but they represent the most common research findings. In his latest theory, these five higher-orders clusters replace the original schema domains.

For each cluster, Young describes the typical family environment and childhood experiences that lead to the development of the corresponding schemas (Young 2014).

#### The first cluster: **Disconnection and Rejection**

The typical family background is emotionally detached and restricted environment. The atmosphere in the family where the child was raised was cold, lacking empathy, rejecting, critical, withholding, distant, or abusive. The peer origin is feeling different, without a sense of belonging. The needs for love, safety, nurturance, empathy and sharing of feelings, social belonging, spontaneity, praise and respect were not met in a consistent manner (Young 2014).

The following schemas could be formed in such an atmosphere: 1. Emotional deprivation, 2. Mistrust/abuse, 3. Emotional inhibition, 4. Defectiveness/Shame, 5. Social Isolation/Alienation.

#### The second cluster: **Impaired Autonomy and Performance**

The cluster represents such expectations about oneself and environment that restrict the perceived ability to function autonomously in real life, be successful and express needs and emotions freely because of the fear of being abandoned, left alone and being afraid that the world is dangerous. Families were overprotective, not providing children with the opportunity to gain self-confidence, enmeshed, not reward success, controlling and invalidating the child's needs and feelings. This environment formed the following typical schema: 6. Dependence/Incompetence, 7. Abandonment/instability, 8. Vulnerability to Harm or Illness, 9. Enmeshment/Underdeveloped Self, 10. Failure and 11. Subjugation/Invalidation (Young 2014).

#### The third cluster: **Impaired Limits**

This group of schemas is characterized by the lack of internal limits, responsibility to others, or long term goal orientation. Affected individuals have difficulty cooperating with others, respecting the rights of other people and controlling their own emotions and impulses. There are two main types of behavior, self-aggrandising and impulsive or undisciplined manner. Family origin is characterized by over-permissiveness, lack of boundaries, failure to enforce normal rules and creating a sense of superiority over people.

The typical schemas are 12. Entitlement/Grandiosity and 13. Insufficient Self-Control / Self-Discipline. (Young 2014)<sup>2</sup>

#### The fourth cluster: **Excessive Responsibility and Standards**

Individuals are characterized by trying to meet strict, internalized rules and high/unrealistic expectations about performance. They demand orderliness or proper behavior. The origins are demanding, critical, punitive families, putting high expectations or standards on the child's behavior. Family members express feelings of guilt or selfishness when the child is taking part in enjoyable activities. Instead, exceptional achievement, responsibility, perfectionism, taking care of other people, keeping ethical or moral principle, following rules and avoiding mistakes are expected.

Typical schemas of this cluster are: 14. Self-Sacrifice and 15. Unrelenting Standards / Hypercriticalness (Young 2014).

The fifth cluster contains three schemas: 16. Approval-Seeking/Recognition-Seeking, 17. Negativity/Pessimism and 18. Punitiveness. They were added to the latest version of the questionnaire. According to recent research, this cluster can be labelled as Overvigilance and Inhibition. (Sakulsriprasert *et al.* 2016).

#### The schema questionnaires

Young has developed various questionnaires and inventories for the measurement of the main concepts of his theory, among them the Young schema questionnaire (YSQ) for the assessment of the early maladaptive schemas has received ample research attention (Young 2014).

Currently, there are two basic forms of the YSQ, Long (YSQ-L) and Short form (YSQ-S). The second is intended mainly for faster assessment and research purposes. Several studies show good psychometric properties in both forms (Calvete *et al.* 2013; Hoffart *et al.* 2005; Lee *et al.* 1999; Rijkeboer *et al.* 2006). Several versions of the short form have been developed, the latest 90-item version is frequently used, and it is known as the YSQ-S3 (Young 2014).

The YSQ-S3 has been widely used and translated into several foreign languages: Arabic, Canadian-French, Danish, German, Greek, Korean, Polish, Romanian, Spanish, Thai, and Turkish. (Sakulsriprasert *et al.* 2016; Calvete *et al.* 2013; Alfasos 2009; Hawke & Provencher 2012; Bach *et al.* 2017; Kriston *et al.* 2013;

**Tab. 1.** Internal consistency of Schemas

Scale (schema)	Corrected Item-Total Correlations					$\alpha$
	1 <sup>st</sup> item	2 <sup>nd</sup> item	3 <sup>rd</sup> item	4 <sup>th</sup> item	5 <sup>th</sup> item	
S1 Emotional deprivation	.52	.58	.38	.64	.44	.73
S2 Abandonment	.56	.52	.53	.41	.29	.70
S3 Mistrust/abuse	.52	.57	.53	.44	.41	.73
S4 Social isolation/alienation	.55	.41	.63	.62	.64	.78
S5 Defectiveness/shame	.54	.58	.53	.47	.52	.75
S6 Failure	.66	.62	.70	.68	.62	.85
S7 Dependence/incompetence	.57	.46	.55	.47	.53	.75
S8 Vulnerability to harm or illness	.47	.59	.41	.42	.40	.70
S9 Enmeshment/undeveloped self	.43	.28	.21	.31	.32	.54
S10 Subjugation	.40	.57	.43	.51	.44	.71
S11 Self-sacrifice	.35	.36	.56	.36	.55	.68
S12 Emotional inhibition	.49	.46	.43	.46	.12	.64
S13 Unrelenting standards/hypercriticalness	.32	.40	.46	.37	.36	.63
S14 Entitlement/grandiosity	.25	.39	.22	.38	.41	.57
S15 Insufficient self-control/self-discipline	.52	.55	.41	.55	.26	.70
S16 Approval seeking/recognition seeking	.51	.51	.60	.44	.58	.76
S17 Negativity/pessimism	.58	.64	.61	.45	.53	.78
S18 Punitiveness	.64	.36	.59	.59	.24	.72

Lyrakos 2014; Malogiannis *et al.* 2018; Lee *et al.* 2015; Oettingen *et al.* 2017; Trip 2006; Saritas & Gencöz 2011; Soygüt *et al.* 2019). Being fast and yet psychometrically sound, it can be expected the future research will use it predominantly.

### Objectives of the study

As can be seen from previous research review, the YSQ-S3 is widely used in many countries, with clinical and non-clinical populations. International psychometric studies demonstrate good internal consistency of the YSQ-S3 as a measure of reliability and good validity (Sakulsriprasert *et al.* 2016; Calvete *et al.* 2013; Lee *et al.* 1999; Alfasos 2009; Hawke & Provencher 2012; Bach *et al.* 2017; Kriston *et al.* 2013; Lyrakos 2014; Oettingen *et al.* 2017; Trip 2006; Saritas & Gencöz 2011; Soygüt *et al.* 2019). Therefore studying internal consistency of the Slovak version of YSQ-S3 is the first objective of the presented study.

One of the frequently explored aspects of the validity of the YSQ-S3 is its factorial structure (Sakulsriprasert *et al.* 2016; Kriston *et al.* 2012). The importance of studying factorial structure can be perceived from two aspects: the first aspect relates to psychometric properties of a measurement tool and the second one corresponds with the content and structure of Schema theory.

Most of the studies report slightly different results of the YSQ-S3 factorial structure. The first step in study-

ing the higher-order factorial structure is to study the psychometric properties of 18 schemas separately (uni-factorial level). The next step is to study higher-order factor structure which represents five schema clusters. The last step is to study the second-order structure model. Due to the mixed results in international studies and the absence of relevant research in Slovak context we decided to work with the five second-order model proposed by Young *et al.* (2003).

## MATERIALS AND METHODS

### Sampling Procedure

The sample consisted of healthy volunteers from the general population who attended a thorough psychosocial and physiological evaluation as a part of the project Psychological, psychophysiological and anthropometric correlates of cardiovascular diseases. The data was collected between 10/16-02/18.

#### Inclusion criteria:

1. 18-70 years
2. Both sexes
3. Signed the informed consent

#### Exclusion criteria:

1. Psychiatric diagnosis according ICD-10
2. Medication that influences the cardiovascular system

3. Illnesses that influence the cardiovascular system (hypo/hyperthyreosis, cardiovascular diseases, etc.)

### Instruments

The Young Schema Questionnaire Short Form 3 (YSQ-S3) originates from its previous versions. The YSQ-S3 is a self-report tool (Young 2014). Individuals are asked to describe themselves by rating each statement through a 6-point Likert-rating format on the scale from *completely untrue of me (1) to describes me perfectly (6)*. Higher values represent the stronger presence of the corresponding schema. The YSQ-S3 assesses 18 early maladaptive schemas, with five items per scale, resulting in a total of 90 items.

In this study the translation of the questionnaires was accomplished through the following procedure:

Two clinical psychologists and a qualified translator independently translated the questionnaire from English to Slovak. The native Slovak translator was qualified with a college and PhD education, Slovak as a mother tongue, and an experience of more than seven years of translating documents. The three translations of the YSQ-S3 were synthesized into one Slovak version by a bilingual individual. The Slovak version of YSQ-S3 was then translated back to English by a professional translator, who was the native English speaker and who was blind to not familiar with the content of the

original versions. The translation back into English was subsequently compared with the original version. The original and translation were evaluated as being conceptually and culturally equivalent.

### Statistical Analysis

To examine the factorial structure we used confirmatory factor analysis using Maximum likelihood (ML) method with analyzing the covariance matrix (Brown 2006). To fit the models, following indices were used:  $\chi^2$  test, relative  $\chi^2$  ( $\chi^2/df$ ), RMSEA (root mean square error of approximation), PCLOSE with 90% confidence interval, comparative fit index (CFI), the goodness of fit index (GFI) (Bentler 1990; Urbanek 2000). The goodness of fit was assessed by the recommendations of Kline (2011). The values of relative  $\chi^2$  less than 5.0, CFI more than 0.90, and RMSEA less than 0.08 suggest a good fit of the model. Statistical analysis was conducted by IBM SPSS Statistics 21 and Amos 22.0. Reliability assessment was carried out using Cronbach  $\alpha$ .

### Ethics

The investigation was performed in the agreement with the latest version of the Helsinki Declaration and the Guideline for Good Clinical Practice (EMA <http://www.ema.europa.eu/pdfs/human/ich/013595en.pdf>, 20.3.2009). A local ethical committee of Faculty of Social Sciences and Health Care, Constantine the

**Tab. 2.** Fit indices for the confirmatory factor analysis of unifactorial EMS models

	$\chi^2$	<i>p</i>	$\chi^2/df$	RMSEA	90CI+	90CI-	CFI (RNI)	GFI	AGFI
1. Emotional deprivation	6.53	0.258	1.306	0.032	0	0.091	0.995	0.991	0.974
2. Abandonment	14.98	0.01	2.995	0.081	0.036	0.13	0.96	0.981	0.943
3. Mistrust/abuse	20.22	0.001	4.044	0.101	0.057	0.148	0.948	0.974	0.922
4. Social isolation/alienation	27.22	<0.001	5.444	0.122	0.079	0.168	0.951	0.965	0.895
5. Defectiveness/shame	13.13	0.022	2.627	0.074	0.026	0.123	0.975	0.983	0.949
6. Failure	16.27	0.006	3.253	0.087	0.042	0.135	0.98	0.978	0.934
7. Dependence/incompetence	14.75	0.011	2.949	0.08	0.035	0.13	0.969	0.981	0.944
8. Vulnerability to harm or illness	14.05	0.015	2.81	0.078	0.031	0.127	0.963	0.982	0.945
9. Enmeshment/undeveloped self	24.64	<0.001	4.929	0.114	0.072	0.161	0.831	0.966	0.899
10. Subjugation	11.20	0.051	2.239	0.064	0.006	0.115	0.975	0.985	0.956
11. Self-sacrifice	9.31	0.097	1.863	0.054	0	0.106	0.981	0.988	0.965
12. Emotional inhibition	2.54	0.771	0.508	0	0	0.054	1	0.997	0.99
13. Unrelenting standards/hypercriticalness	24.63	<0.001	4.926	0.114	0.072	0.161	0.879	0.967	0.901
14. Entitlement/grandiosity	8.91	0.113	1.782	0.051	0	0.104	0.967	0.988	0.965
15. Insufficient self-control/self-discipline	14.47	0.013	2.893	0.079	0.033	0.129	0.963	0.98	0.941
16. Approval seeking/recognition seeking	17.99	0.003	3.597	0.093	0.049	0.141	0.96	0.978	0.933
17. Negativity/pessimism	32.94	<0.001	6.588	0.136	0.094	0.182	0.933	0.961	0.882
18. Punitiveness	17.76	0.003	3.552	0.092	0.048	0.14	0.962	0.977	0.932

Philosopher University in Nitra accepted the study. All participants signed an informal consent with the participation after the procedures were fully explained.

## RESULTS

### *Participant Characteristics*

The total sample consisted of 302 participants (72% women, 28% men) with a mean age of 32.05 (SD = 8.28; age range 18–78). Within this sample 35.2% were single, 41.3% were married and 22.3% were in a long-term partnership. Educational level was high, 64.2% had graduated from college, while the remaining 35.8% had ended their education at lower levels.

### *Internal Consistency*

The reliability (internal consistency) coefficients of eighteen schemas are presented in Table 1. The Cronbach's alpha coefficients of YSQ-S3 subscales ranged from 0.54 to 0.85. These findings indicated that 13 of 18 subscales of YSQ-S3 had good internal consistency ( $\alpha > 0.7$ ). Three scales (Self-sacrifice, Emotional inhibition, and Unrelenting standards/hypercriticalness) showed lower internal consistency ( $\alpha < 0.7$ ) and the internal consistency of two scales (Enmeshment/undeveloped self, Entitlement/grandiosity) was very low ( $\alpha < 0.6$ ). Given the low number of items per scale, the coefficients can be considered adequate.

Corrected item-total correlations exceeded the threshold of 0.30 in all but eight cases (one item of the scales Abandonment, Emotional Inhibition, Insufficient self-control and Punitiveness each, two items of the scales Enmeshment and Entitlement).

### *Factorial Validity*

#### *Confirmatory factor analysis*

The previous studies present the results of the factorial structure of the YSQ-S3 using exploratory factor analysis technique. (Calvete et al. 2013; Soygüt et al. 2019).

Even though no such analysis has been made in the Slovak sample, it is possible to formulate hypotheses from previous research, and therefore we use confirmatory factor analysis technique.

Three levels of hypotheses were tested: First, 18 unifactorial level models were tested. Second, five Early maladaptive schemas clusters were tested. Third, second-order schema factor model according to Young was tested in the Slovak sample (Young et al. 2003).

#### *Unifactorial Early maladaptive schemas models*

Eighteen separate models (each consisted of five items) were tested. These items are the same as in reliability analysis described above. Results of these 18 CFAs are presented in table 3.

Based on the results in Table 2, we can conclude that the unifactorial level of EMS was confirmed in Slovak sample. The 16 out of 18 early maladaptive schemas showed acceptable to good fit ( $\chi^2/df < 5$ , and CFI  $> 0.93$ ). Moreover, five of the schemas as mentioned above (Emotional deprivation, Subjugation, Self-sacrifice, Emotional inhibition and Entitlement) demonstrated an even better fit ( $p > 0.05$ ). Two early maladaptive schemas models (Social isolation and Negativity) did not fit well with the data. ( $\chi^2/df > 5$ ).

#### *Early maladaptive schema clusters*

In the next step, we tested the validity of the five schema clusters. Two models were tested for each cluster. In the first one (labelled as 1F), one factor consists of all items included in the cluster. The second model (labelled as Young's model) represents a hierarchical solution: five items load one factor and subsequently the factors in the cluster load one second-order factor. The number of items, respectively the number of factors in five presented clusters is different since the clusters consist of a various number of first-order factors (from 2 to 6). Results of these models are presented in table 3.

**Tab. 3.** Fit indices for the confirmatory factor analysis of EMS Clusters

	NPAR	$\chi^2$	df	p	$\chi^2/df$	RMSEA	90CI+	90CI-	CFI (RNI)	GFI	AGFI
Cluster1_1F	50	1095.34	275	<.001	3.983	0.100	0.093	0.106	0.663	0.761	0.718
Cluster1_Young	55	731.12	270	<.001	2.708	0.075	0.069	0.082	0.811	0.839	0.806
Cluster2_1F	60	1126.36	405	<.001	2.781	0.077	0.072	0.082	0.757	0.777	0.744
Cluster2_Young	66	884.86	399	<.001	2.218	0.064	0.058	0.069	0.836	0.835	0.807
Cluster3_1F	20	125.47	35	<.001	3.585	0.093	0.075	0.11	0.801	0.919	0.873
Cluster3_Young	21	83.66	34	<.001	2.461	0.070	0.051	0.089	0.891	0.949	0.918
Cluster4_1F	20	104.52	35	<.001	2.986	0.081	0.064	0.099	0.848	0.929	0.889
Cluster4_Young	21	59.85	34	0.004	1.760	0.050	0.028	0.071	0.943	0.96	0.936
Cluster5_1F	30	508.58	90	<.001	5.651	0.124	0.114	0.135	0.695	0.795	0.727
Cluster5_Young	33	269.18	87	<.001	3.094	0.083	0.072	0.095	0.867	0.894	0.854

Legend: Clusters: Cluster1 – Disconnection and Rejection, Cluster2 – Impaired Autonomy, Cluster3 – Impaired Limits, Cluster4 – Other-Directedness, Cluster5 – Overvigilance and Inhibition

**Tab. 4.** Fit indices for the confirmatory factor analysis of first and second-order schema model with all schemas

	NPAR	$\chi^2$	df	p	$\chi^2/df$	RMSEA	90CI+	90CI-	CFI	GFI	AGFI
First-order models											
A	180	10039.6	3915	<.001	2.56	0.072	0.070	0.074	0.447	0.458	0.433
B	333	7267.6	3762	<.001	1.93	0.056	0.054	0.058	0.684	0.653	0.622
C	190	8738.9	3905	<.001	2.24	0.064	0.062	0.066	0.564	0.585	0.564
D	180	9429.3	3915	<.001	2.41	0.068	0.067	0.07	0.502	0.568	0.548
Second-order model											
E	208	7766.7	3887	<.001	1.998	0.058	0.056	0.059	0.65	0.63	0.61

When comparing the fit indices, all five clusters proposed by Young showed a better fit than one-factor clusters. However, only Cluster4 (“Other-Directness”) of the Young’s five clusters of second order demonstrated a good fit in all indices, reaching the CFI threshold 0.90 ( $\chi^2 = 59.847$ ,  $\chi^2/df = 1.76$ , RMSEA = 0.05, CFI = 0.943).

*Early maladaptive schemas – second order schema model*  
The third level of analysis is represented by models containing all 18 schemas in one model (Calvete et al. 2013). Four first-order factor structure models were tested. We examined both correlated (A) and uncorrelated first-order 18-factor structure (B) models, and both correlated (C) and uncorrelated 5-factor first-order structure (D), referring to the clusters as described in Young’s theory (Young 1994).

One second-order factor (E) structure model was tested. It consists of all 18 schemas (first order-factors) grouped in 5 clusters (second-order factors). All clusters are correlated in the model.

As shown in Table 4, the fit indices of the second-order model (E) were lower than acceptable fit ( $p < 0.001$ ; CFI, GFI, AGFI < 0.7). Also, first-order models (A-D) did not fit the data well according to the same criteria. Therefore, respecification regarding theoretical basis from previous research and localized areas of strain in models is recommended. Other possibilities are discussed in the following section.

## DISCUSSION

The study aimed to examine internal consistency and factorial validity of the Slovak version of YSQ-S3 inventory (Padesky 1994). The data were collected from fall of 2017 until the spring of 2018. Altogether 302 healthy adults participated in the research.

Internal consistency of the Slovak version of the YSQ-S3 was mainly acceptable. Thirteen schemas showed medium to good levels of reliability ( $\alpha = .70-.85$ ). Internal consistency of three schemas (Self-sacrifice, Emotional inhibition, Unrelenting standards) was low ( $\alpha < .70$ ). Two schemas demonstrated low internal consistency ( $\alpha < .60$ ; Enmeshment, Entitlement).

Foreign studies have revealed similar levels of internal consistency in different versions of the YSQ-S3. Our findings correspond with the results of the studies mentioned below. Reported Cronbach’s alpha coefficients vary across countries, ranging from low to excellent ( $\alpha = .53-.81$  in Turkish student sample (Soygüt et al. 2019);  $\alpha = .70-.93$ ; in Danish mixed clinical and nonclinical sample (Bach et al. 2017);  $\alpha = .62-.85$  in Thai student sample. (Sakulsriprasert et al. 2016);  $\alpha = .59-.90$  in Korean student sample (Lee et al. 1999);  $\alpha = .57-.92$  in Canadian-French nonclinical sample (Hawke & Provencher 2012);  $\alpha = .54-.83$  in Spanish student sample (Calvete et al. 2013);  $\alpha = .67-.91$  in German nonclinical sample (Kriston et al. 2013);  $\alpha = .72-.98$  in Greek clinical and nonclinical samples (Lyrakos 2014).

The value of alpha lowers with the decreasing number of analyzed items (Streiner 2003). Because each schema consisted of just five items, the number of items could partly explain the range of the internal consistencies. Also, eight items correlated weakly with the overall schemas score. Based on our results we recommend further analysis of the schemas with lower internal consistency (especially Enmeshment and Entitlement). These two schemas appear to be problematic also in other studies (Sakulsriprasert et al. 2016; Hawke & Provencher 2012). Thus, the best possibility concerning current conditions would be to extract psychometrically sound items from the YSQ long version and replace the corresponding problematic ones in the YSQ-S3.

The second objective of the present study was to examine the factorial validity of YSQ-S3. Among the three levels of hypothesis tested, the first level showed the best results. The unifactorial level of EMS was confirmed in Slovak sample with only two schema models of 18 that did not fit the data well (Social isolation and Negativity). Five schema models (Emotional deprivation, Subjugation, Self-sacrifice, Emotional inhibition and Entitlement) demonstrated a good fit, 11 showed acceptable to a good fit. The results are consistent with those of previous studies (Sakulsriprasert et al. 2016; Calvete et al. 2013; Hawke & Provencher 2012; Kriston et al. 2013; Lyrakos 2014).

In the second step, five EMS clusters were tested, at first as a one-factor model and then as a hierarchical solution, representing the theoretical model of EMS clusters as proposed by Young (2014). The models of the hierarchical solution showed a better fit than one-factor clusters, but only Cluster 4 (Other-Directness) demonstrated a good fit in all the indices.

Finally, CFA of the first and second-order schema models with all the schemas was performed. However, the fit indices of the tested models were lower than the acceptable fit. Poor fit of these models can be partially explained by the character of the statistics used. The CFA models, which use the maximum likelihood estimation method are inflated with increasing non-normality, what could also be the case in several of our schemas (Curran *et al.* 1996).

Previous psychometric studies that employed factor analysis (Sakulsriprasert *et al.* 2016) have identified the considerable variety of higher-order solutions with no convincing results, providing rather weak support for the theoretical model proposed by Young *et al.* (2003).

It can be concluded that the worse fit of the tested models with the data in the second and third step reflects the structure of the unifactorial EMS, which, although acceptable, is not excellent. Therefore, we recommend doing the analysis and interpretation of schemas with scores only, both for research as well as clinical purposes. Cluster scores should be interpreted with caution, as recommended by other authors as well (Sakulsriprasert *et al.* 2016; Hawke & Provencher 2012).

### Limitations

The main limitation of the present study concerns sampling bias. The sample, although quite diverse, was rather young and exclusively nonclinical, and may lack the proper breadth of representativeness.

### Future research

The present study aimed to verify the factorial structure and internal consistency of the YSQ-S3. The further psychometric properties of the Slovak version of the scale with a representative sample of various respondent groups remain to be examined in future. Further aspects of validity, e.g. concurrent, should be verified by correlating the scores of the instrument with the measures of mental health to examine meaningful relationships. To verify the stability of the scale over time, a study with test and retest measurements may be designed. Finally, there may be a need to consider revising the scale by replacing the questionable short form items by those from the long form of the scale.

## CONCLUSION

The results of our study provide evidence that the psychometric properties of the Slovak version of YSQ-S3 are acceptable and valid. The results of internal consistency analysis are consistent with those of previ-

ous studies, suggesting satisfactory reliability of the measure. The results of factor analysis indicate a satisfactory structure of the scale on the level of 18 EMS. However, the higher order models failed to support the validity of the clusters. Therefore we recommend using and interpreting the scores of 18 EMS only.

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## DISCLOSURE

The authors report no conflicts of interest in this work.

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