

Validation of the Arabic Version of the Mental Health Literacy Scale (MHLS) for the general population in Makkah, Saudi Arabia

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Abstract: **Background:** The estimated lifetime prevalence risk of any mental condition is 34%, and the prevalence of mental disorders is on the rise. The Mental Health Literacy Scale (MHLS) is the most popular and reliable theory-based instrument for assessing mental health knowledge. Therefore, this research aimed to validate the Arabic version of the Mental Health Literacy Scale (MHLS) among the Saudi population in Makkah City, Saudi Arabia. **Methods:** This cross-sectional study was carried out using a simple random sample of 253 individuals from the general community. MHLS questionnaire with 35 questions was chosen. MHLS was validated using content and construct validity (Confirmatory factor analysis). **Results:** The modified mental health literacy scale was psychometrically and statistically valid, reliable, and theoretically coherent among the sample under study. A correlation analysis between different constructs, as revealed by CFA, was conducted. Results showed that participants' attitudes toward mental disorders were positively and significantly associated with identifying mental disorders ($r = 0.13$, $p = 0.049$) and attitudes toward individuals with mental disorders ($r = 0.20$, $p = 0.002$). Results of the perceived MHL indicated an overall mean MHL score of 3.72 ± 0.46 (out of 5). The domain with the highest mean score was related to the participants' attitudes towards mental disorders (4.41 ± 0.68), followed by information-seeking towards mental disorders (3.58 ± 0.97), identification of mental disorders (3.38 ± 0.59) and finally participants' attitudes individuals with mental disorders (3.31 ± 0.79). **Conclusion:** MHLS in Arabic was valid and reliable to be used in MHL evaluation. The work can assist administrators in developing more effective plans to raise the MHL of the general population and add to the body of evidence currently available for MHL assessment.

Keywords: Validation, Mental health, Literacy, Scale, Saudi Arabia.

1. INTRODUCTION

Both mental and physical health are essential components of overall health. Depression, for instance, raises the risk for a variety of physical health issues, especially chronic disorders such as diabetes, heart disease, and stroke. Similarly, chronic diseases may raise the likelihood of mental illness (1). Awareness of mental health is crucial for improving mental health treatment and behavioral health (2). This is an essential and basic topic for shifting to a more proactive mental health strategy.

Mental health literacy is defined as the ability to gain access to understanding and use information in ways that promote and maintain good mental health. It refers to knowledge and beliefs about mental disorders that aid their recognition, management, or prevention. It also includes the ability to recognize specific disorders, known risk factors and causes, know

self-treatments, and available professional help, and it is an attitude that promotes recognition and appropriate help-seeking (3). Individuals with higher levels of mental health literacy recognize mental health problems and symptoms, know where to seek help and information, and understand that the mental health problems can and should be treated. Mental health literacy is associated with behavioral health care utilization(4). However, information on the existing situations of mental health literacy is scarce. This could be caused, in part, by the internalized stigma associated with mental illness and the resulting misunderstanding. Mental health literacy has received increasing attention as a useful strategy to promote the early identification of mental disorders, reduce stigma and enhance help-seeking behaviors (5). Researchers have found that cultural differences affect Mental health literacy, where European countries are higher than in Asian and African countries (6). Additionally, ethnic and racial minority participants are less likely to seek and receive mental health care (7). Greater self-stigma (i.e., unfavorable self-judgments for seeking psychological treatment) was linked with fewer behavioral health care sessions, but public stigma (i.e., perceptions of public attitudes toward persons who seek psychological help) was unrelated to service utilization. These results indicate the need to address the self-stigma associated with obtaining mental health treatment, therefore, it is important to increase the awareness of mental health. The ability to recognize specific disorders; knowing how to seek mental health information; knowledge of risk factors and causes; knowledge of self-treatments; knowledge of professional help available; and attitudes that promote recognition and appropriate help-seeking are the seven attributes of mental health literacy (8). To assess the level of mental health literacy, all seven attributes need to be assessed.

Many researchers have developed different measures to measure mental health literacy. Literature found two types depending on their measurement method: vignette interview approaches and scale-based measurements. Most of the developed measures have not covered the seven attributes of mental health literacy (9). The Mental Health Literacy Scale (MHLS) was established by Australian researchers to assess all aspects of mental health literacy. This scale included all seven areas of literacy (10). Assessment of mental health literacy is a predictor of health-related behaviors, and it also mediates the effect of academic education on these behaviors (11). Mental wellbeing issues regularly stay undiscovered which will lead to delay in diagnosis and treatment (12). MHL has not been studied in a large scale in Arabic countries (13). The mental health literacy research in Saudi Arabia is sparse. Evidence shows 34% of Saudis fulfill the requirements for a mental health problem in their lifetime. Eighty percent of Saudis with serious mental illnesses do not consider treatment (14). In addition, the MHLS has been validated in several nations, including Arabic countries. In Saudi Arabia, a study was conducted to validate MHLS and only included Saudi female university students in the sample(15). However, none of these investigations were conducted among the Saudi Arabian general population. Therefore, the aim of this study is to validate the mental health literacy scale among general population in Makkah city, Saudi Arabia.

2. METHODS AND MATERIALS

Study Design

This was a cross-sectional study conducted among general population in Makkah, Saudi Arabia to validate the Arabic version of the mental health literacy scale.

Sample size and setting

The questionnaire was sent through social media to the participants. Using the Google Forms platform, a web-based, self-registration questionnaire was constructed. Participants were required to provide their permission to participate in the research. Formulas are used to calculate sample sizes (population size, z-score, margin of error, and standard of deviation). 250 individuals were sufficient to achieve a 95% confidence interval (i.e., that the obtained rate was within 5%).

Study measures

Demographic Data Questionnaire

The demographic background information includes age, gender, marital status, education level, employment, questions regarding about getting burnout easily or getting stressed, previous history of mental health disorders, suffer from any form of abuse, or Ever sought mental help.

Mental Health Literacy Scale (MHLS)

In the current study, we used the original English Mental Health Literacy (MHL) scale (35 items, Appendix 1) (10). The responses to the first 15 items were recorded on a four-point Likert scale with items 10, 12 and 15 being reverse scored. The remaining items were reported on a five-point scale, and reverse scoring was performed on items 20-28. The scale's total score was calculated by adding all 35 elements, with a maximum score of 160 and a minimum score of 35.

Translation

The original version of MHLS is provided in the English language. The reason for translating the scale is that it is not accessible in the Arabic language (16, 17). Permission was provided from the authors (10) for the use of the scale, and translation rights for the Arabic version was necessary (17).

In this study, translation was performed using the forward-backward approach. Initially, the original English version of the questionnaire was independently translated into Arabic by two professionals. After reviewing the two translated versions, a single Arabic version of the questionnaire was produced. Subsequently, an English language specialist who was unfamiliar with the specialized English text of psychology reverse-translated the material. Thereafter, the English text of the backward-translation version was adapted with the original English version of the questionnaire. The English translation was then re-translated into Arabic by three psychological professionals with English language expertise.

In addition, the literacy level of the Arabic version of the scale was considered in an effort to guarantee that individuals with varying levels of literacy could understand and complete the scale. In addition, care was made to adopt Modern Standard Arabic (MSA), the 'formal' Arabic used in writing, education, and government (17), so that the translated scale is applicable to all Arabic-speaking communities.

Statistical Analysis

Data analysis was carried out using RStudio (R version 4.1.1). Descriptive statistics were used to express categorical variables (frequencies and percentages) as well as numerical variables (mean and standard deviation [SD]). The validity of the MHL scale was assessed using exploratory and confirmatory factor analyses. Spearman's correlation analysis was implemented to assess the between-construct validity. The associations between the demographic and health-related characteristics of students and their MHL scale scores were investigated by constructing univariate linear regression analysis. The significantly associated variables from such univariate models were subsequently used independent variables in a multivariate linear regression model. Results were expressed as beta coefficients and their respective 95% confidence intervals (95% CIs). Statistical significance was considered at $p < 0.05$.

Ethical Approval

Ethical approval for the study protocol was obtained from the biomedical ethics committee at Umm Al-Quora university with the approval No. Approval No. (HAPO-02-K-012-2020-05-384). All participants signed a written consent to participate in the study. Identifiable information about the patients has not been collected, and the data has been anonymized and coded. The study followed the Ethical Principles of the Helsinki Declaration.

3. RESULTS

Identification of outliers and missing data

Initially, we received 256 responses. However, we excluded four records due to missing primary outcomes. Therefore, a total of 252 records were eligible for exploratory and confirmatory factor analysis. We investigated the existence of multivariate outliers using Mahalanobis distance test on the 35 items of the Mental Health Literacy scale. We used 34 degrees of freedom ($k-1$), and outliers were identified at $p < 0.001$. Nine outliers were removed; hence, 243 cases were included in the subsequent analyses.

Exploratory factor analysis

For the exploratory factor analysis, a principal axis factoring (PAF) method was applied on the 35 items using the varimax rotation method. The PAF technique was selected due to its capacity to extract factors which are compatible with factor analysis (18). We selected the orthogonal varimax rotation method because it extends the dispersion of loadings within the

constructs; thus, it reveal fewer variables which are incorporated into easily-interpreted factors(19). The Kaiser, Meyer, Olkin (KMO) measure of sampling adequacy was 0.68, suggesting that the data is appropriate for factor analysis. The PFA analysis revealed a four-factor solution (**Table 1**). However, 15 items were excluded because they were not significantly loaded to any factor (with loadings of ≤ 0.50). Therefore, 20 items were eligible for the confirmatory factor analysis (CFA).

Table 1: Exploratory factor analysis for the 35 items of the Mental Health Literacy scale.

Item*	RC1	RC2	RC3	RC4
MHL_01	-0.05	-0.17	0.10	0.36
MHL_02	0.06	0.04	-0.12	0.33
MHL_03	0.07	0.00	-0.06	0.46
MHL_04	-0.20	-0.02	0.12	0.38
MHL_05	0.06	0.03	-0.01	0.45
MHL_06	0.00	-0.12	0.09	0.51
MHL_07	0.02	0.05	-0.16	0.70
MHL_08	0.06	0.05	0.05	0.69
MHL_09	-0.13	-0.03	-0.02	0.15
MHL_10	-0.03	0.23	-0.05	-0.11
MHL_11	-0.01	-0.13	0.24	0.23
MHL_12	0.07	0.06	-0.26	0.14
MHL_13	-0.08	0.05	0.24	0.43
MHL_14	0.03	0.24	-0.03	0.40
MHL_15	0.22	0.09	-0.21	0.07
MHL_16	0.10	0.01	0.79	0.02
MHL_17	0.08	0.12	0.73	0.08
MHL_18	0.06	0.02	0.59	0.04
MHL_19	-0.04	-0.03	0.81	0.02
MHL_20	-0.13	0.35	-0.19	0.06
MHL_21	0.18	0.73	0.00	0.17
MHL_22	0.03	0.73	-0.06	0.09
MHL_23	0.08	0.41	-0.17	-0.06
MHL_24	0.26	0.58	-0.09	0.15
MHL_25	0.05	0.29	0.11	-0.07
MHL_26	-0.04	0.74	0.04	-0.03
MHL_27	-0.09	0.53	0.21	-0.08
MHL_28	0.05	0.62	0.07	0.03
MHL_29	0.72	0.12	-0.04	-0.03
MHL_30	0.78	0.12	0.03	0.05
MHL_31	0.78	0.11	0.00	0.01
MHL_32	0.73	0.06	-0.10	0.04
MHL_33	0.74	-0.02	0.10	-0.05
MHL_34	0.58	-0.06	0.13	-0.01
MHL_35	0.73	-0.04	0.00	0.06

*Italicized items are with cross-loadings. Bold items had a significant loading (>0.45).

Confirmatory factor analysis

In the initial CFA model, four items were not significantly loaded to their respective factors (standardized factor loadings of ≤ 0.50): MHL_06 in Factor #4, MHL_18 in Factor #3, MHL_27 in Factor #2 and MHL_34 in Factor #1. This indicated that the CFA model required modification; therefore, these items were sequentially excluded in the final model. The final

CFA model consisted of a total of 16 items, and the standardized factor loadings were statistically significant (**Table 2**). The items were categorized into four constructs, including identification of mental disorders (2 items), information-seeking regarding mental disorders (3 items), attitude toward mental disorders (5 items) and attitude toward individuals with mental disorders (6 items). The Cronbach’s alpha coefficients for the four constructs ranged between 0.517 and 0.849 (**Table 2**), indicating good internal consistency. All the model fit indices were generally acceptable: model test baseline $\chi^2 = 1192.7$ with a p value of < 0.0001 , root mean square error of approximation (RMSEA) = 0.060, 90%CI, 0.046 to 0.073 (ideally < 0.08), the standardized root mean square residual (SRMR) = 0.060 (ideally < 0.08), comparative fit index (CFI) = 0.920 (ideally > 0.9) and Tucker-Lewis index (TLI) = 0.902 (ideally > 0.9).

Table 2: Items included in the final confirmatory factor analysis model.

#	Indicator	Mean ± SD	SFL	Ca
Identification of mental disorders		3.38 ± 0.59		0.517
MHL_07	To what extent do you think it is likely that the diagnosis of Bipolar Disorder includes experiencing periods of elevated (i.e., high) and periods of depressed (i.e., low) mood	3.57 ± 0.65	0.512	
MHL_08	To what extent do you think it is likely that the diagnosis of Drug Dependence includes physical and psychological tolerance of the drug (i.e., require more of the drug to get the same effect)	3.20 ± 0.80	0.595	
Information-seeking regarding mental disorders		3.58 ± 0.97		0.757
MHL_16	I am confident that I know where to seek information about mental illness	3.28 ± 1.25	0.695	
MHL_17	I am confident using the computer or telephone to seek information about mental illness	3.89 ± 1.07	0.731	
MHL_19	I am confident I have access to resources (e.g., GP, internet, friends) that I can use to seek information about mental illness	3.58 ± 1.21	0.723	
Attitude toward mental disorders		4.41 ± 0.68		0.750
MHL_21	A mental illness is a sign of personal weakness	4.37 ± 0.96	0.752	
MHL_22	A mental illness is not a real medical illness	4.62 ± 0.81	0.689	
MHL_24	It is best to avoid people with a mental illness so that you don't develop this problem	4.28 ± 0.98	0.557	
MHL_26	Seeing a mental health professional means you are not strong enough to manage your own difficulties	4.57 ± 0.95	0.577	
MHL_28	I believe treatment for a mental illness, provided by a mental health professional, would not be effective	4.23 ± 1.05	0.516	
Attitude to individuals with mental disorders		3.31 ± 0.79		0.849
MHL_29	How willing would you be to move next door to someone with a mental illness?	3.19 ± 0.97	0.647	
MHL_30	How willing would you be to spend an evening socializing with someone with a mental illness?	3.53 ± 1.05	0.801	
MHL_31	How willing would you be to make friends with someone with a mental illness?	3.59 ± 1.11	0.819	
MHL_32	How willing would you be to have someone with mental illness start working closely with you on a job?	3.73 ± 1.02	0.694	
MHL_33	How willing would you be to have someone with a mental illness marrying into your family?	2.61 ± 1.06	0.602	
MHL_35	How willing would you be to employ someone if you knew they had a mental illness?	3.22 ± 1.09	0.590	

Ca: Cronbach’s alpha; SFL: standardized factor loading

Model fit criteria are listed in **Table 3**. These outcomes indicate that the modified mental health literacy scale was psychometrically and statistically valid and theoretically coherent among the sample under study.

Table 3: Fit criteria for the confirmatory factor analysis of the initial and final models of the Mental Health Literacy scale.

Model fit parameters		Ideal criteria	Initial	Final
Absolute fit	χ^2	$p > 0.05$	1172.035 ($p < 0.0001$)	1192.7 ($p < 0.0001$)
	RMSEA	< 0.08	0.068	0.060
	SRMR	< 0.08	0.079	0.060
Incremental fit	CFI	> 0.90	0.684	0.920
	TLI	> 0.90	0.661	0.902
Number of items		N	35	16

CFI: comparative fit index; RMSEA: root mean square error of approximation; SRMR: the standardized root mean square residual; TLI: Tucker-Lewis index.

Construct validity

To assess the construct validity, we conducted a correlation analysis between different constructs of as revealed by CFA. Data is presented in a diagonal manner in Table 4. Results showed that participants' attitudes toward mental disorders were positively and significantly associated with the identification of mental disorders ($r = 0.13, p = 0.049$) and attitudes to individuals with mental disorders ($r = 0.20, p = 0.002$, **Table 4**).

Table 4: Bivariate correlations between different constructs.

Construct	C1	C2	C3	C4
C1	1.00			
C2	0.01	1.00		
C3	0.13*	0.04	1.00	
C4	0.07	0.05	0.20*	1.00

*the correlation is statistically significant at $p < 0.05$; C1: Identification of mental disorders; C2: Information-seeking regarding mental disorders; C3: Attitude toward mental disorders; C4: Attitude to individuals with mental disorders.

Demographic and mental health-related characteristics

The majority of the participants were females (77.8%), single (95.5%) and aged 19 to 25 years (96.3%). Employed participants represented 5.3% of the sample; however, 66.3% of the participants considered themselves as financially stable. Approximately half of the respondents (49.0%) had a psychiatric illness, while 8.6% of them had ever been diagnosed with a mental health disorder. About one-quarter of participants declared that they can easily get burnout (23.9%), and a higher proportion (50.4%) can get stressed easily (**Table 5**).

Table 5: Demographic and mental health-related characteristics (N=243).

Parameter	Category	N (%)
Age (y)	< 19	0 (0.0%)
	19 to 25	234 (96.3%)
	> 25	9 (3.7%)
Gender	Male	54 (22.2%)
	Female	189 (77.8%)
College or specialty	College of Medicine	88 (36.2%)
	College of pharmacy	25 (10.3%)

	College of dentistry	15 (6.2%)
	College of nursing	28 (11.5%)
	College of Applied medical sciences	53 (21.8%)
	College of Public Health and Health Informatics	34 (14.0%)
Student level	Second year	15 (6.2%)
	Third year	34 (14.0%)
	Fourth year	71 (29.2%)
	Fifth year	34 (14.0%)
	Sixth year	27 (11.1%)
	Internship Year	62 (25.5%)
Social status	Single	232 (95.5%)
	Married	11 (4.5%)
	Other	0 (0.0%)
Employed (Part time or full time)	Yes	13 (5.3%)
Have a psychiatric/mental health course in the curriculum	Yes	119 (49.0%)
Easily get burnout	Yes	58 (23.9%)
	No	54 (22.2%)
	Sometimes	131 (53.9%)
Easily get stressed	Yes	122 (50.4%)
	No	28 (11.6%)
	Sometimes	92 (38.0%)
	Unknown	1
Consider self as financially stable	Yes	161 (66.3%)
Feel discriminated educationally	Yes	94 (38.7%)
Suffer from any form of abuse	Yes	55 (22.6%)
Ever diagnosed with mental health disorders	Yes	21 (8.6%)
Ever sought mental help	Yes	31 (12.8%)

Outcomes of the MHL scale

Results of the perceived MHL indicated an overall mean MHL score of 3.72 ± 0.46 (out of 5). The domain with the highest mean score was related to the participants' attitudes towards mental disorders (4.41 ± 0.68), followed by information-seeking towards mental disorders (3.58 ± 0.97), identification of mental disorders (3.38 ± 0.59) and finally participants' attitudes individuals with mental disorders (3.31 ± 0.79). More details about the mean scores of different items are listed in **Table 2**.

Relationship between the demographic and health-related characteristics and MHL characteristics

Based on the results of the univariate analysis, having a psychiatric or mental health course in the curriculum was significantly associated with higher MHL scores ($\beta = 0.15$, 95%CI, 0.04 to 0.27, $p = 0.010$). On the other hand, the following variables were associated with lower MHL scores: being employed ($\beta = -0.32$, 95%CI, -0.57 to -0.06, $p = 0.015$) and easily get burnout ($\beta = -0.14$, 95%CI, -0.28 to -0.01, $p = 0.044$) and stress ($\beta = -0.14$, 95%CI, -0.26 to -0.03, $p = 0.014$, **Table 6**). However, based on the adjusted, multivariate analysis, employed students ($\beta = -0.36$, 95%CI, -0.62 to -0.10, $p = 0.007$) and those who get stressed ($\beta = -0.13$, 95%CI, -0.25 to -0.01, $p = 0.044$) were more likely to have low MHL scores, whereas having a psychiatric/mental health course in the curriculum was independently associated with higher MHL scores ($\beta = 0.12$, 95%CI, 0.01 to 0.24, $p = 0.034$). Getting burnout was not an independent predictor of higher MHL scores (**Table 6**).

Table 6: Univariate and multivariate regression analyses for the factors associated with MHL.

Parameter	Category	Univariate			Multivariate		
		Beta	95% CI	p-value	Beta	95% CI	p-value
Age (y)	19 to 25	—	—				
	> 25	0.19	-0.12, 0.50	0.231	NA	NA	
Gender	Male	—	—				
	Female	0.11	-0.03, 0.25	0.118	NA	NA	
College or specialty	College of Medicine	—	—				
	College of pharmacy	0.05	-0.15, 0.26	0.600	NA	NA	
	College of dentistry	-0.16	-0.42, 0.09	0.205	NA	NA	
	College of nursing	0.13	-0.07, 0.32	0.204	NA	NA	
	College of Applied medical sciences	-0.05	-0.20, 0.11	0.566	NA	NA	
	College of Public Health and Health Informatics	0.07	-0.11, 0.25	0.461	NA	NA	
Student level	Second year	—	—				
	Third year	0.16	-0.12, 0.44	0.272	NA	NA	
	Fourth year	0	-0.26, 0.25	0.970	NA	NA	
	Fifth year	0.05	-0.23, 0.34	0.703	NA	NA	
	Sixth year	0.13	-0.16, 0.42	0.376	NA	NA	
	Internship Year	0.1	-0.16, 0.36	0.438	NA	NA	
Social status	Single	—	—				
	Married	0.22	-0.06, 0.50	0.120	NA	NA	
Employed	No	—	—				
	Yes	-0.32	-0.57, -0.06	0.015	-0.36	-0.62, -0.10	0.007
Have a psychiatric/mental health course in the curriculum	No	—	—				
	Yes	0.15	0.04, 0.27	0.010	0.12	0.01, 0.24	0.034
Easily get burnout	No	—	—				
	Yes	-0.14	-0.28, -0.01	0.044	-0.07	-0.21, 0.08	0.353
Easily get stressed	No	—	—				
	Yes	-0.14	-0.26, -0.03	0.014	-0.13	-0.25, 0.01	0.044
Consider self as financially stable	No	—	—				
	Yes	0.03	-0.09, 0.16	0.593	NA	NA	
Feel discriminated educationally	No	—	—				
	Yes	0.02	-0.10, 0.14	0.727	NA	NA	
Suffer from any form of abuse	No	—	—				
	Yes	0.05	-0.09, 0.19	0.458	NA	NA	
Ever diagnosed with mental health disorders	No	—	—				
	Yes	-0.13	-0.33, 0.08	0.225	NA	NA	
Ever sought mental help	No	—	—				
	Yes	0.08	-0.10, 0.25	0.386	NA	NA	

4. DISCUSSION

Translation and validation of the MHLS in Arabic was conducted among the general population in Makkah city, Saudi Arabia. In the initial CFA test, the 35 items adapted from the original scale were unable to be loaded. After multiple adjustment, the final version, which consists of 16-items, showed sufficient loading reliability after excluding multiple factors. A total of 19-items were deleted to achieve a psychometrically robust Arabic version of MHL literacy scale. Despite this, our version assessed four factors of mental health literacy similar to the original MHL scale. The validity and reliability of the final modified Arabic version were strong.

The O'Conner MHL scale was adapted previously to multiple languages. Other adaptations of this scale have deleted multiple items to achieve psychometric robustness. Wang et. al. has adapted the scale for Chinese and deleted 3 items [14]. Moreover, the adapted version to Persian language has deleted 5 items from the original scale [15]. This emphasizes how cultural adaptations vary. There has been a previous adaptation of this scale to Arabic in Saudi Arabia before our current study. Alshehri et al. study was carried out among medical university college students in Riyadh which had a different outcome from the current study in terms of adapting to the scale (15). This sampling by Alshehri et al. Was only in Riyadh, and only targeted female students. Furthermore, the statistical methods and analysis used in their study differ. Future studies with broader and more comprehensive population sample are needed for a more accurate adaptation of the scale.

In the current study, CFA phase, the six items were eliminated. The final version of the MHLS was approved with 29 items and six attributes: the ability to recognize disorders (8 items), the knowledge of where to seek information (4 items), the knowledge of risk factors and causes (2 items), the knowledge of self-treatment (2 items), the knowledge that professional help is available (3 items), and attitudes that promote recognition or appropriate help-seeking behavior (10 items).

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