

Exploratory Factor Analysis and Psychometrics Properties of the Malay Version Metacognitive Questionnaire 30 Items

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Abstract

The Metacognitive Questionnaire-30 (MCQ-30) has been translated into many languages in different countries. The aim of the study was to determine the psychometric properties of Malay version of MCQ-30 (MCQ-30-M) among the undergraduate students in University Putra Malaysia. A cross sectional validation study was conducted on preclinical students in University Putra Malaysia (n=344). Participants completed a series of questionnaires that included MCQ-30-M, Depression, Anxiety, Stress Scale-21 (DASS21), and Automatic Thoughts Questionnaire. Using exploratory factor analysis, the MCQ-30-Malay was clustered into 5 factors in order to follow the original study which resulted in 2 factors that loaded with 3 questions and 5 items did not load to any factor. The MCQ-30-Malay demonstrated good internal consistency and moderate validity. The measures have shown moderate concurrent and convergent validity with other questionnaires that include Depression, Anxiety, Stress Scale-21 (DASS21), Automatic Thoughts Questionnaire-Malay (ATQ-M) and Sardinian Status Kesehatan Mental (SSKM). The measures also have shown a strong correlation between MCQ-30-M and its subscales. The findings of the study have shown that the MCQ-30-M has demonstrated good psychometric properties when being tested among preclinical student.

Keywords: Metacognition, MCQ-30, Factor Structure, Reliability, Validity

INTRODUCTION

World Health Organization (WHO) predicted that depression will be among the leading causes of worldwide disability by the year of 2020 [1]. Across the Asia Pacific region, prevalence rates of current or 1-month major depression range from 1.3 to 5.5% and rates of major depression in the previous year ranged from 1.7 to 6.7% [2]. In Malaysia, previous studies have reported that the prevalence of depressive symptoms among medical students was 21.2% [3] and 34.9% [4]. Met cognitive refers to the cognitive style, knowledge, events and processes that are involved in the control, modification and interpretation of thinking [5]. The maladaptive of met cognitive is important in the development of psychological disorder [6, 7]. Depression is maintained and intensified by the activation of rumination and unhelpful response patterns [8]. One of many ways to measure the met cognitive ability is through a widely used Met cognitive Questionnaire-

30 [8]. A longer form version of MCQ, Met cognitive Questionnaire-65 (MCQ-65) with 65 items, requires longer time to complete [8]. Hence, a shorter and modified version of MCQ-30 is widely used in research [8]. MCQ-30 consist of 5 factors, namely (a) positive beliefs about worry,(b) negative beliefs about the uncontrollability of thoughts and corresponding anger, (c) cognitive confidence, (d) negative beliefs about thoughts, and (e) cognitive self-consciousness [9].

MCQ-30 have also been translated in many versions and been used in varieties of culture. The countries included Spain [10], Iran [11], Italy [12], Pakistan [13] and South Korea [14]. In addition to original MCQ-30, various translated version of MCQ-30 have been proven to have a good reliability and validity. Besides that, studies conducted on reliability and validity of MCQ-30 among psychiatric patients [10], employees [5], adults [13] and students [14] were done. In some studies, it is stated that the MCQ-30 shows a statistically significant differences between different educational level and employment status [10]. While in other study in Italy reported no gender differences emerged as significant after independent samples t-tests with Bonferroni correction [12]. Despite MCQ-30 being used widely in the measure of met cognition in western country, it is still has not been validated in Malaysia. To date, no study has been reported on the validity and reliability of the MCQ-30 in Malay language. In addition, validated psychological instruments for the assessment of depression and the theories for depression in Malaysia has yet to include MCQ-30. Therefore, study on the psychometric properties of MCQ-30 - Malay is worth of investigation.

Hence, current study aims to examine the construct validity of MCQ-30 among undergraduate students. MCQ-30 in Malay language version will be developed and tested its generalizability of the construct in Malaysia local settings. In addition, various psychometric properties of MCQ-30, including reliability and validity will be examined in current study.

METHODOLOGY

Participants and Settings

Participants (n=344) involved in the study included undergraduate students majoring in medical program in University Putra Malaysia. The data collection was done between the period of 6th April 2015 until 3rd August 2015.

Instruments

Demographic data. Participants' socio demographic information was asked as part of the questionnaire. Socio demographic information such as age, gender, ethnicity, religious belief, and hometown location was collected.

Metacognitive Questionnaire-30-Malay language version (MCQ-30-M). Metacognitive Questionnaire-30-Malay (MCQ-30-M) is a Malay language translated version of the original MCQ-30 (Wells, 2009) [8]. MCQ-30 is a shorter and modified version of the 65-item Metacognitive Questionnaire (MCQ-65). The MCQ-30-M is made up of 30 items in a Likert

scale's format that ranged from "(1) Strongly Disagree" to (4) Strongly Agree". An example of the items presented to the participants' is "I always observe my thoughts". MCQ-30 was found to have good reliability (0.72-0.93) and construct validity (0.91).

Depression Anxiety Stress Scale-21 (DASS-21). The Malay version of the Depression, Anxiety, Stress Scale-21 (DASS-21-M) was translated from the English version of DASS-21. DASS-21-M is a 21-item instrument measuring past one week symptoms of depression, anxiety and stress. Each of these three domains equally contains seven items. Subjects were asked to rate severity and frequency of them experienced each item over the past week. The Likert scale ranged from 0 (did not apply to me at all) to 3 (applied to me very much, or most of the time). DASS-21-M score is calculated by summing the scores for the relevant items and multiplying by two. Musa reported good reliability and validity of DASS-21 to be used in Malaysian context [15].

Automatic Thoughts Questionnaire-Malay language version (ATQ-M) [16]. The 17-item Automatic Thoughts Questionnaire-Malay language version (ATQ-Malay) is a translated version of the original ATQ [17]. ATQ-M measures the frequency of negative automatic thoughts that are related to depression. Respondents rate the frequency of those 30 negative thoughts on a 1 to 5 scale. For instance, how frequently negative automatic thoughts such as "I'm a loser" have occurred in the past week; higher score indicates increased severity of negative thoughts. Reliability value is strong (0.83 and 0.93), there is a positive relationship ($r > 0.6$) between the ATQ and depressive symptomology, and the scales were able to differentiate between depressed and non-depressed samples [16].

Mental Health Status Screening (Saringan Status Kesihatan Mental, SSKM). Saringan Status Kesihatan Mental (SSKM) is a validated measure to screen for mental health status, which including depression, anxiety and psychotic disturbance among the Malaysian population. The 20-item scale has adequate internal reliability and concurrent validity. The scale is rated on a 4-point Likert scale. Cronbach's alpha was 0.89 for the total scale, and ranged from 0.69 to 0.81 for each construct subscale, proven its good internal consistency. By using the MINI-guided interview as the gold standard, the sensitivity recorded is 70% and specificity recorded is 71% at cut off score of 14 and greater. A score of 14 and above indicates the need of further evaluation of psychiatric morbidity. Test-retest reliability was acceptable at Cronbach's alpha of 0.75 [18].

Procedure

Data collection was conducted from 15th Jun 2015 to 6th July 2015. Participants were provided with the details of the research and written consent was obtained prior to any study procedure. All participants were able to answer questionnaire with minimal guidance. Ethical approval was obtained from Ethics Committee for Research Involving Human Subjects at University Putra Malaysia (UPM).

Statistical Analysis

IBM SPSS Statistics (version 22.0) was used to perform data analysis. Data screening was done before any further analysis. Exploratory factor analysis was performed to examine the factor structure of MCQ-30-M. Concurrent validity of MCQ-30-M was determined by Pearson correlation coefficient using total score and subscale score. Reliability was evaluated by Cranach’s alpha coefficient. We used 0.8 and above as the acceptable reliability.

RESULTS

Among participants (n=344), 58.8% are reported to be younger than 20 years old, with a mean age of 20.57 (S.D.=1.09). More female participants (61.6%) are reported in current study, as compared to male (38.4%). In addition, majority participants in the study were Malay (71.4%) and practicing Islam religion (71.8%). Table 4.1 shows the distribution of socio-demographic characteristics participants in this study.

Table 4.1. Socio-demographic of participants (n=344)

Variables	n	Percentage (%)
Age		
≤20	202	58.8
≥21	142	41.2
Gender		
Male	132	38.4
Female	212	61.6
Race		
Malay	245	71.2
Chinese	85	24.7
Indian	8	2.3
Others	6	1.7
Religion		
Islam	249	72.4
Christian	13	3.8
Buddhism	73	21.2
Hinduism	8	2.3
Other religion	1	.3

Exploratory Factor Analysis

Exploratory factor analysis (EFA) was conducted on MCQ-30-M. Upon examination of the correlation matrices, substantial numbers of correlations greater than 0.33 were found, suggesting favorability of the data set. Favorable values of the Kaiser-Meyer-Olkin value (0.86) indicating sampling adequacy, which was above the suggested minimum of 0.60 [19] and a significant value (p<.001) of Bartlett’s Test of Sphericity also suggested that relationships

existed between at least some of the factors and the data were suitable for factor analysis. A number of criteria were used to determine the most appropriate number of factors to retain: (a) minimum Eigen values of 1, (b) minimum factor loadings of 0.30, (c) minimal factorial complexity (multiple loading), and (d) meaningful interpretation of factors.

It is reported that the five factors explained 48.8% of the total variance. Their respective Eigen values were 6.64 (factor one), 3.55 (factor two), 1.76 (factor three), 1.39 (factor four) and 1.29 (factor five). Factor 1 accounted for 22.14% of the variance, factor 2 accounted for 11.83% of the variance, factor 3 accounted for 5.85% of the variance, factor 4 accounted for 4.64% of the variance and factor 5 accounted for 4.31% of the variance.

The rotated factor loadings of each MCQ-30-M items are presented in Table 4.2. The five-factors were extracted using principal component analysis and were subjected to Varimax rotation with Kaiser Normalization. Inspection of the factor loadings allows us to determine the strength of each item load on their expected factor and/or load in a manner that follows a re-interpretation of the factors.

Most items, as expected are subsumed under each five factors (a) positive beliefs about worry, (b) negative beliefs about uncontrollability and danger of worry, (c) cognitive confidence, (d) need for control and (e) cognitive self-consciousness respectively. The first factor has 7 items, second factor has 5 items, third factor has 7 items, fourth and fifth factor have 3 items each. There were 5 items that did not load on any factors as they did not have adequate high factor loading in either factor. These items were (1) item 11, “Saya tidak dapat mengabaikan fikiran saya yang merisaukan”, (2) item 22, “Saya akan dihukum kalau saya tidak dapat mengawal cara pemikiran saya”, (3) item 1, “Saya dapat mengelakkan masalah pada masa akan datang jika saya risaukan tentang masalah tersebut”, (4) item 15, “Kerisauan saya yang melampau mampu menjadikan saya menjadi gila” and (5) item 14 “Adakalanya, fikiran saya mengelirukan saya”.

In Table 4.3, the item distribution according to the factors are presented to compare with current data and other studies that have examined original MCQ-30, and two other studies from Spain and Korea. In factor 1 - positive beliefs about worry (POS), all items are the same as in original MCQ-30. Meanwhile factor 2 - negative beliefs about uncontrollability and danger worry (NEG), with additional of item 6, “Memang salah saya jika salah satu kerisauan saya menjadi benar, kerana saya tidak dapat mengawal pemikiran saya tentang kerisauan itu” are loaded on factor 4 in previous studies, namely the factor of need for control (NC). Item 9, “Kerisauan saya tidak berhenti walaupun saya cuba sedaya upaya untuk menghentikannya” and item 21, “Apabila saya mula risau, saya sukar untuk menghentikannya” which was supposed to load on NEG factor, were both loaded on factor 3 in current study, namely cognitive confidence (CC) factor. At the same time, item 13, “Fikiran saya sepatutnya dalam kawalan saya sepanjang masa” that supposed to load in NC factor, are now loaded to factor 5, cognitive self-consciousness (CSC) factor.

In comparison with Spanish MCQ-30, only one item was reported to not loading on factor NC was, item 27, “Saya tidak akan dapat berfungsi jika saya tidak dapat mengawal cara pemikiran

saya” [20]. On the other hand, Korean version of MCQ-30 [14] reported two items loaded to two different factors. Item 13, “Fikiran saya sepatutnya dalam kawalan saya sepanjang masa” appeared to reflect CSC as well as supposed NC factor and item 11, “Saya tidak dapat mengabaikan fikiran saya yang merisaukan” appeared to reflect POS as well as supposed NEG factor.

In summary, the majority of items in MCQ-30 were loaded on the expected factor, except for few items that either had not sufficient factor loadings or loaded in other factor in current sample.

Table 4.2. Item loadings of MCQ-30-M items

Item No.	Items	Factors				
		1	2	3	4	5
26	Saya tidak mempercayai daya ingatan saya (I do not trust my memory.)	.76				
29	Saya kurang yakin dengan daya ingatan saya untuk tindakan yang perlu saya buat. (I have little confidence in my memory for actions.)	.76				
17	Saya mempunyai daya ingatan yang teruk. (I have poor memory.)	.73				
8	Saya tidak ada keyakinan untuk mengingat perkataan atau nama orang lain. (I have little confidence in my memory for words and names.)	.68				
24	Saya tidak yakin dengan daya ingatan saya mengenai tempat yang saya pernah lawati. (I have little confidence in my memory for places.)	.66				
9	Kerisauan saya tidak berhenti walaupun saya cuba untuk menghentikannya. (My worrying thoughts persist, no matter how I try to stop them.)	.56				
21	Apabila saya mulai cemas, saya sukar untuk menghentikannya (When I start worrying, I cannot stop.)	.45				
11	Saya tidak dapat mengabaikan fikiran saya yang merisaukan. (I cannot ignore my worrying thoughts.)					
22	Saya akan dihukum kalau saya tidak dapat mengawal cara pemikiran saya. (I will be punished for not controlling certain thoughts.)					
23	Kerisauan saya dapat membantu saya mengatasi masalah. (Worrying helps me to solve problems.)		.78			
10	Kerisauan membantu saya untuk mengatur masalah dalam minda saya. (Worrying helps me to get things sorted out in my mind.)		.76			
19	Kerisauan saya membantu saya menangani masalah. (Worrying helps me cope.)		.72			
28	Saya dapat berkerja dengan baik jika saya merisaukan tentangnya. (I need to worry in order to work well.)		.68			
7	Saya perlu sentiasa merisaukan sesuatu untuk memastikan hidup saya sentiasa teratur. (I need worry in order to remain organized.)		.59			
1	Saya dapat mengelakkan masalah pada masa akan datang jika saya risaukan tentang masalah tersebut. (Worrying helps me to avoid problems in the future.)					
18	Saya memberikan perhatian yang teliti kepada cara pemikiran saya. (I pay close attention to the way my mind works.)			.71		
16	Saya sentiasa sedar akan cara pemikiran saya. (I am constantly aware of my thinking.)			.70		
Item No.	Items	Factors				
		1	2	3	4	5
12	Saya sering mengawasi/memerhatikan pemikiran saya. (I monitor my thoughts.)			.67		
30	Saya sentiasa mengawasi cara pemikiran saya. (I constantly examine my thoughts.)			.58		
3	Saya memikirkannya tentang cara pemikiran saya. (I think a lot about my thoughts.)			.57		
13	Fikiran saya sepatutnya dalam kawalan saya sepanjang masa (I should be in control of my thoughts all of the time.)			.53		
5	Saya sedar akan cara pemikiran saya apabila saya sedang cuba mengatasi masalah. (I am aware of the way my mind works when I am thinking through a problem.)			.53		
27	Saya tidak akan dapat berfungsi jika saya tidak dapat mengawal cara pemikiran saya. (If I could not control my thoughts, I would not be able to function.)				.68	
20	Ketidakupayaan saya untuk mengawal pemikiran adalah tanda kelemahan. (Not being able to control my thoughts is a sign of weakness.)				.62	
25	Sesetengah fikiran tidak baik difikir. (It is bad to think certain thoughts.)				.55	
15	Kerisauan saya yang melampaui kemampuan menjadikan saya menjadi gila. (My worrying could make me go mad.)					
4	Saya boleh menjadi sakit kerana terlalu banyak merisaukan banyak perkara. (I could make myself sick with worrying.)					.68
2	Kerisauan membahayakan diri saya. (My worrying is dangerous for me.)					.54
6	Memang salah saya jika salah satu kerisauan saya menjadi benar, kerana saya tidak dapat mengawal pemikiran saya tentang kerisauan itu (If I did not control a worrying thought, and then it happened, it would be my fault.)					.51
14	Adakalanya, fikiran saya mengelirukan saya. (My memory can mislead me at times.)					

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.^a

(^a)= Rotation converged in 7 iterations.

Table 4.3. Item distribution according to factor (N=344) of MCQ-30, MCQ-30-M, Spanish MCQ-30 and K-MCQ-30.

Factors	MCQ-30	MCQ-30-M (current study)	Spanish MCQ-30	K-MCQ-30
Positive beliefs about worry (POS)	1	-	1	1
	7	7	7	7
	10	10	10	10
	19	19	19	19
	23	23	23	23
	28	28	28	28
Negative beliefs about uncontrollability and danger worry (NEG)	2	2	2	2
	4	4	4	4
	9	*	9	9
	11	-	11	11 ^R
	15	-	15	15
	21	*	21	21
Cognitive confidence (CC)	8	8	8	8
	14	-	14	14
	17	17	17	17
	24	24	24	24
	26	26	26	26
	29	29	29	29
Need for control (NC)		9*		
		21*		
	6	*	6	6
	13	*	13	13 ^R
	20	20	20	20
	22	-	22	22
Cognitive self-consciousness (CSC)	25	25	25	25
	27	27	-	27
	3	3	3	3
	5	5	5	5
	12	12	12	12
	16	16	16	16
	18	18	18	
	30	30	30	
		13*		13 ^R

Note. MCQ-30 = Metacognitive Questionnaire-30, MCQ-30-M = Metacognitive Questionnaire-30-Malay, Spanish MCQ-30 = Spanish version Metacognitive Questionnaire-30, K-MCQ-30 = Korean version Metacognitive Questionnaire-30

(-) = Item does not load, (*) = Item loaded at different factor, (^R) = Item loaded at two factors.

Concurrent and Convergent Validity

Concurrent validity was assessed using Pearson correlation to compute the correlation between MCQ-30-M factor subscale scores, total MCQ30-M score and ATQ-M while convergent validity was assessed by using the correlation between total MCQ-30-M, DASS-21 and SSKM. Table 4.5 presents the inter-correlation between MCQ-30-M factors, total MCQ-30-M, ATQ-M, DASS-21 and SSKM. As shown in Table 4.5, each of MCQ-30-M factors and its total MCQ30-M score are reported to have significant positive correlation. The individual factor of MCQ30-M mostly showed positive and significant correlation with related constructs except for factor 3: Cognitive confidence and factor 5: Cognitive self-consciousness (CSC). The result of assessments also showed moderate concurrent and convergent validity between total MCQ30-M score, ATQ-M, DAS21 and SSKM respectively. All of them showed positive and significant correlation. Positive and significant correlations were found between each of MCQ30-M factors, with ATQ-M, DAS21 and SSKM except for factors 5 - cognitive self-consciousness.

Internal consistency

The internal consistency (reliability) of the five factors and total MCQ30-M score was assessed using Cranach’s coefficients alpha. The item and content of each question can be seen in Table 4.4, along with the result of Cranach’s alpha described next. Cranach’s alpha for each factor was as follows: Positive beliefs about worry $\alpha = .79$; Negative beliefs about uncontrollability and danger worry $\alpha = .70$; Cognitive confidence $\alpha = 0.78$; Need for control $\alpha = .63$; and Cognitive self-consciousness $\alpha = 0.76$. Most of the alpha coefficients exceed minimum value of 0.7 except for factor 4: Need for control. The alpha coefficient for total score was .87. These alpha coefficients is of good level as compared to the guidelines of Cranach’s alpha $>.70$ cutoff [21].

Table 4.4. MCQ-30-M factors and total MCQ-30-M score Cranach’s Alpha values (N=344)

Items/Factors	Cranach’s Alpha (α)
Positive beliefs about worry (POS)	0.79
Negative beliefs about uncontrollability and danger worry (NEG)	0.70
Cognitive confidence (CC)	0.78
Need for control (NC)	0.63
Cognitive self-consciousness (CSC)	0.76
Overall MCQ-30 items	0.87

Table 4.5. Correlations of MCQ-30-M factors, total MCQ-30-M score, total DASS score, total ATQM score and total SSKM score. (N=344)

	1	2	3	4	5	6	7	8
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1. Positive beliefs about worry (POS)	-								
2. Negative beliefs about uncontrollability (NEG)	.28**	-							
3. Cognitive confidence (CC)	.21**	.57**	-						
4. Need for control (NC)	.43**	.56**	.44**	-					
5. Cognitive self-consciousness (CSC)	.49**	.26**	.08	.40**	-				
6. Total MCQ-30-M score	.69**	.76**	.67**	.79**	.62**	-			
7. Total DASS-21 Score	.11*	.46**	.44**	.31**	-.003	.38**	-		
8. Total ATQ-M Score	.04**	.45**	.45**	.36**	-.08	.35**	.69**	-	
9. Total SSKM Score	.12*	.37**	.41**	.22**	-.05	.31**	.66**	.61**	-

Note. MCQ-30-M = Metacognitions Questionnaire-30-Malay; DASS = Depression Anxiety Stress Scale-21; ATQM = Automatic Thoughts Questionnaire Malay; SSKM = Saringan Status Kesehatan Mental

*Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Gender Differences

To compare the mean of MCQ-30-M total score between male and female, independent sample t-tests was conducted. The assumption of homogeneity of variances was tested via Levene’s test, homogeneity assumption was not violated, $p = .824$. Based on the Levene’s test, it emerged as non-significant; thus, equal variance is assumed for MCQ-30-M total score of both male and female.

DISCUSSION

This study aims to determine the psychometric properties of MCQ-30-M among the pre-clinical students in UPM. Five factor structure proposed by Wells and Cartwright-Hatton (2004) [5] was confirmed in the current study. The questionnaire demonstrated a good internal consistency and

reliability. The questionnaire is also reported to have moderate concurrent and convergent validity with other questionnaires.

From EFA results, total of 5 items did not load on either factor. The possible reason could be due to the sample differences, as we recruited non-clinical participants, as opposed to sample of patients from previous other studies. In the current undergraduate students sample pool, they may have different characteristics in their metacognitive style. First, a healthy individual may recognize that the problems that will arise in the future won't be solved or avoided despite the worrying thoughts that they may have. Problem arises are beyond their control. Besides that, the participants in this study are likely to be well adapted to their busy daily life routine as a pre-clinical university student that they have learned the ways to ignore their own worrying thoughts. Other than that, the participants trust their own thoughts, believing that their thoughts are acceptable and thus, would not be punished for it. This scenario is less likely to happen in depressed patients where their level of trust upon themselves is low. They believe that their thoughts are not always acceptable and thus, may end up being punished for the uncontrollable thoughts. Lastly, the participants as pre-clinical students in UPM, are more likely to share their worrying thoughts with peers. This act will reduce the possibility for them to get mad by their own thoughts. The opposite situation happens to clinical patients as they are less likely to share their thoughts, increasing the possibility for them to get mad.

In addition, some items did not load on expected factor. Item 6 may be perceived to lean more towards negative beliefs about the uncontrollability of own thoughts rather than need to control after it is translated to Malay language. Item 9 and 21 should be taken into precaution in further research as a continuation of analysis using confirmatory factor analysis (CFA) may help in determining the most suitable factor for both items. Item 13 could load to other factor than the presumed factor which may be explained by the similarity in cultures that presumably influence the pattern of thoughts as evidenced in Korea version of MCQ-30 [14].

For convergent validity, Pearson correlation between total MCQ-30-M, DASS-21 and SSKM was tested. MCQ-M-30 showed positive correlation with DASS-21 and SSKM, as well as ATQ-M. The findings proved the convergent validity of MCQ-30-M with depression symptomology. In addition, MCQ-30-M subscales showed great internal reliability, hence has proven its psychometric properties and its suitability to use in the local settings.

The results of the study should be viewed in the lights of a few limitations. This study cannot be generalized to the whole Malaysia due to the current sampling strategies. Current study only recruited undergraduate students who majored in medicine. In addition to that, a larger sample size should be obtained in future studies as a larger sample size will grant the capacity to run both EFA and confirmatory factor analysis in the same study. In addition, future studies shall examine MCQ-30 among clinical sample in Malaysia. Despite these limitations, results obtained were satisfactory and answered the objectives of the study.

Results of current study confirmed the psychometric properties of the translated MCQ-30 into Malay version of MCQ-30-M. Despite being tested in the undergraduate students, few limitations

existed in the current study. MCQ-30-M provided good internal consistency for its overall scale and subscales as well as moderate concurrent and convergent validity. In short, finding of current study has proved the credibility of MCQ30 as the instrument to assess metacognitive beliefs related to depression.

REFERENCES

World Health Organization. Department of Mental Health, & Substance Abuse. (2005). *Mental health atlas 2005*. World Health Organization.

Chiu, E. (2004). Epidemiology of depression in the Asia Pacific region. *Australian Psychiatry*, 12, 4–10.

Yusoff, B., Fuad, A., Rahim, A., & Yaacob, M. J. (2011). The Prevalence of Final Year Medical Students with Depressive Symptoms and Its Contributing Factors, 18(4), 305–309.

Saravanan, C., & Wilks, R. (2014). Medical students' experience of and reaction to stress: the role of depression and anxiety. *The Scientific World Journal*, 737382. <http://doi.org/10.1155/2014/737382>

Wells, A., & Cartwright-Hatton, S. (2004). A form of the metacognitions questionnaire: Properties of the MCQ-30. *Behaviour Research and Therapy*, 42, 385–396.

Wells, A. (2000). *Emotional disorders and metacognition: Innovative cognitive therapy*. Chichester, UK: Wiley.

Wells, A., & Matthews, G. (1994). *Attention and emotion: A clinical perspective*. Hillsdale, NJ: Erlbaum.

Wells, A. (2009). *Metacognitive Therapy for Anxiety and Depression*. London: The Guilford Press.

Spada, M. M., Mohiyeddini, C., & Wells, A. (2008). Measuring metacognitions associated with emotional distress: Factor structure and predictive validity of the metacognitions questionnaire 30. *Personality and Individual Differences*, 45(3), 238–242. <http://doi.org/10.1016/j.paid.2008.04.005>

Martín, J., Padierna, A., Unzurrunzaga, A., González, N., Berjano, B., & Quintana, J. M. (2014). Adaptation and validation of the metacognition questionnaire (MCQ-30) in Spanish clinical and nonclinical samples. *Journal of Affective Disorders*, 167, 228–234.

- Jabalamelian, S. A. (2011). Reliability and validity of metacognitive questionnaire (MCQ) in Iranian students Aim: Measurement of metacognition in psychological research is an important factor for detection of psychological disorders and is a foundation for measurement and monito, 43–51.
- Quattropiani, M., &Lenzo, V. (2014). Psychometric properties of the Italian version of the Short Form of the Metacognitions Questionnaire (MCQ-30).
- Nadeem, M. (2013). Translation and Validation of Metacognitions Questionnaire-30: A Pilot Study on Pakistani Adults, 16(2), 80–89.
- Cho, Y., Jahng, S., & Chai, S. (2012). The Factor Structure and Concurrent Validity of the Korean Version of the Metacognitions Questionnaire 30 (K-MCQ-30). *Journal of Clinical Psychology*, 68(3), 349–361. <http://doi.org/10.1002/jclp.20867>
- Musa, R.,Fadzil, MA., & Zain, Z. (2007). Translation. Validation and psychometric properties of Bahasa Malaysia version of the Depression. Anxiety. Stress Scale (DASS). *ASEAN Journal of Psychiatry*, 8 (2), 82-89.
- Oei, T.P.S., &Mukhtar, F. (2007). Exploratory and Confirmatory Factor analysis of Psychometric Properties of Automatic Thoughts Questionnaire. *Malay, Hong Kong Journal of Psychiatry*, vol.18,3, 92-100.
- Hollon, SD., &Kendall, PC. (1980). Cognitive self-statements in depression: Development of an automatic thoughts questionnaire. *Cognitive Therapy Research*;4:383-95.
- Lim, CH, Singh, S., Cheah., Seow E.L., Tian P.O. (2011). The development and validation of a Malaysian Mental health screening instrument: The “SARINGAN STATUS KESIHATAN MENTAL-20” (SSKM-20)
- Tabachnick, B. G., &Fiddell, L. S. (1996).Using multivariate statistics(3rd ed.). New York: Harper Collins.
- Ramos-Cejudo J., Salguero J. M., & Cano-Vindel A. (2013). Spanish Version of the Meta-Cognitions Questionnaire 30 (MCQ-30). *Spanish Journal of Psychology*, 16(95), 1-8.
- George, D., & Mallery, P. (2003). *SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.)*. Boston: Allyn& Bacon.