CONFIRMATORY FACTOR ANALYSIS OF ROSENBERG SELF-ESTEEM SCALE IN A SAMPLE OF SLOVAK HIGH SCHOOL AND UNIVERSITY STUDENTS

Peter HALAMA

Institute of Experimental Psychology, Slovak Academy of Sciences
Dúbravská cesta 9, 813 64 Bratislava, Slovak Republic
E-mail: Peter.Halama@savba.sk

Abstract: The contribution presents results of confirmatory factor analysis of the Rosenberg Self-Esteem Scale (RSES) among Slovak subjects. The sample consisted of 920 high school and university students (365 males, 555 females). Using LISREL software, eight different models of factor structure were estimated. Models were formulated on the basis of previous results, and they included a one-factor model, a one-factor model with correlated uniquenesses of negatively worded items, a one-factor model with correlated uniquenesses of positively worded items, four two-factor models (positive and negative self-esteem, self-liking and self-competence, general and transient self-esteem, self-derogation and defense of self), and a three-factor model (social comparison, positive and negative self-esteem factors). The best fit indices were found for the model one-factor with correlated uniquenesses of negatively worded items representing unidimensional construct contaminated by effect associated with negatively worded items. Satisfactory fit indices were also found for the one-factor model with correlated uniquenesses of positively worded items, for the two-factor solution with positive and negative self-esteem and for the three factor solution. Correlational analysis revealed that factors based on these models differ in their correlations with Big Five personality traits as measured by NEO-FFI. This suggests that Rosenberg Self-Esteem Scale can be used alternatively as one, two or three dimensional measure.

Key words: self-esteem, Rosenberg Self-Esteem Scale, confirmatory factor analysis

Self-esteem has been one of the most frequently studied psychological constructs in personality and social psychology research and it has occupied psychologists almost from the beginning of the discipline (Tesser, 2003). Many research tools have been developed for measuring self-esteem and its different aspects. Rosenberg's Self-Esteem Scale (RSES) is one of the most-used self-esteem measures in psychological research. It was created in 1965 by Morris Rosenberg and soon became a very popular and wide-spread research tool. It was originally developed as a ten-item long, one-dimensional scale measuring global self-esteem - overall evaluative aspect of individual self-concept (Gray-Little, Williams, Hancock, 1997). The scale was translated and used in many languages, including East-European ones, e.g. Slovak (Ficková, 1999; Gurňáková, 2000), Czech (Blatný, Osecká, 1997; Balaštíková, Blatný, Kohoutek, 2004) and Estonian (Pullman, Allik, 2000).

The RSES has been subjected to intense psychometric analysis. The analysis showed adequate internal consistency of

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the scale meeting the desired criteria. The Cronbach's alphas usually range between 0.7 and 0.9 with lower values in samples of the elderly (Gray-Little, Williams, Hancock, 1997). Slovak samples of secondary school and university students show a satisfactory level of internal consistency measured by Cronbach's alpha 0.76 (Halama, Bieščad, 2006), however, younger samples produce somewhat lower values, e.g. alpha = 0.65 in pupils of elementary schools aged from 10 to 14 (Sarková et al., 2006). This suggests that the scale could be less comprehensible to subjects too young for it. The estimation of reliability by test-retest correlations revealed that the scale shows considerably stability over time and therefore that global self-esteem can be considered as a trait (Tasser, 2003). Robins, Hendin and Trzesniewski (2001) verified the construct validity of the scale. They found strong correlations of RSES with other scales measuring self-esteem (0.62-0.76) and with other related constructs. The authors also confirmed that RSES predicts many aspects of mental health, e.g. life satisfaction, positive emotions, depression, perceived stress, etc. Several studies performed item analysis of the scale. In their IRT analysis Gray-Little, Williams and Hancock (1997) found the items *I wish I could have more respect for myself* and *I certainly feel useless at times* less discriminating in comparison with other items. Sarková et al. (2006) found that the item *I wish I could have more respect for myself* had zero item-total correlation in the sample of pupils. Halama and Bieščad (2006) used both classical test theory and item response theory to analyze RSES items and they found that both approaches revealed the unsatisfactory qualities of the item *I feel that I am a person of worth, at least on an equal plane with others* (low item-total correlation, low discrimination). As the item in the original version did not lack psychometric qualities, they attribute it to the complicated translation.

A specific question concerning RSES is its factor structure. Originally, RSES was set as one-dimensional and several later studies agreed with this assumption. Gray-Little, Williams and Hancock (1997) applied exploratory factor analysis and although it extracted two factors with eigenvalue over 1, the second-factor low eigenvalue was the reason why they argued for a one-dimensional solution. Pullman and Allik (2000) found that a one-factor solution best fits the data collected on the Estonian sample. Another support for a one-factor model comes from the authors' taking into account positive and negative items. They considered frequently identified two-factor solution (positive and negative self-esteem) as a side effect of negatively worded items (Marsh, 1996; Corwyn, 2000). Therefore, they consider the RSES as unidimensional but contaminated by a method effect associated with negatively worded items. Both Marsh (1996) and Corwyn (2000) argue for verbal ability as an important source of this effect, because the result revealed that the correlation between positive and negative self-esteem factors tends to diminish with increased verbal ability. Greenberger et al. (2002) also argue for the effect of negative wording producing the artificial two-factor structure, because they found that after rewording all items into a positive direction, the two-factor structure changed to a one-factor. However, there appeared two other studies confirming the one-factor structure of the RSES with side effect; but in these cases the effect was primarily associated with positively worded items (Wang et al., 2001; Martín-Albo et al., 2007). Wang et al. (2001)

found this effect on the sample of drug users and therefore they suggest that this effect may be caused not only by verbal ability, but also by psychological feelings that the respondents have toward an instrument.

The research has produced several two-factor solutions. The most frequent structure reported in the analyses is the already mentioned structure with two factors: positive self-esteem (positively worded items, e.g. *I feel that I have a number of good qualities*) and negative self-esteem (negatively worded items, e.g. *I certainly feel useless at times*). This structure was revealed in research in Slovakia as well in the Czech Republic (Halama, Bieščad, 2006; Sarková et al., 2006; Blatný, Osecká, 1994). Shanani, Dipboye and Phillips (1990) see support for this solution in the fact that positive and negative self-esteem (self-derogation and self-enhancement, as they are convinced) differ in their correlations with work-related attitudes. Alternative two-factor models were postulated in the other studies. Tafarodi and Milfne (2002) argue for self-competence and self-liking factors (also named assessment and acceptance). Self-competence has an affinity towards assessment of personal competences and abilities (e.g., *I feel that I have a number of good qualities*) and self-liking towards acceptance and appreciation of self (e.g., *I take a positive attitude toward myself*). Corwyn (2000) presents two other two-factor models based on previous research. The model of Kaufmann et al. (in Corwyn, 2000) distinguishes between general self-esteem and transient self-esteem. General self-esteem is related to global and permanent self-evaluation (e.g., *All in all, I am inclined to feel that I am a failure*) and transient self-esteem to the situational self-evaluation. This factor is saturated by items containing the phrase "at times" (e.g., *At times I think I am no good at all*). The model of Kaplan and Pokorny (in Corwyn, 2000) embraces factors of self-derogation and conventional defense of individual worth. Self-derogation is formed by items in some way related to detraction of self, while defense of worth is concerned with appreciation of self.

The three-factor solution with a special factor named social comparison appending positive and negative self-esteem was first identified in the 70s and 80s (Alwin, Jackson, in Corwyn, 2000). This solution was also identified in research in the Czech Republic (Blatný, Osecká, 1994), where the authors came up with it as an alternative to the two-factor solution. Although it was not fully confirmed in later research on a sample of adolescents done by these authors (Osecká, Blatný, 1997), later confirmatory factor analysis on the bigger sample (n = 708) showed that this solution had the best fit with the data (Blatný, Urbánek, Osecká, 2006). The authors attribute this fact to the higher dependence on the opinions of others in Czech adolescents caused by cultural particularities.

The present study focuses on the factor structure of RSES in the sample of Slovak students of high schools and universities by means of confirmatory factor analysis. It also aims at analyzing how the identified factors correlate with Big Five personality factors.

METHOD

Sample

In this analysis, archival data from several studies was used. The subjects filled out the Rosenberg Self-Esteem Scale as part of a questionnaire set. Altogether 920 subjects were included in the analysis. 365 of

them were males and 555 females. Their ages ranged from 15 to 32, (mean 18.56 years, standard deviation 2.48). The subjects were students of secondary schools and universities in Bratislava, Trnava and Košice regions. 289 of the subjects also filled out the NEO-FFI questionnaire, which was used for correlation analysis of the RSES factors with Big Five traits.

Measure

A Slovak translation of the *Rosenberg Self-Esteem Scale (RSES)* was employed (E. Ficková). This version of the scale consists of 10 items and it uses a 4-point Likert-like scale format (ranging from absolutely disagree to absolutely agree). Five items are formulated positively and five items negatively. As the order of the items of the Slovak version differs from that of the original version, Table 1 contains the numbers of the items used in the Slovak version. Negatively formulated items were reversed before analysis so that higher values of all items refer to high self-esteem, and lower values to low self-esteem. Average score in our sample was 29.78 with standard deviation 4.86. The scale showed satisfactory internal consistency with Cronbach alpha 0.78.

NEO Five Factor Inventory (NEO-FFI) by Costa and McCrae (Slovak version was made by Ruisel and Halama, 2007) was used to measure five basic personality traits. The NEO-FFI measures neuroticism, extraversion, openness to experiences, agreeableness and conscientiousness as defined in the five-factor theory. It has 60 items (12 for every dimension) and it is one of the most used questionnaires in personality research.

Estimated models

Eight models of hypothetical structure of the scale were estimated in the process of analysis (see Figure 1). They were suggested on the basis of previous results reviewed in the introductory part of this study. Model 1 represents the original one-dimensional structure of the RSES, with all items saturated by the factor of Global self-esteem (GLO). Model 2 comprises one factor, but there are also hypothesized correlations between uniquenesses of negatively worded items (negative wording method effect). Model 3 is similar

Table 1. Items of Rosenberg Self-Esteem Scale

1. I feel that I am a person of worth, at least on an equal plane with others
2. All in all, I am inclined to feel that I am a failure
3. I feel that I have a number of good qualities
4. I am able to do things as well as most other people
5. I feel that I do not have much to be proud of
6. I take a positive attitude toward myself
7. I wish I could have more respect for myself
8. On the whole, I am satisfied with myself
9. I certainly feel useless at times
10. At times I think I am no good at all

to Model 2, but correlations are hypothesized between uniquenesses of positively worded items. Four other four models represent different versions of two-factor structure. Each of these models supposes the factors to be correlated. Model 4 consists of the factors Positive self-esteem (POS, positively worded items - 1, 3, 4, 6, 8) and Negative self-esteem (NEG, negatively worded items - 2, 5, 7, 9, 10). Model 5 consists of the factors Competence (COM, items 1, 2, 3, 4, 5) and Self-liking (LIKE, items 6, 7, 8, 9, 10). Model 6 consists of the factors General self-esteem (GEN, items 1, 2, 3, 4, 5, 6, 7, 8) and Transient self-esteem (TRA, items 9, 10). Model 7 consists of the factors Self-derogation (DER, items 2, 5, 6, 7, 8, 9, 10) and Defense of self (DEF, items 1, 3, 4). Finally, Model 8 consists of three factors: Social comparison (COM, items 1, 3, 4), Positive self-esteem (POS, items 6, 7, 8) and Negative self-esteem (NEG, items 2, 5, 9, 10).

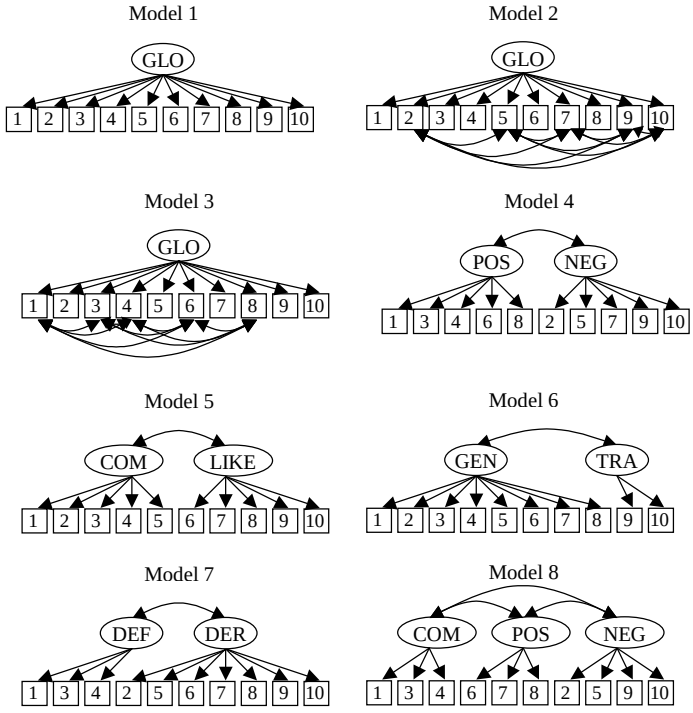

Figure 1. Eight hypothetical models of RSES structure (the numbers in the squares indicate item numbers as displayed in Table 1)

RESULTS

Confirmatory factor analysis was carried out using the LISREL 8.51 software (Jöreskog, Sörbom, 2001). The models were estimated on the basis of covariance matrix between items by the Maximum Likelihood Method (MLM) for continuous data. Several fit indices were used to evaluate models' fit (Urbánek, 2000): chi-square and degrees of freedom, Comparative fit index (CFI), Non-normed fit index (NFI), Root mean square of approximation (RMSEA) 90% confidence interval and Akaike information criterion (AIC). The fit indices of the estimated models are presented in Table 2. Four models (Models 1, 5, 6, 7) can be rejected as their fit indices suggest unsatisfactory agreement with the data (chi-square - df ratio higher than 5, CFI and NNFI less than 0.9, RMSEA higher than 0.08). Three models (Models 2, 3, 8) have acceptable fit with the data. Of these models, the one-factor model with correlated uniquenesses of negatively worded items has the best fits to the data, and this is also supported by the lowest AIC index. Model 4 is on the borderline of accepting or refusing. CFI and NNFI are above 0.9, however, chi-square - df ratio exceeds 5, and RMSEA 90% confidence interval extends slightly into the area of rejecting. These 4 models with good or borderline fit were selected for further analysis. Table 3 presents standardized factor loadings and correlations between factors or item uniquenesses (due to space limitation, only factor loadings for selected models are presented).

As previous research (e.g., Blatný, Osecká, 1994, 1997; Corwyn, 2000) suggested possible variation of RSES structure in different groups (e.g., adolescence and adults), additional analysis focused on the models' fit in the groups according to age and gender. The only models estimated in these groups were those with acceptable data fit in the whole sample. Table 4 presents the fit indices of these four models estimated separately in the group of adolescents (15-18 years) and young adults (more than 18 years).

Table 2. Fit indices of estimated models

	Chi-square (degrees of freedom)	CFI	NNFI	RMSEA 90% confidence interval	AIC
Model 1	574.77 (35)	0.78	0.72	0.120-0.140	614.78
Model 2	108.11 (25)	0.96	0.93	0.049-0.072	168.11
Model 3	118.19 (25)	0.96	0.93	0.052-0.075	178.19
Model 4	196.29 (34)	0.93	0.90	0.062-0.082	238.29
Model 5	563.98 (34)	0.80	0.73	0.120-0.130	605.98
Model 6	345.56 (34)	0.87	0.82	0.090-0.010	387.56
Model 7	481.05 (34)	0.82	0.76	0.011-0.130	523.05
Model 8	139.50 (32)	0.95	0.93	0.054-0.075	199.51

Table 3. Standardized factor loadings and factor inter-correlations in four models with acceptable fits

Item	Model 2	Model 3	Model 4		Model 8		
	GLO	GLO	POS	NEG	COM	POS	NEG
1	0.31	0.18	0.31		0.36		
2	0.42	0.59		0.55			0.60
3	0.50	0.26	0.50		0.62		
4	0.49	0.34	0.48		0.62		
5	0.34	0.50		0.50			0.39
6	0.75	0.43	0.75			0.76	
7	0.35	0.42		0.42		0.38	
8	0.77	0.47	0.77			0.78	
9	0.38	0.70		0.71			0.71
10	0.40	0.74		0.74			0.75

Correlations between factors or items' uniqueness												
	It	2	5	7	9	It	1	3	4	6	POS-NEG - 0.59	COM-POS - 0.70 COM-NEG - 0.48 NEG-POS - 0.58
	5	.26				3	.17					
	7	.06	.05			4	.15	.30				
	9	.22	.19	.17		6	.14	.26	.17			
	10	.26	.19	.16	.44	8	.13	.22	.17	.41		

Table 4. Fit indices of selected models in age groups

	Age from 15 to 18 (n = 538)					Age more than 18 (n = 382)				
	Chi-square (degrees of freedom)	CFI	NNFI	RMSEA 90% confidence interval	AIC	Chi-square (degrees of freedom)	CFI	NNFI	RMSEA 90% confidence interval	AIC
Model 2	48.69 (25)	0.97	0.95	0.029-0.072	108.69	55.01 (25)	0.97	0.94	0.036-0.076	115.01
Model 3	65.69 (25)	0.95	0.92	0.047-0.087	125.69	80.84 (25)	0.94	0.89	0.058-0.096	140.84
Model 4	92.36 (34)	0.93	0.91	0.052-0.086	134.36	120.65 (34)	0.91	0.88	0.066-0.098	162.65
Model 8	85.97 (32)	0.94	0.92	0.051-0.086	131.97	98.03 (32)	0.94	0.91	0.057-0.090	144.03

Table 5. Fit indices of selected models in gender groups

	Males (n = 365)					Females (n = 555)				
	Chi-square (degrees of freedom)	CFI	NNFI	RMSEA 90% confidence interval	AIC	Chi-square (degrees of freedom)	CFI	NNFI	RMSEA 90% confidence interval	AIC
Model 2	45.64 (25)	0.97	0.95	0.025-0.069	105.64	79.58 (25)	0.96	0.93	0.048-0.079	139.58
Model 3	29.86 (25)	0.99	0.99	0.000-0.050	89.86	121.79 (25)	0.93	0.88	0.069-0.099	181.79
Model 4	59.42 (34)	0.96	0.95	0.025-0.064	101.65	176.17 (34)	0.9	0.87	0.074-0.100	218.17
Model 8	59.80 (32)	0.96	0.92	0.029-0.068	105.80	134.37 (32)	0.94	0.91	0.063-0.090	110.00

Furthermore, correlations between RSES factors and five personality traits were analyzed in order to find whether the individual factors show different relations with other variables. On the basis of Models 4 and 8 with acceptable fit, new variables were computed as a sum of the items that were saturated by the factor. The negatively formulated items were left recoded, so that higher score of each factor refers to higher level of self-esteem. These variables were correlated with the score of Big Five personality traits as measured by NEO-FFI. The results are presented in Table 6. The total score of RSES (global self-esteem) has significant correlations with all Big Five factors, the highest one with neuroticism and extraversion, the lowest one with openness to experiences. The correlational analysis of RSES dimensions based on the two-factor model with positive and negative self-esteem as well as the three-factor model with social comparison, positive and negative self-esteem showed that these dimension are linked somewhat differently to the five personality traits. In the two-factor model the positive self-esteem dimension is related more to extraversion, openness to experiences, agreeableness and conscientiousness, while negative self-esteem is related more to neuroticism. Regarding the three-factor model, the dimension social comparison differs substantially from positive and negative self-esteem as well as from global self-esteem in its relations to Big Five traits. It shows no correlations with neuroticism and also higher correlation with openness than global self-esteem. It also achieved considerably higher correlations with extraversion, agreeableness and conscientiousness than did positive and negative self-esteem.

Table 6. Correlations between the RSES dimensions and Big Five personality dimensions measured by NEO-FFI

	Neuroticism	Extraversion	Openness	Agreeableness	Conscientiousness
One-factor model					
Global self-esteem	-0.407**	0.406**	0.195**	0.250**	0.341**
Two factors based on Model 4					
Positive self-esteem	-0.186**	0.485**	0.343**	0.370**	0.396**
Negative self-esteem	-0.494**	0.257**	0.036	0.101	0.225**
Three factors based on Model 8					
Social comparison	-0.004	0.479**	0.416**	0.438**	0.419**
Positive self-esteem	-0.403*	0.339**	0.140*	0.148*	0.235**
Negative self-esteem	-0.458**	0.241**	0.030	0.114	0.234**

* $p < 0.05$, ** $p < 0.01$

DISCUSSION

The results of the present study show that the model with best fit in the overall sample is the one-factor model (global self-esteem) with correlated uniquenesses of negative items (so-called negative wording method effect). It suggests that the structure of the Slovak translation of Rosenberg Self-esteem Scale can be most properly described as one-dimensional, with the effect of negatively worded items. These results are consistent with the results of several previous studies (Marsh, 1996; Corwyn, 2000). Both Marsh and Corwyn attribute this effect to verbal ability of respondents, which can result in subjects with low reading skills having more difficulty in correctly interpreting negatively worded items. To test this hypothesis, Corwyn (2000) estimated the two-factor model with positive and negative self-esteem in groups of subjects with different verbal ability. He found that that correlations between these two factors tended to increase with increased verbal ability, which means that two factors of RSES were less differentiated in subjects with satisfactory compared with those with low verbal ability. Corwyn therefore suggests that the scale could be used as one-dimensional, taking into consideration, however, possible bias coming from negatively worded items. The fact, that the simple one-factor model (Model 1) did not show satisfactory fit with the data in the present study (the same is true for Corwyn's study), should be reason for careful evaluation of the measurement errors related to these items in the further uses of RSES.

The estimation of the selected models across gender and age groups showed that the one-factor model with correlated uniquenesses of negative items had the best fit in all the groups with the exception of males. If the assumption of better verbal ability in an older group were hypothesized (the reason for this is only indirect, without measurement of the verbal ability), there could be no support for the smaller negative wording effect suggested by Corwyn (2000). The more important differences had been shown in the groups of males and females. While RSES structure in females clearly corresponds to the one-factor model with bias associated with negatively worded items, in males Model 3 (one-factor model with correlated uniquenesses of positively worded items) showed the best fit with the data. This suggests that response bias could be related to factors other than purely verbal ability, in this case namely to gender. The one-factor model with method effect associated with positively worded items was identified as the best fitting model in Spain (Martín-Albo et al., 2007). The authors even found slight gender differences, however in a way contrary to that in the present study (better fit for negative wording method effect in males and for positive wording method effect in females). These results are important mainly because they suggest that possible RSES method effect may differ across gender or culture groups. Further support for culture differences in positive and negative method effect is given by Schmitt and Allik (2005) who found that differences between the scores of negative and positive items vary across cultures and are related to several culture characteristics such as length of life and high literacy rate (tendency to treat positive and negative items equally) or collectivism and power distance (tendency to treat positive and negative items differently). Therefore, differences between males and females in RSES method effect could be related to

culture characteristics, especially broadly defined social norms, stereotypes or social roles for gender groups in different countries. These assumptions should, however, be examined in further research, which will be able to consider and measure the important aspects of self-esteem sources in different countries.

Correlation analysis of RSES factors with other personality constructs is a frequent way to examine their legitimacy (e.g., Shanani, Dipboye, Phillips, 1990; Greenberger et al., 2002). In the present study, Big Five personality traits were used to investigate the question of how the hypothesized factors relate to the personality traits. Previous research found that particularly neuroticism, extraversion and conscientiousness are typical correlates of RSES total score (e.g., Ficková, 1999; Pullman, Allik, 2000). Similar results appeared in this study, with highest correlations between RSES and neuroticism and extraversion. However, correlation analysis of the factors in two and three factor solutions showed that these factors are related to personality in a somewhat different way. As regards two factor structure, the differences are in all dimensions. There are namely substantially higher correlations of negative self-esteem with neuroticism, and of positive self-esteem with extraversion, openness, agreeableness and partly also with conscientiousness. From the factors based on the three-factor model, social comparison differs in its correlations from the other two factors, which have quite similar patterns of correlations. Taking into consideration that items of social comparison (three-factor model) are included in positive self-esteem in the two-factor model (positive self-esteem in two-factor model splits into social comparison and positive self-esteem in the three-factor model), it seems that social comparison is the factor with different relations to personality factors. While positive and negative self-esteem are predicted mainly by neuroticism and less intensely also by extraversion and conscientiousness, social comparison is not predicted by neuroticism, but by other factors (including openness and agreeableness). Blatný, Urbánek and Osecká (2006) emphasizes that Czech adolescents were found to have stronger feelings about the opinions of others than adolescents from other European countries. As the Czech and Slovak nations are cognate cultures, the same could be true for Slovak adolescents. Therefore it could be supposed that this aspect of self-esteem is an important part of the self-concept in Slovak subjects, and using RSES as a three-factor scale could be advantageous in the process of analysis.

CONCLUSION

The results of the confirmatory factor analysis gave most support for the one-factor solution with correlated uniquenesses of negative items (negative wording method effect). This is consistent with the results of several previous studies focused on RSES structure (Marsh, 1996; Corwyn, 2000). Therefore, using RSES as a one-dimensional scale should not be questioned. However, the results of our study suggested that method effect can vary across different groups, in this case males and females. As the results of this study are contrary to studies from other countries, e.g. Spain (Martín-Albo et al., 2007), the influence of social factors could by hypothesized. Correlational analysis of the factors based on the alternative models with acceptable fit with the data showed that there are meaningful differences in the way they are related to personality traits. Using RSES as multidimensional (with

two or three dimensions) could be therefore considered as a possible alternative in situations where more comprehensive analysis of self-esteem is applied.

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KONFIRMATÓRNA FAKTOROVÁ ANALÝZA ROSENBERGOVEJ ŠKÁLY SEBAHODNOTENIA NA VÝBERE SLOVENSKÝCH STREDOŠKOLÁKOV A VYSOKOŠKOLÁKOV

P. H a l a m a

Súhrn: Príspevok prezentuje výsledky konfirmatórnej faktorovej analýzy Rosenbergovej škály sebahodnotenia na slovenských respondentoch. Výber pozostával z 920 študentov stredných a vysokých škôl (365 mužov, 555 žien). Pomocou softwaru LISREL bolo odhadovaných osem rozličných modelov faktorovej štruktúry škály. Modely boli formulované na základe výsledkov predchádzajúcich štúdií a zahŕňali jednofaktorový model, jednofaktorový model s korelovanými chybami negatívnych položiek, jednofaktorový model s korelovanými chybami pozitívnych položiek, štyri dvojfaktorové modely (pozitívna a negatívna sebaúcta, sebakompentencia a sebapáčenie, všeobecná a prechodná sebaúcta, sebaznižovanie a obrana seba) a trojfaktorový model (sociálne porovnávanie, pozitívna a negatívna sebaúcta). Najlepšie indikátory zhody boli zistené pre model reprezentujúci jednodimenzionálny model so skreslením asociovaným s negatívne formulovanými položkami. Uspokojivé indikátory zhody boli zistené aj pre jednofaktorový model s korelovanými chybami pozitívnych položiek, pre dvojfaktorový model s pozitívnou a negatívnou sebaúctou a pre trojfaktorový model. Korelačná analýza ukázala, že faktory založené na týchto modeloch vykazujú odlišné korelácie s piatimi veľkými osobnostnými črtami meranými dotazníkom NEO-FFI. To vedie k záveru, že Rosenbergova škála sebahodnotenia môže byť alternatívne používaná ako jedno , dvoj alebo trojdimenzionálny nástroj.