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Psychometric properties of the Turkish version of the universal mental health literacy scale for adolescents

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ABSTRACT

Purpose: While enhancing mental health literacy is a critical component of preventive mental health, there is currently no mental health literacy instrument specific to adolescents in Turkey. This study aimed to adapt the universal mental health literacy scale for adolescents (UMHL-A) to Turkish and determine its validity and reliability.

Methods: This methodological study utilized data collected from 268 adolescents aged 10 to 14 years, between April and June 2024. Data were obtained using a personal information form and the UMHL-A. The construct validity of the scale was evaluated using confirmatory factor analysis, and its reliability was assessed with internal consistency and test-retest reliability.

Results: The scale consists of two parts: the Likert UMHL-A, a five-point scale to determine adolescents' attitudes, and the T/F UMHL-A, a true/false scale to measure their knowledge. In this study, it was shown that the Likert UMHL-A, which includes 8 items and two factors, namely help-seeking and stigma, and the T/F UMHL-A, which consists 9 items and two factors namely mental health knowledge and mental illness knowledge, had good fit indices. The Cronbach's alpha reliability coefficient was 0.934 for the Likert UMHL-A, and 0.862 for the T/F UMHL-A. The item-total score correlation coefficients of the Likert UMHL-A ranged between 0.582 and 0.856, whereas those of the T/F UMHL-A varied between 0.483 and 0.804.

Conclusion: The Turkish version of the UMHL-A is a valid and reliable tool for assessing adolescents' mental health literacy.

Implications for practice: Health professionals can use this brief and easy-to-apply instrument in clinical practices or educational programs to identify and improve adolescents' mental health literacy.

Introduction

Mental disorders account for a considerable proportion of the global disease burden during adolescence, and are the leading cause of disability in young people (Erskine et al., 2024; Kucera et al., 2023; World Health Organization (WHO), 2021). Worldwide, it is reported that 293 million of the 2.516 billion individuals aged 5–24 years are affected by at least one mental disorder, and the prevalence of mental disorders is 13.9 % for those aged 10–14 years (Kieling et al., 2024). In a meta-analysis including 11 high-income countries, the prevalence of childhood mental disorders is 12.7 % (Barican et al., 2022). In addition, national studies indicate that the overall prevalence of any psychiatric disorder among children and adolescents is 12.1 % in Kenya (Erskine et al., 2024), 15.5 % in Europe (Sacco et al., 2024), 17.5 % in China (Li et al., 2022), 17.8 % in Ireland (Lynch et al., 2023), and 24.6 % in Ethiopia (Mitiku et al., 2024). Moreover, approximately 50 % of mental disorders in adulthood begin before the age of 14 (Kågström et al., 2023; Solmi et al., 2022; World Health Organization (WHO), 2021). In Turkey, the overall prevalence of any psychopathology in children aged 6–13 years is 37.6 % without impairment criterion, and 17.1 % with impairment criterion. This prevalence is partly higher than previous global and national studies, highlighting specific challenges faced by Turkish adolescents (Ercan et al., 2019). However, their mental health is largely overlooked due to the false belief that they are in their healthiest period (Juliansen et al., 2024). Indeed, adolescents with mental disorders have the worst access to and engagement in mental health services compared to other age groups (Altwaijri et al., 2023; Ghafari et al., 2022; Kucera et al., 2023). Globally, the need for mental health services for more than half of adolescents is not met (Ghafari et al., 2022). Reasons for the high rate of unmet need for mental health care in this group may be barriers such as poor mental health

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literacy of both adolescents and their parents, stigma, lack of resources, or insufficient training among healthcare providers (Mubeen et al., 2024; Schnyder et al., 2020). Whereas, poor mental health during this critical developmental period portends a range of risky behaviours, including tobacco, alcohol and substance use, risky sexual behaviours, self-harm, violence and suicide (Juliansen et al., 2024; World Health Organization (WHO), 2021). Additionally, poor adolescent mental health negatively affects the education, family and social life, employment, health and well-being throughout the lifecourse (Erskine et al., 2024; Juliansen et al., 2024; Kieling et al., 2024). This situation reveals the need for an urgent action plan to address the increasing mental health needs of adolescents, and demonstrates the importance of culturally sensitive and age-appropriate preventive or therapeutic mental health services (Altwaijri et al., 2023; Benton et al., 2021; Kieling et al., 2024). It is known that the most important element of preventive mental health care is to increase adolescents' mental health literacy levels (Kågström et al., 2023; Marinucci, Grové, & Allen, 2024).

Mental health literacy, defined as "understanding how to obtain and maintain positive mental health, understanding mental disorders and their treatments, decreasing stigma related to mental disorders, and, enhancing help-seeking efficacy" (Kutcher, Wei, & Coniglio, 2016). Mental health literacy is fundamental to mental health promotion, prevention, and care (Jorm, 2015; Kutcher, Wei, & Coniglio, 2016). Although mental health literacy increases access to mental health services and acts as a protective factor against the development of mental health problems, it is reported that adolescents have poor mental health literacy (Kucera et al., 2023; Kutcher, Wei, Costa, et al., 2016; Renwick et al., 2024; Spencer et al., 2022). In this regard, it is vital to expand community-based mental health services and integrate interventions to increase mental health literacy for all children and adolescents into schools (Ma et al., 2023; Marinucci, Grové, & Allen, 2024; Spencer et al., 2022). Young adolescents, in particular, are considered to be at an ideal age for mental health interventions aimed at promoting mental health knowledge, reducing stigma, improving help-seeking attitudes, and facilitating early detection of mental disorders (Kågström et al., 2023; Kutcher, Wei, Costa, et al., 2016).

While the need for mental health interventions for adolescents is supported, assessment tools and methods are reported to be inadequate (World Health Organization (WHO), 2021). However, in order to positively equip adolescents with the knowledge, skills and resources to protect their mental health, it is first necessary to determine their mental health literacy (Kågström et al., 2023; Renwick et al., 2022). In our country, mental health literacy scales are designed for adults (Göktaş et al., 2019; Kesgin et al., 2020), and there is no instrument specific to adolescents. The lack of a valid and reliable scale makes it difficult to accurately measure and assess the mental health literacy of Turkish adolescents. This may lead to underdiagnosis, ineffective interventions, or perpetuation of stigma. In addition, failure to prevent or manage mental health problems in the early years significantly increases their cost and burden (Barican et al., 2022; Ma et al., 2023). Therefore, it is clear that an effective and culturally appropriate measurement tool encompassing the four components of mental health literacy for adolescents is required. For this reason, this study was conducted to determine the psychometric properties of the Turkish version of the UMHL-A developed by Kågström et al. (2023). Thus, it is thought that this instrument, which is specific to adolescents, up-to-date, reliable, valid, short and easy-to-apply, will address an important need in both research and practice, and will help health professionals determine and improve the mental health literacy of adolescents.

Methods

Study design

This study employed a descriptive, cross-sectional, and methodological design. The current study was initiated in August 2023 with permission by e-mail from the corresponding author who developed the original scale, and was conducted according to the Strengthening Reporting of Observational Studies in Epidemiology (STROBE) checklist.

Setting and sample

The study population comprised adolescents aged 10 to 14 years attending a public school in an urban area of western Turkey, between April and June 2024. The number of scale items, which is the most recommended method in scale adaptation studies, was taken as the basis to determine the sample size of the study. It has been reported that the sample size in scale validity and reliability studies should be 5 to 10 times the number of scale items (Boateng et al., 2018), and at least 30 pairs of data are required to evaluate test-retest reliability (Tavşancıl, 2019). The UMHL-A used in this study consists of 17 items. Accordingly, the minimum sample size was determined as 170, taking 10 times the number of scale items as a reference. Eventually, a total of 268 adolescents who met the inclusion criteria on the specified dates were included in the study to ensure that the sample size was enough for factor analysis. For test-retest reliability analysis, UMHL-A was re-administered to 63 randomly selected adolescents from the sample group two weeks later. The inclusion criteria were as follows: aged between 10 and 14 years, volunteering to participate in the study, and having written parental consent. The exclusion criteria were as follows: having a mental disorder diagnosed by a physician based on the adolescent's self-declaration or having incomplete data.

Data collection tools

Data were collected with a personal information form, and the UMHL-A.

Personal information form

This form was prepared by the researchers in line with the literature (Bjørnsen et al., 2017; Kågström et al., 2023). It includes five questions about the sociodemographic characteristics of adolescents.

Universal mental health literacy scale for adolescents (UMHL-A)

The UMHL-A was developed by Kågström et al. (2023) to assess the mental health literacy of children and young adolescents (aged 10–14 years). The scale consists of two parts: the Likert UMHL-A, a five-point scale to determine adolescents' attitudes, and the T/F UMHL-A, a true/false scale to measure their knowledge. The Likert UMHL-A includes the help-seeking (HS) and stigma (ST) dimensions, and consists of 8 items rated on a five-point Likert scale (1: strongly disagree, 2: disagree, 3: neither agree nor disagree, 4: agree, 5: strongly agree) with an extra "3: don't know" option, On the other hand, the T/F UMHL-A includes the knowledge of mental health (KMH) and knowledge of mental illness (KMI) dimensions, and consists of 9 items scored on a two-point scale (1, yes, 0: no) with an additional "0: don't know" option. The scores that can be obtained from the HS, ST, KMH, and KMI dimensions range between 5 and 25, 3–15, 0–5, and 0–4, respectively (Kågström et al., 2023).

Procedures

First, permission was obtained via email from the corresponding author (Ondřej Pešout) who developed the original scale to determine and utilize the psychometric properties of the Turkish version of the UMHL-A. To determine the psychometric properties of the scale, the principles of the International Testing Commission and the World Health Organization regarding the cross-cultural adaptation process of self-report scales were followed (International Test Commission, 2018; World Health Organization (WHO), 2020).

Phase I- Translation: In order to examine the psycholinguistic properties of the scale, the "translation-back translation" method was used. Initially, the original scale was translated into Turkish by two independent individuals who are fluent in English, native Turkish speakers and have a good command of the terminology of the scale.

Phase II- Synthesis of translations: The two translation texts obtained were evaluated by a Turkish language expert, the translation team, and the researchers for semantic, conceptual, linguistic, and contextual differences. Then, a joint decision was made for the translation of each item, and the first draft Turkish scale was obtained.

Phase III- Back translation: At this stage, the draft Turkish scale was translated into the original language by an independent translator who was bilingual, native English speaker and had no knowledge about the scale. Thus, a draft English scale was created.

Phase IV- Expert panel: In order to evaluate the content validity of the scale whose language equivalence was ensured, the expert panel was utilized by using the "Davis Technique". In this regard, a four-point evaluation form (1: not appropriate; 2: needs improving; 3: appropriate, but needs minor modification; 4: very appropriate) was created to allow experts to express their opinions on whether the items on the Turkish scale and the original scale were equivalent. The prepared form was sent to 10 academic staff working in the field of pediatric or psychiatric nursing to receive their feedback. Following the experts' evaluations, the scale items were revised and finalized.

Phase V- Pilot application and cognitive review: After the expert panel, the draft Turkish scale was administered to 35 adolescents, who were not included in the sample, using purposive sampling method to test for comprehensibility. In the pilot application, adolescents were asked if there were any incomprehensible expressions, and if so, their suggestions were noted.

Phase VI- Latest version and documentation: As a result of the adolescents finding the items comprehensible, no changes were made to the scale, and latest version was approved.

Phase VII- Final study: The final study data were obtained by the researchers through face-to-face interviews at two different times. In this context, data collection tools were applied to 268 adolescents aged 10–14 years who were studying at a public school. In order to prevent bias and to match test and retest measurements, adolescents were asked to use an identifying code. It took approximately 20 min to complete the questionnaires. Additionally, the UMHL-A was re-administered to 63 randomly selected adolescents from the sample group two weeks later to test its time-dependent invariance.

Ethical considerations

This study was approved by the Bandirma Onyedi Eylul University Health Sciences Non-Interventional Research Ethics Committee (Decision date: March 21, 2024; number: 2024–700). The institutional permission was obtained from the Balikesir Provincial Directorate of National Education (Decision date: April 04, 2024; number: E-99191664-605.01-100201951). In addition, the principle of volunteerism was adopted in the study, and the adolescents' right to anonymity and confidentiality were protected. All adolescents and their parents were informed about the study, and the adolescents' verbal consent and their parents' written consent were obtained.

Data analysis

Data analysis was performed by a biostatistician independent from the study using Statistical Package for Social Sciences (SPSS-26.0) and Analysis of Moment Structures (AMOS-26.0). In the study, the normality of the data was examined with the Shapiro-Wilk normality test. Descriptive characteristics of adolescents were presented as frequency (n) and percentage (%). The content validity index (CVI) was calculated to evaluate the content validity, while confirmatory factor analysis (CFA) was performed using maximum likelihood prediction and associated fit indices to test the construct validity. Cronbach's alpha coefficient and item-total score correlation coefficient were employed to estimate the reliability of the scale. Intraclass correlation coefficient (ICC) was utilized to assess the test-retest reliability. The significance level was accepted as $p < 0.05$.

Results

Adolescents' characteristics

Adolescents' mean age was 12.07 ± 0.95 years, and 50.0 % were female. The mothers of 36.2 % and fathers of 34.0 % of them were high school graduates, and 49.3 % had a medium economic status.

Validity analysis

The validity of the UMHL-A was assessed both in terms of content and construct validity. To evaluate the content validity of the Turkish version of the scale, the opinions of 10 experts were solicited, and the CVI of the scale was calculated to be 1. In addition, CFA was performed to assess the construct validity of the Likert UMHL-A (Fig. 1), and the T/F UMHL-A (Fig. 2). In the present study, the fit indices of the Likert UMHL-A were found as follows: Chi-square/ Degrees of Freedom (χ^2/df), 2.568; Standardized Root Mean Square Residual (SRMR), 0.021; Root Mean Square Error of Approximation (RMSEA), 0.077; Goodness of Fit Index (GFI), 0.964; Comparative Fit Index (CFI), 0.985; Incremental Fit Index (IFI), 0.985; Tucker Lewis Index (TLI), 0.973. On the other hand, the fit indices of the T/F UMHL-A were found as follows: χ^2/df, 2.533; SRMR, 0.042; RMSEA, 0.076; GFI, 0.953; CFI, 0.959; IFI, 0.959; TLI, 0.938 (Table 1). The factor loadings of the Likert UMHL-A items ranged between 0.586 and 0.897, whereas those of the T/F UMHL-A varied between 0.578 and 0.899 (Table 2).

Reliability analysis

The reliability of the UMHL-A was examined through both internal consistency, and test-retest reliability. The Cronbach's alpha coefficient was found to be 0.934 for the Likert UMHL-A, and 0.862 for the UMHL-A. Additionally, none of the items had a total score correlation coefficient less than 0.30 (Table 3). The ICC calculated for test-retest reliability was 0.998 for Likert UMHL-A, and 0.997 for T/F UMHL-A (Table 4).

Discussion

As the prevalence of mental disorders increases worldwide, the importance of mental health literacy also grows. There is a need for mental health literacy scales especially for adolescents. Therefore, this study

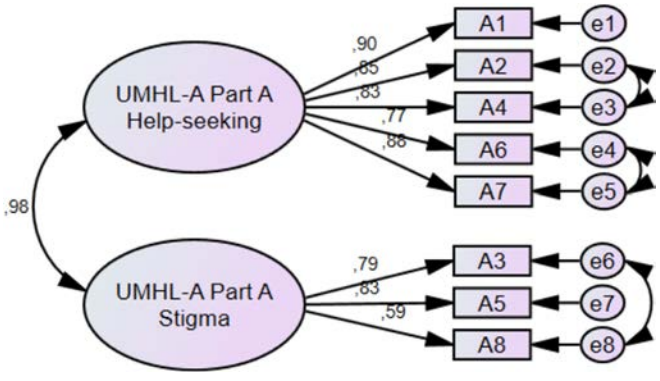

Fig. 1. Factor structure of the two dimensions of the Likert UMHL-A (Part A).

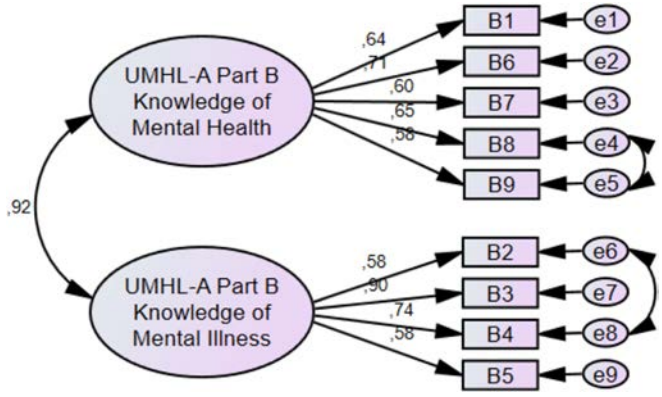

Fig. 2. Factor structure of the two dimensions of the T/F UMHL-A (Part B).

was conducted to evaluate the psychometric properties of the Turkish version of the UMHL-A, and the results of the study were discussed from two perspectives.

Validity analysis

Validity refers to the extent to which a measurement tool accurately measures the feature it aims to measure (Alpar, 2022; Erdoğan et al., 2020; Heale & Twycross, 2015). In this study, both content validity and construct validity methods were used to evaluate the validity of the UMHL-A. Content validity is assessed to determine whether the entire scale and each of its items accurately measure the intended concept, and do not include unrelated concepts. If the tool measures all the features of the concept being analysed, it is considered to have content validity. It is recommended to seek the opinions of 3 to 20 experts for the assessment of content validity (Erdoğan et al., 2020; Polit & Beck, 2020). In the current study, the CVI was calculated based on the opinions of 10 experts in pediatric or psychiatric nursing. CVI is used to determine whether experts consider each item in the measurement tool necessary, and a value greater than 0.90 indicates perfect consistency (Polit & Beck, 2020; Yusoff, 2019). In this study, the CVI for the 17-item UMHL-A was calculated as 1, indicating that the scale has content validity.

Construct validity is used to determine the extent to which an instrument that designed to measure an abstract concept achieves its purpose (Erdoğan et al., 2020). In this study, CFA, a method employed to assess construct validity, was utilized. For the construct validity of a scale, goodness of fit indices are expected to be at the desired level in CFA. To assess goodness of fit, χ2/df, SRMR, RMSEA, GFI, CFI, IFI, and TLI indices are usually used (Erdoğan et al., 2020; Meydan & Şeşen, 2015; Tabachnick & Fidel, 2019). In the literature, a χ^2/df ratio between 0 and 3, an SRMR value between 0 and 0.08, and an RMSEA value between 0 and 0.05 are indicative of a good fit. Of the goodness of fit indices, GFI, CFI, IFI, and TLI values between 0.95 and 1 indicate a good fit (Akyüz, 2018; Tabachnick & Fidel, 2019). In this study, the χ^2/df, SRMR, RMSEA, GFI, CFI, IFI, and TLI values were calculated as 2.568, 0.021, 0.077, 0.964, 0.985, 0.985, and 0.973, respectively, for the two-factor Likert UMHL-A, and 2.533, 0.042, 0.076, 0.953, 0.959, 0.959, and 0.938, respectively, for the two-factor T/F UMHL-A. In this direction, it can be said that both Likert and T/F UMHL-A factor structures exhibit a excellent fit. In the original study, Kågström et al. (2023) found that χ^2/df, SRMR, RMSEA, CFI, and TLI values were 102.532/19, 0.045, 0.067, 0.942, and 0.914 for Likert UMHL-A, and 40.572/26, 0.043, 0.024, 0.981, and 0.973 for T/F UMHL-A, respectively. Similarly, they reported that the fit indices were within acceptable or excellent limits (Kågström et al., 2023).

In this study, the factor loadings for the Likert UMHL-A items ranged from 0.586 to 0.897, while the factor loadings for the T/F UMHL-A items varied between 0.578 and 0.899. Similarly, Kågström et al. (2023) stated that the factor loadings for UMHL-A items ranged from 0.389 to 0.648. In the literature, it has been stated that factor loadings between 0.30 and 0.40 represent the minimum acceptable values to explain the construct, and items with loadings below 0.30 may be appropriate to remove from the scale. Additionally, while loadings of 0.50 or higher are considered to have practical significance, loadings of 0.70 or higher are defined to explain the construct well (Alpar, 2022). Based on these results, it can be said that all items are relevant to the scale and their factor loadings are adequate, both the Likert UMHL-A and the T/F UMHL-A demonstrate a good fit, and the factor structure is confirmed. Thus,

Table 1
Model goodness of fit indices of the Turkish version of the UMHL-A.

Indices	Good Fit	Acceptable Fit	Likert UMHL-A	T/F UMHL-A
χ2/df	0 ≤ χ2/df ≤ 3	3 ≤ χ2/df ≤ 4	2.568	2.533
SRMR	0 ≤ SRMR≤0.08	0.05 ≤ SRMR≤0.10	0.021	0.042
RMSEA	0 ≤ RMSEA≤0.05	0.05 ≤ RMSEA≤0.08	0.077	0.076
GFI	0.95 ≤ GFI ≤ 1	0.90 ≤ GFI ≤ 0.95	0.964	0.953
CFI	0.95 ≤ CFI ≤ 1	0.90 ≤ CFI ≤ 0.95	0.985	0.959
IFI	0.95 ≤ IFI ≤ 1	0.90 ≤ IFI ≤ 0.95	0.985	0.959
TLI	0.95 ≤ TLI ≤ 1	0.90 ≤ TLI ≤ 0.95	0.973	0.938

Abbreviation: χ2/df, Chi-square/Degree of Freedom; SRMR, Standardized Root Mean Square Residual; RMSEA, Root Mean Square Error of Approximation; GFI, Goodness of Fit Index; CFI, Comparative Fit Index; IFI, Incremental Fit Index; TLI, Tucker Lewis Index.

Table 2
Confirmatory factor analysis model fit indices.

Items		Factors	SE	CR	p	Factor loading
A1	<---	Likert UMHL-A Help-seeking				0,897
A2	<---		0.048	19.338	<0.001	0.846
A4	<---		0.049	18.523	<0.001	0.829
A6	<---		0.052	16.170	<0.001	0.767
A7	<---	Likert UMHL-A Stigma	0.043	21.291	<0.001	0.879
A3	<---					0.794
A5	<---		0.070	15.194	<0.001	0.830
A8	<---		0.069	10.959	<0.001	0.586
B1	<---	T/F UMHL-A Knowledge of mental health				0.635
B6	<---		0.138	9.548	<0.001	0.713
B7	<---		0.135	8.337		0.601
B8	<---		0.134	8.777	<0.001	0.647
B9	<---		0.126	7.988	<0.001	0.579
B2	<---	T/F UMHL-A Knowledge of mental illness				0.578
B3	<---		0.148	9.910	<0.001	0.899
B4	<---		0.151	8.279	<0.001	0.742
B5	<---		0.130	7.661	<0.001	0.579

Abbreviation: SE, Standard Error; CR, Critical Ratio.

Table 3
Internal reliability of the Turkish version of UMHL-A.

Scale	Factors	Items	Item-total correlation	α if item deleted	Alpha coefficient	
Part A: Likert UMHL-A	Help-seeking	A1	0.856	0.919	0.924	0.934
		A2	0.802	0.923		
		A4	0.775	0.925		
		A6	0.752	0.927		
	Stigma	A7	0.844	0.920	0.801	
		A3	0.770	0.926		
		A5	0.785	0.925		
		A8	0.582	0.939		
Part B: T/F UMHL-A	Knowledge of mental health	B1	0.586	0.848	0.760	0.862
		B6	0.657	0.840		
		B7	0.539	0.852		
		B8	0.587	0.847		
	Knowledge of mental illness	B9	0.483	0.857	0.771	
		B2	0.514	0.855		
		B3	0.804	0.826		
		B4	0.632	0.843		
		B5	0.521	0.854		

Table 4
Time-invariance analysis.

Scale	ICC	95 % Confidence Interval		p
		Lower	Upper	
Part A: Likert UMHL-A	0.998	0.994	0.999	<0.001
UMHL-A Help-seeking	0.998	0.994	0.999	<0.001
UMHL-A Stigma	0.993	0.982	0.997	<0.001
Part B: T/F UMHL-A	0.997	0.991	0.999	<0.001
UMHL-A Knowledge of mental health	0.992	0.978	0.997	<0.001
UMHL-A Knowledge of mental illness	1.000	1.000	1.000	<0.001

Abbreviation: ICC, Intraclass Correlation Coefficient.

Turkish version of the UMHL-A can be accepted as a valid measurement tool.

Reliability analysis

Reliability is defined as the ability of an instrument to provide sensitive, consistent, and accurate results, and to show stability between independent measurements (Erdoğan et al., 2020; Heale & Twycross, 2015). In this study, internal consistency and test-retest methods were used for the reliability analysis of UMHL-A. Internal consistency is a reliability method that determines whether all aspects of the scale have the ability to measure (Erdoğan et al., 2020). The most commonly used methods for assessing the internal consistency of a measurement tool include Cronbach's alpha coefficient and item-total score reliability (Erdoğan et al., 2020; Tavşancıl, 2019). In the current study, Cronbach's alpha reliability coefficient was calculated as 0.934 for the Likert UMHL-A, and 0.862 for the T/F UMHL-A. According to widely accepted criteria, the coefficient is interpreted as follows: $0.00 \leq \alpha < 0.40$, reliability; $0.40 \leq \alpha < 0.60$, low reliability; $0.60 \leq \alpha < 0.80$, quite reliable; $0.80 \leq \alpha \leq 1.00$, highly reliable (Alpar, 2022; Tavşancıl, 2019). In this regard, the Turkish version of the UMHL-A was quite reliable.

Item-total score reliability provides information about the reliability of each item on the scale. If the items on the scale have equal weight and are independent, the correlation coefficient between each item and the total test score is expected to be high. Although there is no specific standard regarding the range within which the item-total score correlation coefficient should be, generally, when the sample size is < 400, this coefficient is expected to be ≥0.30, indicating that the reliability power of the item is high (Alpar, 2022; Erdoğan et al., 2020). In this study, the item-total score correlation coefficients of the Likert UMHL-A ranged between 0.582 and 0.856, whereas those of the T/F UMHL-A varied between 0.483 and 0.804. Accordingly, it can be concluded that the reliability of each item on the scale is sufficient.

Invariance is the capacity of a measurement tool to provide consistent results in different periods, and is evaluated by test-retest method (Erdoğan et al., 2020; Heale & Twycross, 2015). The test-retest method involves administering the same measurement tool to the same group of participants at different times. Thus, the degree of reliability of the scale is determined by calculating the correlation coefficient between the scores of the two administrations. It has been stated in the literature that the reliability level increases as the correlation coefficient approaches 1, but this coefficient should not be < 0.70, and a value of ≥0.80 is ideal (Erdoğan et al., 2020; Polit & Beck, 2020). In the present study, the test-retest method was applied with a two-week interval to test the invariance of the Turkish version of the UMHL-A, and the ICC calculated were found to be 0.998 for Likert UMHL-A, and 0.997 for T/F UMHL-A. These results showed that the test-retest reliability of the scale was high and that the time-dependent invariance of the scale was achieved.

Limitations

The study is valuable for bringing a measurement tool to assess adolescent mental health literacy into the Turkish language. However, this study has several limitations. First, the findings are based on self-reported data from adolescents aged 10–14 years who voluntarily participated in the study, which restricts the generalizability of the results to all adolescents in Turkey. Therefore, its reliability and validity can be tested in different sample and settings. Second, this study is limited by its lack of focus on cross-cultural and predictive validity. Lastly, the use of "don't know" option could be examined in more depth. Analyses using a cluster and item groupings could expand on the interpretations of the score meanings for the adolescents who chose this response.

Implications for practice

Health professionals such as psychiatric and pediatric nurses can use this short and easy-to-apply measurement tool to identify and improve adolescents' mental health literacy, and to examine factors associated with mental health literacy. In addition, they can collaborate with educators and policy makers to include mental health literacy in the education curriculum from an early age. Indeed, a low-cost general school program or campaigns can improve adolescents' mental health literacy. Therefore, using the scale in longitudinal studies is recommended. It may also be suggested to re-evaluate the psychometric properties of the scale in a larger sample.

Conclusions

In this study, the psychometric properties of UMHL-A were tested, and the results were found to be consistent with the literature. Thus, the Turkish version of the UMHL-A was shown to be a valid and reliable measurement tool.

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Ethics approval statement

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CRediT authorship contribution statement

Emre Ciydem: Writing – review & editing, Writing – original draft, Visualization, Validation, Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization. **Dilek Avci:** Writing – review & editing, Writing – original draft, Visualization, Validation, Supervision, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Conceptualization.

Data availability

Data are available upon reasonable request, by sending an e-mail to the corresponding author.

Declaration of competing interest

The authors have no conflicts of interest to disclose.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.pedn.2024.10.020.

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