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Prediction power of sense of coherence on loneliness among high-school students

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Abstract: The paper deals with the relationship between Sense of Coherence and loneliness among adolescents. The research focuses on the correlation between Sense of Coherence and loneliness, and the prediction power between these variables. In the present study, high school students (N = 800) completed the UCLA Scale of Loneliness and Sense of Coherence scale that consists of three components: Comprehensibility, Manageability and Meaningfulness. As the results show, all the components of Sense of Coherence correlate with loneliness on the level of statistical significance < 0,01. LRA analysis shows that Sense of Coherence significantly predicts loneliness and explained 40,9% of the variance among high-school students.

Keywords: sense of coherence, loneliness, adolescence

1 Introduction

Sense of Coherence is a key concept of the salutogenic theory developed by the medical sociologist A. Antonovsky. Antonovsky defined Sense of Coherence (henceforth, SOC) as "*a global orientation that expresses the extent to which one has a pervasive, enduring though dynamic feeling of confidence that (1) the stimuli deriving from one's internal and external environments in the course of living are structured, predictable, and explicable; (2) the resources are available to one to meet the demands posed by these stimuli; and (3) these demands are challenges, worthy of investment and engagement.*" (Antonovsky, 1987, p. 19). It can also be said that SOC is a global orientation of a person to view life as structured, manageable, and meaningful, since the three main elements of SOC, described in Antonovsky's definition, are comprehensibility, manageability and meaningfulness. SOC is a personal disposition, it is a way of thinking, being and acting that enables one to identify and use one's own internal as well as external resources to promote one's health and well-being (Eriksson & Lindström, 2006).

In adolescence, which is a period of many physical, emotional and behavioural changes, SOC might be an important disposition of a young person to cope effectively with the new demands. An adolescent with a strong SOC, who perceives the developmental tasks as manageable, meaningful and as positive challenges, will probably have an easier path toward adulthood. It

has been argued that during adolescence, young people review their coping resources through different experiences and their SOC varies during this time (Braun-Lewensohn, Idan, Lindström, & Margalit, 2017). Antonovsky & Sagy (1986) also proposed that during adolescence, SOC is strengthening and at the end of this developmental period it should be stabilized. According to recent research findings, however, there is no significant change in SOC between the ages of 15 to 18 (Honiken & et al., 2008) or 16 to 19 (Kröninger-Jungaberle & Grevenstein, 2013), suggesting that SOC is established and stabilized earlier in life, already during childhood.

Sense of Coherence seems to be tightly connected to one's relationships. According to Eriksson (2017), SOC is reflected in the way we meet and treat other people. Bauminger et al. (2008) stated that SOC of a child depends on the consistency and quality of interactions with important figures in his/her life. Those with secure and close relationships will more likely see the world as secure, stable or manageable. Research findings suggest that the quality of a parent-child relationship (García-Moya, Moreno, & Jiménez-Iglesias, 2013), family functioning (Marsh, Clinkinbeard, Thomas, & Evans, 2007), parental style, ease of communication with parents or parents' knowledge about their children's lives (García-Moya, Rivera, Moreno, Lindström, & Jiménez-Iglesias, 2012) are all important predictors of SOC in adolescent

age. It is not only the family environment, however, but the broader social network that seems to play a role in development of SOC. Positive models of behaviour in the peer group, classmate support, perceived teacher support (García-Moya, Moreno, & Jiménez-Iglesias, 2013) or perceived social support in general (Marsh, Clinkinbeard, Thomas, & Evans, 2007) were found to be predictive of SOC in adolescence. The degree of perceiving the world as structured, manageable, and meaningful might in turn affect the quality of the relationships. A young person with strong SOC might be more likely to develop trust and commitment in relationships with other people, thus building stronger and closer friendships. SOC has been found to directly affect, for example, the intimacy of a relationship with the best friend in adolescents (Bauminger, Finzi-Dottan, Chason, & Har-Even, 2008). Children who report lower levels of SOC were also found to be less accepted by their peers (Efrati-Virtzer & Margalit, 2009). One of the most important developmental tasks of adolescence – to develop intimate relationships with peers – therefore seems to be influenced by the level of SOC.

As part of this developmental task, adolescents distance themselves from their parents and relations with peers gain in importance. Their social world is going through transitions, making them more vulnerable to loneliness. Elevated levels of loneliness in late adolescence have been reported by numerous research (Beutel, et al., 2017; Luhmann & Hawkley, 2016) also stressing the possible negative effects of loneliness on later life, including risk of depression, cardiovascular diseases or overall poor self-rated health (Goosby, Bellatorre, Walsemann, & Cheadle, 2013). Loneliness can be defined as a distressing experience resulting from the discrepancy between preferred and actual quality or quantity of social relationships of an individual (Perlman & Peplau, 1984). In line with the above mentioned, SOC as a factor affecting close peer relationships in adolescence can be considered a protective factor when it comes to loneliness. In fact, there is research evidence supporting this idea. A negative correlational relationships between Sense of Coherence and loneliness have been found in samples of third graders with and without reading difficulties (Al-Yagon & Margalit, 2006), of fifth-sixth graders (Sharabi, Levi, & Margalit, 2012), or adolescents with and without learning disabilities (Idan & Margalit, 2014). These studies indicated that children or adolescents with high levels of SOC tended to report lower feelings of loneliness than those with a low SOC. The aim of this study is to test whether this relationship between SOC and loneliness can be found in Slovak adolescents as well, and explore the prediction power between these variables.

2 Research

2.1 Sample

The research sample consisted of 800 high school students aged 15 to 19. The respondents were from the following regions of Slovakia: Nitra, Bratislava, Banská Bystrica, Prešov, Trenčín, Trnava and Žilina. According to the approximation of Morgan and Krejcie (1970; In Tomšik, 2017), at least 786 respondents must be included in the set, with a percentage distribution corresponding to the size of the basic set in each region. This criterion has been met (Confidence 95,0%, Margin of Error 3,5%). Our research sample consists of 320 male and 472 female respondents (8 uncategorized), with an average age of 16,81 years (SD = 1,567). In total, 1000 questionnaires were distributed, which means that the return rate of the questionnaires was 80,0%. The questionnaires were administered in a paper-pencil form (81,8%) and online (18,2%) using the quota sampling technique. Respondents had approximately 30 minutes to complete the questionnaires.

2.2 Methods

UCLA Scale of Loneliness

The widely used UCLA Scale of Loneliness was administered as a measure of loneliness (adapted for the Slovak conditions). The scale was first developed by Russell, Peplau and Ferguson (1978) and has since gone through several revisions. The scale consists of 20 items, 9 of them are worded positively (non-lonely items), while 11 of them are worded negatively (lonely items). The respondents are supposed to indicate how often they feel the way described by the item on a scale ranging from 1 to 5. The scale is one-dimensional, the higher the overall score, the lonelier the respondents report feeling. The authors report a high reliability of the scale ranging from 0,89 to 0,94 across different samples. In our sample, Cronbach's alpha is α = 0,85 with a split-half reliability of 0,85.

Orientation to Life Questionnaire

To measure the Sense of Coherence, a standardized Orientation to Life Questionnaire developed by Antonovsky was used. The questionnaire consists of 29 items that correspond to three dimensions: comprehensibility (cognitive component – 11 items), meaningfulness (behavioural component – 8 items) and manageability (motivational component – 10 items). The respondents indicate their answers to stated questions on a scale from 1 to 7. The questionnaire was found to have a satisfactory internal consistency, Cronbach's alpha ranging from α = 0,82 to α = 0,91 (Antonovsky, 1983, In: Chamberlain, & Zika, 1988). In our research, the internal consistency was found to be 0,83; while the split-half reliability was 0,80.

2.3 Statistical analysis

For the description of the research data, detecting associations between variables and for detecting differences between research groups, statistical programs SPSS (Statistical Package for Social Science ver. 25) and STATA 13 were used. MCAR test (Little's Missing Completely at Random) was used to verify the missing data. After assuring that the data in the file are missing randomly, the Missing Value Analysis (Expectation-Maximization) method was applied to replace the missing data. To verify the normality of the research data, the Kolmogorov-Smirnov test was used. To determine the linear relationship between research variables, Spearman's rank correlation coefficient was used. We also used the linear regression analysis (Enter method) based on the Breusch-Pagan test of homoscedasticity to determine the predictive power of Sense of Coherence on loneliness among high-school students.

3 Results

Table 1 presents the descriptive statistics of the scores obtained by students in our research sample in measures of loneliness and SOC, including the overall score for SOC as well as its three components.

Table 2 summarizes the Spearman's rank correlation coefficient between loneliness (UCLA) and Sense of Coherence and its subscales (Comprehensibility, Manageability, Meaningfulness). The results show that significant correlations were obtained between loneliness and Sense of Coherence ($r_s = 0,640^{**}$). Significant correlations were also obtained between loneliness and all the components of the Sense of Coherence tool: Comprehensibility ($r_s = 0,444^{**}$), Manageability ($r_s = 0,569^{**}$), Meaningfulness ($r_s = 0,562^{**}$). Although all the obtained correlations were positive, it should be noted that the score of Sense of Coherence is reversed.

Tables 3 and 4 show that all the components of the Sense of Coherence scale significantly predicted the loneliness of the high school students. Before testing, we examined the multicollinearity of the model. All VIF values were within acceptable limits (VIF ≤ 3,3; Kock, & Lynn, 2012): Comprehensibility VIF = 1,483; Manageability VIF = 2,040; Meaningfulness VIF = 1,636. Sense of Coherence made a significant contribution to loneliness (R^2 /Adjusted/ = 0,409; F = 554,579; Sig. < 0,001; β = 0,640), where a higher level of Sense of Coherence decreased the loneliness (note that the score of Sense of Coherence is reversed). The value of R^2 (Adjusted) = 0,328 indicated that Manageability accounted for 32,8% (in total model β = 0,280) of the total variance of loneliness among high school students; Meaningfulness accounted for 32,6% (in total model β = 0,341) of the total variance of loneliness among high school students; and Comprehensibility accounted for 19,0% (in total model β = 0,143) of the total variance of loneliness among high school students.

4 Discussion

The aim of our study was to explore the relationship between loneliness and Sense of Coherence in a representative sample of Slovak adolescents and determine the predictive power of Sense of Coherence and its three main components in relation to loneliness. Adolescence is a developmental period with a high risk of loneliness that might have negative effect on mental and physical health of an individual later in life (Goosby, Bellatorre, Walsemann, & Cheadle, 2013). Strong Sense of Coherence as an inner resource might play an important role in coping with the demands of adolescence, including the task of developing strong and intimate relationships, thus preventing feelings of loneliness. Our results suggest that there is a significant correlation between loneliness and SOC. The more manageable ($r_s = 0,569$), meaningful ($r_s = 0,562$) and comprehensible ($r_s = 0,444$) life is perceived by an adolescent, the less lonely he/she feels. This finding is in line with previous research that similarly found a negative correlation between loneliness and SOC in adolescents (Idan & Margalit, 2014), as well as younger children (Al-Yagon & Margalit, 2006; Sharabi, Levi, & Margalit, 2012).

In our research, Sense of Coherence was identified as a significant negative predictor of loneliness, explaining 40,9% of variance in loneliness in high school students. Among the three components of Sense of Coherence, Meaningfulness was shown to be the strongest predictor (β = 0,341; Adjusted R^2 = 0,326), followed by Manageability (β = 0,280; Adjusted R^2 = 0,328) and Comprehensibility (β = 0,143; Adjusted R^2 = 0,190). There is very little research-based explanation for the differences in predictive values of SOC components, as beliefs and perceptions received little attention in predictive models of loneliness thus far. In previous research, cognition was not identified as a significant predictor of loneliness (Fees, Martin, & Poon, 1999), which is in line with Comprehensibility, a cognitive component of SOC, being the weakest predictor of the three. On the other hand, a behavioural component of SOC, Meaningfulness, was found to be the strongest predictor. The bidirectional relationship between meaning in life and loneliness seems to be supported by both psychological (Stillman & Lambert, 2013) and neurological literature (Mwilambwe-Tshilobo, et al., 2019).

Nevertheless, it is all three components of SOC that seem to play a role in feelings of loneliness. To prevent loneliness, it might be helpful for a young person to identify (1) when, where and why he/she does or does not feel lonely, in order to perceive feelings of loneliness as predictable and explicable (Comprehensibility); (2) what he/she can do to overcome feelings of loneli-

Tab. 1: Descriptive statistics

Measure	N	M	SD	SEM	MIN	MAX	γ_1	γ_2
Loneliness	800	68,54	11,487	0,406	28	92	−0,389	−0,307
Comprehensibility	800	41,67	7,177	0,254	22	68	0,209	0,165
Manageability	800	42,25	7,295	0,258	16	62	−0,111	0,121
Meaningfulness	800	39,80	8,507	0,301	8	56	−0,517	0,123
Sense of Coherence	800	123,71	19,024	0,673	57	183	−0,118	0,163

* Note: N – number; M – mean; SD – standard deviation; SEM – standard error of the mean; MIN – minimum score; MAX – maximum score; γ_1 – skewness; γ_2 – kurtosis

Tab. 2: Spearman's rank correlation coefficient

Measure	1	2	3	4
1. Loneliness	–			
2. Comprehensibility	0,444**	–		
3. Manageability	0,569**	0,555**	–	
4. Meaningfulness	0,562**	0,387**	0,623**	–
5. Sense of Coherence	0,640**	0,752**	0,861**	0,837**

* Note.: ** – p > 0,01 Level of Statistics Significance of r_s

Tab. 3: Linear regression analysis. Model summary

Model	R	R^2	Adj. R^2	F	Sig.	df1	df2
1	0,640[a]	0,410	0,409	554,579	< 0,001	1	799

a. Predictors: (Constant). Sense of Coherence (overall score)

*Note: R – Multiple Correlation Coefficient; R^2 – Coefficient of Determination; Sig. – Level of Statistical Significance of F; df – degrees of freedom

Tab. 4: Linear regression analysis. Coefficients table

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations		
	Beta	Std. Error	β			Zero-order	Partial	Adj. R^2
1 Comprehensibility	0,229	0,053	0,143	4,353	< 0,001	0,437	0,152	0,190
1 Manageability	0,441	0,061	0,280	7,261	< 0,001	0,573	0,249	0,328
Meaningfulness	0,460	0,047	0,341	9,851	< 0,001	0,571	0,330	0,326
2 Sense of Coherence	0,387	0,016	0,640	23,549	< 0,001	0,640	0,640	0,409

a. Dependent Variable: Loneliness

* Note: β – Beta Coefficient; t – t Value; Sig. – Level of Statistics Significance of t

ness or who can he/she ask for help, in order to perceive his/her inner and outer resources as sufficient and efficient (Manageability); and (3) to realise how important it is to build close and intimate relationships with others, in order to perceive loneliness as worth fighting for (Meaningfulness; Margalit, 2010).

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