

STRUCTURE OF ROSENBERG'S SELF-ESTEEM SCALE: THREE-FACTOR SOLUTION*

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Abstract: The study deals with the structure of the Rosenberg Self-Esteem Scale. In previous research several samples of Czech adolescents were obtained, yielding a similar three-factor structure as exploratory results. Confirmatory factor analysis was conducted on the joint sample (N = 708, 293 boys and 415 girls) and separately on a high school students group (N = 428, 184 boys and 244 girls) and a university students group as well (N = 280, 109 boys and 171 girls). Analyses corroborated the hypothesis about three-factor structure invariant in both groups. These factors are assertion of positive statements about self, denial of negative statements about self and factor of social comparison.

Key words: Rosenberg Self-Esteem Scale, confirmatory factor analysis, adolescents, culture

INTRODUCTION

According to Blascovich and Tomaka (1991), Rosenberg's Self-Esteem Scale (RSES, Rosenberg, 1965) belongs to the most widespread instruments for the measurement of global self-esteem. It was originally intended for the adolescents, but it was also applied to other samples of population. The RSES involves ten items evaluated by the respondents on a four-point (sometimes five-point) scale ranging from "I agree" to "I don't agree at all".

The RSES was originally intended as unidimensional and some current studies confirm this assumption (e.g., Gray-Little, Williams, Hancock, 1997). However, when subjected to factor analysis, two

factors usually emerged: the first factor is formed by positively worded items, the second by negatively worded items (Goldsmith, 1986; Hagborg, 1993, 1996; Hensley, Roberts, 1976; Kaplan, Pokorny, 1969; Tafarodi, Swan, 1995).

The interpretation of these factors differs with various authors. Some of these assume that it is about the positive and negative component of self-esteem: e.g. Stolin (1987) assumes that it is about positive self-esteem (or self-confidence) and negative self-esteem (or self-depreciation). Also according to Tafarodi and Swan (1995) the global self-esteem contains two dimensions: a sense of social worth, or self-liking, and a sense of personal efficacy, or self-competence.

Other authors look upon the two-factor structure as the artifact of measurement and consider the scale as unidimensional. They consider the emergence of two orthogonal factors as a result of the response set. Currently, this interpretation prevails on the grounds of results of a confirmatory

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factor analysis (e.g., Marsh, 1996; Shevlin, Bunting, Lewis, 1995), as well as on the grounds of results of the construct validation (Carmines, Zeller, 1994).

In our research (Blatný, Osecká, 1994) we analyzed the structure of the RSES in a sample of university students with the help of the exploratory factor analysis (Varimax, method of principal components). We have found out that the self-esteem in this sample is two-dimensional or three-dimensional. It is always possible to isolate positive and negative components of self-esteem which are formed by negatively or positively worded items. As the third factor, items based on social comparison are separated from positively worded items.

According to Hensley and Roberts (1976), the structure of self-esteem can change due to age. Therefore we replicated the research project with a sample of high-school students (Osecká, Blatný, 1997).

In the observed sample of high-school students it was possible to extract only two factors. The positively and negatively worded items did not divide into two factors. They formed the only bipolar factor: in the first factor, the positively worded items have a positive factor loading and the negatively worded items have a negative factor loading. However, this may not be the developmental specialty typical of adolescents: when analyzing another scale of self-esteem on a comparable sample of high school students and apprentices, we extracted positive and negative components (Osecká, Řehulková, 1997). The second factor is unipolar and the highest loadings are on the items which express a comparison with others: consequently, the second factor is parallel to the third factor of self-esteem of the university students.

The aim of the present study is to verify the three-dimensional structure of Rosen-

berg's Self-Esteem Scale by means of confirmatory factor analysis.

METHOD

Sample

In the present study we re-analyzed data from previous research with high school students (Osecká, Blatný, 1997) and university students (Blatný, Osecká, 1994, 1998). The sample of high school students consisted of 428 participants (184 boys and 244 girls, mean age 16 years in the range from 14 to 19 years) and the sample of university students counted 280 participants (109 boys and 171 girls, mean age 21 years in the range from 18 to 30 years). The total sample size was 708 in the combined sample, and comprised 293 males and 415 females

Method

Rosenberg's Self-Esteem Scale (1965) was translated by the present authors (Blatný, Osecká, 1994). Items are given in the Appendix.

Method of analysis

For the analysis of Rosenberg's Self-Esteem Scale we used the confirmatory factor analysis. The individual models were estimated with the help of the programs LISREL (Jöreskog, Sörbom, 1993), EQS (Bentler, Wu, 1993), and AMOS (Arbuckle, 1997) which co-operated in the environment of the software Streams (Gustafsson, Stahl, 1997).

RESULTS

Five structural models were estimated corresponding to five hypothesized factor

structures in the joint sample and both subgroups. Their brief descriptions follow:

M1 - the baseline model with one general factor of self-esteem (see Figure 1);

M2 - the model with three correlated factors of self-esteem (see Figure 2);

M3 - the same structural model as M2 estimated in two groups separately with no constraints across the groups;

M4 - the same model as M3 but the corresponding factor loadings were constrained to have the same values;

M5 - the same model as M3 but both the corresponding factor loadings and factor intercorrelations were constrained to have the same values.

Fit indices for these five models are given in the Table 1.

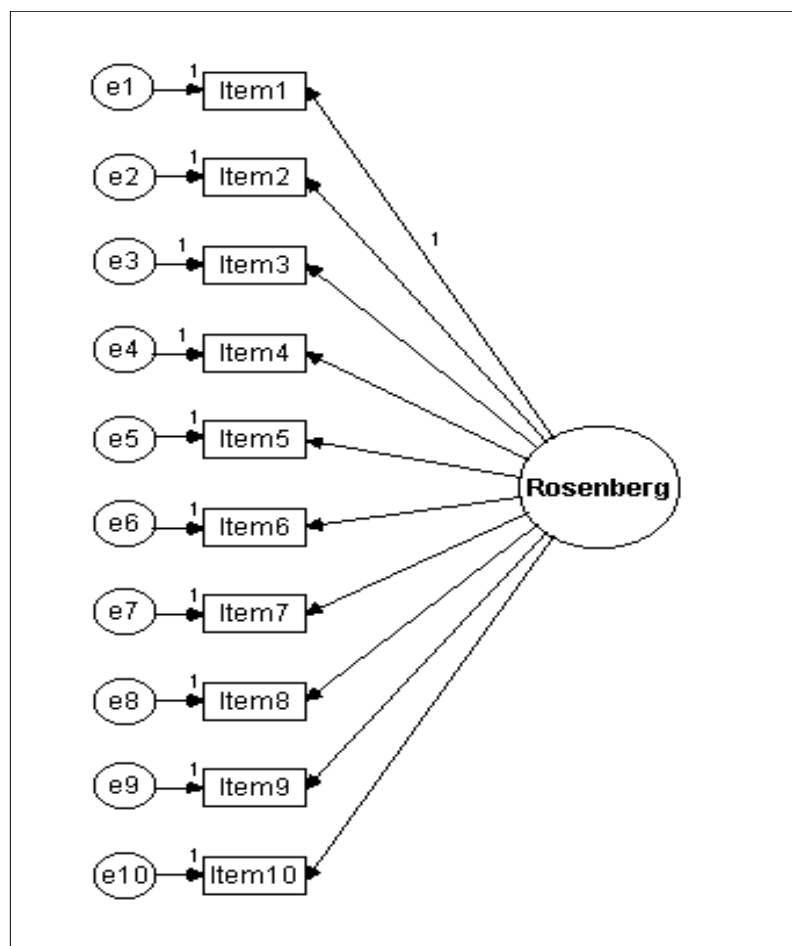


Figure 1. One-factor model of the Rosenberg's Self-Esteem Scale

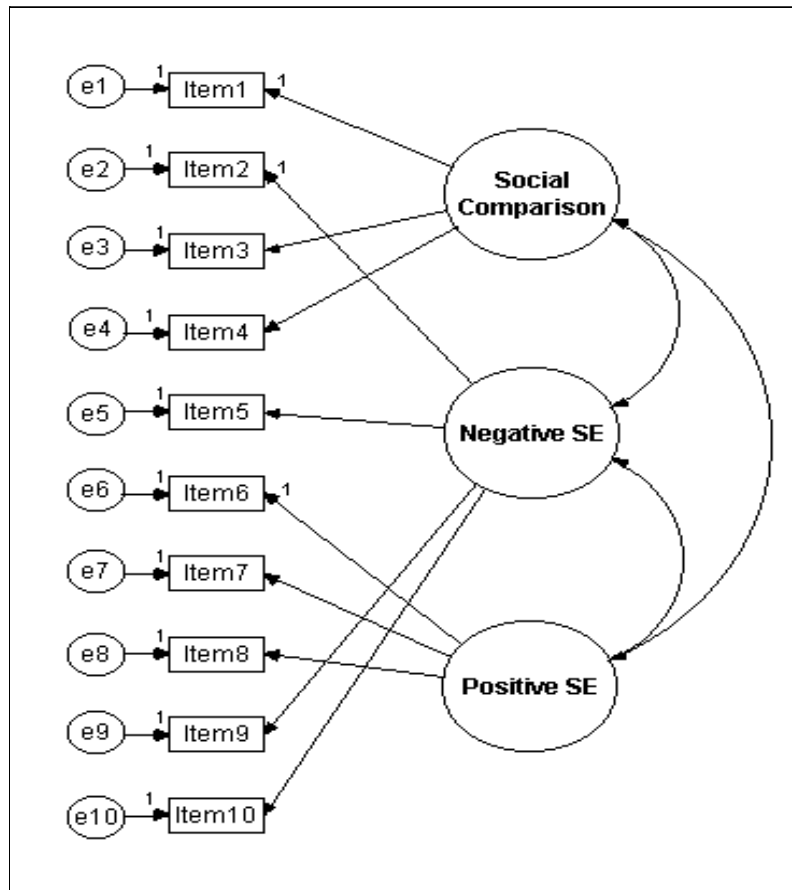


Figure 2. Three-factor model of the Rosenberg Self-Esteem Scale

Table 1. Fit indices for five models of the structure of the Rosenberg Self-Esteem Scale

	χ^2	df	p	CFI	NNFI	RMSEA (90%)	p_{close}	Hoelter (0.05)
Model	186.25	35	0.00	0.911	0.885	0.067-0.089	0.000	190
M1	86.09	32	0.00	0.996	0.994	0.037-0.061	0.536	380
M2	129.11	64	0.00	0.963	0.948	0.028-0.047	0.983	459
M3	150.88	71	0.00	0.954	0.942	0.031-0.049	0.970	430
M4	159.61	74	0.00	0.951	0.941	0.032-0.049	0.966	422

Although the chi-square criterion suggests that no model is acceptable which is very common result in the case of rather large sample sizes as the chi-square test is quite powerful, there are other fit indices which imply serious increase in the model fit as we move from model M1 to model M2, and serious decline in the model fit as we proceed from model M3 to model M5 (the differences of the chi-square values together with the differences of the degrees of freedom). Nevertheless, it is possible to say that even model M5, which is not acceptable from the viewpoint of rather strict chi-square criterion, is acceptable on the grounds of other criteria (for example 90% confidence interval of RMSEA).

The factor structure of individual models does not suggest that the gradual use of constraints across the groups leads to dramatic changes in the values of factor loadings and/or factor intercorrelations. The final factor solution (M5) is given in Table 2.

DISCUSSION

The model fit which assumes the existence of one factor (M1) is not satisfactory. Therefore, we tested the alternative model (M2) which assumes the existence of three mutually correlated factors of self-esteem that represent various aspects of this variable: positive and negative components of self-esteem which are formed by positively or negatively worded items, and a component of self-esteem based on social comparison. On the grounds of the chi-square criterion it was possible to reject this model but on the grounds of less strict criteria it is possible to look upon this model as fairly acceptable in so far as its fit with data is concerned.

Then we tested three models representing the hypotheses about the same factor structure of Rosenberg's Self-Esteem Scale for the two sub-samples - for the group of high school students and that of undergraduates.

Table 2. The final factor solution - standardized coefficients

Item	High school students				University students			
	λ_{iP}	λ_{iN}	λ_{iS}	θ_i	λ_{iP}	λ_{iN}	λ_{iS}	θ_i
1			0.49	0.87			0.52	0.85
2		0.63		0.78		0.70		0.72
3			0.55	0.84			0.58	0.82
4			0.69	0.73			0.68	0.73
5		0.59		0.81		0.60		0.80
6	0.67			0.74	0.72			0.70
7	0.46			0.89	0.54			0.84
8	0.73			0.68	0.72			0.70
9		0.71		0.71		0.71		0.70
10		0.62		0.78		0.71		0.71

Note. Factor loading subscripts: P - Positive self-esteem, N - Negative self-esteem, S - Social comparison

The first model assumes only the same factor structure in both groups (M3), the second model also assumes equality of individual factor loadings (M4), and moreover, the third model assumes equality of correlations of individual factors in both groups (M5).

Whereas on the grounds of the chi-square values it would be necessary to reject all the three models (M3 - M5) as poorly fitting, on the grounds of other criteria such as the index RMSEA and the value p_{close} (statistical significance value of the null hypothesis test which assumes so called close fit with data) it is not possible to reject anyone of the models.

On the basis of these results it is not possible to refute the existence of the three-factor structure of the RSES. It seems that this three-factor model of the RSES is the model with the best fit.

In relation to Rosenberg's Self-Esteem Scale, up to now there have not been any references to the factor expressing the dimension of self-esteem based on social comparison in available literature. This fact may be due to cultural particularities of Czech adolescent population. Macek (1997) found that Czech adolescents feel very strongly about the opinion of significant others (e.g., parents) in comparison with adolescents from other European countries. As there is evidence that content of self-concept forms around the salient features of the self (Blatný, Osecká, Hrdlička, 1992; Hare, Castenell, 1985; Josephs, Tafarodi, Markus, 1992; Markus, 1980), the explanation that a need for recognition from others is reflected in the structure of self-esteem in the shape of social-comparison-facet seems possible.

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APPENDIX

Items of Rosenberg's Self-Esteem Scale:

1. *I feel that I am person of worth, at least on an equal plane with others.*
(Mám pocit, že si uchovávám svoji osobní důstojnost nejméně v takové míře, jako většina ostatních lidí).
2. *All in all, I am inclined to feel that I am a failure.*
(Jsem vždy náchylný považovat se za neúspěšného člověka).
3. *I feel that I have a number of good qualities.*
(Myslím si, že mám řadu dobrých vlastností).
4. *I am able to do things as well as most other people.*
(Jsem schopný dělat mnoho věcí stejně dobře jako ostatní).
5. *I feel I do not have much to be proud of.*
(Zdá se mi, že nemohu být u sebe na nic zvláštního hrdý).
6. *I take a positive attitude toward myself.*
(Mám k sobě dobrý vztah).
7. *I wish I could have more respect for myself.*
(Chtěl bych si sám sebe víc vážit).
8. *On the whole, I am satisfied with myself.*
(Jsem se sebou vcelku spokojený).
9. *I certainly feel useless at times.*
(Občas jasně pocituji svoji neužitečnost).
10. *At times I think I am no good at all.*
(Někdy si myslím, že jsem naprosto neschopný).

STRUKTURA ROSENBERGOVY ŠKÁLY SEBEHODNOCENÍ: TŘÍ-FAKTOROVÉ ŘEŠENÍ

M. B l a t n ý, T. U r b á n e k, L. O s e c k á

Souhrn: Studie se zabývá strukturou Rosenbergovy škály sebehodnocení. V předchozím výzkumu autoři prokázali tří-faktorovou strukturu Rosenbergovy škály sebehodnocení na základě exploratorní faktorové analýzy. V předkládané studii byla tří-faktorová struktura škály ověřována pomocí konfirmatorní faktorové analýzy na souboru českých adolescentů ($N = 708$, 293 chlapců a 415 dívek), který byl tvořen univerzitními ($N = 280$, 109 chlapců a 171 dívek) a středoškolskými studenty ($N = 428$, 184 chlapců a 244 dívek). Analýza potvrdila hypotézu o tří-faktorové struktuře Rosenbergovy škály sebehodnocení. Nalezenými faktory jsou pozitivní sebehodnocení, negativní sebehodnocení a sebehodnocení založené na sociálním srovnávání.