

Psychometric properties of the Thai Mental Health Literacy Scale in sixth-year medical students

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Abstract

Background: Mental health literacy reduces stigma and the risk of developing mental disorders along with increasing help-seeking behavior. The aim of this study was to translate and study both the psychometric properties of the Thai Mental Health Literacy Scale (TMHLS) and the mental health literacy in sixth-year Thai medical students of the Faculty of Medicine Siriraj Hospital, Bangkok.

Methods: Two-hundred and fifty participants were enrolled using the convenience sampling method. Descriptive statistics were used to analyze demographic data and mental health experiences. Inferential statistics were applied to compare sources of mental health experiences. The content validity and reliability by internal consistency of the TMHLS was analyzed by Index of item objective congruence (IOC) obtained from the examination of three experts in mental health field and Cronbach's Alpha, respectively.

Results: The TMHLS had good content validity (IOC=.67-1.0) and good reliability (Cronbach's alpha=.85). The participants' mean (\pm S.D.) mental health literacy score was 123.09 (\pm 11.55). Individuals who had a mental health professional as an intimate contact and individuals who had a history of seeking help from mental health professional(s) in person showed significantly higher mental health literacy than those who did not.

Conclusions: The TMHLS has good psychometric properties. Dynamic knowledge transfer and exchange with a close mental health professional should be applied to promote mental health literacy in medical students.

1. Background

Mental health problems have been increasing throughout the world [1], with young adults (aged 18–25 years) being the most affected group. At least, 30% of young adults have mental disorders while the remaining 70% are also at risk of developing mental disorders. Three-quarters of all psychiatric disorders have their onset during this period of a person's life [2]. Studies have found that people in this age group, especially university students reported higher levels of stress and mental health problems and had the lowest-tendency to engage in help-seeking behavior, due to poor mental health literacy [3–7].

Mental health literacy reduces stigma and the risk of developing mental disorders along with increasing help-seeking behavior [8]. People with high mental health literacy will be able to recognize, manage, and prevent mental health problems. On the other hand, people with low mental health literacy may not be able to appropriately manage and often end up with more serious complications which has a negative impact on them, society, and their country [9].

Presently, no proper, convenient, or time-efficient psychometric measurement is available in Thai. The aim of this study was to translate and study psychometric properties of the Thai mental health literacy scale (TMHLS). Sixth-year medical students (i.e. externs) from the Faculty of Medicine Siriraj Hospital in

Bangkok, Thailand were chosen for three reasons. First, they were university students and young adults at risk of onset of mental disorder [2, 10, 11]. Second, literature review has shown that experiences of working with patients affects the ability to recognize and diagnose mental disorders [12, 13] which is a key structure of mental health literacy. These students had already experienced a four-week psychiatric rotation in their fifth-year of medical training. Last but not least, in the near future, these students will work as general practitioners (GP) and encounter patients with both physical and mental illnesses [14, 15, 16].

2. Method

2.1 Participants

The number of participants in this study was determined by the Cochran formula [17], which is $n = P(1-P) Z^2/E^2$. The confidence level was at 95 percent and the error of expected reliable validity was .05. Two-hundred and forty-six participants were the minimum required to follow the formula.

We expanded the sample size to 250 and enrolled sixth-year medical students (externs) who had registered for the first semester in academic year 2017 and voluntarily answered the questionnaire in this study by Sripen R. and a research assistant using the convenience sampling method on orientation day under the permission of the Deputy Dean of Undergraduate Education of Faculty of Medicine Siriraj Hospital, Mahidol University Bangkok, Thailand.

2.2 Tools

A demographic questionnaire was used to collect data from medical students including gender, age, and mental health experiences after a psychiatric rotation in their fifth-year; their exposure to media such as the internet, newspaper, and television; self-experience of mental disorder(s); having family members or friends with a mental illness; having a mental health professional such as a psychiatrist, psychiatric nurse, clinical psychologist, or counsellor as an intimate contact; history of seeking help from mental health professional(s) in person; and history of seeking help from mental health professional(s) for family members or friends. We also asked the participants about their mental illness if applicable.

2.3 The translation of mental health literacy scale (MHLS)

The mental health literacy scale (MHLS) was created by Matt O'Connor and Leanne Casey at Griffith University, Australia. It contains good internal consistency at .873 and test–retest reliability at .797 [18]. Permission to translate and use the MHLS was kindly granted by Matt O'Connor.

The MHLS was translated to Thai under the supervision of a professor of English language and literature. The index of item-objective congruence (IOC) was used to verify content validity by three mental health experts: one psychiatrist and one licensed clinical psychologist from the Department of Psychiatry, Faculty of Medicine Siriraj Hospital, and one professor who obtained a clinical psychologist license from the Faculty of Psychology, Chulalongkorn University. The Thai mental health literacy scale (TMHLS) was finally completed following expert opinion.

The TMHLS is a self-reporting questionnaire with 35 items covering six attributes of mental health literacy: the ability to recognize a disorder, knowledge of where to seek information, knowledge of risk factors and causes, knowledge of self-treatment, knowledge of professional help available and attitudes that promote recognition or appropriate help-seeking behavior. The total score is the summation of all items. Therefore, the maximum score is 160 whereas the minimum score is 35. A higher score means greater mental health literacy.

2.4 Statistical analyses

All statistical analyses were performed by SPSS version 23. Descriptive statistics were used to analyze frequency and percentage of gender, age, and mental health experiences. Inferential statistics were applied to compare the sources of mental health experiences which affected the participants' mental health literacy. The content validity and reliability by internal consistency of the Thai mental health literacy scales (TMHLS) was analyzed by the IOC and Cronbach's Alpha, respectively. (Fig. 1)

3. Results

3.1 The sixth-year medical students

Two-hundred and two of the 250 sixth-year medical students (externs) or 80.8% of the participants answered and returned the questionnaires.

The majority of respondents were female ($n = 133$; 65.8%) and the sample age range was between 22–24 years ($M = 23$, $SD = 0.46$). Psychiatric rotation in their fifth-year was the most popular source of their mental health experience ($n = 190$; 94.1%), followed by media exposure ($n = 139$; 68.8%), and having family members or friends with mental disorder(s) ($n = 110$; 54.5%). The other sources were their own experience of mental disorder(s) ($n = 31$; 15.3%), having intimate contact with a mental health professional ($n = 29$; 14.4%), history of seeking help from a mental health professional(s) in person ($n = 19$; 9.4%) and history of seeking help from mental health professional(s) for family members or friends ($n = 16$; 7.9%).

Thirteen out of 202 medical students had major depressive disorder (MDD) (6.4%), the most common diagnoses among the samples. Other mental health problems of participants included panic disorder ($n = 3$; 1.5%); adjustment disorder and attention deficit hyperactivity disorder (ADHD) in equal numbers ($n = 2$; 1%); bipolar disorder as well as premenstrual dysphoric disorder (PMDD) and relationship problems in one participant respectively ($n = 1$; 0.5%). Eight participants (4%) also reported unspecified mental health problems (Table 1).

Table 1
Demographic data of the sixth-year medical students (n = 202)

Attributes	Frequency (n)	Percent (%)
Response rates	202	80.8
Sex Female	133	65.8
Male	69	34.2
Age (years) 22	22	10.9
23	158	78.2
24	22	10.9
(M = 23, SD = 0.46, Range 22–24 years)		
Sources of mental health experiences (mutual items and answers reasonable)		
• Fifth-year rotation (psychiatry)	190	94.1
• Media (internet/ newspaper/ television)	139	68.8
• Having family members or friends with mental disorder(s)	110	54.5
• Self-experience of mental disorder(s)	31	15.3
• Having a mental health professional as an intimate contact	29	14.4
• History of seeking help from mental health professional(s) in person	19	9.4
• History of seeking help from mental health professional(s) for family members or friends	16	7.9
Types of mental illness		
• Major depressive disorder (MDD)	13	6.4
• Panic disorder	3	1.5
• Adjustment disorder	2	1
• Attention deficit hyperactivity disorder (ADHD)	2	1
• Bipolar disorder	1	0.5
• Premenstrual dysphoric disorder (PMDD)	1	0.5
• Relationship problems	1	0.5
• Unspecified	8	4

3.2 The psychometric properties of the Thai mental health literacy scale (TMHLS)

The first-round of content validity was .67 with nine of the 35 items (items number 2, 3, 5, 6, 7, 8, 15, 20 and 24) defined as needing revision (IOC > .05) (Table 2). After revision of the nine items, content validity in the second round increased to .85. However, four of the nine items (items number 3, 5, 15 and 20) were still defined as needing revision (IOC > .05) (Table 3).

Table 2
The first-round of content validity of the Thai mental health literacy scale (TMHLS)

Items	Score from experts			Total	IOC	Results
	1st	2nd	3rd			
1	0	+1	+1	2	.67	Useable
2	-1	+1	+1	1	.33	Need for Revision
3	0	0	+1	1	.33	Need for Revision
4	0	+1	+1	2	.67	Useable
5	-1	+1	+1	1	.33	Need for Revision
6	0	0	0	0	0	Need for Revision
7	0	0	+1	1	.33	Need for Revision
8	-1	0	0	-1	-.33	Need for Revision
9	+1	+1	+1	3	1	Useable
10	+1	+1	+1	3	1	Useable
11	+1	+1	0	2	.67	Useable
12	+1	+1	+1	3	1	Useable
13	+1	+1	0	2	.67	Useable
14	+1	+1	+1	3	1	Useable
15	0	-1	+1	0	0	Need for Revision
16	+1	+1	+1	3	1	Useable
17	+1	+1	+1	3	1	Useable
18	0	+1	+1	2	.67	Useable
19	+1	+1	+1	3	1	Useable
20	0	-1	+1	0	0	Need for Revision
21	+1	+1	+1	3	1	Useable
22	+1	+1	+1	3	1	Useable
23	0	+1	+1	2	.67	Useable
24	-1	-1	-1	-3	-1	Need for Revision
25	+1	+1	+1	3	1	Useable

Items	Score from experts			Total	IOC	Results
	1st	2nd	3rd			
26	+1	+1	+1	3	1	Useable
27	+1	+1	+1	3	1	Useable
28	+1	+1	0	2	.67	Useable
29	+1	+1	+1	3	1	Useable
30	+1	+1	+1	3	1	Useable
31	+1	+1	+1	3	1	Useable
32	+1	+1	+1	3	1	Useable
33	+1	+1	+1	3	1	Useable
34	+1	+1	+1	3	1	Useable
35	+1	+1	+1	3	1	Useable
Total					.67	Useable

Table 3
The second-round of content validity of the Thai mental health literacy scale (TMHLS)

Items	Score from experts			Total	IOC	Results
	1st	2nd	3rd			
1	0	+1	+1	2	.67	Useable
2	+1	+1	+1	3	1	Useable
3	+1	+1	-1	1	.33	Need for Revision
4	0	+1	+1	2	.67	Useable
5	+1	+1	-1	1	.33	Need for Revision
6	+1	+1	+1	3	1	Useable
7	+1	+1	+1	3	1	Useable
8	+1	+1	+1	3	1	Useable
9	+1	+1	+1	3	1	Useable
10	+1	+1	+1	3	1	Useable
11	+1	+1	0	2	.67	Useable
12	+1	+1	+1	3	1	Useable
13	+1	+1	0	2	.67	Useable
14	+1	+1	+1	3	1	Useable
15	+1	+1	-1	1	.33	Need for Revision
16	+1	+1	+1	3	1	Useable
17	+1	+1	+1	3	1	Useable
18	0	+1	+1	2	.67	Useable
19	+1	+1	+1	3	1	Useable
20	+1	+1	-1	1	.33	Need for Revision
21	+1	+1	+1	3	1	Useable
22	+1	+1	+1	3	1	Useable
23	0	+1	+1	2	.67	Useable
24	+1	+1	+1	3	1	Useable
25	+1	+1	+1	3	1	Useable

Items	Score from experts			Total	IOC	Results
	1st	2nd	3rd			
26	+1	+1	+1	3	1	Useable
27	+1	+1	+1	3	1	Useable
28	+1	+1	0	2	.67	Useable
29	+1	+1	+1	3	1	Useable
30	+1	+1	+1	3	1	Useable
31	+1	+1	+1	3	1	Useable
32	+1	+1	+1	3	1	Useable
33	+1	+1	+1	3	1	Useable
34	+1	+1	+1	3	1	Useable
35	+1	+1	+1	3	1	Useable
Total					.85	Useable

The Cronbach's Alpha measurement was .85 which is considered a good criterion. Nevertheless, the reliability coefficients of all 35 items from the measurement, showed that there were six items (items number 9, 10, 11, 12, 15 and 20) which did not meet the criterion (CITC < .20). The Cronbach's Alpha after removing items that did not meet the criterion was .872 which was in the same interval as the prior one. Thus, all items that did not meet the criterion were still preserved (Table 4).

Table 4
Reliability coefficients of all 35 Items from the Thai mental health literacy scale (TMHLS)

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1	120.0050	127.146	.388	.847
2	120.1608	126.206	.440	.845
3	119.7186	127.203	.444	.846
4	120.0101	125.677	.442	.845
5	119.6734	125.160	.509	.844
6	120.0151	127.096	.339	.848
7	119.8442	126.263	.402	.846
8	119.6482	124.320	.544	.843
9	120.1709	132.405	.124**	.853
10	120.4121	136.213	-.122**	.857
11	119.9447	133.113	.089**	.853
12	120.6783	133.586	.028**	.856
13	119.9146	130.887	.223	.850
14	119.6131	128.370	.394	.847
15	120.3568	131.443	.140**	.853
16	119.1005	129.444	.318	.848
17	119.1256	129.878	.295	.849
18	118.9447	129.578	.292	.849
19	118.8543	129.085	.399	.847
20	120.4472	131.945	.077**	.857
21	119.2563	125.616	.367	.847
22	118.9095	126.770	.384	.847
23	119.1859	126.657	.413	.846

**Items that have corrected item-total correlation less than .2 are not pass the criterion.

Items	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
24	118.9548	124.649	.492	.844
25	119.3920	129.179	.254	.850
26	118.7286	126.936	.420	.846
27	118.7337	127.762	.414	.846
28	118.6734	128.504	.374	.847
29	120.4573	125.886	.411	.846
30	119.7688	125.360	.461	.845
31	119.3618	123.444	.572	.842
32	119.5879	124.233	.494	.844
33	120.4874	124.776	.414	.846
34	120.0050	124.601	.401	.846
35	119.6784	124.957	.454	.845
**Items that have corrected item-total correlation less than .2 are not pass the criterion.				

3.3 The mental health literacy in sixth-year medical students

The mean score of the mental health literacy of sixth-year medical students was 123.09 (S.D. \pm 11.55, 95% CI = 121.49–124.69). The maximum score was 151 from a total score of 160, whereas the minimum was 81 with the lowest possible being 35.

After multiple comparisons of mental health literacy experiences of sixth-year medical students, having intimate contact with a mental health professional and a history of seeking help from a mental health professional(s) in person significantly correlated with the students' mental health literacy score. The mental health literacy of individuals who had intimate contact with a mental health professional was significantly higher than those who did not (mean \pm SD was 127.41 ± 13.96 and 122.37 ± 10.99 , respectively; $t(200) = 2.196$, $p < .05$). The magnitude of the difference in the means (mean different = 5.04, 95% CI = .51- 9.57) was small ($d = .40$). Likewise, mental health literacy of individuals who had a history of seeking help from mental health professional(s) in person was higher than those who did not (mean \pm SD was 128.84 ± 10.25 and 122.50 ± 11.55 , respectively; $t(200) = 2.302$, $p < .05$). The magnitude of the difference in the means (mean different = 6.34, 95% CI = .90- 11.78) was medium ($d = .58$) (Table 5).

Table 5
The comparison of mental health literacy by mental health experiences

Mental health experiences	n	\bar{x}	S.D.	t	p
Media (internet/ newspaper/ television)					
have	139	123.98	11.94	1.622	.106
not have	63	121.14	10.49		
Having family members or friends with a mental illness					
have	110	123.83	11.78	.986	.325
not have	92	122.22	11.28		
Self-experience of mental disorder(s)					
have	31	126.16	10.13	1.612	.108
not have	171	122.54	11.74		
Having a mental health professional as an intimate contact					
have	29	127.41	13.96	2.196*	.029
not have	173	122.37	10.99		
History of seeking help from mental health professional(s) in person					
have	19	128.84	10.25	2.302*	.022
not have	183	122.50	11.55		
History of seeking help from mental health professional(s) for family members or friends					
have	16	124.94	10.85	.664	.507
not have	186	122.94	11.63		
* p < .05					

3.4 Questionnaire comments

The questionnaire comments found that of the 202 participants, 5.9% reported that the questions were too comprehensive and needed to be defined clearly; 3% stated that the questions were too long; 1% said that questions about mental health experiences were not clear and that a separate version of the mental

health literacy questionnaire for medical students and the general population was needed due to the complicated questions; 0.5% stated that the questions were theoretical and may not reflect true literacy as more questions about attitude were required; the questionnaire contained too many negative questions and the text “no and disagree” should be emphasized. Meanwhile, 0.5% also reported that the questionnaire form made it easy to answer and the questions were crystal clear.

4. Discussion

4.1 The sixth-year medical students

The most common mental disorders among sixth-year medical students (externs) in this study were major depressive disorder (MDD) and panic disorder which is in line with a previous Thai study that reported adjustment disorder, major depressive disorders, and dysthymia as the most common diagnoses of medical students who utilized the counselling unit of the Faculty of Medicine Siraj Hospital [19]. This was similar to a Malaysian study that found anxiety and depression to be common in medical students who attended a private university [20]. These outcomes were also supported by a Chinese meta-analysis study that showed depression, anxiety, suicidal ideation and eating disorders as the major contributors of mental health problems in medical students [21].

4.2 The Psychometric properties of the Thai mental health literacy scale (TMHLS)

The Thai mental health literacy scale has good validity and reliability. The content validity by the IOC in this study was between .67 – 1.00 and the reliability from Cronbach’s Alpha was .851.

Owing to some language deviation in translation of the TMHLS, the validity of the scale was tested two times by three experts in the mental health field. The IOC in the second-round was increased from .67 to .85 and only four out of nine items (items number 3, 5, 15 and 20) needed to be revised (IOC > .05). According to a prior study, not all measurements can assess all attributions of mental health literacy and suggested that some items needed to be removed [18]. In the end, all 35 items were used in the scale.

The Cronbach’s Alpha of the TMHLS was .851 which is considered good for the reliability of testing. However, six items (items number 9, 10, 11, 12, 15 and 20) of the scale did not meet the criterion (CITC < .20). The Cronbach’s Alpha after removing items that did not meet the criterion was slightly different from the Cronbach’s Alpha when all 35 items were tested for. These six items remained in the scale for the same reasons as the previous study that found the measurement cannot assess all attributes of mental health literacy when some of the items needed to be removed [18]. Therefore, these six items which did not meet the criterion were statically persevered.

4.3 The mental health literacy in sixth-year medical students

The mental health literacy of sixth-year medical students in our work was in line with a prior British study [13]. Our score was marginally lower than that of an Australian study exploring mental health literacy in first-year university students [18]. This may reveal differences in mental health literacy between developing and developed countries. A previous Thai study showed no proficient way to differentiate

between anxiety disorders from depressive disorders in one third of local village health workers and noted that acknowledgement of mental health literacy was required [22]. Additional supporting evidence was provided by a South African study that reported about mental health literacy and urged for mental health education of primary healthcare professionals in developing countries [23]. Moreover, language deviance and questionnaire format may also be responsible for the different results (see more information on “the questionnaire comments” topic).

Our participants had already gained mental health experience by their fifth-year of medical training and these practices may have affected their mental health literacy. Previous works also showed higher mental health literacy in individuals who encountered mental health problems than the individuals who did not [12, 24]. The more exposure someone has, the more mentally health literate they are [12].

Consistent with a previous study [18], the mental health literacy of individuals who had a history of seeking help from mental health professional(s) in person was higher than those who did not (mean \pm SD was 128.84 ± 10.25 and 122.50 ± 11.55 , respectively; $t(200) = 2.302$, $p < .05$). Dynamic knowledge transfer and exchange with a close mental health professional, like in family businesses [25], could also be a reason for higher mental health literacy of individuals who had a mental health professional as an intimate partner than those who did not (mean \pm SD was 127.41 ± 13.96 and 122.37 ± 10.99 , respectively; $t(200) = 2.196$, $p < .05$).

4.4 The questionnaire comments

The main concern about the questionnaire was the complexity and clarity of the questions, however, the items that should be allocated were not mentioned in the notes. Basically, the Thai mental health literacy Scale (TMHLS) aims to assess general, not specific mental health literacy. According to the comments, students advised for a separate version of the mental health literacy assessment tool for medical students and the general population as evidence from a previous study, which is the original version of the mental health literacy scale [18], detailed that the measurement can be used to assess mental health literacy in assorted populations. Moreover, although some participants described the questionnaire as easy and clear to answer, an equal number asked for the questionnaire to highlight the text “no and disagree” and expressed concern that the form was overly theoretical and may not reflect accurate mental health literacy. They requested more questions about attitude to be included and sought to reduce excessive negative questions. As this work was intended to translate and study the psychometric properties of the TMHLS, we did not revise the original questions. A clearer definition of the mental health experience and who is an intimate person, i.e. parents, siblings or significant other, along with emphasizing the text with “no and disagree” should be considered in a further study.

4.5 Limitations

As we used convenience sampling in this study, an inherent bias could not be avoided. Our participants were not chosen at random. Thus, the results cannot legitimize any generalizations. Since we used Cronbach’s Alpha for reliability testing of the Thai mental health literacy scale (TMHLS), the interitem covariance and the measurement assumptions error could be considered as the Alpha value cannot be

equivalent with the reliability of the test score [26]. Cultural and linguistic context in the translation process may also have affected the TMHLS. Information and recall bias may have been present in this observational descriptive cross-sectional study. A prospective cohort study with semi-structured interviews for medical students in different academic years is obligatory.

5. Conclusion

Of the 202 sixth-year medical students, majority was female aged 22–24 years. Approximately 6% of them had major depression. Psychiatric rotation was the most popular source of their mental health experience. The Thai mental health literacy scale (TMHLS) had good content validity (IOC = .67 – 1.0) and good reliability (Cronbach's alpha = .85). From the lowest score of 35 to the highest of 160, in which a higher score meant greater mental health literacy, the participants' mean (\pm S.D.) mental health literacy score was 123.09 (\pm 11.55). Individuals who had a mental health professional as an intimate contact and individuals who had a history of seeking help from mental health professional(s) in person showed significantly higher mental health literacy than those who did not.

Declarations

Ethics approval and consent to participate

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. This study was approved by Siriraj Institutional Review Board of Faculty of Medicine Siriraj Hospital, Mahidol University; COA no. Si203/2017; protocol number 127/2560 (EC3). The Mental Health Literacy Scale (MHLS) was kindly granted permission by the research team of Griffith University (Matt O'Connor & Leanne Casey). Written informed consent was obtained from all individual participants included in the study.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests

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Authors' contributions

GS designed and coordinated the study, analyzed data and wrote the paper. RS co-designed the study, collected and analyzed data, helped to write and reviewed drafts of the paper. SP co-designed the study, help to analyzed data and reviewed drafts of the paper.

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Figures

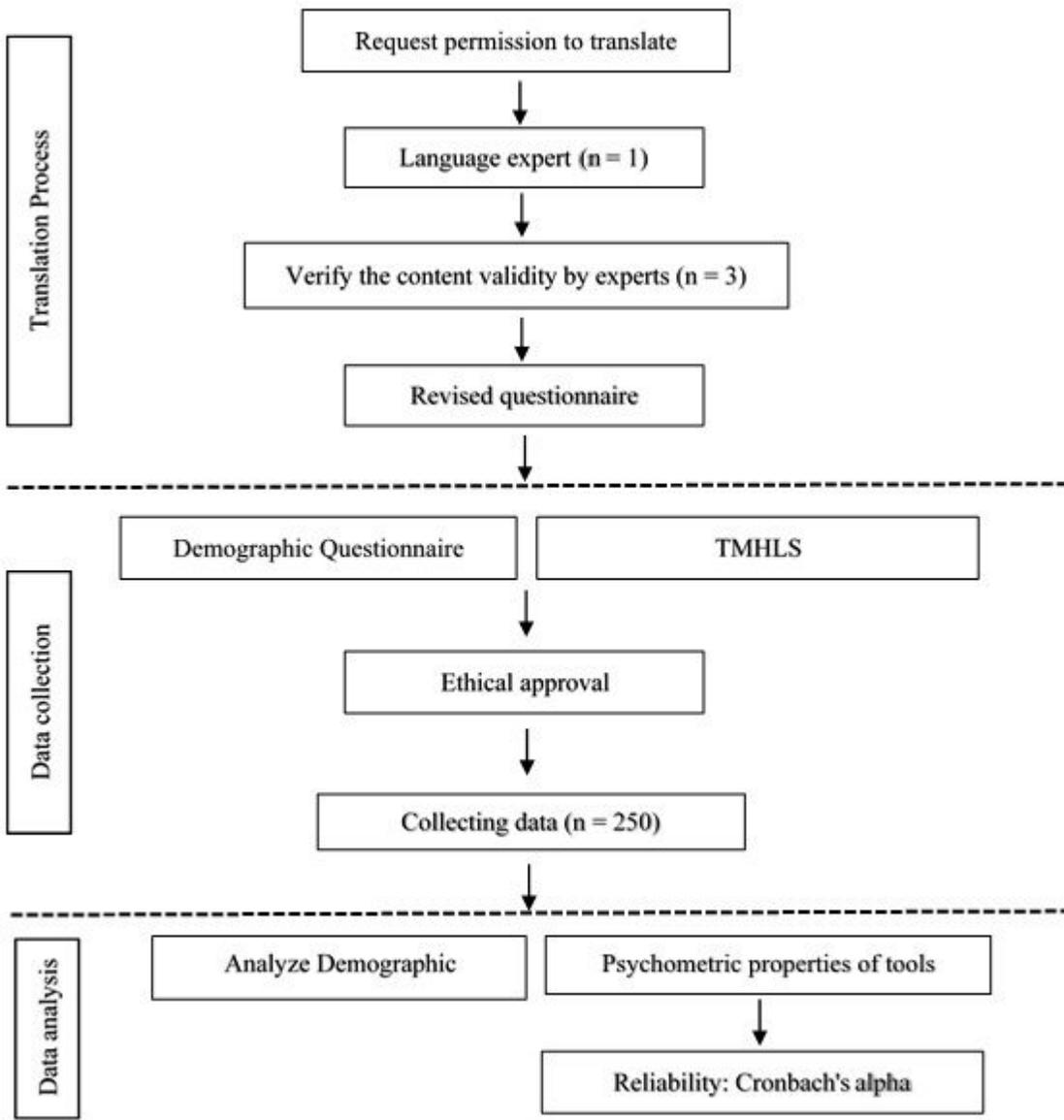


Figure 1

Summary of the research process