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Research Article

The Serbian Short Version of the Mental Health Literacy Questionnaire for Young People (MHLq-yp): Validation with a Sample of Elementary School Students

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ABSTRACT

The last few decades have brought an elaboration of the concept and the development of valid and reliable measures of mental health literacy (MHL) in adults, children, and adolescents. Nevertheless, most of the empirical evidence on MHL has come from developed, high-income Western countries. The present study aimed to develop a short Serbian version of the Mental Health Literacy Questionnaire for Young People (MHLq-yp), suitable for application in elementary school settings. The original version of the MHLq-yp has been adapted into Serbian following the back-translation methodology and think-aloud procedure. This questionnaire was validated in a sample of 386 primary school students (52.2% girls) aged 11 to 14 years (M_{age} = 12.63, SD_{age} = 0.88). Based on exploratory factor analysis and internal consistency indices, a short version of the instrument was developed, showing good internal and convergent validity.

Keywords: literacy, mental health, elementary school, validity, Serbia

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Introduction

Mental health problems typically emerge during childhood and adolescence (Belfer, 2008; Freţian et al., 2021), with 75% of mental disorders starting before the age of 25 and 50% developing by the age of 14 (Kessler et al., 2005). However, research shows that only 18-34% of young people with pronounced symptoms of depression and anxiety seek professional help (Gulliver et al., 2010), indicating a significant portion of young people remain without necessary intervention and support. The probability of early mental health problem recognition and the appropriate help-seeking behaviors is higher with the appropriate "literacy" in this field (Kitchener & Jorm, 2004). Thus, mental health literacy (MHL) is considered a significant determinant of mental health (Bjørnsen et al., 2017).

MHL has received increased attention in recent years. The term originally referred to knowledge and beliefs about mental disorders that aid in their detection, treatment, or prevention (Jorm et al., 1997). Jorm (2012) later proposed a broader conceptualization that includes knowledge of how to prevent mental disorders, recognizing the onset of a disorder, understanding help-seeking options and treatments, and knowing effective self-help strategies for milder problems, as well as first aid skills to support others with mental health issues. Kutcher and colleagues (2013) expanded upon this by proposing a four-component MHL model that addresses stigma and help-seeking efficacy (Kutcher et al., 2016), while Bjørnsen et al. (2017) referred to the component of maintaining positive mental health as ''positive mental health literacy".

Specific mental disorders recognition, knowledge about mental disorders, treatments, and help-seeking among the younger population is generally poor and varies from study to study (Renwick et al., 2022). Levels of MHL can differ by gender (Aluh et al., 2018; Campos et al., 2016; Coles et al., 2016; Cotton et al., 2006; Essau et al., 2013), age (Campos et al., 2016; Essau et al., 2013; Jorm, 2007), and level of proximity to persons with mental health problems (Campos et al., 2016; Dias et al., 2018; Jorm, 2000; Lauber et al., 2001).

MHL is related to various mental health problems, such as depression, anxiety, and stress. Some studies showed a negative correlation

between MHL and symptoms of depression and anxiety (Calear et al., 2021; Lam, 2014; Liu et al., 2023; O'Brien, 2020; Singh et al., 2020; Yao et al., 2023), while others suggest the ability to recognize mental disorders is positively correlated with levels of depression (Al-Shannaq et al., 2023; Ozturan & Kocakaya, 2023). In one study among adolescents, more positive attitudes toward seeking help were associated with higher levels of general anxiety disorder literacy and lower self-stigma (Calear et al., 2021). Lower self-stigma levels were connected to seeking help from parents, while higher self-stigma was related to not seeking help from anyone (Calear et al., 2021). MHL is positively correlated with various aspects of mental health and well-being. It is positively correlated with mental health levels, happiness, and overall adaptation while being negatively correlated with psychological distress (Zhang et al., 2023). Also, MHL may have a protective effect on risky behaviors and may aid emotion regulation strategies in adolescents (Lubman et al., 2020). While MHL is found to be an important predictor of mental health problems, general well-being also highly predicts depression, anxiety, and stress outcomes (O'Brien, 2020). Furthermore, life satisfaction, as a cognitive component of subjective well-being, plays an important role in positive youth development (Park, 2004).

Assessing Mental Health Literacy

Jorm and colleagues (1997) began evaluating mental health literacy (MHL) in Australia through structured interviews and vignettes depicting individuals with mental health disorders. This method has been used in various countries and populations, including young people (Attygalle et al., 2017; Essau et al., 2013; Lam, 2014; Olsson & Kennedy, 2010; Sharma et al., 2017). However, research on MHL in Serbia, particularly among children and youth, is scarce. To our knowledge, there has been only one study with young people in Serbia using this methodology (Popić et al., 2014); it involved 1,000 third-grade students from 40 randomly selected secondary schools and found low levels of MHL. Despite its wide use, this methodology has limitations, such as lengthiness, a narrow focus on specific mental disorders, and difficulties with repeated measurements. New instruments have been developed to address these issues, but most of them still primarily measure

the mental illness component of MHL rather than the mental health component (Liu et al., 2023).

One of the instruments that overcomes the aforementioned constraints is the *Mental Health Literacy Questionnaire for young people (MHLq-yp)*. It is constructed to assess MHL among young people and evaluate the effectiveness of programs promoting MHL among youth (Campos et al., 2016). It consists of 33 items grouped into three factors: First aid skills and Help-seeking (FA/HS) (10 items, e.g., "If I had a mental disorder, I would seek professional help (psychologist and/or psychiatric"), Knowledge/Stereotypes (Kn/St) (18 items, e.g., "Mental disorders affect people's thoughts") and Self-help strategies (SHS) (5 items, e.g., "Good sleep helps to improve mental health"). Participants answer using a Likert-type rating scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). In addition to the scores for the specified dimensions, the total score for the 33 items can also be calculated. A higher score implies a higher level of MHL. Previous studies (Campos et al., 2016) have shown good reliability and internal consistency for these factors: First aid skills and Help-seeking $\alpha = .79$; Knowledge/Stereotype $\alpha = .78$; Self-help strategies $\alpha = .72$; Total score $\alpha = .84$. In 2018, Dias et al. (2018) adapted this questionnaire for young adults, and later, a short version of the questionnaire was developed for adults (Campos et al., 2022). However, there has not been a similar adaptation for children and adolescents. A short form of the MHL measure would be useful for several reasons. First, it would take less time to fill it out, which is especially important when working with elementary school students. Furthermore, researchers could include additional scales of interest within the same questionnaire. Assessing MHL is an important first step toward gaining insight into the baseline level of MHL and designing interventions to improve MHL (Renwick et al., 2022).

Therefore, our study aimed at (1) translating and adapting the MHLq version for young people for the Serbian language, (2) exploring the factor structure and internal consistency of the Serbian version and devising a shorter version of the scale, and (3) evaluating the shorter version's internal consistency and external validity.

Method

Sample

Convenience sampling was used. Data were collected in four elementary schools, all located in Belgrade. The initial sample consisted of 424 students. Participants with ten or more missing values (considering the entire questionnaire) were excluded from further analyses. The final sample included a total of 386 students (52.2% girls) attending the sixth (33.4%), seventh (43.9%), or eighth grade (22.6%), ranging in age from 11 to 14 years (M = 12.63, SD = 0.88). Serbian language was the mother tongue for all participants, and 98.7% reported that they were of Serbian nationality. Almost all participants (99.5%) stated that their parents were employed.

Procedure

In translating and adapting the MHLq-yp, we rigorously adhered to the recommended procedure from the instrument's authors: 1) English translation by a bilingual translator; 2) Think-aloud process with four participants; 3) Back-translation by another bilingual translator; 4) Semantic comparison with four participants; 5) Analysis by the Portuguese research team who developed the original questionnaire.

Before the study, informed consent was obtained from elementary school principals, parents, and students. Participants then anonymously and voluntarily completed the paper questionnaire during one school class (45 minutes). The questionnaires were distributed by researchers or school staff. After the assessment, participants received a debriefing text on youth mental health written by the researchers, covering the importance of monitoring mental health, identifying signs of psychopathology, and referral information. Additional references for further reading about mental health in children and adolescents were also provided.

Measures

The introductory section of the questionnaire included self-reports of gender and age. Participants rated their physical and mental health (using a

rating scale from 1 – very bad to 5 – very good). Participants were asked about their familiarity with individuals experiencing mental health issues, specifying the relationship closeness if applicable (family member/relative, friend, someone else, or themselves). Additionally, participants indicated how often they seek mental health information (1 - not at all, 5 - very often) and rated their level of mental health knowledge (1 - not at all informed, 5 - very informed). In a separate section, participants identified mental health disorders from a list including generalized anxiety, cerebral palsy, Down syndrome (Trisomy 21), Parkinson's disease, depression, stroke, and schizophrenia, with the option to select multiple disorders.

Depression, Anxiety, and Stress Scale - DASS-21

The DASS-21 (Lovibond & Lovibond, 1995; Serbian version: Jovanović et al., 2014) is a 21-item instrument used to assess symptoms of depression, anxiety, and stress in both clinical and nonclinical settings. The DASS-21 includes three subscales: Depression (7 items, "I felt that life was meaningless"), Anxiety (7 items, "I experienced trembling (e.g., in the hands)"), and Stress (7 items, "I found it hard to wind down"). Participants rate the presence of symptoms over the past two weeks using a 4-point response scale ranging from 0 (*did not apply to me at all/never*) to 3 (*applied to me very much or most of the time/always*). Scores for depression, anxiety, and stress are calculated by averaging scores of all items within subscales. The results of a previous study (Jovanović et al., 2014) have shown that the Serbian version of DASS-21 demonstrates good psychometric characteristics. Descriptives and internal consistency coefficients for all subscales are presented in Table 1.

Emotion Regulation Questionnaire - ERQ

The ERQ (Gross & John, 2003, Serbian version validated by Popov et al., 2016) was adapted for children based on suggestions of authors who created the version for children (ERQ - CA; Gullone & Taffe, 2012). It consists of 10 items capturing personal tendencies to reappraise and suppress the expression of emotions. Participants were asked to indicate their level of agreement with each item using the seven-point Likert scale (1 - *strongly disagree* to 7 - *strongly agree*). The ERQ is designed to assess two emotion regulation strategies: Cognitive reappraisal, with 6 items (e.g., "When I'm

faced with a stressful situation, I make myself think about it in a way that helps me stay calm"), and Expressive suppression, with 4 items (e.g., "I keep my emotions to myself"). A higher score implies a higher use of the strategy. Previous research indicated good internal consistency (α = .79 for reappraisal; α = .73 for suppression) and sound convergent and discriminative validity (Gross & John, 2003; John & Gross, 2004). The Serbian version of this questionnaire also showed satisfactory internal consistency (α = .64 for reappraisal; α = .71 for suppression), factor structure, and validity (Popov et at., 2016). Descriptives and internal consistency coefficients obtained in this study are presented in Table 1.

Self-Stigma of Mental Illness Scale – Short Form - SSMIS-SF

The SSMIS-SF (Corrigan et al., 2012) is designed to assess personal stigma toward people with mental health issues. It consists of five items describing people with mental health illness (e.g., "I think that most persons with mental health illness are unpredictable"). Participants answer using a nine-point Likert-type scale (1 - *strongly disagree* to 9 - *strongly agree*). In adapting this questionnaire for the Serbian population, three translators fluent in English (source language) and native in Serbian (target language) were included, all researchers within the fields of psychology or special education, and all having more than five years of experience in working with adolescents in educational or clinical settings. In the first step, two translators adapted the questionnaire independently. Then, a third translator did the back-translation. At the end of the process, a group discussion of translators with a specialist for adolescents took place, after which the final version of the scale was compiled. Higher scores indicate greater personal stigma. The SSMIS-SF has demonstrated good convergent and discriminant validity in prior research (Corrigan et al., 2012). Descriptives and internal consistency are presented in Table 1.

Brief Multidimensional Students' Life Satisfaction Scale - BMSLSS

The BMSLSS (Huebner et al., 2006; Riemer et al., 2014; Seligson et al., 2003) consists of six items that measure the self-perceived satisfaction with life in multiple domains: family life, friends, school experiences, self, where one lives, and in general (e.g., "I would describe my satisfaction with

my family life as"). The participants were asked to rate their satisfaction with the mentioned dimensions during the last few weeks on a seven-point Likert-type scale (1 - *very dissatisfied* to 7 - *very satisfied*). The six items were summed to create the total life satisfaction score. A higher score implies a higher life satisfaction. Previous research (Costa et al., 2022) suggested that the scale has good reliability (ω = 0.87). Also, CFA showed that the one-factor structure has an excellent fit (CFI = 0.972, RMSEA = 0.052, 90% CI [0.046, 0.058], SRMR = 0.028). The adaptation process described in the previous paragraph related to the SSMIS-SF was repeated in the case of this scale, too. Descriptives and internal consistency are presented in Table 1.

Table 1

Sample sizes, empirical ranges, means, standard deviations, skewnesses, kurtosises, and Cronbah's alpha statistics: DASS21, ERQ, SSMIS-SF, and BMSLSS

	N	Min	Max	*M*	*SD*	Sk	Ku	α
DASS-21								
Depression	386	0	3	0.81	0.64	0.77	-0.31	.86
Anxiety	386	0	3	0.74	0.69	0.94	0.22	.81
Stress	386	0	3	1.18	0.75	0.24	-0.94	.83
ERQ								
Cognitive reappraisal	386	1	7	4.02	1.41	-0.22	-0.45	.77
Expressive suppression	386	1	7	3.47	1.51	0.12	-0.82	.72
SSMIS-SF	373	1	9	3.85	1.27	0.41	0.74	.52
BMSLSS	364	2	7	5.58	1.13	-0.87	0.38	.82

Note. DASS-21 = Depression, Anxiety, and Stress Scale; ERQ = Emotion Regulation Questionnaire; SSMIS-SF = Self-Stigma of Mental Illness Scale – Short Form; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale.

Ethical Standards

This study was reviewed and approved by the Committee for Assessment of Ethicality in Scientific Research of the Institute for Educational Research in Belgrade, Serbia (No. 163/2023).

Results

Descriptive statistics

Sample sizes, empirical ranges, means, standard deviations, skewnesses, and kurtosises for DASS21, ERQ, SSMIS-SF, and BMSLSS are presented in Table 1. The majority stated their physical health is good (39.7%) or very good (49.9%). When it comes to mental health, an average of 4.21 (*SD* = 0.91) is significantly higher than the average score of 3 ($t(384) = 38.457$, $p < .001$), with 29.8% stating their mental health was good and 48.3% very good. Of all participants, 46.4% knew someone with mental health issues, with 8.9% being that person.

Additionally, average scores for seeking mental health information and being informed were analyzed. For seeking mental health information, the average score was 3.12 (*SD* = 1.21), which does not deviate significantly from the average score of 3. For being informed, the mean score ($M = 3.43$, $SD = 1.10$) was higher than the mean score of 3 ($t(384) = 7.806$, $p < .001$). Descriptive statistic measures of all items of MHLq-yp are presented in Appendix A and all items in Serbian, as well as the scoring procedure, are presented in Appendix B. When it comes to recognizing mental health disorders, the percentage of affirmative answers is presented in Appendix C. To explore significant differences between percentages, z scores were used. Among mental disorders, differences were found between all proportions, except between schizophrenia and depression. Among other disorders, differences were found between Parkinson's disease and Down syndrome ($z = -4.986$, $p < .001$); cerebral palsy and Down syndrome ($z = -5.150$, $p < .001$), and stroke and Down syndrome ($z = -3.769$, $p < .001$).

Developing a short version: Factor analysis and internal consistency reliability

Following the three-factor model proposed by the original scale authors, CFA conducted in JASP software (Version 0.13.1, University of Amsterdam) indicated a poor fit to our data ($\chi^2(528, 495) = 1414.728$, $p < .001$, RMSEA = .070, and CFI = .655). To explore the 33-item Serbian scale

further, EFA with principal axis factoring and oblique promax rotation was conducted, guided by previous research suggesting intercorrelated factors (Campos et al., 2016). The number of factors to extract was determined using the parallel analysis method (PC), and items with loadings below 0.4 were excluded (Stevens, 2002).

The KMO coefficient (0.82) and Bartlett test ($\chi^2(528) = 3179.911$, $p < .001$) indicated that the data were suitable for EFA, which yielded a four-factor solution accounting for 30.1% of the variance (Figure 1). Table 2 presents the factor loadings for each item. Items 1, 7, 13, 15, 16, 18, 20, 27, and 32 were excluded from the final version due to factor loadings below 0.4. The first factor ($\lambda = 5.933$), explaining 15.9% of the variance, consisted of 9 out of 18 items that were originally part of the factor Knowledge and stereotypes; the second factor ($\lambda = 3.052$), accounting for 7.2% of the variance, included 6 out of 10 items from the initial First Aid and Help-seeking factor; factor number three ($\lambda = 2.098$) explaining 4.2% of the variance, contained 5 items which are distributed in different factors in the original version; and the fourth factor ($\lambda = 1.558$) which accounted for 2.7% of the variance comprised 5 items with all but one (item 14) originating from the Self-help factor. Thus, three factors containing the same items as factors of the original version were also named the same: "Knowledge/Stereotype (Factor 1)," "First aid skills and Help-seeking (Factor 2)," and "Self-help strategies (Factor 4)." However, factor three from a four-factor solution overlapped with other factors both empirically and conceptually. Items 12 (*People with mental disorders come from families with little money*), 17 (*Only adults have mental disorders*), and 26 (*Depression is not a true mental disorder*) are about wrong beliefs about people with mental health disorders and the disorders themselves. All three items are included in the Knowledge/Stereotype factor in the original version of the questionnaire. As shown in Table 3, factor three is the most correlated with the first - Knowledge/Stereotype. However, item 24 (*If a friend of mine developed a mental disorder, I wouldn't be able to help her/him*) describes a belief about one's capacity to help a friend who is dealing with a mental health disorder. In the original version of the questionnaire, this item is included in the Self-help strategies factor. As we consider this factor to be conceptually contradictory, containing different kinds of beliefs about mental health, and

as the study aim was to make a shorter version of the questionnaire, it was decided for the factor three to be excluded. Despite its strong loading, item 14 ("*Alcohol use may cause mental disorders*") was removed from the Self-help strategies factor due to its better conceptual fit with the Knowledge factor. Factors moderately correlate, with the highest correlation being between First aid skills and Help-seeking and Self-help strategies (.54) and the lowest between Knowledge/Stereotype and First-aid skills and Help-seeking (.18) (Table 3).

Figure 1

Scree plot for the first exploratory factor analysis of the MHLq-yp

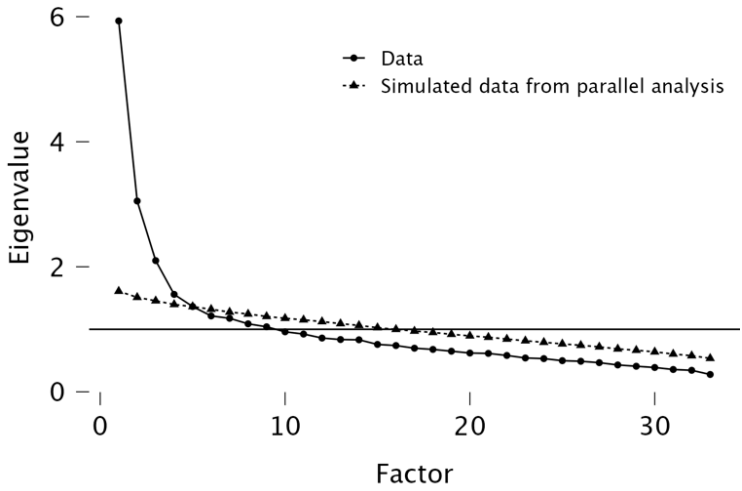


Table 2

Factor loadings

	1st EFA Factors				2nd EFA Factors		
	1	2	3	4	1	2	3
Item11	0.710				0.719		
Item 31	0.608				0.663		
Item 4	0.604				0.511		
Item 23	0.587				0.555		
Item 28	0.564				0.664		
Item 25	0.533				0.427		
Item 22	0.459				0.486		
Item 3	0.416						
Item 33	0.412				0.495		
Item 10		0.804				0.782	
Item 6		0.639				0.621	
Item 8		0.589				0.539	
Item 5		0.520				0.561	
Item 19		0.507				0.468	
Item 29		0.498				0.438	
Item 12			0.656				
Item 17			0.652				
Item 24			0.482				
Item 26			0.422				
Item 21				0.606			0.610
Item 14				0.533			
Item 30				0.478			
Item 2				0.434			0.481
Item 9				0.422			0.447
Item 1							
Item 7							
Item 13							
Item 15							
Item 16							
Item 18							
Item 20							
Item 27							
Item 32							
R^2	30.1				32.7		

Note. Loading not presented in the tables are low factor loadings (< 0.4).

Table 3

Intercorrelations between factors after the first and the second EFA

	1st EFA				2nd EFA		
	Factors				Factors		
	1	2	3	4	1	2	3
1	-				-		
2	.18	-			.23	-	
3	.48	.18	-		.37	.47	-
4	.41	.54	.23	-			

Note. The first EFA: Factor 1 (Knowledge/Stereotype); Factor 2 (First aid skills and Help-seeking); Factor 4 (Help-seeking and Self-help strategies). In the second EFA: Factor 1 (Knowledge/Stereotype); Factor 2 (First aid skills and Help-seeking); Factor 3 (Help-seeking and Self-help strategies).

Since EFA showed that the factor structure of the Serbian version of the MHLq-yp is not unidimensional, reliability coefficients for total scores (for both 33 and 20 items versions) are mainly calculated for comparison with the original version of the questionnaire and comparison of these two Serbian versions. Both versions of the scale showed good reliability (Table 4). The subscale coefficients did not decrease significantly after reducing the number of items. However, the Serbian version of the SHS subscale, consisting of 5 items, had questionable reliability. Thus, despite its low loading, item 32 was retained within this subscale because the reliability coefficient drops to 0.59 if this item is removed. This suggests that the Serbian version of the SHS subscale requires further refinement to improve its reliability.

Table 4

Comparison of Cronbach's alpha coefficients

	Campos et al. (2016)	Original scale Serbian	Shortened version Serbian
Number of items	33	33	20
Knowledge/Stereotype	.78	.79	.79
First aid skills and Help-seeking	.79	.75	.74
Self-help strategies	.72	.65	.61
MHLq-yp	.84	.83	.81

Note. MHLq-yp= Mental Health Literacy Questionnaire for Young People – Serbian Shortened Version, total score.

Finally, the mean values of the three subscales and total scores are calculated based on the results of EFA. Descriptive statistics and correlations are presented in Table 5. All scores are significantly higher than the average score 3: Kn/St ($t(385) = 26.021$, $p < .001$); FA/HS ($t(385) = 17.526$, $p < .001$); SHS ($t(385) = 21.772$, $p < .001$); total MHLq-yp score ($t(385) = 30.085$, $p < .001$).

Table 5

Means, standard deviations, and Spearman's rho correlations among MHLq-yp dimensions and total score

	M	*SD*	Sk(z)	Ku(z)	Kn/St	FA/HS	SHS
Kn/St	3.86	0.66	-6.55	5.70	-		
FA/HS	3.74	0.83	-4.92	-0.73	.08	-	

SHS	3.79	0.71	-4.19	1.91	.28**	.36**	-
MHLq-yp	3.81	0.53	-8.01	9.03	.66**	.70**	.69**

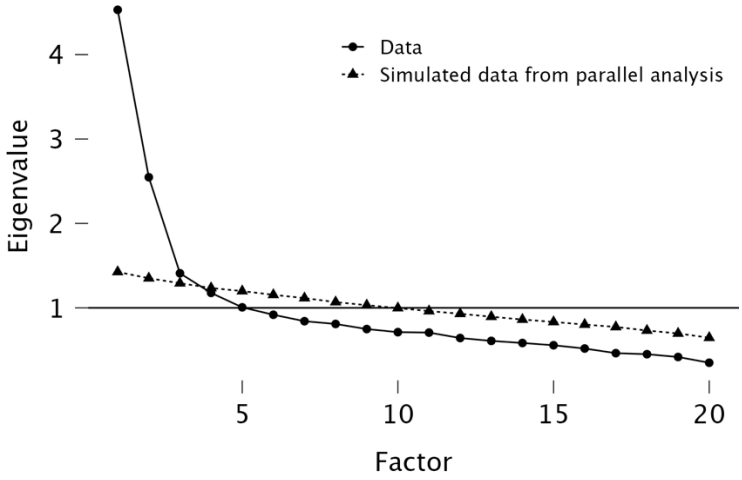
Note. Kn/S t= Knowledge/Stereotype; FA/HS = First aid skills and Help-seeking; SHS = Self-help strategies; MHLq-yp = Mental Health Literacy Questionnaire for Young People – Serbian Shortened Version.
* $p < .05$. ** $p < .01$.

The Serbian short version of the MHLq-yp contains three factors: Knowledge/Stereotype (items 3, 4, 11, 22, 23, 25, 28, 31, 33), First aid skills and Help-seeking (items 5, 6, 8, 10, 19, 29), and Self-help strategies (items 2, 9, 21, 30, 32). The second EFA is then performed on these 20 items. The KMO coefficient (0.83) and Bartlett test ($\chi^2(190) = 1771.738$, $p < 0.001$) indicated that the data were suitable for EFA. A three-factor solution was yielded, accounting for 32.7% of the variance (Figure 2). The second part of Table 2 presents the factor loadings for each item. The first factor (λ=4.530), explaining 15.7% of the variance, consisted of 8 out of 9 items that were chosen to be retained within the factor Knowledge and stereotypes. Item 3 (*A person with depression feels very miserable*) had a low loading on the first factor (0.34). However, compared to the loadings of this item on the other factors, this loading was the highest. The second factor (λ = 2.547) accounting for 10.8% of the variance included all six items we retained within the factor First Aid and Help-seeking. Factor number three (λ=1.41) explained 6.2% of the variance, containing only three out of five retained items within the Self-help strategies factor. The loading of item 30 (*Doing something enjoyable helps to improve mental health*) on factor three was lower than 0.4 (0.371) but still higher than its loadings on other factors. Finally, item 32 (*Talking over problems with someone helps to improve mental health*) has a loading lower than 0.3, which was expected, taking into account that it is retained within this scale based on reliability analyses despite low loading in the first EFA. Based on the second EFA, we decided to retain all 20 items in the short version. To conclude, the short Serbian version

of MHLq-yp yielded a three-factor structure and showed good reliability, but the SHS scale should be further explored and improved.

Figure 2

Scree plot for the second exploratory factor analysis of the MHLq-yp



Convergent Validity: Correlates and group differences

To assess convergent validity, correlations were examined between the MHLq-yp dimensions and total scores with measures of depression, anxiety, stress, cognitive reappraisal, expressive suppression, personal stigma towards individuals with mental health issues, satisfaction with life in various domains, self-perceived mental health, frequency of seeking mental health information, and level of general mental health knowledge. Due to non-normal distributions, Spearman's rho correlations were utilized. Findings are detailed in Table 6.

Table 6

Correlations between MHLq-yp dimensions and MHLq-yp total score and different factors

Scale	Kn/St	FA/HS	SHS	MHLq-yp
DASS21				
Depression	.28**	-.18**	-.02	.03
Anxiety	.31**	-.19**	-.03	.05
Stress	.29**	-.18**	.00	.05
ERQ				
Cognitive reappraisal	.11*	.13*	.20**	.21**
Expressive suppression	.21**	-.09	.03	.05
SSMIS-SF	.13*	.02	.09	.11*
BMSLSS	-.25**	.24**	.13*	.03
Mental healh	-.24**	.30**	.01	.05
Seeking info	.16**	.04	.06	.13**
Informed	.14**	-.03	.01	.05

Note. Kn/St = Knowledge/Stereotype; FA/HS = First aid skills and Help-seeking; SHS = Self-help strategies; MHLq-yp = Mental Health Literacy Questionnaire for Young People – Serbian Shortened Version; DASS21 = Depression, Anxiety, and Stress Scale; ERQ = Emotion Regulation Questionnaire; SSMIS-SF = Self-Stigma of Mental Illness Scale – Short Form; BMSLSS = Brief Multidimensional Students' Life Satisfaction Scale; Mental health = Participants' assessment of their mental health; Seeking info = Participants' assessment of how often they seek information about mental health; Informed = Participants' assessment of how much they are informed about mental health in general. * $p < .05$. ** $p < .01$.

To compare groups, a non-parametric test was employed due to the non-normal distribution of dependent variables. A Mann-Whitney U test was conducted to examine differences in total MHL score and subscores by gender and whether participants knew someone with mental health issues (Table 7). The results showed that girls had significantly higher Knowledge/Stereotype scores (U = 12121, z = -5.06, $p < .001$) and total

scores (U = 14005, z = -3.24, p < .001) than boys. Participants who knew someone with mental health issues had significantly higher Knowledge/Stereotype scores (U = 6673, z = -2.03, p = .042) but significantly lower First Aid Skills and Help-Seeking scores (U = 6255.5, z = -2.74, p = .006) compared to those who did not know someone with mental health issues.

Table 7

Differences in MHLq-yp dimension and total score based on gender and proximity with mental health problems

	Gender			Proximity		
	Girls	Boys		Yes	No	
	Mean Ranks			Mean Ranks		
Kn/St	213.70	157.06	**	140.72	120.33	*
FA/HS	192.62	181.55		124.95	152.41	**
SHS	192.54	181.65		138.40	125.06	
MHLq-yp	204.32	167.95	**	134.65	132.68	
N	201	173		88	179	
N total	374[a]			267[b]		

Note. Kn/St = Knowledge/Stereotype; FA/HS = First aid skills and Help-seeking; SHS = Self-help strategies; MHLq-yp = Mental Health Literacy Questionnaire for Young People – Serbian Shortened Version. *p < .05. **p < .01.

[a]. Participants who answered prefer not to answer or *other* are removed (n=11);

[b]. Participants who answered they are not sure if they know someone with mental health problems are removed (n=119).

Discussion

This study aimed to translate and adapt the MHLq for young people into Serbian, explore its factor structure, create a shorter version, and assess its internal consistency and external validity.

The majority of respondents rated their mental health above average, i.e., as very good or good. At the same time, nearly half of the participants stated that they know someone with mental health problems, mostly friends. Among mental health disorders, the smallest percentage of participants

accurately identified generalized anxiety as a mental disorder, compared to depression and schizophrenia. Previous studies showed young people to have very low percentages of successfully identifying mental disorders (Aluh et al., 2018; Coles et al., 2016; Gulliver et al., 2010; Jorm, 2007; Lam, 2014; Thai et al., 2020; Wright et al., 2005). It is important to explore why it is harder for young people to recognize general anxiety as a mental health problem and how successful they are in differentiating it from stress or nervousness. Among other medical conditions, it is notable that most issues are related to Down syndrome, which is recognized as a mental health issue more often than other medical conditions, probably due to cognitive impairments. It would be interesting to cross-check this data with data on how many people with these disorders participants know. Participants demonstrated average information-seeking behavior and knowledge about mental health. Also, participants showed a reasonable degree of MHL, including knowledge about mental health problems, self-help strategies, and using first aid and help-seeking skills. Such findings contrast with a previous Serbian study indicating lower MHL among high school students (Popić et al., 2014), in which, however, a different methodology (vignettes) was used.

Factor analysis and internal consistency analysis resulted in the shorter version of the instrument, with 20 items organized, as expected, in the original three dimensions – Knowledge/Stereotype, First aid skills, and Help-seeking and Self-Help strategies (SHS). The intercorrelations between dimensions and total score supported the questionnaire's consistency. Internal reliability was acceptable, except for the SHS subscale, which showed questionable reliability. Internal reliability for the SHS subscale might be improved in future research with the inclusion of additional items. However, at first, EFA showed a four-factor solution was the one that best fit the data, but we decided to exclude one of the factors. This factor consisted of beliefs related to mental disorders (*Depression is not a true mental disorder; Only adults have mental disorders*), people dealing with them (*People with mental disorders come from families with little money*), and beliefs about whether one would be able to help if a friend develops a mental disorder. In the original version of the questionnaire, the first three items are loaded on the Knowledge/Stereotype factor and the latter on the Self-help strategies factor. However, it is important to consider why our data did not fit

this way. It is possible that participants understood the last item in the context of their own limited resources for help (would I know who to turn to, would I have someone to ask for information), or perhaps they understood the item in the context of knowledge about mental disorders (would I understand them, would I know what their problem entails and what it looks like). Considering that all other items conceptually fit the Knowledge/Stereotype factor best, it may be the wording of the item or cultural differences. This should be further investigated using, for example, interviews or focus groups. The first three items are all about Knowledge/Stereotype, but they did not load on that factor. It would be important to explore this further with participants, asking them about their understanding of the items' meaning. Furthermore, item 14 (*Alcohol use may cause mental disorders*) was excluded because of poor conceptual fit with the Self-help strategies factor, and we consider the Knowledge/Stereotype factor to be a better conceptual fit (as is the case with the original version of the questionnaire). However, it should be noted that this item strongly loaded on the Self-help strategies factor, which raises the question about how alcohol is perceived by young adolescents in the context of mental health. Kilibarda and colleagues (2013) showed in a sample of students in Serbia that predictors for potential drinking are the expectation of having fun and the wish to feel relaxed. Along with our results, does this mean that adolescents perceive drinking as a self-help strategy? It would be important to explore this further in a separate research study.

The Knowledge/Stereotype subscale was positively correlated with depression, anxiety, and stress, while the First Aid Skills and Help-seeking subscales showed negative correlations with these measures. This suggests that individuals with heightened symptoms of psychological distress may face challenges in using these skills (Calear et al., 2021; O'Brien, 2020; Singh et al., 2020). All MHLq-yp subscales and the total score were positively correlated with cognitive reappraisal, indicating that greater knowledge about mental health and treatment options may lead individuals to be better equipped to understand and manage their emotions (Tambling et al., 2023; Zhang et al., 2023). However, only the Knowledge/Stereotypes subscale showed a significant positive correlation with expressive suppression. It is possible that this correlation reflects the avoidance of content that we seek or are exposed to, but that is also unpleasant, so we may tend to avoid or

suppress those feelings. Previous studies showed that cognitive reappraisal can effectively mitigate one's subjective experience of negative emotion, while the effect of expressive suppression is controversial (Yan et al., 2022). Surprisingly, the Knowledge/Stereotype subscale and MHLq-yp total score were positively correlated with personal stigma toward individuals with mental health problems, contrary to previous research suggesting a decrease in stigma with higher MHL levels (Calear et al., 2021; Jung et al., 2017; Simões de Almeida et al., 2023). This discrepancy underscores the need to explore social and cultural factors influencing knowledge and stigma surrounding mental health, especially in less developed countries like Serbia, where low levels of mental health knowledge, high stigma, and limited confidence in healthcare services prevail (Renwick, 2022).

Knowledge/Stereotypes subscale correlated negatively, while the First Aid Skills and Help-seeking and Self-Help Strategies subscales correlated positively with the self-perceived satisfaction with life in multiple domains. Such findings are partly in line with previous results linking better MHL and adolescents' well-being (Ethan & Patricia, 2021; Zhang et al., 2023). However, different directions of these correlations raise questions about using the total MHL score when accessing MHL. A higher score on the Knowledge/Stereotypes scale was associated with poorer self-evaluated mental health in this study, contradicting prior research (Jafari et al., 2021). This may be because greater knowledge leads to recognizing more symptoms, negatively impacting self-rated mental health. The Knowledge/Stereotype subscale and MHLq -yp total score were also positively correlated with participants' self-reported frequency of seeking information about mental health, emphasizing the importance of promoting MHL to encourage individuals to seek information and potentially improve mental health outcomes (Ghadirian & Sayarifard, 2019; Gulliver et al., 2010).

Our results indicate that girls score higher on Knowledge/Stereotype and overall Mental Health Literacy (MHL) compared to boys, which is in line with previously reported results (e.g., Nobre et al., 2022; Ozturan & Kocakaya, 2023; Ratnayake & Hyde, 2019). However, some studies found higher MHL levels in men, particularly in communities with better access to education and media for males (Bener & Ghulom, 2011). Our results also show that respondents who pointed out that knowing someone with a mental

health problem achieved higher scores on the Knowledge/Stereotype subscale and lower scores on the First Aid Skills and Help-seeking subscale. Similar results were found in several studies (Campos et al., 2016; Dias et al., 2018; Jorm, 2000; Lauber et al., 2001; Nobre et al., 2022). Improving help-seeking behaviors is crucial for adolescents, with interventions showing increased formal help-seeking (Lubman et al., 2020). Enhancing MHL parents and adolescents may lead to improved mental health support for adolescents, who are more likely to seek help from parents and peers than mental health professionals (Calear et al., 2021).

Assessing MHL is vital for preventing, identifying, and treating mental health issues. The MHLq-yp (short version) serves as a valuable screening tool, particularly in school settings, offering a reliable self-report measure rooted in a comprehensive MHL approach. Future research should further investigate the psychometric properties of the MHLq-yp short form with diverse adolescent samples.

Limitations and future directions

Considering the age of participants and the paper-and-pencil method we used for collecting data, the percentage of excluded participants due to missing values was at the level expected by the researchers (about 9%). However, it is possible that this was not completely random but related to MHLq-yp - the participants with lower MHLq-yp scores may have had difficulties answering other questions related to mental health. This issue could be further explored in future research using focus groups or interviews. Furthermore, the data on knowing someone with mental health problems (families/relatives/friends/themselves) rely on participants' own assessments of disorders' presence, which are not reliable, so these results should be interpreted with caution. Although the BMSLSS demonstrated high reliability, it was not previously validated in Serbia, and the reliability of the SSMIS-SF is questionable. Future research should include additional questionnaires that have been validated in Serbian samples of children and adolescents. The main problem, which was noted in the Results and Discussion sections, is related to the SHS scale. Low factor loadings should be further explored in future research, and the development of additional items should be considered. Suggestions for future research are also

mentioned in the Discussion section, but it is important to add that a multi-method approach and a more diverse sample of participants could be used in future research. However, as far as we know, this is the first study that validated the scale for assessment of MHL in elementary school students in Serbia.

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Conflict of interest

We have no conflicts of interest to disclose.

Data availability statement

Data used in this paper are available upon a reasonable request.

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Appendix A

Table A1

Means, standard deviations, skewness, and kurtosis for all items

	Items	*N*	*M*	*SD*	Skewness (z)	Kurtosis (z)
1	If a friend of mine developed a mental disorder, I would offer her/him support.	383	4.51	0.84	-2.14	5.02
2	Physical exercise helps to improve mental health.	383	4.02	1.14	-1.00	0.13
3	A person with depression feels very miserable.	380	3.80	1.13	-0.58	-0.45
4	People with schizophrenia usually have delusions (e.g., they may believe they are constantly being followed and observed).	371	3.91	1.07	-0.83	0.26
5	If I had a mental disorder I would seek my family's help.	385	4.11	1.27	-1.25	0.33
6	If a friend of mine developed a mental disorder, I would encourage her/him to look for a psychologist.	381	4.25	1.08	-1.65	2.22
7	Mental disorders don't affect people's behaviours.	381	4.0	1.26	-1.07	0.03
8	If a friend of mine developed a mental disorder, I would talk to her/his parents.	382	3.24	1.37	-0.26	-1.09
9	Good sleep helps to improve mental health.	384	3.68	1.20	-0.63	-0.41

10	If I had a mental disorder I would seek for professional help (psychologist and /or psychiatrist).	383	3.87	1.31	-0.96	-0.23
11	A person with anxiety disorder may panic in situations that she/he fears.	369	4.00	1.06	-1.09	0.88
12	People with mental disorders come from families with little money.	378	4.19	1.03	-1.05	0.26
13	If a friend of mine developed a mental disorder, I would listen to her/him without judging or criticising.	382	4.42	0.98	-1.90	3.18
14	Alcohol use may cause mental disorders.	384	3.87	1.19	-0.88	-0.10
15	Mental disorders don't affect people's feelings.	385	4.04	1.27	-1.12	0.11
16	The sooner mental disorders are identified and treated, the better.	383	4.47	0.92	-2.00	3.67
17	Only adults have mental disorders.	385	4.60	0.80	-2.34	5.66
18	Brain malfunctioning may cause the development of mental disorders.	376	3.77	1.00	-0.57	0.06
19	If a friend of mine developed a mental disorder, I would encourage her/him to get medical support.	385	3.97	1.11	-0.94	0.19
20	If I had a mental disorder I would seek my friends' help.	383	3.49	1.30	-0.47	-0.88

21	Having a balanced diet helps to improve mental health.	384	3.27	1.18	-0.24	-0.63
22	One of the symptoms of depression is the loss of interest or pleasure in most things.	379	4.01	1.10	-1.11	0.72
23	A person with anxiety disorder avoids situations that may cause her/him distress.	376	3.75	1.09	-0.67	0.03
24	If a friend of mine developed a mental disorder, I wouldn't be able to help her/him.	382	3.94	1.16	-0.94	0.05
25	The symptoms' length is one of the important aspects to determine whether a person has, or has not, a mental disorder.	360	3.39	0.98	-0.11	0.02
26	Depression is not a true mental disorder.	382	3.86	1.31	-0.90	-0.32
27	Drug addiction may cause mental disorders.	381	4.25	1.01	-1.45	1.74
28	Mental disorders affect people's thoughts.	382	4.18	0.96	-1.11	0.78
29	If a friend of mine developed a mental disorder, I would talk to the form teacher or other teacher.	383	3.02	1.40	-0.13	-1.23
30	Doing something enjoyable helps to improve mental health.	381	3.98	1.03	-0.95	0.58
31	A person with schizophrenia may see and hear things that nobody else sees and hears.	379	3.88	1.12	-0.82	0.03

32	Talking over problems with someone helps to improve mental health.	383	4.01	1.01	-1.01	0.77
33	Highly stressful situations may cause mental disorders.	382	3.92	1.10	-0.83	-0.04

Note. Both theoretical and empirical range for all items is from 1 to 5.

Appendix B

Table B1

Items of Serbian Short Version of Mental Health Literacy Questionnaire for Young People (MHLq_yp)

1	Физичка активност помаже да ментално здравље буде боље.
2	Особа са депресијом се осећа веома јадно.
3	Особе са шизофренијом обично имају илузије (на пример, верују да их неко стално прати и посматра).
4	Да ја имам ментални поремећај, потражио/ла бих помоћ од своје породице.
5	Да мој друг/другарица развије ментални поремећај, охрабрио/ла бих га/је да потражи помоћ психолога.
6	Да мој друг/другарица развије ментални поремећај, разговарао/ла бих са његовим/њеним родитељима.
7	Добар сан помаже да ментално здравље буде боље.
8	Да ја имам ментални поремећај, тражио/ла бих професионалну помоћ (психолога и/или психијатра).
9	Особа са анксиозним поремећајем може паничити у ситуацијама којих се она плаши.
10	Да мој друг/другарица развије ментални поремећај, подстакао/ла бих га/је да потражи медицинску помоћ.
11	Балансирана исхрана помаже да ментално здравље буде боље.
12	Један од симптома депресије је губитак интересовања или уживања у већини ствари.
13	Особа са анксиозним поремећајем избегава ситуације које могу да је узнемире.

14	Трајање симптома је један од важних аспеката за одређивање тога да ли неко има или нема ментални поремећај.
15	Ментални поремећаји утичу на мисли које људи имају.
16	Да мој друг/другарица развије ментални поремећај, разговарао/ла бих са разредним/ом или неким другим наставником.
17	Када радимо нешто у чему уживамо, то може да нам поправи ментално здравље.
18	Особа са шизофренијом може видети и чути ствари које нико други не види и не чује.
19	Разговор са неким о својим проблемима помаже да ментално здравље буде боље.
20	Изузетно стресне ситуације могу довести до менталних поремећаја.

Note. Knowledge/Stereotype - item9, item18, item3, item13, item14, item15, item12, item2, item20); First Aid and Help-seeking – item8, item5, item6, item4, item10, item16 and Self-Help strategies – item1, item7, item11, item17, item19.

Appendix C

Table C1

Recognizing mental health problems – Percentage of affirmative answers in additional questions of MHLq-yp

	Yes(*N*, %)	*N*
Generalised anxiety	201, 56.0%	359
Depression	272, 75.3%	361
Schizophrenia	269, 74.9%	359
Parkinson's desease	65, 18%	361
Cerebral palsy	63, 17.5%	360
Stroke	78, 21.7%	360
Down syndrome (Trisomy 21)	124, 34.3%	362