

Reliability and Validity of the Positive Mental Health Literacy Scale in Turkish Adolescents

ABSTRACT

Background: The present study aims to determine the reliability and validity of the Positive Mental Health Literacy Scale in the Turkish language.

Methods: The sample of the present methodological study included 457 adolescents. The data were collected between February 10, 2019, and May 31, 2019, with a socio-demographic data form and the Positive Mental Health Literacy Scale. The scale was first translated to the Turkish language, expert opinion was obtained, and a pilot scheme was conducted. The content validity index was employed to test the validity of the scale, confirmatory and exploratory factor analyses were conducted to test the construct validity, item analysis was conducted to test the reliability of the scale, Cronbach's alpha analysis was employed to determine internal consistency, and the test-retest scores were compared to determine time invariance.

Results: The scale is unidimensional. The content validity analysis of the scale was 0.97. Scale item loads varied between 0.56 and 0.72 based on the confirmatory factor analysis. The Cronbach's alpha coefficient of the scale was 0.87, and the test-retest score was intra-class correlation coefficient = 0.739 ($P < .001$). The mean participant score on the positive mental health literacy scale was 2.9 (SD=0.9).

Conclusion: The validity and reliability findings in the study that was conducted to adapt the Positive Mental Health Literacy Scale to the Turkish language revealed that the scale could be used to measure the mental health literacy of adolescents. The Turkish version of the scale could be used in programs that aim to identify positive mental health literacy levels of adolescents in Turkish society.

Keywords: Mental Health Literacy, Adolescent, Reliability and Validity, Promotion of Health

Introduction

A review of the definitions of mental health would reveal that the concept of mental health cannot be explained only by psychological problems or psychopathologies. In addition to mental health problems, mental health also entails psychological well-being, life expectations, hopefulness, and preservation and sustenance of optimism.¹ This approach is called positive psychology. This concept is important in the holistic approach and scrutiny of mental health. Positive psychology, first defined by Seligman, is a field in psychology that contributes to the individual's connection with life and the assessment of positive factors that would improve the individual's life. Positive psychology aims to focus on positive attributes rather than the negative ones and individual strengths to improve the psychological strength of individuals that would lead to the achievement and maintenance of a welfare level to sustain a healthy life.^{2,3}

The assessment of positive psychology requires knowledge of certain components.⁴ The self-determination theory assesses the basic requirements for the sustenance and improvement of positive psychology and mental health. The 3 theoretical universal psychological requirements of individuals include autonomy, competence, and association, and these are important in the preservation and sustenance of mental health. Furthermore, these



Funda Özpulat^{ID}¹

Duygu Öztaş^{ID}²

Nevin Günaydin^{ID}³

¹Selcuk University, Aksehir Kadir Yallağöz Health School, Konya, Turkey

²Ankara University, Faculty of Nursing, Ankara, Turkey

³Ordu University Faculty of Health Sciences, Ordu, Turkey

Corresponding author:

Funda Özpulat

✉ funda-ozpulat@hotmail.com

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components are also called the “basic psychological needs” in this theory. It could be suggested that the fulfillment of these 3 requirements leads to psychologically well individuals with positive mental health.⁵ These concepts are important factors for individuals to know how to achieve and maintain good mental health. This also suggests that mental health literacy, a tool employed by individuals to preserve and improve their mental health, would also be a positive determinant.

Mental health literacy (MHL), an important component of health literacy, is significant for positive contributions to mental health in the protection and development of health.⁶ Simply, MHL entails the “knowledge and beliefs on recognition (awareness), the management or prevention mental disorders.”⁷ However, although it emphasizes the positive aspect of mental health literacy, the studies conducted and the scales developed on MHL analyzed the concept based on the knowledge level, stigma and seeking help, the impact of treatments, hospitalization rate, and employment of adequate resources.⁸⁻¹² This has been an important problem in the analysis of positive mental health based on MHL.

Mental health problems constitute the highest disease burden and medical barriers for adolescents similar to all age groups in the world.¹³ Similarly, most young individuals in Turkey suffer from psychological disorders and their MHL levels are low.^{6,14} The behaviors, attitudes, and practices adopted by the remaining adolescents to improve their mental health are not yet known. In particular, determination of the positive mental health status of adolescents, who are the future adults of the society and play a key role in the preservation and development of the mental health of the society, determination of the areas that need to be improved for positive psychology, and improvement of the psychological well-being and resilience of adolescents are significant for preventive mental health applications.⁸ Determination of the methods for the achievement of good mental health by the adolescents, protection, and sustenance of their mental health, and determination of the methods to sustain positive behavior would also contribute to a healthy society. Thus, accurate and reliable measurement instruments that are developed to determine the positive aspect of MHL are required. The present study aimed to determine the validity and reliability of the “Positive Mental Health Literacy Scale (MHPK-10)” that was developed by Bjørnson et al⁸ and measures the positive attributes of MHL in adolescents.

Methods

Study Design and Sample Size

The present study is a methodological study that aimed to determine the validity and reliability of the MHPK-10 scale for Turkey. The

15- to 21-year-old participants were junior-high, high school, and college students in Konya province in Turkey. The convenience sampling method was employed to assign the study subjects,¹⁵ and the study was conducted with 481 adolescent participants. The study was conducted between February 10, 2019, and May 31, 2019. One week before the study, verbal information was provided for the junior-high and high school students on the aim of the study in their classrooms, and then, the written consent forms were sent to their parents. The data collection forms were distributed to the students after their parents approved their participation. Verbal information was provided for the college students on the aim of the study in their classrooms, and informed consent forms were distributed. The scales were distributed to those who voluntarily signed the form. It took about 13 minutes to complete the scale. Selçuk University Provincial Directorate of National Education and university ethics committee approvals were obtained to conduct the study (08/02/2019-E.15230). Written permission was obtained from Hanne Nissen Bjørnson, the author of communication for the scale, via e-mail for the adaptation of the scale to the Turkish language. Also, the author of the study informed the students and their parents about the aim of the study and stated that participation was voluntary.

After the forms were examined and the missing/incorrect forms were excluded, the remaining 457 forms were analyzed to measure the validity and reliability of the instrument. The study was conducted with 15- to 21-year-old voluntary adolescents without any communication impediments.

Data Collection Instruments

The data were collected with a personal data form that included sociodemographic attributes (age, gender, income, education, parental occupation, etc.), anamnesis (health resources, presence of diseases, educational level for mental problems, etc.), and the MHPK-10 scale. Also, the Adolescent Subjective Well-Being Scale and Adolescent Health Development Scale were employed.

Positive Mental Health Literacy Scale: The 5-point Likert-type scale was developed by Bjørnson et al⁸ in 2017 and includes 10 items. The items measure autonomy, association, and competence attributes of good mental health. The total MHPK-10 score is calculated with the mean item scores. The participants are asked to rate each item on a 6-point scale from 0 (“I do not know”), 1 (“completely false”) to 5 (“completely true”). Each item score varies between 1 and 5, and the mean item score varies between 0 and 5. A higher mean score reflects higher knowledge. A test–retest correlation coefficient over 0.70 is acceptable.⁸ The test–retest coefficient for the 10-item version was $r=0.74$, reflecting a good construct validity and robust test–retest reliability. To determine the internal consistency of the single factor scale, the McDonald’s test was conducted, and it was determined that McDonald’s omega was 0.84.⁸

Adolescent Subjective Well-Being Scale: The scale was developed by Eryılmaz for happiness studies conducted in adolescents in 2009. It was developed for the Turkish culture and employed in several studies conducted in Turkey. It is a 4-point Likert-type scale that includes 15 items. A higher scale score represents the amplitude of the measured trait. Internal consistency of the scale was 0.86, the Spearman–Brown coefficient was 0.83, and the test–retest reliability was 0.83.¹⁶

MAIN POINTS

- The MHPK-10 measure provides the positive attributes of mental health literacy (MHL) in adolescent.
- The Positive Mental Literacy Scale (MHPK-10) was translated into the Turkish language and tested for reliability and validity.
- The Cronbach’s alpha reliability coefficient of the MHPK-10 was 0.872.
- Compared to the original scale, the MHPK-10 scale scores of Turkish adolescents were low.

Adolescent Health Development Scale: The scale was developed by Chen et al¹⁷ in 2003. The Cronbach's alpha reliability coefficient of the original scale was 0.932, and the sub-scale alpha coefficients varied between 0.75 and 0.88. The scale includes 40 items and 6 sub-scales. A higher scale score reflects positive health promotion behavior.¹⁷ Turkish language validity and reliability were determined by Ortağağ et al¹⁸ in 2011 and Bayık Temel et al¹⁹ in 2011. Both studies reported that the scale was valid and reliable in the Turkish language.^{18,19}

Translation of the scale and the pilot scheme

The permission to translate and determine the validity and reliability of the scale in the Turkish language was obtained from Hanne Nissen Bjørnsen, one of the developers of the scale, via e-mail. The original MHPK-10 scale was translated into Turkish by 3 experts employed in the English department of the school of foreign languages in a public university. The scale items that were translated into Turkish were assessed by 8 expert lecturers. The experts were asked to determine the accuracy of the translation of the scale items, suitability of the items for the target group based on expression, adequacy for adolescents in the assessment of mental health literacy, and to propose editing when necessary. Based on the expert feedback, the scale items were edited. During the assessment of the comprehensibility of each item, the item was scored with 1 point for "inadequate," 2 points for "somewhat adequate," 3 points for "adequate," and 4 points for "completely adequate." The Turkish scale was then translated back to English by 3 lecturers to determine language scope and validity. Furthermore, the finalized scale items in the Turkish language were analyzed by a Turkish language and literature lecturer. After the above-mentioned procedures, a pilot scheme was conducted with a group of 20 students to determine the comprehensibility of the scale in Turkish. The pilot scheme data were not included in the final Turkish validity and reliability analysis.

Statistical Analysis

The exploratory factor and reliability analyses were conducted with Statistical Package for the Social Sciences (SPSS) version 26.0 (IBM SPSS Corp.; Armonk, NY, USA, 2019), and the confirmatory factor analysis was conducted with Amos 23 software. In statistical analysis, the *t*-test was conducted on numerical variables, and the Pearson's chi-squared test was conducted on categorical variables to determine the differences between sociodemographic variables. The Pearson's correlation coefficient was employed to determine the correlations between the variables. The statistical significance was accepted as $P < .05$, and the Kolmogorov-Smirnov test was conducted to determine the normal distribution of the data.

Results

Participant Demographics

The sample of the study which was conducted between February 10, 2019, and May 31, 2019, included 457 students attending 2 junior high schools ($n = 110$), 2 high schools ($n = 227$), and a college ($n = 120$) in a district located at the Central Anatolia Region in Turkey. The mean participant age was 17.18 ± 1.67 years (min: 15 and max: 21) and 66.9% of the participants were 18 years old or younger, and 54.3% were female. Mother's education level was primary school or lower in 54.5% of the participants, and father's education level was the junior high school in 31.5%, the mothers of 79.9% were unemployed, and the fathers of 32.6% were self-employed. Among the participants, 75.9% had a nuclear family and 64.7% had a balanced budget. The parents of 85.6% of the participants were not diagnosed

with a disease. The health information resource of 43.8% of the participants was a physician, 30.4% utilized the internet, and 63.2% applied to public hospitals for a check-up. Also, 28.2% visited health centers twice a year on average, 55.1% described their health as good, 41.8% attended health courses, 4.6% attended courses on mental health, and 0.4% participated in mental health education programs.

Validity Findings

Content validity analysis

The original MHPK-10 scale was translated to the Turkish language by 3 experts in the Middle East Technical University to determine the content validity. A common form was developed after the translations of 10 lecturers were analyzed, and this form was translated back to the English language by 3 lecturers and submitted for the approval of the scale developer. After the approval, the translated version was assessed by a lecturer in Turkish language and literature and the form was finalized. The content validity index of the scale was 0.97.

Construct validity analysis

In the present study, confirmatory factor analysis (CFA) results (Table 1) were analyzed for the chi-square goodness of fit, goodness-of-fit index (GFI), adjusted goodness-of-fit index (AGFI), comparative fit index (CFI), Tucker-Lewis index (TLI), incremental fit index (IFI), normed fit index (NFI), root mean square (RMR), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR) indices. Based on the GFI and CFA results, the ratio of χ^2 to the degree of freedom was determined as 2.55 (GFI: 0.962, CFI: 0.967, NFI: 0.847, TLI: 0.956, RMSEA: 0.058, SRMR: 0.035). The Kaiser-Meyer-Olkin (KMO) was 0.918 in the exploratory factor analysis conducted to determine the construct validity of the MHPK-10 scale. Thus, the sample size was adequate to conduct factor analysis. The Bartlett test of sphericity ($\chi^2 = 1629.72$; $P < .001$) demonstrated that there were significantly high correlations between the variables, and the data were suitable for factor analysis ($P < .001$). The findings revealed no factor load under 0.500 (Figure 1).

Figure 1 provides information on which items consist of the measurement model confirmed with 10 items and demonstrated the standardized regression coefficients (factor loads) for 1-way paths. The study findings revealed no factor load under 0.500.

Table 1. Index Values of the Measurement Model and Good Fit Value (n=457)

	Fit Index Values	Acceptable Fit Values
χ^2	86.701	-
Df	34	
P	<.001	
χ^2/df	2.550	≤ 5
GFI	0.962	≥ 0.85
CFI	0.967	≥ 0.85
NFI	0.847	≥ 0.85
TLI	0.956	≥ 0.85
RMSEA	0.058	≤ 0.08
SRMR	0.035	≤ 0.10

This table shows that confirmatory factor analysis results are within acceptable limits for the MHPK-10. GFI, Goodness-of-fit index; CFI, Comparative fit index; NFI, Normed fit index; TLI, Tucker-Lewis index; RMSA, Root mean square error of approximation; SRMR, Standardized root mean square residual.

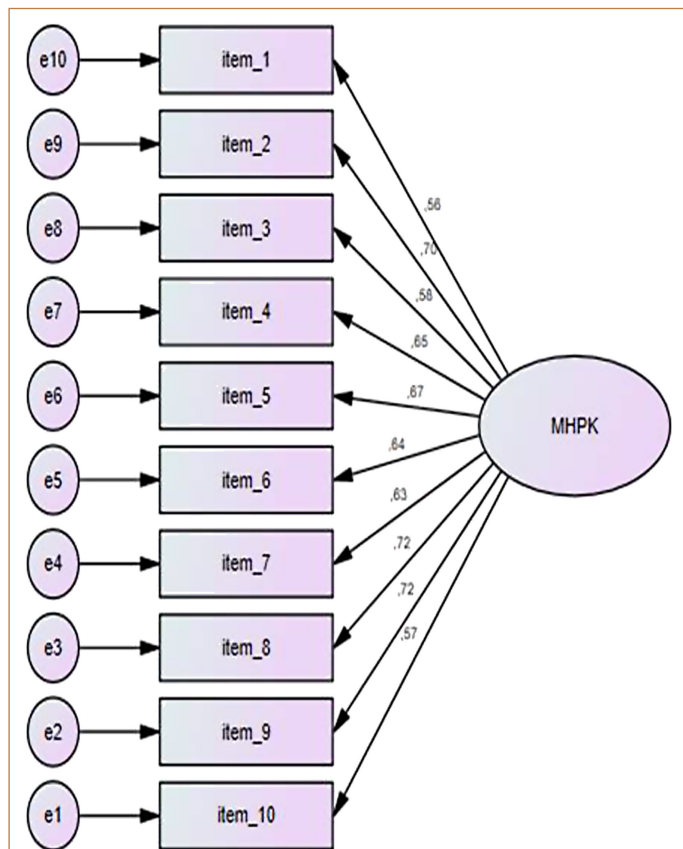


Figure 1. Path diagram for the the Positive Mental Health Literacy Scale.

Reliability analysis

The Cronbach’s alpha analysis demonstrated that the reliability of the unidimensional MHPK-10 that included 10 items was high ($\alpha=0.872$). McDonald’s omega was 0.903. No total item correlation was less than 0.3, and no item reduced the reliability of the scale (Table 2). To test the consistency of the scale over time, the scale was reapplied to 50 out of 457 participants 2 weeks later. The results revealed a statistically significant high fit between the test and retest data (intraclass correlation coefficient (ICC)=0.739) (Table 3). The mean participant scores in equivalent scales were included. The mean participant score was 46.23 (SD=10.17) in the Adolescent

Total Item Correlation	Item Total Correlations	Cronbach’s Alpha When an Item Is Deleted
Item_1	0.521	0.866
Item_2	0.648	0.857
Item_3	0.548	0.865
Item_4	0.607	0.860
Item_5	0.613	0.858
Item_6	0.592	0.860
Item_7	0.578	0.861
Item_8	0.671	0.855
Item_9	0.673	0.854
Item_10	0.518	0.866

Table 3. Examination of Test–Retest Results (n=50)

	Intraclass Correlation Coefficient	95% CI		P
		Lower Limit	Upper Limit	
Test–retest	0.739 ^c	0.539	0.852	<.001*

*P < .05.

Subjective Well-Being Scale, 45.38 (SD= 9.93) in the Psychological Resilience Scale, and 2.90 (SD= 0.90) in the MHPK-10 scale (Table 4). A positive and significant moderate correlation was determined between the participant scores in the MHPK-10 and the Adolescent Subjective Well-Being scales ($r=0.391$; $P < .001$). A positive and significant moderate correlation was determined between the participant scores in the MHPK-10 and the Psychological Resilience scales ($r=0.442$; $P < .001$) (Table 5).

Discussion

Most mental health problems in adulthood are rooted in adolescence, and the evidence demonstrated that mental disorders could be prevented with early diagnosis and intervention.²⁰ Thus, measurement tools that could correctly reveal the mental health literacy in SD, standart deviation different age groups are required. The present study aimed to determine the validity and reliability of the MHPK-10 scale adapted to the Turkish language.

Discussion of Validity and Reliability of MHPK-10, Construct Validity, and CFA

Confirmatory factor analysis was conducted to test the construct validity of the MHPK-10 scale. The conformity of the CFA and variables to the organizational structure was determined.²¹ The analyses indicated that the MHPK-10 was a unidimensional measurement tool and included 10 items. It was consistent with the original scale and identical to the findings reported in the study conducted on the original 10-item scale. Furthermore, the MHPK-10 was a unidimensional scale based on the original study findings.⁸ It was demonstrated that the square fit of the scale was 2.55 in CFA, which was within the statistically acceptable goodness of fit limit.²²

The KMO and Bartlett tests were conducted to determine the data consistency in factor analysis. Kaiser–Meyer–Olkin was 0.918 for and Bartlett test was 1629.721 ($P < .001$). The analyses demonstrated

Table 4. Descriptive Statistics of the Scales (n=457)

	Mean (SD)	Minimum	Maximum
Adolescent subjective well-being	46.23 (10.17)	15	60
Psychological resilience	45.38 (9.93)	12	60
Mental health literacy	2.90 (0.90)	0	5

SD, standard deviation.

Table 5. Examination of the Correlations Between Scales

	n = 457	MKPK-10
Adolescent subjective well-being scale	r	0.391*
	P	<.001*
Psychological resilience	r	0.442*
	P	<.001*

*P < .001.

that the study data were adequate for factor analysis. A KMO value of over 0.90 reflects that each scale variable perfectly conforms with the other variables.²³

The χ^2/df ratio in the model obtained with the CFA analysis conducted to determine the construct validity of the scale was below 5; RMSEA and RMR were less than 0.08; the CFI, GFI, IFI, and TLI were above 0.90; the AGFI and NFI were close to 0.90, demonstrating that the model was consistent with the CFA data.²³⁻²⁵

Reliability

The scale item score correlations varied between 0.518 and 0.673. This demonstrated that correlation coefficients between the scale items and the total and sub-scale scores were adequate and reliable. The total item correlation should be over 0.30.^{26,27}

The Cronbach's alpha reliability coefficient was 0.872 for the overall scale. A Cronbach's alpha coefficient of $0.80 \leq \alpha \leq 1.00$ reflects high reliability.²⁸ The Cronbach's alpha was 0.86 on the original scale.⁸ Similarly, α was 0.84 for the scale developed by Jorm et al⁷ 0.873 for the scale developed by O'Connor and Casey.¹²

To test the consistency of the scale over time, the scale was reapplied to 102 participants 2 weeks later. The results revealed a statistically significant high fit between the test and retest findings (ICC = 0.739, $P < .001$). This demonstrated that the scale was consistent and reliable.²⁹

MHPK-10 Attributes

The mean MHPK-10 score of the participants was 2.90. This demonstrated that the MHPK-10 scores of the adolescents were low. On the other hand, the mean score on the original scale was 4.51.⁸ The mean mental health literacy score of the adolescents was lower in the present study when compared to the original scale. However, Arafat et al³⁰ determined that the depression literacy score of the students and Rafal et al¹¹ reported that the mean mental health literacy score of the novice university students were moderate. The similarities between the present study findings and other reports were due to cultural attitudes toward mental health problems and the differences between the available psychological health services in societies where the studies were conducted. Based on the present study findings, the low MHPK-10 scores of adolescents could be since mental health courses or training were not available for the majority of the adolescents. Also, the differences between the findings of the studies conducted in different countries could be due to the differences between the attitudes of these societies toward mental health problems based on cultural attributes and various mental health services available in these countries. Rafal et al¹¹ reported that students mostly avoided professional healthcare. In a study conducted with adolescents and young adults, Rickwood et al¹⁰ reported that younger individuals employed more informal networks (friends, parents, partners, etc.) for their mental problems and older individuals (college students) preferred professional support rather than informal support.

In conclusion, the present study reported the psychometric attributes of the MHPK-10 scale. The findings demonstrated that MHPK-10 scale scores were low among Turkish adolescents when compared to the original scale reports. The validity and reliability of the scale revealed that it could be used to determine MHPK-10 scores of Turkish adolescents. Six experts determined that the content validity index of the

scale was 0.97. The Cronbach's alpha reliability coefficient of the scale was 0.872, demonstrating high reliability. Based on the construct validity findings, content validity index, and Cronbach's alpha coefficient, the MHPK-10 scale could be used to determine the mental health literacy of adolescents.

Intervention programs for mental health literacy for adolescents with higher health risks, particularly mental health problems, could be recommended due to low MHPK-10 scores.

Ethics Committee Approval: Ethics committee approval was obtained from the Health Sciences Ethics Committee of Selçuk University (Approval Date: February 08, 2019; Approval Number: 2019/15230).

Informed Consent: Informed consent was obtained from the individuals who participated in this study.

Peer-review: Externally peer-reviewed.

Author Contributions: Concept - F.O.; Design - F.O., D.O.; Supervision - F.O., D.O.; Resource - F.O., D.O.; Materials - F.O., D.O.; Data Collection and/or Processing - F.O., D.O.; Analysis and/or Interpretation - F.O., D.O.; Literature Search - F.O.; Writing - F.O., D.O., N.G.; Critical Reviews - F.O., D.O., N.G.

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