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Atroszko, P. A., Sawicki, A., Sendal, L., & Atroszko, B. (2017). Validity and reliability of single-item self-report measure of global self-esteem. In M. McGreevy & R. Rita (Eds.), *Proceedings of the 7th Biannual CER Comparative European Research Conference* (pp. 120–123). London, England: Science Publishing.

## VALIDITY AND RELIABILITY OF SINGLE-ITEM SELF-REPORT MEASURE OF GLOBAL SELF-ESTEEM

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**Abstract:** *Self-esteem, is one of the most important predictors of psychological well-being, therefore valid, reliable and convenient measures of this construct are necessary. Well-being is often measured in large scale surveys, and to overcome some difficulties associated with measurement of many variables with multi-item scales, ultra-brief measures are being developed. Validity and reliability of single-item self-report measure of self-esteem focused on the degree of satisfaction with the self was examined in a sample of 1451 university students in Poland. Subsample of 135 students was used to assess intraclass correlation coefficient (ICC) for test-retest reliability of that measure. ICC was .79, which can be interpreted as adequate reliability. Self-esteem was related in predictable ways to different measures related to well-being, including perceived stress, depressiveness, anxiety, and various facets of quality of life, as well as self-blame as ineffective stress coping. This study provides initial evidence for good psychometric properties of a single-item self-report measure of self-esteem.*

**Keywords:** *global self-esteem, quality of life, single-item measures,, stress, well-being*

### 1. Introduction

Global self-esteem is defined as individual's positive or negative attitude toward the self as a totality. A number of studies have stressed the importance of studying specific self-esteem (e.g. academic self-esteem), but global self-esteem remains essentially relevant to psychological well-being [1], and therefore, is the subject of this research.

Self-esteem is one of the most often studied psychological constructs. Literature provides evidence of its relationship with a number of phenomena, from academic [2] and professional success [3] to social relations and personal growth [4]. Self-esteem is studied as one of the internal factors protecting one from perceived stress [5]. People with high self-esteem more often use constructive coping strategies, whereas people with low self-esteem have a poor perception of their abilities to cope with stressing environment [6] and tend to use emotional-focused strategies [7]. This phenomenon is showed in research conducted among adolescents as well as adults [5]. Prospective analyses provided evidence for a relation between low self-esteem in adolescence and negative consequences for mental and physical health during adulthood [8]. It is also strongly related to psychological problems, such as depression, suicidal tendencies, eating disorders, anxiety, and aggressive tendencies [9]. Self-esteem also affects quality and quantity of sleep, which are considered to be good predictors of health and quality of life [10]. It is also important as a predictor of people's social behaviour. People high on self-esteem tend to have higher social capital [11], they tend to strengthen relationships in the face of difficulties [12]. Low self-esteem is related to avoidance [13] and experiencing rejection (even where none exist) [14], which can lead to loneliness and narrow social network. It is related to lower satisfaction with romantic relationships as well [15]. Generally, self-esteem is one of the basic predictors of life satisfaction and happiness (directly [16], and indirectly [17]), is related to meaning in life [18], and self-reported quality of life [19]. Relations of self-esteem with

mentioned psychological phenomena are well established and studied in numerous research. Therefore, most of them were used as criterion variables for investigating concurrent validity.

Single-item measure of self-esteem, (SISE) was developed and shown to be valid and reliable [20]. However, this measure asks directly about high self-esteem, and this anchoring may have effect on its validity in certain contexts. What is more, it seems to be more cognitive rather than emotional evaluation of oneself. This measure may also show some tendency to be related to some extent to a narcissistic self-evaluation understood as overly inflated declarative high self-esteem [21]. It is suggested that a more indirect measure of one's attitude towards the self could provide more useful information in the context of psychosocial functioning. Therefore, on the basis of WHOQOL Bref a single item measure of self-esteem was developed and it asks the question "How satisfied are you with yourself?".

### 2. Single-item scales

Single-item measures are increasingly more often used, especially in large surveys in which there is necessity for controlling multitude of different variables. Repeatedly they prove to be valid and reliable tools. Gradually recommendations and guidelines on the usage of single-item scales are being developed [22]. The use of ultra-brief scales becomes more common practice in educational research, marketing research and health research [23]. Although, it has to be emphasized that not always single-item scales are best solution. In some situations or contexts their performance is significantly inferior to multi-item questionnaires, for example in studies on sexual satisfaction [24]. Therefore, it is highly recommended to think through advantages and disadvantages of the use of ultra-brief scales in a specific research setting, following current data available on the subject.

One of the reasons which make ultra-brief scales useful tools is the fact that analysis of Likert response format data

at the item level is statistically robust [25]. Nonetheless, in cases in which single-item scales are used, it is recommended to use more stringent alpha level in order to make prudent statistical decisions.

On the basis of previous theoretical frameworks and empirical research into self-esteem, the aims of the current study were to: (1) assess concurrent validity of single-item measure of self-esteem through relationships with perceived stress, depressiveness, anxiety, loneliness, facets of quality of life and self-blame as ineffective coping mechanism – it is expected that self-esteem will be positively related to the indicators of well-being and negatively related to indicators of stress and diminished well-being as well as using self-blame as coping mechanism, (2) the currently investigated single-item measure will show stronger relationships with indicators of well-being (stress, depressiveness, satisfaction with life) than SISE; (3) assess the reliability of single-item measure of self-esteem with test-retest method.

### 3. Methods

**Participants.** A total of 1451 students from different universities in Pomerania Region in Poland took part in the study, 675 men (43.6%) and 751 women (50.3%), 25 (6.2%) persons did not report gender, with mean age of 21.13 years ( $SD = 1.82$ ). Students were from different faculties, courses of study, years and modes of study. One hundred thirty five participants took part in test-retest procedure, 87 females and 77 males, 5 persons did not report gender, with mean age years  $M = 21.17$ ,  $SD = 1.86$ . **Measures.** A self-report, single-item measure of self-esteem was developed on the basis of item from WHOQOL Bref Scale [26]. Originally used 5-point response scale has been modified to 9-point response scale, in compliance with recommendations to use at least 7-point Likert format response data when conducting statistical analyses on single item measures [25]. Self-esteem was measured by question “How satisfied are you with yourself?” with 9-point response scale, from 1 - “very dissatisfied” to 9 - “very satisfied”. Other measures were widely used valid and reliable scales adapted in Poland. Perceived stress was measured with Perceived Stress Scale (PSS-4), a 4-item, 5-point Likert response format scale [27]. Depressiveness and anxiety were measured by Hospital Anxiety and Depression Scale, which includes 14 items with 4-point response format, seven items for anxiety and seven for depression [28]. Loneliness was measured by Short Loneliness Scale, which includes three items with 3-point response format [29]. Self-blame was measured as one of the dimensions from Mini-COPE scale, this dimension includes two items with 4-point Likert response format scale [30]. General health, Sleep quality, General quality of life, Satisfaction with support from friends, Satisfaction with personal relationship, Meaning in life, and Satisfaction with life were measured with single-item scales, developed on the basis of WHOQOL Bref Scale [31,32,33].

**Procedure.** Data collection used convenience sampling. Students were invited to participate anonymously in the study during lectures or classes. More than 90% of all

present students agreed to do so. Ninety one percent of participants filled in ‘paper and pencil’ questionnaires and nine percent of students completed online versions of the questionnaires. Self-esteem was measured on two occasions with three week interval between them. Anonymous way of coding participants was applied in order to match responses from both measurement occasions. Participation in the study was anonymous and no monetary or other material rewards were offered to the participants.

**Statistical analyses.** Intraclass correlation coefficient (ICC) along with the 95% confidence interval (CI) was used as a measure of test-retest reliability [34]. Means, standard deviations, percentages and correlation coefficients were calculated. Comparison of two correlation coefficients was performed with  $z$  statistic. All statistical analyses were conducted in IBM SPSS 24.

### 4. Results

Means, standard deviations and correlations between self-esteem and other measured variables are presented in table 1. An intraclass correlation coefficient (ICC) of .79 (95% CI = .71-.85,  $p < .001$ ) was obtained for self-esteem. The correlation between self-esteem ( $M = 6.09$ ,  $SD = 1.80$ ) and satisfaction with life ( $M = 6.00$ ,  $SD = 1.86$ ) was strong,  $r = .60$ ,  $p < .001$ .

*Table 1. Means, standard deviations and correlations of single-item self-esteem measure with perceived stress, depressiveness, anxiety, loneliness self-blame, general health, sleep quality, general quality of life, satisfaction with support from friends, satisfaction with personal relationships, meaning in life, and satisfaction with life*

Scale	$M (SD)$	Self-esteem
Perceived stress	10.53 (3.05)	-.49**
Depressiveness <sup>a</sup>	13.88 (4.13)	-.48**
Anxiety <sup>a</sup>	12.00 (3.88)	-.49**
Loneliness	4.59 (1.71)	-.39**
Self-blame <sup>a</sup>	2.86 (1.64)	-.40**
General health	5.88 (2.09)	.41**
Sleep quality	5.55 (2.11)	.42**
General quality of life	6.72 (1.39)	.54**
Satisfaction with support from friends	6.76 (1.83)	.37**
Satisfaction with personal relationships	6.03 (2.34)	.43**
Meaning in life	6.05 (2.01)	.55**
Satisfaction with life	6.00 (1.86)	.60**

\* $p < .05$ ; \*\* $p < .01$

<sup>a</sup>Subsample of 1074 students, 481 men (44.8%) and 572 women (53.3%), 21 (2.0%) persons did not report gender, with mean age of 21.77 years ( $SD = 3.24$ )

Comparison of correlation coefficients between self-esteem and well-being indicators in the present study ( $r_1$ ) and in the study where SISE ( $r_2$ ) was used [20] showed that: (1) these correlations with stress were significantly different  $r_1$  (1451) =  $-.49$ ,  $r_2$  (496) =  $-.36$ ,  $Z = -3.05$ ,  $p =$

.001; (2) these correlations with depressiveness were significantly different  $r_1(1451) = -.48$ ,  $r_2(496) = -.25$ ,  $Z = -5.13$ ,  $p < .001$ ; (3) these correlations with satisfaction with life were significantly different  $r_1(1451) = .60$ ,  $r_2(496) = .45$ ,  $Z = 3.83$ ,  $p < .001$ .

## 5. Discussion

The results provided evidence of good test-retest reliability of single-item measure of self-esteem. Study provides sufficient level of concurrent validity. The results were congruent with expectations, and as predicted, self-esteem was negatively associated with perceived stress, depressiveness, anxiety, loneliness, and self-blame coping style. Positive relations of self-esteem were obtained for general health, sleep quality, general quality of life, satisfaction with support from friends, satisfaction with personal relationships, meaning in life, and satisfaction with life. The strength of relationship of self-esteem with meaning in life and satisfaction with life is higher than in the previous studies with multi-item scales (e.g.  $r = .47$  for satisfaction with life [16],  $r = .37$  for meaning in life [18]). It may be an effect of common method bias, caused by similar response format in all of the quality of life measures.

This measure is very quick to fill and therefore it offers low cost and minimized burden option for both respondents and researchers. It can be easily applied in large scale researches in which self-esteem have to be measured along with many other variables. As predicted, this measure also showed stronger relationships with indicators of well-being such as perceived stress, depressiveness, and satisfaction with life than the SISE. It suggests that this measure more adequately captures the emotional aspect of one's attitude to the self than SISE. A significant advantage of the examined comparison is similarity of some measures used in both studies. In both studies PSS scales (PSS-6 in SISE study, PSS-4 in this study [27]) were used to assess perceived stress. Also, in both studies single-item measures of satisfaction with life were used ("How satisfied are you with your life as a whole these days?" [35] in SISE study, and "How much do you enjoy your life?" in this study).

Weakness of this tool is its brevity, therefore it is not useful in precise individual evaluation of self-esteem for the purposes of diagnosis or direct comparison between individuals.

The biggest strengths of the study are a large and heterogeneous sample of university students and the use of widely applied valid and reliable measures of criterion variables. The main limitation of the study is that it has not been performed on a representative sample of students nor representative sample of general population. Research on more representative samples is warranted. The future studies should investigate convergent validity of this measure. Also, different methods of measurement, such as observation or experience sampling methodology are recommended. Potential common method bias has to be taken into account whenever several single-item scales with similar response format are used in surveys. More

data on common method bias for these measures is required.

The aim of this study was to provide empirical evidence of the psychometric properties of single-item measure of self-esteem. Reliability and criterion validity were tested. The study shows that single-item self-report measure of global self-esteem is a potentially useful research tool.

## Acknowledgements

Grant: Grant badawczy w ramach projektu młodych naukowców i uczestników studiów doktoranckich Uniwersytetu Gdańskiego. Number of grant: 538-7422-B121-13 in 2013 and 538-7422-B450-14 in 2014. On the basis of decision number DEC-2013/08/T/HS6/00403 the author (Paweł Andrzej Atroszko) received funds from National Science Centre Poland within doctoral scholarship for preparing PhD dissertation.

Grant: The publication was funded by a grant of the Faculty of Social Sciences of the University of Gdansk on the projects of young scientists and doctoral students in 2016 (Bartosz Atroszko). Grant No: 538-7300-B273-16.

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