Research Article

EXPLORATION AND REVISION OF THE CONTENT FOR "MENTAL HEALTH SCALE FOR MIDDLE SCHOOL STUDENTS (MSSMHS)": EXPERT CONSENSUS AND ANALYSIS OF RELIABILITY AND VALIDITY

Xiong Chen[*#], *Chunqi Ai*[*], *Zhongchun Liub*[**]

[*]**Department of Mental Health Center, Taihe Hospital Affiliated to Hubei University of Medicine, Shiyan, Hubei 442000, Maojian District, China**

[**]**Department of Psychiatry, RenMin Hospital of Wuhan University, Wuhan 430060, China**

Abstract

Objective: Primary and secondary school students in a unique stage of development, has a unique psychological age characteristics, their mental health screening should be appropriate for their psychological development characteristics. The contents of Middle School Students Mental Health Scale (MSSMHS) were explored and revised, and the reliability and validity of the revised scale were tested.

Methods: The middle school and high school students in Shiyan city of Hubei province were selected by random cluster sampling, and the revised mental health scale for middle school students was used to investigate. The 57 items of the original scale were revised, and SPSS25.0 statistical software was used for statistical analysis of the data. Cronbach's Alpha coefficient under Alpha was used to test the reliability of the scale. Factor analysis was used for structural validity analysis.

Results: The results of factor analysis, correlation analysis and internal consistency coefficient showed that the revised scale had high reliability, and its validity also met the requirements of psychological measurement.

Conclusion: The revised content of "MSSMHS" reasonably avoids cultural taboos and sensitive words of "suicide", and has good reliability and validity, which is worth popularizing in the practice of psychological assessment of middle school students. *ASEAN Journal of Psychiatry, Vol. 23(2) January, 2023; 1-8.*

Keywords: Middle School Students, Mental Health, Suicide, Reliability, Validity, Expert Consensus

Introduction

The mental health of middle school students has always been the focus of social attention. In recent years, the COVID-19 and electronic products have affected middle school students. Many surveys at home and abroad and self-reports of middle school students show that middle school students have psychological and behavioral problems such as social withdrawal, poor learning, exam anxiety, smoking and drinking to varying degrees [1-5], which seriously affects the physical and mental health and growth of adolescents. In terms of self-developed measurement tools, Professor Wang Jisheng took the lead in compiling the "Mental Health Scale for Middle School Students (MSSMHS)", which is widely used and can accurately measure and find out the mental health problems and symptoms of middle school

students. However, the content of item 57 of MSSMHS adopts the content expression of "I often have suicidal thoughts". Considering the cultural sensitivity and taboos and the voice of content expression, it is necessary to revise and improve the content of item 57. A large sample of middle school students is applied, and the reliability and validity of the revised MSSMHS are tested and analyzed. The report is as follows.

Brief introduction of MSSMHS scale

Mental health is very important in students' growth. It not only restricts students' physical health, but also plays an important role in students' personality and intellectual development [6]. Mental health level is also an important factor restricting academic achievement [7]. This scale is compiled by Professor Wang Jisheng, a famous psychologist in China. It can be used to evaluate the mental health status of middle school students. The scale consists of 60 items, and it includes 10 subscales. They are obsessive-compulsive symptoms, paranoia, hostility, interpersonal sensitivity, depression, anxiety, learning pressure, maladjustment, emotional instability and psychological imbalance. That is, the mental health status of subjects can be measured as a whole, or evaluated according to the average score of each scale [8]. The scale uses a 5-level scoring system, and each question is a declarative sentence. An assessment takes about 20 minutes. He has tested this scale with a large sample (20,000 subjects). Due to its wide coverage, high screening rate, small number of questions, and short duration, the scale is an effective and accurate tool to measure the mental health status of middle school students. It is independently completed by middle school students and is widely used [9-12]. The scale adopts a 5-level score from 1 (none) to 5 (always). The test-retest reliability is between 0.716 and 0.905, the homogeneity reliability is between 0.6501 and 0.8577, and the split-half reliability is between 0.6341 and 0.8400; The correlation between the total score of the scale and each subscale is 0.7652-0.8726, and the correlation between each subscale is 0.4027-0.7587 [13].

Methodology

In the MSSMHS scale, items 5, 13, 14, 16, 44 and 57 are the contents of depression factors, of which question 57 is "I often have suicidal thoughts". Can the word "suicide" be replaced by "life is meaningless" or "despair"? It is still not very reasonable. By referring to the content of depression and suicide on Beck Depression Questionnaire, PHQ-9 scale, Burns Depression Checklist (BDC), SDS scale and Center for Epidemiologic Studies Depression Scale (CES-D), the first round of expert demonstration and research meeting was held. At least two experts from different professional fields and institutions participated in the revision. Among them, there were 6 chief psychiatrist, 10 psychologists, 8 educators, 5 social workers, 3 government leaders, 2 computer engineers, and 2 statisticians. After the first round of expert argumentation meeting, the three items "I feel like life is meaningless.", "I feel like living, studying, or even entertaining is meaningless." and "There is no point in doing anything." were suggested as a replacement for "suicide". We needed to refer to several other items of depression factors in MSSMHS scale. Among them, Item 5: I feel depressed; Item 13: I cry easily; Item 14: I feel hopeless for the future; Item 44: I am often listless and unable to lift myself up. It was necessary to ensure that the newly revised content did not overlap with the above four items. Then we held the second and third rounds of expert discussion meetings. Finally, it was confirmed that item 57 of the MSSMHS scale was revised as: "I often have the idea of doing anything is meaningless".

Survey objects and methods

From March 25, 2021 to April 15, 2021, students from two ordinary high schools and two ordinary junior middle schools in Shiyan City, Hubei Province were selected by random cluster sampling and taking schools and classes as units. In the way of network link, the computer engineer shall complete the topic in advance. Taking the school as a unit, the engineer sent the evaluation link of the revised version of MSSMHS to the psychology teachers of each

school, and the psychology teacher sent it to each student in the school, and urged the students to complete it within the specified time.

Before the evaluation, the psychological teachers of each school were trained on the filling methods and precautions of the online questionnaire.

All the questionnaires were completed and submitted by students individually. The final data results were uniformly extracted by the Mental Health Center of Taihe Hospital, Shiyan City, Hubei Province. As a result, 11,266 valid data were collected. Among them, there were 5398 males and 5868 females with an average age of 14.15 ± 1.67 years, of which males accounted for 47.91% and females accounted for 52.09%.

Statistical methods

SPSS 25.0 statistical software was used for statistical analysis of the data. The value of Cronbach's Alpha coefficient under Alpha was used to test the reliability of the scale; factor analysis was used to analyze the construct validity.

Results

Internal consistency analysis (reliability test)

Reliability test is to test the internal consistency of the scale by calculating the value of Cronbach's alpha coefficient of the scale. As shown in Table 1, the overall Cronbach's alpha coefficient of the table is 0.976, and the internal consistency is very high.

From the perspective of different factors, the Cronbach's Alpha coefficient of anxiety factor is 0.910>0.9, and the internal consistency is very high; The Cronbach's Alpha coefficient of obsessive-compulsive factor, paranoid factor, hostile factor, sensitive factor of interpersonal tension, depression factor, learning pressure factor, maladaptive factor, emotional instability factor, and psychological imbalance factor are all greater than 0.7, and the internal consistency is good.

It means that the overall scale and each factor have passed the reliability test (Table 1).

Confirmatory factor analysis (validity test)

Validity test is carried out for the mature scale, which includes construct validity, convergent validity and discriminant validity, The usage method is Confirmatory Factor Analysis (CFA), and the CFA is carried out by SPSS amos25 software. The main results are as follows:

Construct validity: As shown in Table 2, due to the complexity of the model, there are 10 factors and a large sample size. There are a total of 10332 valid questionnaires, x^2/df is high and acceptable, while RMSEA is 0.056 and less than 0.08, which is acceptable; NFI, RFI, CFI, IFI, TLI are all greater than 0.8, in general, the overall model adaptation is acceptable.

Aggregation validity: It can be seen from Table 3 that the Average Variance Extracted (AVE) values of the eight factors that include paranoid factor, hostility factor, sensitive factor of interpersonal tension, depression factor, anxiety factor, learning pressure factor, maladaptive factor, and emotional instability factor are all greater than 0.4. And the factor loadings of the corresponding topics are all greater than 0.4, which indicates that each latent variable has a good representativeness for the topic to which it belongs. In addition, the CR of the combined reliability of each latent variable is greater than 0.7, which indicates that the convergent validity is good.

However, for the item of the forcing factor, "Q3: Doing homework must be checked repeatedly", the factor loading is only 0.226, which can be considered for revision or deletion.

It is worth pointing out that in order to avoid the negative guidance of the item, this study revises the item 57 of the MSSMHS scale and changes it to "I often have the idea that what I do is meaningless", and the factor loading of this item is 0.775. The AVE of the depression factor is 0.569, which is tested by convergent validity (Table 3).

Table 1: Reliability test results of the overall scale and 10 factors.

Factor	Cronbach's alpha coefficient	Terms
Force factor	0.735	6
Paranoid factor	0.856	6
Hostile factor	0.866	6
Sensitive factors of interpersonal tension	0.822	6
Depression factor	0.886	6
Anxiety factor	0.91	6
Study pressure factors	0.864	6
Maladaptive factor	0.793	6
Emotional instability factor	0.841	6
Psychological imbalance factor	0.761	6
Scale as a whole	0.976	60

Table 2: Table of global fitting coefficients.

$\chi^2/\delta f$	RMSEA	NFI	RFI	CFI	IFI	TLI
33.146	0.056	0.858	0.849	0.862	0.862	0.853

Table 3: Factor load tables.

The path	Estimate	AVE	CR
Q22<---Forcing factor	0.755	0.316	0.714
Q12<---Forcing factor	0.581		
Q10<---Forcing factor	0.484		
Q3<---Forcing factor	0.226		
Q23<---Forcing factor	0.45		
Q48<---Forcing factor	0.708		
Q26<---Paranoid factor	0.738	0.51	0.861
Q24<---Paranoid factor	0.758		
Q20<---Paranoid factor	0.602		

Q11<---Paranoid factor	0.654		
Q47<---Paranoid factor	0.756		
Q49<---Paranoid factor	0.762		
Q50<---Hostile factor	0.831		
Q25<---Hostile factor	0.663		
Q21<---Hostile factor	0.676	0.523	0.867
Q19<---Hostile factor	0.775		
Q52<---Hostile factor	0.661		
Q58<---Hostile factor	0.718		
Q45<---Sensitive factors of interpersonal tension	0.75		
Q18<---Sensitive factors of interpersonal tension	0.813		
Q17<---Sensitive factors of interpersonal tension	0.762	0.461	0.83
Q4<---Sensitive factors of interpersonal tension	0.744		
Q51<---Sensitive factors of interpersonal tension	0.45		
Q59<---Sensitive factors of interpersonal tension	0.457		
Q16<---Depression factor	0.76		
Q14<---Depression factor	0.727		
Q13<---Depression factor	0.653	0.569	0.887
Q5<---Depression factor	0.804		
Q44<---Depression factor	0.796		
Q57<---Depression factor	0.775		
Q34<---Anxiety factor	0.751		
Q43<---Anxiety factor	0.848		
Q46<---Anxiety factor	0.846	0.635	0.912
Q56<---Anxiety factor	0.825		
Q15<---Anxiety factor	0.789		
Q6<---Anxiety factor	0.714		

Q36<---Study pressure factor	0.645		
Q38<---Study pressure factor	0.741		
Q40<---Study pressure factor	0.751	0.523	0.868
Q55<---Study pressure factor	0.797		
Q33<---Study pressure factor	0.668		
Q31<---Study pressure factor	0.728		
Q9<---Maladaptive factor	0.673		
Q29<---Maladaptive factor	0.675		
Q39<---Maladaptive factor	0.55	0.402	0.799
Q41<---Maladaptive factor	0.661		
Q8<---Maladaptive factor	0.702		
Q1<---Maladaptive factor	0.52		
Q27<---Emotional instability factor	0.71		
Q32<---Emotional instability factor	0.691		
Q35<---Emotional instability factor	0.619	0.473	0.843
Q53<---Emotional instability factor	0.636		
Q7<---Emotional instability factor	0.702		
Q2<---Emotional instability factor	0.758		
Q37<---Psychological imbalance factor	0.597		
Q42<---Psychological imbalance factor	0.497		
Q54<---Psychological imbalance factor	0.624	0.359	0.77
Q60<---Psychological imbalance factor	0.635		
Q30<---Psychological imbalance factor	0.584		
Q28<---Psychological imbalance factor	0.648		

Discussion

According to the relevant data released by WHO, about 1.2 million adolescents die worldwide every year, of which suicide is the third leading cause of death among adolescents [14-20]. Among adolescents aged 10 to 19, depression is the main cause of disease and disability [21,22].

According to the China Youth Development Report released not long ago, about 30 million children and adolescents under the age of 17 in China are troubled by various emotional disorders and behavioral problems [23]. Relevant data also show that 10%-15% of children in China have mental health problems such as anxiety, depression and behavioral disorders. For

a long time, due to the limitations of people's ideas and resources, the mental health education of primary and secondary school students has not been paid attention to by the society [24,25]. According to the data of blue book on mental health of China in 2020, the detection rate of depression among adolescents in China has reached 24.6%, of which the detection rate of severe depression is 7.4%. Depression, the "silent killer", is targeting students. Since the 1990s, a large number of psychologists and educators in China have been engaged in the research of middle school students' mental health problems, and the use of mental health measurement tools has played an important role in these studies [26-30].

Middle school students are in a unique developmental stage and have unique psychological age characteristics, and their mental health screening should be appropriate for their psychological development characteristics [31,32]. Self-editing or revision and use of foreign scales should be cautious. When introducing foreign scales, first of all, it is necessary to understand and examine the use of foreign scales, and to determine the value and applicability of the introduction; Secondly, the scale should be translated accurately in combination with Chinese idioms; Third, it is necessary to consider the suitability and reliability of the items of the scale, and finally establish a culture-specific norm and update it in a timely manner. Be mindful of rationality and purpose when using measurement tools. The purpose of psychological measurement is to provide information and services for schools to carry out mental health education, mainly explain the current status of students' mental health development, and understand the changes in students' mental health development after consultation, counseling and education. This is the basis for schools to carry out mental health education, and psychological measurement tools must not be abused to avoid negative effects.

Conclusion

In the process of using the MSSMHS, we find that item 57 directly asks the patients about their suicidal thoughts. Because in the school environment, it seems to have a negative guiding effect to conduct a mental health survey for middle school students and directly ask students about their suicidal thoughts. We use the sentence "I often have the idea that what I do is meaningless". On the one hand, the word suicide is reasonably avoided, so as not to induce students to have too many negative emotions; On the other hand, this sentence still belongs to the depression factor of the scale, and is very close to the meaning of the core symptoms of depression such as low mood, self-blame and suicidal thoughts. Thus, it is more conducive for us to promote the use in schools, avoid causing some negative news, help schools and families better and faster screen out students with psychological problems, provide important psychological evaluation materials for follow-up focus, guidance and medical treatment, and contribute to the healthy growth of middle school students.

The results show that the revised content of "Mental Health Scale for Middle School Students (MSSMHS)" reasonably avoids the cultural taboos and sensitive words of "suicide", and has good reliability and validity.

It is worthy to be popularized in the practice of middle school students' psychological evaluation. However, only four schools are piloted this time, and the sample size is limited. In the future research, it is necessary to further expand the scope of the survey and increase the sample size, so as to improve the reliability of the scale evaluation, and make it mature through continuous revision. There is no confirmatory factor analysis in this study. Whether the scale structure is reasonable still needs further verification. The preparation of the scale is a long-term work. In the future, with the theoretical development of the mental health scale and the practical needs of middle school students' mental health, this scale will be continuously revised and improved to realize the distinctive features of simplicity and practicality, and to become a scale that researchers of mental health and workers in the fields of counseling and education are willing to use.

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Corresponding author: Xiong Chen, Department of Mental Health Center, Taihe Hospital Affiliated to Hubei University of Medicine, Shiyan, Hubei 442000, China

Email: xlwszx@taihehospital.com