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VALIDITY AND RELIABILITY OF SINGLE-ITEM SELF-REPORT MEASURES OF MEANING IN LIFE AND SATISFACTION WITH LIFE

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Abstract: Health, subjective well-being and many other fields of research require large surveys that often include repeated measurements, and involve a multitude of crucial variables. This results in a demand for effective, valid and reliable measurement tools. Widely applied self-report multi-item scales can be associated with high cost and burden for both respondents and researchers. Lengthy measures also provide a threat to the validity of measurements due to fatigue effects in participants. In order to overcome this issues a single-item, self-report measures of meaning in life and satisfaction with life were examined in a sample of 1451 university students. These two measures were administered in a subsample of 135 students on two occasions with three weeks interval between them. Intraclass correlation coefficients (ICC) for test-retest reliability were very high, .86 for meaning in life, and .88 for satisfaction in life. These measures were related in predictable ways to perceived stress, depressiveness, anxiety, and loneliness. The study provides evidence for the validity and reliability of these single-item measures. These scales are potentially convenient measures of meaning in life and satisfaction with life in large surveys.

Keywords: meaning in life, reliability, satisfaction with life, single-item measure, validity

1. Introduction

The interest in understanding quality of life and wellbeing has been increasing very fast [1] and became the focus of recent intense research attention. It is suggested that a positive well-being may be essential for people from an evolutionary perspective [2]. Positive affect associated with subjective well-being (SWB) might be crucial for motivational reasons. Positive moods trigger approach tendencies, such as obtaining food, finding shelter, social support etc. which increase one's chances of survival [3]. As popularity of this topic is increasing, it is essential to develop psychometrically reliable and valid research tools that are suitable for application in large surveys.

Recent studies on newly identified construct of study addiction showed that the different aspects of wellbeing and quality of life may be also crucial variables in educational research [4]. The growing interest in antecedents and consequences of unhealthy study attitudes and behaviours creates a need for short and convenient measures of meaning in life and satisfaction with life. These studies often require large samples and encompass multitude of relevant variables including socioeconomic background, school or university environment, personality, cognitive functioning, different learning attitudes and behaviours, school or academic performance, and diverse measures of wellbeing and health [5, 6, 7, 8, 9, 10].

2. Meaning in life

Meaning in life could be described as “the extent to which people comprehend, make sense of, or see significance in their lives, accompanied by the degree they perceive themselves to have a purpose or overarching aim in life” [11]. It is assumed that the purpose in life is a distinctive domain of psychological well-being [12] and that human being seems to be predetermined to instill a meaning to life [13]. In general, it was positively associated with

psychological and physical health, e.g. lower depression, anxiety, stress, loneliness, and positive and negative emotions [14]. One of the most widely used psychometric tools for measuring meaning in life is 10-item measure of the *Presence of Meaning in Life*, and the *Search for Meaning in Life* [15].

3. Satisfaction with life

Satisfaction with life has been defined as a “global evaluation by the person of the quality of his or her life” [16]. It could be also described as a cognitive component of SWB [17]. Most scientists and specialists seem to approve the statement that satisfaction with life should be considered the main component of any comprehensive conception of adjustment or mental health [18]. Satisfaction with life and meaning in life are mutually connected constructs and their moderate stability over one year has been proven [19]. One of the most widely used psychometric tools for measuring satisfaction with life is 5-item Satisfaction with Life Scale [20].

4. Single-item scales

An increasing number of large surveys, which frequently include repeated measurements, results in a demand for ultra-brief, single-item scales that do not impose additional burden and provide ease of interpretation. This type of measurement is characterized by a series of advantages, for instance in situations when time is restricted or when respondents' burden must be minimized [21]. Even though single-item measures are not always considered an appropriate method due to their worse psychometric properties in comparison to multi-item scales in specific contexts [22], their usefulness and popularity in research are constantly growing. Single, overall questions have been efficiently used in population surveys to measure e.g.

health status, quality of life, and health related quality of life [23].

The analysis of Likert response format data at the item level is statistically robust [24, 25]. This is one of the reasons which make single-item measures useful tools which can be applied in statistical testing of complex models. All the same, in cases in which single-item measures are used it is suggested to use more stringent alpha level in order to make cautious statistical decisions.

On the basis of previous theoretical frameworks and empirical research into meaning in life and satisfaction with life, it is hypothesized that: (H1) meaning in life and satisfaction with life are negatively related to perceived stress, depressiveness, anxiety and loneliness.

5. Methods

Participants. A total of 1451 students from different universities in Pomerania Region in Poland took part in the study, 675 men (46.5%) and 751 women (51.5%), 25 (1.7%) persons did not report gender, with mean age of 21.75 years (SD = 3.11). 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. Two single-item, self-report measures were developed on the basis of items from WHOQOL Bref scale [21]. The previous 5-point Likert scale has been modified to a 9-point response scale, in line with recommendations to use at least 7-point Likert scale when conducting statistical tests and analyses on single-item measures [24]. Meaning in life was measured by question: "To what extent do you feel your life to be meaningful?" with 9-point response scale, from 1 - "Not at all" to 9 - "An extreme amount". Life satisfaction was measured by question: "How much do you enjoy life?" with 9-point response scale, from 1 - "Not at all" to 9 - "An extreme amount". 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 response format scale [26]. Depressiveness and anxiety was measured by *Hospital Anxiety and Depression Scale*, which includes 14 items with 4-point response format scale, seven items for anxiety and seven for depression [27]. Loneliness was measured by *Short Loneliness Scale*, which includes 3 items with 3-point response format scale [28].

Procedure. Data collection used opportunistic 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. The study took place from 2013 to 2015. Meaning in life and satisfaction with life were 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 [29, 30]. Means, standard deviations, percentages and correlation coefficients were calculated. Statistical analyses were conducted in IBM SPSS.22.

6. Results

The correlation between meaning in life ($M = 6.05$, $SD = 2.01$) and satisfaction with life ($M = 6.00$, $SD = 1.86$) was very high, $r = .76$, $p < .001$. An intraclass correlation coefficient (ICC) of .86 (95% CI = .81-.90, $p < .001$) was obtained for meaning in life and .88 (95% CI = .83-.91, $p < .001$) for satisfaction with life. Means, standard deviations and correlations of meaning in life and satisfaction with life with studied variables are presented in table 1.

Table 1. Means, standard deviations and correlations of satisfaction with life and meaning in life with perceived stress, depressiveness, anxiety, and loneliness

Scale	M (SD)	Satisfaction	Meaning
Perceived stress	10.53 (3.05)	-.42**	-.41**
Depressiveness ^a	13.88 (4.13)	-.49**	-.44**
Anxiety ^a	12.00 (3.88)	-.44**	-.36**
Loneliness	4.59 (1.71)	-.42**	-.40**

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

^aSubsample 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 ($SD = 3.24$).

7. Conclusions

The conducted study provides evidence for very good test-retest reliability of single-item measures of meaning in life and satisfaction with life. The measures were highly interrelated indicating that they may in fact measure very similar or even the same construct.

The obtained data supported concurrent validity of the measures. All hypotheses were substantiated and the measures related in predictable ways to the indicators of wellbeing measured by widely used, valid and reliable psychometric tools. Meaning in life and satisfaction with life were negatively related to perceived stress, depressiveness, anxiety and loneliness. The pattern of correlations and the values of correlation coefficients were very similar providing more support for the hypothesis that these scales measure very similar construct.

The results provided support for the validity and reliability of the measures of meaning in life and satisfaction with life. These scales offer low cost and minimized burden options for both respondents and researchers. They are quick and easy to fill in and seem promising for application in various surveys, especially for large surveys when many other variables need to be measured and the relationships between them are more important than precise evaluations for every individual. 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 different aspects of wellbeing and psychosocial functioning. The main limitation of the study is a lack of data on the convergent validity with a widely used, valid and reliable measures of quality of life, general health or quality of sleep. The future studies should investigate this type of validity using also different methods of measurement, such as observation or experience sampling methodology. There is also need for data on discriminant validity, as well as predictive validity of these measures from longitudinal settings, including possible comparisons in predictive value with multidimensional multi-item scales of quality of life, general health and sleep quality. Also research on more representative samples is warranted. In light of the obtained results, there is a need for more studies investigating whether meaning in life and satisfaction with life are the same construct.

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