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**ASSESSMENT THE LONELINESS OF SLOVAK  
ADOLESCENTS: ADAPTATION OF THE SOCIAL AND  
EMOTIONAL LONELINESS SCALE FOR ADULTS  
(SELSA-S) TO ADOLESCENTS AND VERIFICATION OF  
PSYCHOMETRIC ATTRIBUTES IN THE SLOVAK  
VERSION**

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*Abstract*

*Loneliness is an intense experience, subjectively perceived state, in which the person experiences a significant qualitative and/or quantitative deficit in the networks of social relationships. In adolescence, loneliness relates to social exclusion and risk behaviour symptoms. Although identifying loneliness in the adolescent population is a practical issue, no suitable methodology has been adapted so far. The goal of this paper is to adapt the SELSA-S methodology (DiTommaso et al., 2004) identifying social and emotional loneliness in the European conditions. A Slovak version has been created for the purpose of identifying psychometric attributes in the adolescent population as a target group. The empirical research involved a research file of N=331 adolescents. The factor analysis was used to confirm the suitability of the three-factor structure (loneliness in family, social, and romantic relationships) ( $\chi^2=207.08$ ;  $df=87$ ;  $p<.001$ ;  $CFI=0.94$ ;  $GFI=0.91$ ;  $RMSEA/IC90\%=.07/.06-.08$ ). The concurrent and discriminant validity of the methodology is supported by the correlation with the measured variables representing the factors of social support ( $r=-.20$  -  $-.68$ ), attachment prototypes ( $r=.11$ -*

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.28), number of close social contacts ( $r=-.17$  -  $-.22$ ), and the UCLA loneliness scale (Russel, 1996) ( $r=.17$ -.66). The suitability of the SELSA-S methodology in the Slovak version has been confirmed.

Keywords: loneliness; psychometric attributes; factor analysis

## Introduction

The authors aim to identify the basic psychometric attributes pertaining to the Slovak version of the Social and Emotional Loneliness Scale (SELSA-S; DiTommaso et al., 2004). The paper focuses on the basic theoretical framework of social and emotional loneliness in the contexts of moderator variables including social support, attachment, and demographic factors. This theoretical framework is complemented by the authors' research aimed at the verification of the expected correlations and validity of the Slovak version of this scale.

Loneliness was not considered a significant phenomenon until the second half of the 20th Century (Mijuskovic, 1996; Weiss, 1973). At the end of the 1970s did experts begin pointing out that this concept needs to be addressed (Cacioppo & Patrick, 2008; Medora & Woodward, 1991; Peplau, 1988; Perlman & Peplau, 1982; Rokach, 2002; Spira, 2013; Weiss, 1973). Similarly, this concept only occurred in specialised literature in Slovakia at the beginning of the 21st century (Balogová, 2008; Ráčzová, 2008; Žiaková, 2008). The primary reason may relate to the fact that loneliness is often researched in terms of correlation or causality in different areas of human life.

Adolescents are inclined to create social relationships and feel the need to establish couple and erotic relationships with the opposite sex. During this period they experience their first loves based on shared interests and emotional affinity characterised by an uncritical view of their significant other. However, it is a period when young people lose their loved ones, which is painful - this can decrease their self-esteem and make them experience loneliness (Binarová, 2005). During adolescence, family attachments loosen and adolescents are growing independent, yet they are trying to retain a positive relationship with their parents, which can be very difficult (Kopčánová, 2016). However, the perception of this attachment is undergoing transformation. Loneliness research in adolescents (Goosens et al., 2009; Ráčzová, 2008; Šiňanská, 2019) points

out the strong correlation between the changed attachment to parents and the experiencing of loneliness. If parents divorce, it can have a major negative impact on this unattachment process.

Loneliness represents a subjective experience of lack or loss of social relationships. It occurs when a person feels a discrepancy between the quantity and quality of social relationships. However, in case of loneliness, it includes a mainly subjective lack of quality social contacts (Aiden, 2016). Loneliness is an intense experience - a subjectively perceived state in which a person suffers from severe quantitative and/or qualitative deprivation in their social relationship network (Bowman, 1955; Brenner, 1974; Cacioppo & Patrick, 2008; Perlman & Peplau, 1982; Rogers, 1973; Slater, 1990; Sullivan, 1953; Weiss, 1973; Zilboorg, 1938; Žiaková, 2008). However, the quality of interpersonal relationships is more important than their quantity (Cacioppo et al., 2008; Rovenská & Daduňáková, 2018).

The second problem in terms of the effort to define loneliness is the presence of different types of loneliness - emotional, social, cognitive, behavioural (Perlman & Peplau, 1982), existential (Yalom, 1980), situational, transitional, chronic, etc. (Elias, 2001; Weiss, 1973; Young, 1982). Their mechanisms of functioning, causes, and consequences are different.

In defining loneliness as a concept, age and demographic characteristics (place of living, job, etc.) also play an important role. Therefore, the symptoms of social isolation can be identified in different age and social groups, for instance in adolescents, divorced couples, the unemployed, those who change their place of living, people whose behaviour and values differ from those of their surroundings, stigmatised persons (due to health disadvantage, minority religion, ethnicity, race, age, sexual orientation, etc.) (Weiss, 1973). Adolescents represent a group that can be significantly influenced by loneliness (Vašková & Lovašová, 2020), since they address questions such as the meaning of life, self-realisation (future career; Čopková & Jendrejáková, 2020), and social relationships - intimate as well as friendly ones. The problems result from the answers to these questions which, as a rule, accompany them (Vágnerová, 2012).

Loneliness due to social isolation results from the absence of a social network of peers, colleagues, neighbours, family, or friends in which a person can participate and engage. Any serious disruption of social roles and positions may cause a person to experience social isolation (Ráczová, 2008).

A broad range of events can cause mental load, which are further enhanced by loneliness. In reality, all the events that lead towards losing people with whom an individual shared their interests can lead towards loneliness due to social isolation. Engagement in a peer group is almost or even equally as important as the initial maternal bonding. Affiliation follows attachment - long-term absence of activities with peers causes anxiety as it does if attachment does not occur at all (Bowlby, 1985). Anxiety and suffering caused by loneliness due to social isolation when a person is excluded from group activities ensues very soon, and the pain grows over time. A lonely child waiting to join other children who merely watches them playing and mutters complaints to the adults. When an adolescent is entering adulthood, the issue of acceptance gains existential importance (Weiss, 1973). Sullivan (1953, as cited in Weiss, 1973) assumes that most of us have experienced the pain caused by being excluded by our peers in childhood. This bitter experience could be referred to as “fear of ostracization”. States related to social integration are different from initial bonding and these two cannot compensate each other. Adolescents still need to play with their peers as well as needing their parents’ care. Adults also need a social network that provides them with support and opportunities to engage, and also intimate bonding, which provides them with feelings of safety and love (Bowlby, 1961; Maslow, 2013; Weiss, 1973).

The social support network intensively developed during this period can help adolescents address the aforementioned needs (Dumm, 2008). In the broadest terms, social support includes providing a variety of resources that can help one overcome stressful situations (Halachová & Rovenská, 2017). The multi-dimensional definition of social support includes also the emotional component, which represents a major part of the internal feeling of loneliness (Wilcox & Vernberg, 1985, as cited in Akerlind & Hornquist, 1992). Research has shown that a circle of close friends is more important than all other social support (Rook, 1987, as cited in Akerlind & Hornquist, 1992).

The psychological viewpoint of loneliness can be defined according to different theoretical approaches as follows (*see* Table 1).

Table 1. A review of approaches to loneliness

Approach	Starting point	Characteristics		Causes	
		positive	normality/ pathology	personal/ situational/genetic	history, childhood/ present day childhood
Psychodynamic	clinical practice	no	pathology	personal	childhood
Phenomenological	clinical practice	no	pathology	personal	present day
Existential	clinical practice	yes	panhuman universal	human condition	life-long (permanent)
Sociological	social analysis	no	normative	society	history and the present day
Cognitive	research	no	normality	personal and situational	history and the present day
Personal	theory	no	normality	personal and situational	present day
Systemic	theory	yes	normality	personal and situational	present day
Interactional	clinical practice	no	normality	personal and situational	history and the present day
Biological	clinical practice / research	no	normality	genetic and situational	history and the present day

The theoretical framework provides multiple approaches to loneliness as well as potential correlations between loneliness and selected factors. In the following part of this paper, the authors proceed to empirical verification of the method's validity and the assumptions regarding the potential moderator variables.

### Objectives

The research presented in this paper deals with validation of the Slovak language version of the SELSA-S methodology (DiTommaso & Spinner, 1993), which identifies the level of social and emotional loneliness. The primary goal was to identify the factor structure of the Slovak adaptation and compare it with the original factor structure. In terms of the standard methodological and statistical procedures, the objectives included verification of its internal consistency, identification of the basic descriptive characteristics of the SELSA-S methodology and its factors, and identification of concurrent

and discriminant validity using the theoretically correlating variables. For this purpose, a set of other methodologies dealing with loneliness research was used; *i.e.* UCLA (Russell, 1996), MSPSS (Zimet et al., 1988; Zimet et al., 1990), attachment level RSQ (Griffin & Bartholomew, 1994), and social contact quantification to identify social involvement.

## Method

### *Participants*

The research file consisted of 331 respondents (males=135; females =196), who studied at high schools in Slovakia at the time (2nd year=217-64.6%; 3rd year=119-35.4%). The high schools were selected to ensure that the criteria for representativeness in terms of geography and high school type were taken into consideration. The average age was 17.32 years (SD=0.779; Min-Max=16-21; Med(x)=17). In terms of high school focus, 125 respondents (37.2%) studied at grammar schools and 211 respondents (62.8%) studied at other types of high schools.

### *Measures*

*Loneliness measures.* The SELSA-S is a shortened 15-item version of the original Social and Emotional Loneliness Scale (SELSA) (DiTommaso & Spinner, 1993) that measures three dimensions of loneliness using three subscales. The respondents expressed their agreement on a 7-point Likert-type scale (1=strongly disagree; 7=strongly agree) and the individual items were formulated as positive as well as negative statements. In processing, the polarity of 9 items had to be reversed, three for each subscale. The scale provided good internal consistency values for individual subscales as verified by Cronbach's alpha (romantic -.87; family - .89; social - .90 (DiTommaso et al., 2004). The Slovak language version was used for the current study, which was created by a certified translator and verified by independent back-translation prior to use.

*UCLA Loneliness Scale (Version 3) (UCLA-3, Russell, 1996)* - The UCLA-3 Loneliness Scale is a uni-dimensional measure of loneliness. The scale consists of 20 items rated on a 4-point Likert-type scale (1=never; 4=always). The total score varied between 20 (low level of loneliness experienced) and 80 (high level of loneliness experienced). The internal

consistency of the original scale identified using Cronbach's alpha showed satisfactory values ( $\alpha=.89-.94$ ), which was similar in the current study ( $\alpha=.88$ ).

*Social support measures.* MSPSS - Multidimensional Scale of Perceived Social Support (Zimet et al., 1988; Zimet et al., 1990) The MSPSS is 12-item scale measuring perceived social support in three areas - family, friends, other important person (e.g., significant other). The scale was using multiple research files including students. The respondents express the intensity of their dis/agreement using a 7-point Likert-type scale (1=very strong disagreement; 7=very strong agreement). The instrument allows researcher to examine different social support resources as well as perceived social support as a single dimension. The reliability of the original instrument verified using Cronbach's alpha showed good values for the total score ( $\alpha=.70-.92$ ) and individual subscales as well ( $\alpha=.81-.93$  in the family subscale;  $\alpha=.78-.94$  in the friends subscale ;  $\alpha=.79-.98$  in the other important person subscale) (Zimet et al., 1988; Zimet et al., 1990). In our research, the values were identified as follows: total score:  $\alpha=.85$ ; individual subscales: family  $\alpha=.90$ , friends  $\alpha=.92$ , other important person  $\alpha=.65$ .

*Social contacts measures.* To identify the number of close social contacts, respondents were asked to provide an approximate number of people that they consider close - to whom they can turn in case of need.

*Attachment measures.* RSQ - Relationship Scales Questionnaire (Griffin & Bartholomew, 1994) is an instrument measuring the type of attachment in adolescents. It consists of 30 items representing typical behaviour in close relationships; the respondents use a 5-point Likert-type scale to answer (1=not at all like me; 5=very much like me). Through subscales, the instrument allows for the identification of 4 attachment prototypes (secure, dismissing, fearful, preoccupied). The original instrument shows satisfactory reliability as verified by Cronbach's alpha in all subscales ( $\alpha=.75-.83$ ; Kurdek, 2002). In this research, the identified values were also satisfactory ( $\alpha=.79-.82$ ).

### *Procedure and design*

The research was performed in person during the classes based on an agreement with the management of the selected schools - the students filled in the questionnaires at school in the presence of the administrator (but not in the presence of their school teachers). The questionnaire was in Slovak; the original methodology was translated and back translated by two different

professional translators.

## Results

### *Descriptive statistics and internal consistency of the SELSA-S subscales*

The descriptive indicators of the SELSA-S Slovak version subscales can be seen in Table 2. In terms of possible differences, the attention was paid to division in terms of gender and year of study. The highest mean loneliness was measured in the romantic relationship subscale (M=19.23 for the whole instrument). In terms of gender, males reported a higher mean romantic loneliness score (M=20.33; SD=8.06) than females (M=18.38; SD=9.56),  $t=1.99$ ,  $p<.05$ ,  $d=0.22$ . No gender differences were observed in the family ( $t=0.587$ ;  $p>.05$ ) and social subscales ( $t=0.479$ ;  $p>.05$ ). There were no statistically significant differences between years of study in any of the subscales ( $t=0.98$ ,  $p>.05$  in romantic;  $t=1.09$ ,  $p>.05$  in family;  $t=0.2$ ,  $p>.05$  in social).

Table 2. The Slovak SELSA-S: Descriptive statistics

		n	Romantic subscale		Family subscale		Social subscale	
			Mean	SD	Mean	SD	Mean	SD
Gender	male	35	20.33	8.06	2.16	6.73	3.09	6.1
	female	96	18.38	9.56	2.61	6.92	3.41	5.85
Year of study	2nd	13	19.59	9.02	2.8	6.79	3.39	6.13
	3rd	18	18.58	8.93	1.94	6.84	3.25	5.67
Total		31	19.23	8.99	2.49	6.81	3.34	5.96

In terms of the internal consistency analysis, the Slovak SELSA-S scale shows good reliability values as verified by Cronbach's alpha. Reliability of the whole instrument was  $\alpha=.78$  (CI 95%=.74-.81) and the reliability of subscales varied from .78 to .85. The internal consistency values of subscales (*see* Table 3) are comparable with the original validation study (DiTommaso et al., 2004) and its Polish adaptation selected for comparison based on its geographical and cultural proximity (Adamczyk & DiTommaso, 2014).



Table 3. Internal consistency (Cronbach's alpha) of the Slovak SELSA-S Subscales

SELSA-S Subscale	$\alpha$	CI 95%
Romantic	.79	.75 - .82
Family	.85	.82 - .87
Social	.78	.74 - .81

*The Slovak SELSA-S factor structure*

The SELSA-S loneliness scale was verified using exploratory as well as confirmatory factor analysis according to the original methodology (DiTommaso et al., 2004). The exploratory factor analysis was performed using Varimax rotation with Kaiser normalisation. The data suitability indicators in the factor analysis (KMO=0.82; Bartlett's test of sphericity  $\chi^2=2170.04$ ,  $df=105$ ,  $p<.001$ ) confirm homogeneity as well as correlation matrix adequacy, therefore the factor analysis is considered objective. Consistent with the previous research, (Adamczyk & DiTommaso, 2014; Amorim et al., 2019; Cecen, 2007; DiTommaso et al., 1999; DiTommaso et al., 2004) the factor analysis showed four potential factors with eigenvalues greater than 1 ( $\lambda = 4.23; 3.05; 1.6; 1.28; 0.8; 0.67; 0.61\dots$ ). Further analysis of the scree plot and dispersion of individual factors showed that the three-factor solution was more suitable. The potential fourth factor was created by dividing the romantic factor (items 10 and 15), but it explains only 8% of the common variability. Therefore, it can be stated that a four-factor solution would not be suitable as it would not provide proper explanatory attributes in individual factors. Likewise, the parallel analysis by the Monte Carlo method also confirmed the three-factor solution as appropriate. Due to the aforementioned theoretical and statistical reasons and in accordance with the original instrument, the 3-factor model was adopted, which explains 59.21% of the total variability. This solution also provides suitable loading of the factor items ( $all>0.4$ ) as can be seen in Table 4.

Table 4. Items and Varimax rotated factor loadings for the Slovak Version of SELSA-S

SELSA-S Item	Factor 1	Factor 2	Factor 3
	Romantic	Family	Social
SELSA-S 3	0.912		
SELSA-S 6	0.92		
SELSA-S 10	0.41		
SELSA-S 14	0.923		
SELSA-S 15	0.647		

Table 4. Items and Varimax rotated factor loadings for the Slovak Version of SELSA-S - *continued*

SELSA-S Item	Factor 1	Factor 2	Factor 3
	Romantic	Family	Social
SELSA-S 1		0.706	
SELSA-S 4		0.687	
SELSA-S 8		0.787	
SELSA-S 11		0.836	
SELSA-S 12		0.817	
SELSA-S 2			0.761
SELSA-S 5			0.708
SELSA-S 7			0.633
SELSA-S 9			0.717
SELSA-S 13			0.763

Note: only items with factor loadings >0.5 are shown

The correlations between individual subscales are significant in two cases; these associations are weak, which confirms their importance as separate subscales. As seen in Table 5, the factors in the Slovak version are orthogonal.

Table 5. Intercorrelations in the Slovak Version of SELSA-S subscales

SELSA - S Subscales	Family	Social
Romantic	r = -.02	r = .12*
Family		r = .43**

Note: \* p < 0.05; \*\* p < 0.001

The three-factor structure of the SELSA-S scale was tested by confirmatory factor analysis (CFA using the Amos 18 software). In accordance with the original three-factor solution (DiTommaso et al., 2004), the assumed three-factor loneliness model consists of three hypothetical factors (loneliness in romantic, familial and social relationships) and each of them is loaded with three items (*see* Table 4). Based on the adequacy indicators, the three-factor model ( $\chi^2=207.08$ ;  $df=87$ ;  $p<.001$ ;  $CFI=0.94$ ;  $GFI=0.91$ ;  $NFI=0.90$ ;  $RFI=0.88$ ;  $TLI=0.92$ ;  $RMSEA / IC90\%=0.07/0.06-0.08$ ) is considered to express the factor structure of the Slovak SELSA-S adaptation in a suitable way.

#### *Concurrent and discriminant validity*

Concurrent and discriminant validity were verified through identification of the mutual correlations between the subscales of the Slovak

SELSA-S scale with the UCLA-3 loneliness scale as well as hypothetically correlating variables for measuring social support (MSPSS), attachment prototypes (RSQ), and close social relationships (expressed by the number reported by respondents).

Based on the previous research aimed to verify the original SELSA-S scale (DiTommaso et al., 2004) and its different language versions (Adamczyk & DiTommaso, 2014; Amorim et al., 2019; Cecen, 2007), positive correlations were expected between the individual subscales of the Slovak SELSA-S scale version and UCLA-3 loneliness scale, whereas negative correlations with the anticipated social support and number of close contacts. Based on the theory on attachment prototypes, positive and negative correlations were also expected.

As can be seen in Table 6, statistically significant correlations were found between all three SELSA-S and the UCLA-3 subscales. The strongest correlation was identified in the social subscale ( $r=.66$ ) and the weakest in the romantic subscale ( $r=.17$ ). The differences among individual correlations indicate that the SELSA-S scale identifies loneliness as a multidimensional and broader construct. The most significant shift can be seen in the romantic subscale - UCLA-3 seems to be unable to capture it sufficiently. However, it indicates that UCLA-3 can also be multidimensional.

As can be seen in Table 6, the Slovak SELSA-S scale version and its subscales were validated using three variables pertaining to individual differences (perceived social support, global attachment and number of the close relationships). Statistically significant correlations were found in the expected direction. The direction and extent of the identified correlations support the validity of the Slovak SELSA-S scale version. In terms of social support identified, negative correlations indicate that lower scores in individual types of loneliness relates to better social support. As for attachment prototypes, the analysis identified correlation values as expected (lower loneliness subscale scores indicate higher secure attachment scores). It was also seen that the number of close contacts correlates with the family ( $r=-.17$ ) and social loneliness subscales ( $r=-.22$ ).

Further analyses identified more variables pertaining to individual differences that can be considered as moderators in terms of the loneliness level. Respondents whose parents were divorced/separated ( $M=2.34$ ;  $SD=1.26$ ) scored significantly lower in family loneliness scores than respondents who have not experienced a divorce ( $M=3.02$ ;  $SD=1.57$ ). This difference ( $t=-3.877$ ;

$p < .001$ ;  $d = 0,48$ ) could be explained by the assumption that children with divorced/separated parents may have closer contact with the parent they live with. Another variable was respondents' household. Statistically significant differences in the romantic ( $t = -2.862$ ;  $p < .01$ ;  $d = 0,51$ ;  $M/\text{both parents} = 4.01$ ,  $SD = 1,8$ ;  $M/\text{other} = 3.38$ ,  $SD = 1,73$ ) and family ( $t = 2.948$ ;  $p < .01$ ;  $d = 0,35$ ;  $M/\text{both parents} = 2.36$ ,  $SD = 1,26$ ;  $M/\text{other} = 2.86$ ,  $SD = 1,56$ ) subscales were identified.

Table 6. Correlations of the Slovak version of SELSA-S subscales with the UCLA-3 and individual difference measures

Measure	Slovak SELSA-S Subscale		
	Romantic	Family	Social
Loneliness – UCLA-3	.17**	.43***	.66***
Perceived Social Support – MSPSS			
Family	.03	-.68***	-.34***
Friends	-.03	-.31***	-.62***
Significant other	-.42***	-.20***	-.32***
Global Attachment – RSQ			
Dismissing	.007	-.05	-.11*
Fearful	.14*	.22***	.25***
Preoccupied	-.05	.11*	.10*
Secure	-.05	-.12*	-.28***
Number of close relationships	.03	-.17**	-.22***

Note: \*  $p < .05$ ; \*\*  $p < 0.01$ ; \*\*\*  $p < .001$ ; UCLA-3 – UCLA Loneliness Scale version 3; MSPSS – Multidimensional Scale of Perceived Social Support; RSQ – Relationship Scale Questionnaire

## Discussion

In terms of the relevant theory, loneliness is perceived as a multidimensional construct. The authors believe that it can be measured as such across different target groups.

The goal of this study is to create a Slovak version of the SELSA-S multidimensional instrument for measuring loneliness and verify its psychometric attributes. Exploratory factor analysis was used to confirm that the three-factor structure of the Slovak version is suitable and in line with the original SELSA-S methodology concept (DiTommaso et al., 1999; DiTommaso et al., 2004) as well as with other language versions (Adamczyk & DiTommaso, 2014; Amorim et al., 2019; Cecen, 2007). Based on this, three subscales were identified: loneliness in 1. family, 2. social, and 3. romantic relationships. This structure was confirmed by confirmatory factor analysis, which showed that

this model was optimal in all indicators (RMSEA values around 0.07; CFI values  $> 0.9$ ) (Johnston, 2014; Newsom, 2015). In terms of psychometric attribute verification, individual subscales were analysed for internal consistency. Cronbach's alpha results ( $\alpha=.78-.85$ ) were comparable with the values pertaining to the original scale -  $\alpha=.83-.87$  (DiTommaso et al., 2004) - as well as other language versions -  $\alpha=.74-.83$ , (Cecen 2007);  $\alpha=.83-.87$  (Adamczyk & DiTommaso 2014);  $\alpha=.77-.93$  (Amorim et al., 2019).

Individual subscales of the SELSA-S methodology were analysed for correlations. The relatively low values of mutual correlations between the subscales while maintaining high internal consistency justify the existence of the three, relatively independent subscales. In the context of loneliness, SELSA-S was therefore validated as a multi-dimensional methodology. The fact that this instrument focuses on experiencing loneliness was also confirmed by proving its concurrent validity. Significant correlations ( $r=.17-.66$ ) between each subscale and the UCLA-3 loneliness scale were found (Russell, 1996). The strongest correlation was found in the social subscale and the weakest one in the romantic subscale, which is consistent with previous validation studies. It is probable, that the SELSA-S instrument covers a broader construct due to its multifactorial nature, therefore its use can be considered justified.

Another indicator supporting the validity of the Slovak SELSA-S version for identifying the three loneliness factors is the correlation with anticipated social support. It was identified using the MSPSS instrument (Zimet et al., 1990), which investigates anticipated social support through three factors. The correlations between the constructs of loneliness and social support were confirmed in a number of theoretical, empirical, and validation analyses across several target groups (Amorim et al., 2019; Chalise et al., 2010; Cecen, 2007; 2010; Rook, 1984; Russell, 1996; Tomaka et al., 2006; Tomás et al., 2019). The direction and level of the correlations identified corresponds with our expectations and it is also consistent with the results of other validation studies on SELSA-S adaptations (Adamczyk & DiTommaso, 2014; DiTommaso et al., 2004;). This has also verified that affiliation is a factor affecting social loneliness as suggested in the theoretical concept. Besides the above, this study also focused on another variable, which supported the validity of this instrument - global attachment. In theory, attachment is perceived as a factor largely affecting emotional loneliness (Weiss, 1985). The correlations between attachment and loneliness have been confirmed by multiple studies (Erozkan,

2011; Hecht & Baum, 1984; Pakdaman et al., 2016). Consistently with the original SELSA-S instrument (DiTommaso et al., 2004), this study also confirmed significant correlations between certain loneliness subscales and attachment prototypes ( $r=.10 - .28$ ). The assumption that loneliness correlates with secure attachment negatively and with anxious attachment positively was confirmed.

Other general assumptions confirmed were related to the number of close social contacts, divorced parents, and household type in terms of adolescent loneliness. Literature provides loneliness studies focused on the impact of divorce on the couple itself (Tilburg et al., 2015; Yárnoz et al., 2008). However, children and youth who experienced parents' divorce can also be studied in terms of consequences. Theory reflects loneliness as a consequence and this is accepted by the academic community (Murphy, 1991; Jones, 1992; Civitci et al., 2009). Based on the empirical findings, it can be stated that adolescents with divorced/separated parents scored significantly lower in family loneliness than adolescents from families without such experience. As for household types, adolescents living with both parents scored higher in romantic loneliness and lower in family loneliness than their counterparts.

The research team believes that their research review successfully confirmed the multidimensionality of loneliness as a social phenomenon as well as the validity of the three-subscale SELSA-S instrument in its Slovak version. This instrument properly captures the multidimensionality of loneliness and it is suitable for use with adolescents as a target group.

### **Conclusion**

The authors are aware of certain limits in this study. It was primarily focused on adolescents as a target group in which loneliness is present, but not addressed enough in theory. Future research should stratify the research file according to further demographic characteristics, mainly age, to allow for a comparison.

Adolescence as a developmental stage is specific in terms of the experiencing of loneliness. According to Weiss (1985), a deficit in affiliation or attachment can be experienced in a more intense way during this period in comparison with later developmental stages. It is supported by theoretical as well as empirical analyses (Heinrich & Gullone, 2006; Salimia & Jowkar,

2011) that have confirmed more intense experiencing of loneliness in adolescence. It results from relative personality immaturity and an increased need of social and emotional experiences (Seginer & Mahajna, 2004; Williams, 1983). To summarise, it can be stated that the level of loneliness in adolescence is roughly comparable to social and emotional loneliness in other target groups, *e.g.*, young adults (Adamczyk & DiTommaso, 2014; Amorim et al., 2019; Cecen, 2007). However, adolescents score lower in romantic loneliness in comparison to other target groups (Adamczyk & DiTommaso, 2014; Amorim et al., 2019; Chalise et al., 2010; Tomás et al., 2019). This fact can be explained in terms of developmental specifics - adolescence is the time when the first experience with romantic relationships is gained including the gradual building of an attachment to the romantic partner. However, the loss of a romantic partner does not necessarily lead to emotional loneliness, since adolescence as a developmental period is characterised mainly by increased affiliation in other social relationships as well.

In the context of adolescence, the Weiss (1985) loneliness model can be considered suitable, therefore the SELSA-S questionnaire was selected despite the fact that originally it was designed for an adult population. Previous research has shown that SELSA-S can be successfully used in adolescent populations as well (Baumgartner & Urbanová, 2019; Goossens et al., 2009; Molčanová et al., 2007; Rahmani et al., 2016; Salimia & Jowkar, 2011).

However, in the context of theory, the presented empirical results provide sufficient evidence of the psychometric attributes pertaining to the Slovak version of the SELSA-S instrument as being comparable with the original English as well as other language versions. It has been shown that in the Slovak environment, this version of the instrument can be successfully used to identify social and emotional loneliness in adolescents as a target group on which the psychometric verification was performed. The results have again confirmed the validity of the SELSA-S instrument. This paper provides further evidence on the validity of factors related to social and emotional loneliness. The authors have also showed that loneliness as a social construct can be of a multifactorial nature, which is consistent with the theory. The validated methodology contributes to the research of loneliness and its social and emotional aspects in the Slovak environment.

It is important that this is the first methodology identifying the level of emotional and social loneliness adapted for the Slovak conditions. The

discussion of its use in the adolescent population contributes to understanding loneliness as a multi-dimensional phenomenon experienced by all population groups.

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## Appendix

### Slovak SELSA-S Questionnaire

DiTommaso, Brannen, & Best, 1999 (original)

Lichner, Žiaková, & DiTommaso, 2020 (slovak adaptation)

### SELSA-S

Na tejto strane sa nachádza niekoľko výrokov, ktorými by mohol jednotlivец opísať svoje sociálne vzťahy. Pozorne si každý výrok prečítajte a uveďte, do akej miery sa s jednotlivými výroky stotožňujete vy. Použite pritom 7-bodovú stupnicu priradenú ku každej otázke (vpravo).

Zamyslite sa nad vzťahmi so svojim partnerom, rodinou a priateľmi *za posledný rok*. Zakrúžkujte číslo, ktoré najlepšie vystihuje, do akej miery daný výrok vystihuje vaše myšlienky a pocity ZA POSLEDNÝ ROK. Odpovedzte, prosím, na každú otázku.

*Za posledný rok:*

	Silne nesúhlasím	1	2	3	4	5	6	7	Silne súhlasím
1. Za posledný rok som sa v prítomnosti svojej rodiny cítil osamelý.	1	2	3	4	5	6	7		
2. Za posledný rok som mal pocit, že som súčasťou partie priateľov.	1	2	3	4	5	6	7		
3. Za posledný rok som mal romantického partnera, s ktorým som sa delil o svoje najintímnejšie myšlienky a pocity.	1	2	3	4	5	6	7		
4. Za posledný rok som sa nemohol spoľahnúť, že niekto z mojej rodiny mi poskytne podporu a povzbudenie, a chýbalo mi to.	1	2	3	4	5	6	7		
5. Za posledný rok moji priatelia rozumeli dôvodom môjho konania a argumentom.	1	2	3	4	5	6	7		
6. Za posledný rok som mal romantického partnera alebo manžela, ktorý mi poskytoval potrebnú podporu a povzbudenie.	1	2	3	4	5	6	7		
7. Za posledný rok som nemal priateľa/priateľov, s ktorými by som sa mohol podeliť o svoje názory, a chýbalo mi to.	1	2	3	4	5	6	7		
8. Za posledný rok som k svojej rodine cítil blízkosť.	1	2	3	4	5	6	7		
9. Za posledný rok som sa mohol spoľahnúť na to, že mi priatelia pomôžu.	1	2	3	4	5	6	7		
10. Za posledný rok som túžil po uspokojujúcejšom romantickom vzťahu.	1	2	3	4	5	6	7		
11. Za posledný rok som sa cítil súčasťou svojej rodiny.	1	2	3	4	5	6	7		
12. Za posledný rok sa o mňa moja rodina naozaj zaujímala	1	2	3	4	5	6	7		
13. Za posledný rok som nemal priateľa/priateľov, ktorí by ma pochopili, a chýbalo mi to.	1	2	3	4	5	6	7		
14. Za posledný rok som mal romantického partnera, ktorého som robil šťastným.	1	2	3	4	5	6	7		
15. Za posledný rok sa mi nesplnila potreba blízkeho romantického vzťahu.	1	2	3	4	5	6	7		