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POST-PRINT

Psychotherapy and Psychosomatics. *88*(3), 177-178. DOI: 10.1159/000497373

Is a Single-Item Measure of Self-Rated Mental Health Useful from a Clinimetric Perspective?

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1. Text

The considerable contribution by Per Bech to the field of psychological assessment has been well summarized in a recent tribute to him in *Psychotherapy and Psychosomatics* [1]. Per Bech was indeed among the first researchers to understand the role of clinimetrics and to highlight some limitations of the classic psychometric model applied to psychiatric research.

In clinimetrics, single-item global ratings can be used to synthesize complex clinical phenomena. They represent a simple and effective way of letting the respondents express their own perceptions about the core symptoms of their general clinical condition [2] Bech and his colleagues demonstrated that a single item screening for depression had as good or better sensitivity than other screening tools, although its specificity suggested that it should be followed up by a thorough diagnostic interview [3]. Beck and his research group also demonstrated that single items were more valid than long questionnaires in discriminating between the symptoms of panic attack and epilepsy seizures [4]. Very often indeed long questionnaires include redundant items that can lower sensibility, while independence of items can preserve it and Bech focused on the evaluation of single items as independent indicators of a symptom. Single items have also other advantages in the daily clinical practice since they are easy to use, quick to administer and score, and can contribute to diminishing the growing dislike of long questionnaires in the general population.

Evidence of measurement soundness and clinical usefulness has been provided for single-item global ratings of a number of complex phenomena, including physical and mental health [5,6]. Specifically, a single item of perceived mental health rated on a 5-point scale was shown to be associated with multiple-item scales of mental health, physical health problems, and health service utilization [5]. From a clinimetric perspective, a single-item measure could be useful as long as it

discriminates between different groups of patients and reflects clinically relevant changes over time [7].

The present study aimed to investigate whether a single item global self-rating of mental health (SRMH) can be usefully applied as a screening tool for mental health. Specifically, we focused on its ability to discriminate between different groups by using a criterion-oriented approach. Two independent samples of the Italian adult population (N = 1,571) were recruited using a chain sampling approach and invited to fill in an online survey. Participants from the first sample (n = 608) were 50.3% female, aged 19 to 85 (M 32.2 ± 11.2), while those of the second sample (n = 963) were 49.5% female, aged 18 to 84 years (M 35.8 ± 13.3). The two samples did not differ in gender proportions [$\chi^2(1) = .10$, $p = .76$], while participants in the first sample were slightly younger [$F(1,562) = 30.83$, $p < .001$, Cohen's $d = .29$]. The response rate was 80% and 85% of the sent links to the online battery for the first and the second sample, respectively. All participants responded to a single-item SRMH ("How would you define your mental health?") rated on a 10-point scale (1 = poor to 10 = excellent). The 1-10 response format was preferred to the more common 1-5 scale since discrimination is limited when the rating scale has a small number of categories [2]. Participants in the first sample also completed the 14-item Hospital Anxiety and Depression Scale (HADS; [8]) and those in the second sample the 5-item World Health Organization Well-Being index (WHO-5; [9]). The University of Bologna Research Ethics Committee approved the study, and each participant provided informed consent before completing the questionnaire.

To test for the ability of the single-item SRMH to discriminate between groups based on anxiety and depression thresholds (HADS cutoff scores ≥8, [8]), ANOVA was conducted on the first sample (n = 608) followed by Hochberg's GT2 post-hoc pairwise comparisons. Four groups were formed based on HADS cutoff scores: group 1 with both depression and anxiety above-threshold (n = 72, M 6.3 ± 1.9); group 2 with both depression and anxiety below-threshold (n = 402, M 8.1 ± 1.4); group 3 with above-threshold depression and below-threshold anxiety (n = 22, M 6.6 ± 1.4); and group 4 with below-threshold depression and above-threshold anxiety (n = 112, M 7.5 ± 1.6). The ANOVA showed a significant effect of group [$F(3,600) = 31.82$, $p < .001$]. Based on post-hoc tests, group 1 scored strongly (Cohen's $d = 1.2$) lower at the single-item SRMH than group 2, and moderately ($d = .68$) lower than group 4. Group 3 scored strongly ($d = 1.1$) lower than group 2, and moderately ($d = .59$) lower than group 4; and group 4 scored slightly ($d = .39$) lower than group 2.

To test for the discriminating ability of the single-item SRMH in relation to mental health, a receiver-operating characteristic curve (ROC) analysis was performed on the second sample (n = 963), considering the WHO-5 cutoff score of ≤28 as indicative of poor mental health and potential clinical levels of depression [10]. The area under the curve was .87 (SE = .02, 95% CI .83 to .91), indicating good diagnostic classification accuracy. A cutoff score ≤6 on the single-item SRMH represented the best compromise between 87% sensitivity (i.e., the proportion of correctly identified true positive cases) and 80% specificity (i.e., the proportion of correctly identified true negative cases).

Altogether, the findings provide preliminary evidence of the usefulness of a single-item SRMH from a clinimetric perspective, as it adequately discriminates between groups based on cutoffs on well-established criterion measures of SRMH. Specifically, with individuals scoring ≤6, a diagnostic interview is recommended as they might be clinically depressed. Normative data for the single-item SRMH are provided in Table 1 for clinicians to evaluate SRMH scores in non-clinical adults.

An important limitation of our study is that the scalability of the single item used was not evaluated, thus further research is needed to address this issue. Future studies are also recommended to collect further evidence of the screening value of the single-item SRMH by using the Clinical Interview for Depression (CID) and the six-item version of the Hamilton Rating Scale for Depression (HAM-D6), which displayed adequate clinimetric properties [11]. Finally, the present study was conducted taking a prevention perspective; however, responsiveness to change should be tested using the single-item SRMH as an outcome measure in controlled clinical trials.

Among the clinical implications of our findings are that the proposed single-item global rating of subjective SRMH could be a valid easy-to-use scale for the outcome evaluation in the practical routine of each clinic visit, and it could also avoid increasing the respondent burden of long redundant questionnaires when used in screening investigations in the general population.

2. Statements

2.1. Disclosure Statement

The authors have no conflicts of interest to declare.

2.3. Funding Sources

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

3. References (Numerical)

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4. Figure Legends

Tab. 1. Italian normative data for the single-item measure of self-rated mental health. Raw scores converted to percentiles (N = 1,571)

Percentile	Score

0	1
1	2
2	3
3	3
4	4
5	4
10	5
20	6
25	7
30	7
40	7
50	8
60	8
70	9
80	9
90	10
100	10

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