ORIGINAL ARTICLE

Validation of the Malay Version of Repetitive Behavior Scale-revised in Children With Autism Spectrum Disorders

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ABSTRACT

Introduction: Restricted and repetitive behaviours (RRB) are actions or interests demonstrated in the form of repetitive motor movement that interferes with one's daily performance. Repetitive Behavior Scale-Revised (RBS-R) is a self-report questionnaire designed to assess the variety and severity of RRB in people with Autism Spectrum Disorder (ASD) comprehensively. The purpose of the current study was to investigate the validity and reliability of the Malay version of RBS-R questionnaire. **Methods:** The cross-cultural adaptation of the RBS-R was performed following established guidelines. The questionnaire was assessed its content and face validity before it was administered to 34 parents or caregivers of children with ASD to determine the internal consistency reliability. Content validity index, face validity index and Cronbach's alpha were calculated. **Results:** The Malay version of RBS-R showed the scale-level content validity with an average index (S-CVI/Ave) of 0.97 and a universal agreement index (S-CVI/UA) of 0.84. Meanwhile, scale-level face validity with an average index (S-FVI/Ave) of 0.97 and a universal agreement index (S-FVI/UA) of 0.90 were derived, indicating that the Malay version of RBS-R questionnaire was relevant, clear and comprehensible. All subdomains showed the Cronbach's alpha coefficient of over 0.7, ranging from 0.758 to 0.914 indicating it was a reliable tool. **Conclusion:** This study showed good level of content validity index, face validity index and internal consistency reliability of the questionnaire. These study findings indicated the practicality of the Malay version of RBS-R to assess RRB in children with ASD. Further research on construct validity is recommended.

Keywords: Autism spectrum disorder, Malay version, Questionnaire, Repetitive behaviour, Validity

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INTRODUCTION

TThe restricted and repetitive behaviours (RRB) and constant deficits in social communication and interaction are two main features to distinguish the Autism Spectrum Disorder (ASD) with other developmental disabilities. Individual with ASD generally will have social communication and interaction difficulty, such as difficulty maintaining or engaging in conversation, and inability to initiate or responds to social relationship. They also have trouble in nonverbal communicative behaviours such as body language and eye contact, or inability to understand or use gestures and facial expressions. In addition, individuals with ASD may be highly sensitive to environmental changes, can rely heavily on routines, or overly concentrated on inappropriate objects (1). The Diagnostic and Statistical Manual of Mental Disorders Fifth Edition (DSM-5) highlights the significance of using diagnostic specifiers based on an individual's severity of ASD which is conceptualized in terms of RRB and social interaction deficits (2).

Most studies targeted on assessing and evaluating language and communication difficulties, however, in recent years, attentiveness has increased in the pathology of RRB regarding ASD. The lower interest for RRB profiles and associated features might be due to lack of specificity and underestimated diagnostic role in ASD (3). In fact, RRB are not only evident to ASD but noticeable in clinical population as well as typically developed population (4). RRB can be deemed as usual features for

various mental, neurological, and neurodevelopmental disorders like obsessive-compulsive disorder, mental retardation, Parkinson's disease, schizophrenia, and Tourette syndrome (5).

Usually, RRB refer to a wide spectrum of behaviours. These behaviours are presented as occurrences of repetitive motor movements that usually serve no functional purpose, restrictive interests, compulsiveness or obsessions, and severe behavioural issues. RRB can interferes with one's day-to-day performance since these actions occur frequently (5). Some people with ASD may have a few types of RRB which are less severe, but others may have multiple forms of RRB that can expend much of their waking hours (6).

The need of differential assessment and diagnosis usage to measure the severity of behaviours in ASD have been noted in tons of studies globally. Observational methods and caregiver's interviews or questionnaires are the several methods of measuring RRB in ASD. One of the challenges for measurement of RRBs is the diversity of these behaviours in children with ASD (7). Several instruments have been developed to assess ASD symptomology namely Sameness Questionnaire (8), Abnormal Focused Affections Checklist (9), and Childhood Routines Inventory (10). However, these assessment tools were not specifically designed for evaluating RRB in ASD, and sometimes can only measure a certain component of RRB.

The Repetitive Behavior Scale-Revised (RBS-R) proposed by Bodfish et al. (5) is an instrument that allows a detailed evaluation of RRB amidst the other parent-report tools for the assessment of RRB. This repetitive behaviour scale has been the most complete and the only specific tool for the assessment of RRB in autism (5). In fact, many studies have used the RBS-R as a simple, useful instrument for examinations of RRB subcategories (11,12) and for evaluating RRBs in clinical trials on the efficacy of ASD treatment (13,14). Therefore, the RBS-R can be used by professionals such as occupational therapist, clinical psychologist, and physician in Malaysia setting as a tool to assess RRB in individual with ASD efficiently.

Originally, the Repetitive Behavior Scale (RBS) contained three subdomains: (a) Stereotypic Behaviour; (b) Self-injurious Behaviour; and (c) Compulsions. Despite, the RBS did not assess into more complex RRB symptoms noticed in individuals with ASD. Consequently, the original RBS was broadened by additional items that assessed ritualized behaviours, insistence on sameness, and restricted interests as a way to include more complex RRB features, thus, to form the new version of RBS-R (5). Previous research showed that the six-factor structure of RBS-R had good psychometric properties among people with ASD, with adequate validity and reliability in various countries such as Greece, USA, Peru, Canada, Japan, Italy and Spain (2,3,12,15-18).

As far as our knowledge, the RBS-R questionnaire has still not been translated into Malay language and validated in Malaysian population to date, despite the extensive use of this instrument across the countries worldwide (13-18). It is recognized that if a measure is to be used in a new country and culture, the items must not only be translated well but also should be adapted culturally to reach equivalence between the original version and target versions of the questionnaire (19). The cross-cultural adaptation of English version into Malay language version is required as RBS-R questionnaire is completed by parents or caregivers who come from different socioeconomic status and background. Also, it is prominent that not all Malaysian parents understand English well. Cook and Beckman stated that validity of research tool was supported by five sources of evidence that are content, response process, internal structure, relation to other variables, and consequence (20). Hence, the primary objective of the present work was to investigate two sources of evidence for validity of the translated version, that are content validity and face validity. Secondly, this study also was aimed to assess the internal consistency reliability of the Malay version of RBS-R on Malay-speaking population.

MATERIALS AND METHODS

Instrument: Repetitive Behavior Scale-Revised (RBS-R)

The RBS-R is a questionnaire designed to measure the full spectrum of repetitive behaviours. The assessment is developed to provide a quantitative, consistent evaluation of the presence and severity of varieties of RRB. The RBS-R requires 10 to 15 minutes to be completed. It consists of 43 items with six subdomains or subscales: (a) Stereotyped Behaviour (six items); (b) Self- injurious Behaviour (eight items); (c) Compulsive Behaviour (eight items); (d) Ritualistic Behaviour (six items); (e) Sameness Behaviour (eleven items); and (f) Restricted Behaviour (four items). Items on the RBS-R are rated on a 4-point Likert scale ranging from: 0 = repetitive behaviour that does not occur; 1 = repetitive behaviour occur and it is a mild problem; 2 = repetitive behaviour occur and it is a moderate problem, and 3 = repetitive behaviour occur and it is a serious problem (5). The higher the RBS-R scores, the more severe the behaviours. The RBS-R can be completed by parents, caregivers, or professionals who know the children well and they are required to report on the behaviours of their children based on the interactions during the last month.

Setting and Procedure

This study was conducted in Selangor, Malaysia. This study involved two main phases; (i) Phase 1: Translation and validation of instrument; and (ii) Phase II: Pilot testing. Fig. 1 shows the schematic diagram of the study phases. Phase I study was conducted between November 2019 until February 2020 and data collection for Phase II study was conducted during movement control order in Malaysia between March 2020 until May 2020.

The process of translation and content validation involved expert panel reviews on the items content to omit vagueness and to achieve relevance and representativeness of the items. Subsequently, the

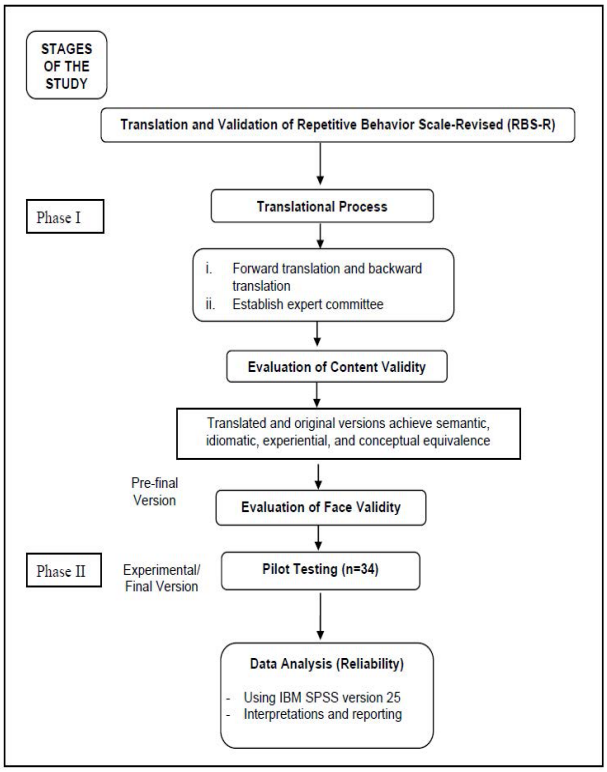

Fig. 1: Schematic diagram of the translation and validation of the Malay version of RBS-R questionnaire.

translated version was pre-tested among the reference population via face validation, to justify the clarity and understandability of the constructed items (21). A pilot test was later conducted to determine the reliability of finalised version of the questionnaire. Approval of human ethics was acquired from the Universiti Teknologi MARA (UiTM) Research Ethics Committee prior conducting the study (Reference No.: 600-IRMI (5/1/6)).

Phase 1: Translation and validation of RBS-R

The translation and validation of the RBS-R was performed following established guideline. (19). The original RBS-R questionnaire was translated from English to the Malay language by two independent translators who were a qualified linguist and a bilingual researcher. The forward-translated and back-translated versions of the tool were compared by the researchers and then were amended accordingly. With the significance of ensuring the preservations of the meanings of the questionnaire, the forward and backward translations process has been cautiously planned. Hence, the Malay version of RBS-R was produced and named as Skala Tingkah Laku Berulang – Semakan (STB-S).

Subsequently, the translated questionnaire (in Malay version) was revised by six experts who are well versed in the Malay language and English, and five of them are well-educated on the autism assessment and rehabilitation. The panel of experts consisted of experts in the fields of occupational therapy, clinical psychology, and paediatrics. The field experts consisted of three senior lecturers of occupational therapy with master's degree education, a paediatrician and a clinical psychologist from private hospitals, and a methodologist as lay expert. The content validity tool was provided for experts to rate each item for its relevancy to each subdomain on a 4-point scale (ranging from 1 = item is not relevant to 4 = item is very relevant). In addition, experts were also encouraged to give comments and suggestions about the representativeness, content, and relevancy of each item.

Face validity was later assessed by eight volunteers recruited from target population. Those recruited were parents of children with ASD from Pusat Terapi Carakerja of UiTM Puncak Alam. The Pusat Terapi Carakerja of UiTM functions as clinical teaching centre and provide occupational therapy or rehabilitation service for the children with ASD who have been diagnosed by medical professionals and clinicians. This centre consists of occupational therapists team who perform assessment on the children and conduct the interventions. The parents in this study evaluated the response format, the instructions, and the items of questionnaire for comprehensibility and clarity. All eight parent volunteers were required to rate each item according to 4-point scale (1 = item is not clear and not understandable to 4 = item is very clear and understandable). All the remarks given by the experts and the parents have been taken into consideration to produce the final version of RBS-R questionnaire in Malay version.

Phase 2: Pilot testing

A pilot test was conducted among 34 samples based on estimation of minimum sample size to determine the internal consistency reliability (22). The inclusion criteria were parents or caregivers of a child with ASD aged between three to 17 years old, who spends most of their time taking care of the child, and understands the Malay language. The exclusion criteria were parents with history of psychological/mental disorders, non-return or failure to respond to all questions in the questionnaire. The self-administered Malay version RBS-R was distributed via an online survey using Google Form, where the link was sent to the parents or caregivers through social media such as Facebook, Instagram and Whatsapp. The study rationale was described in the form, and informed consent was gained before the respondents answered the questionnaire.

Data Analysis

Content validity index (CVI) was computed to examine the content validity of the Malay version of RBS-R questionnaire. The relevance rating needs to be recoded as 1 (relevance scale of 3 or 4) or 0 (relevance scale of 1 or 2) prior to the calculation of CVI. The CVI was computed by calculating the two types of CVI, in which CVI for the overall scale (S-CVI) and CVI for the individual item (I-CVI). To calculate I-CVI, the number of experts that has re-categorized their rating with "1" must be divided by the total number of experts. The items that achieved

100% expert agreement will have the I-CVI value of "1". There are two methods for calculating S-CVI; (i) Averaging index (S-CVI/Ave) which is the average of the I-CVI scores for all items on the scale, and (ii) Universal agreement index (S-CVI/UA) which is the proportion of items on the scale that achieve a relevance scale of 3 or 4 (recoded as 1) by all experts ((23). A CVI value of 0.80 has been signified as acceptable, with items of the content being relevant and valid (24).

Face validity index (FVI) was computed to examine the face validity of the questionnaire. Calculation of FVI also included item-level face validity index (I-FVI), scale-level face validity index (S-FVI), averaging index (S-FVI/Ave), and universal agreement index (S-FVI/UA) similarly to the content validity (25).

The reliability analysis was performed using IBM Statistical Package for the Social Sciences (SPSS) version 25.0 software. Cronbach's alpha coefficient was computed for all subdomains and overall items of the Malay version of RBS-R scale. Cronbach's alpha value above 0.7 was deemed to show acceptable internal consistency reliability (26).

RESULTS

Content Validity

The Malay version of RBS-R questionnaire which consisted of 43 items in six subscales was validated for language and content by six experts. For I-CVI, it is the number of agreed items divided by the total number of experts. There were 36 items that achieved the I-CVI value of 1. Content validation of this questionnaire resulted an overall validity index of more than 0.80, with an average index (S-CVI/Ave) of 0.97 and a universal agreement index (S-CVI/UA) of 0.84. Table I shows the relevance rating on the item scale by six experts and calculation of content validity index. The RBS-R questionnaire in Malay version has achieved the acceptable satisfactory level of content validity. Some minor modifications have been performed upon experts' comments and suggestions on each item questionnaire. For example, Item 3 in subscale Stereotyped Behaviour, the words "menggoncang" was changed to "menggoyangkan" and "memetik" to "mengibaskan" as suggested by the expert.

Table I: The relevance rating on the item scale by six experts

Subscale/Item		Expert						Expert in agreement (n=6)	I-CVI	UA
		1	2	3	4	5	6			
I[1]	I1	1	1	0	1	1	1	6	1	1
	I2	1	1	1	1	1	1	6	1	1
	I3	1	1	1	1	1	1	6	1	1
	I4	1	1	0	1	1	1	5	0.8	0
	I5	1	1	0	1	1	1	5	0.8	0
	I6	1	1	1	1	1	1	6	1	1
	I7	1	1	1	1	1	1	6	1	1
	I8	1	1	1	1	1	1	6	1	1
	I9	1	1	1	1	1	1	6	1	1
II[2]	I10	1	1	1	1	1	1	6	1	1
	I11	1	1	0	1	1	1	5	0.8	0
	I12	1	1	1	1	1	1	6	1	1
	I13	1	1	0	1	1	1	5	0.8	0
	I14	1	1	0	1	1	1	5	0.8	0
	I15	1	1	1	1	1	1	6	1	1
	I16	1	1	1	1	1	1	6	1	1
	I17	1	1	0	1	1	1	5	0.8	0
	I18	1	1	1	1	1	1	6	1	1
III[3]	I19	1	0	1	1	1	1	5	0.8	0
	I20	1	1	1	1	1	1	6	1	1
	I21	1	1	1	1	1	1	6	1	1
	I22	1	1	1	1	1	1	6	1	1

CONTINUED

Table I: The relevance rating on the item scale by six experts(CONT.)

Subscale/Item		Expert						Expert in agreement (n=6)	I-CVI	UA
		1	2	3	4	5	6			
	I23	1	1	1	1	1	1	6	1	1
	I24	1	1	1	1	1	1	6	1	1
	I25	1	1	1	1	1	1	6	1	1
IV[4]	I26	1	1	1	1	1	1	6	1	1
	I27	1	1	1	1	1	1	6	1	1
	I28	1	1	1	1	1	1	6	1	1
	I29	1	1	1	1	1	1	6	1	1
	I30	1	1	1	1	1	1	6	1	1
	I31	1	1	1	1	1	1	6	1	1
	I32	1	1	1	1	1	1	6	1	1
	I33	1	1	1	1	1	1	6	1	1
V[5]	I34	1	1	1	1	1	1	6	1	1
	I35	1	1	1	1	1	1	6	1	1
	I36	1	1	1	1	1	1	6	1	1
	I37	1	1	1	1	1	1	6	1	1
	I38	1	1	1	1	1	1	6	1	1
	I39	1	1	1	1	1	1	6	1	1
	I40	1	1	1	1	1	1	6	1	1
VI[6]	I41	1	1	1	1	1	1	6	1	1
	I42	1	1	1	1	1	1	6	1	1
	I43	1	1	1	1	1	1	6	1	1
								S-CVI/Ave	0.97	
								S-CVI/UA	0.84	

[1]Stereotyped Behaviour Scale
[2]Self-injurious Behaviour Scale
[3]Compulsive Behaviour Scale
[4]Ritualistic Behaviour Scale
[5]Sameness Behaviour Scale
[6]Restricted Behaviour ScalZ

Face Validity

Face validation on the pre-finalised version of translated questionnaire was performed with a total of eight volunteers. They were parents of children with ASD and able to understand the Malay language. Table II shows the comprehension and clarity ratings on the item scale by eight raters and calculation of face validity index. There were 39 items that achieved the I-FVI value of 1. Face validation resulted an overall scale-level FVI of above 0.80, with an average index (S-FVI/Ave) of 0.97. Meanwhile, a universal agreement index (S-FVI/UA) of 0.90 was attained for the RBS-R scale. The RBS-R questionnaire in Malay version has achieved the acceptable satisfactory level of face validity.

Pilot Testing

A total of 34 parents or caregivers agreed to participate in this study. Among those, 29 (85.3%) were females and five (14.7%) were males. The respondents had mean age of 37.97 (SD = 13.14), ranging from 23 to 59 years old. Almost all of the respondents were Malays (97.1%). Meanwhile, the children with ASD had the mean age of 8.50 (SD = 3.33) ranging from three to 17 years old. The children were 28 (82.4%) males and six (17.6%) females. Most of the children were children with autism (n=28, 82.4%), with 16 of them had mild severity

Table II: The clarity and comprehension ratings on the item scale by eight parents of children with ASD

Subscale/Item		Raters in agreement (n=8)	IFVI	UA
I[1]	I1	8	1	1
	I2	8	1	1
	I3	8	1	1
	I4	8	1	1
	I5	8	1	1
	I6	8	1	1
	I7	8	1	1
	I8	8	1	1
	I9	8	1	1

CONTINUED

Table II: The clarity and comprehension ratings on the item scale by eight parents of children with ASD(cont.)

Subscale/Item		Raters in agreement (n=8)	IFVI	UA
II[2]	I10	8	1	1
	I11	8	1	1
	I12	8	1	1
	I13	8	1	1
	I14	8	1	1
	I15	8	1	1
	I16	8	1	1
	I17	8	1	1
	I18	8	1	1
III[3]	I19	6	0.75	0
	I20	8	1	1
	I21	8	1	1
	I22	8	1	1
	I23	8	1	1
	I24	8	1	1
IV[4]	I25	8	1	1
	I26	8	1	1
	I27	8	1	1
	I28	8	1	1
	I29	8	1	1
	I30	8	1	1
	I31	8	1	1
V[5]	I32	8	1	1
	I33	8	1	1
	I34	8	1	1
	I35	8	1	1
	I36	8	1	1
	I37	8	1	1
	I38	6	0.75	0
	I39	6	0.75	0
	I40	8	1	1
VI[6]	I41	5	0.62	0
	I42	8	1	1
	I43	8	1	1
			S-FVI (Ave)	0.97
			S-FVI (UA)	0.90

[1]Stereotyped Behaviour Scale
[1]Self-injurious Behaviour Scale
[3]Compulsive Behaviour Scale
[4]Ritualistic Behaviour Scale
[5]Sameness Behaviour Scale
[6]Restricted Behaviour Scale

Table III: Socio-demographic data of the respondents and their child with ASD (n=34)

Characteristics	Mean (SD)	n(%)
Parents/Caregivers		
Age	37.97 (13.14)	
Gender		
Male		5 (14.7)
Female		29 (85.3)
Race		
Malay		33 (97.1)
Iban		1 (2.9)
Status		
Married		30 (88.2)
Single (widowed/divorced/not married)		4 (11.8)
Relationship with child		
Parent		26 (76.5)
Caregiver		8 (23.5)
Occupation		
Government employee		7 (20.6)
Private sector employee		7 (20.6)
Self-employed		9 (26.5)
Child with ASD		
Age	8.50 (3.33)	
Gender		
Male		28 (82.4)
Female		6 (17.6)
Type of the condition		
Autism		28 (82.4)
Pervasive development disorder-not otherwise specified (PDD-NOS)		1 (2.9)
Asperger's syndrome		5 (14.7)
Severity of the condition		
Mild		21 (61.7)
Moderate		12 (35.3)
Severe		1 (2.9)
Rehabilitation centre		
School with special education programme		14 (41.2)
Community-based rehabilitation (CBR)		6 (17.6)
Private therapy centre		10 (29.4)
Hospital		4 (11.8)

and 12 had moderate severity. Another five (14.7%) children were diagnosed as Asperger's syndrome with mild severity and one (2.9%) child had severe pervasive developmental disorder-not otherwise specified (PDD-NOS). Most of the children received rehabilitation or education from school with special education integration programme (n=14, 41.2%). Other children received therapy from private centres (n=10, 29.4%), community-based rehabilitation centres (n=6, 17.6%) and hospital (n=4, 11.8%). The profiles of respondents and the children with ASD can be seen in Table III.

The internal consistency of each subscale and overall scale had achieved the acceptable level based on Cronbach's alpha coefficient of over 0.7. The Cronbach's alpha coefficients for six subdomains ranging from 0.758 to 0.914, with Sameness Behaviour scale had the highest value of Cronbach's alpha, while the Restricted Behaviour scale had the lowest Cronbach's alpha value. The internal consistency for the overall scale of the questionnaire gave Cronbach's alpha coefficient of 0.940. The detailed Cronbach's alpha values are shown in Table IV.

Table IV: The Cronbach's alpha value for each subscale and overall scale

Subscales	Cronbach's Alpha
I. Stereotype Behaviour Scale	0.827
II. Self-injurious Behaviour Scale	0.795
III. Compulsive Behaviour Scale	0.812
IV. Ritualistic Behaviour Scale	0.770
V. Sameness Behaviour Scale	0.914
VI. Restricted Behaviour Scale	0.758
OVERALL SCALE	0.940

DISCUSSION

This research is the first work to evaluate the psychometric properties of the RBS-R among parents or caregivers of children with ASD in Malaysia. This present study demonstrates the preliminary validity and reliability of the translated Malay version of the RBS-R for measuring RRB in the children with ASD. The content validation in this study included the translation and subsequent review of the translated version. The translational process of RBS-R in Malay version is very thorough as it followed the standard guidelines that involved language experts through forward and backward translation (19). In this study, the panel of experts have provided expertise to review the concept and content of the instrument. A previous work (27) has stated that the content validity can be measured by the experts' opinions on whether the items and scales represent the domains or concepts that the tool is intended to assess. All the experts individually commented on each item for relevance, clarity, and representativeness. The items were reviewed whether there were various ways to interpret the question or ambiguous words or sentences. Improvement was made on the contents of items to ensure the questionnaire is free from ambiguities and locally adapt. A CVI of 0.80 or more for a new instrument is considered adequate and applicable (23,24,28). In the current research, the Malay version of RBS-R demonstrated an overall CVI of above 0.80, indicated that the items contents were strongly relevant and clear to reflect the RRB in the Malay-speaking people.

Consequently, an apparent understanding of the questionnaire can be provided using face validation process as it can measure how the comprehension of the target population. The feedback gathered from the respondents in face validation will help to enhance the clarity, layout and presentation, comprehension of respondents, as well as the estimated duration required to administer the questionnaire (29). During the face validity process in this study, the raters were asked about the readability of the pre-validated RBS-R. All respondents stated that they were able to fully understand the translated RBS-R questionnaire in Malay version. An overall FVI over 0.90 obtained from face validity testing involving eight raters that represented future potential respondents (parents or caregivers of children with ASD), suggested the appropriateness for the questionnaire usage among the Malay-speaking population. The value of 0.83 cut-off score is considered to be acceptable for I-FVI with at least eight to ten raters (28).

Final evaluation of this study involved reliability analysis. The present study indicated the overall scale of the RBS-R had excellent internal consistency reliability and each subscale have attained the acceptable value. It is recommended that the Cronbach's alpha value of over 0.7 achieved acceptable level of internal consistency reliability (26). The internal consistency values were considered to be moderately high and high when they were equal or greater than 0.80 (30). The high internal consistency of RBS-R in Malay version suggested that it has high internal structural stability. which was consistent with the findings of RBS-R translation in other countries, settings, and languages like Italian, Spanish, Japanese, and Greek versions (2,3,15,16). The current study also demonstrated the Restricted Behaviours Subscales had the lowest value of the Cronbach's alpha corresponding with the previous studies of the translation and validation of RBS-R (2,12,15,16).

This study has certain limitations. Firstly, the findings gathered in the current study should not be generalized for different age group of the ASD population as the subjects by age group are insufficient. Further studies should verify if a widespread and diversified age group would differ or be consistent on the results of this Malay version. Another limitation was small sample size for pilot test due to constraints during data collection process. For example, social media such as Instagram limited the number of direct messages sent per day as it detected the research team member's approach as a threat to the autism community and admins of most Facebook page were not approve our request to join their group, which this constraint affected the response rate and timeline of data collection. The application of the Malay version of RBS-R in different Malaysian samples requires further cross-validation because the conclusions derived from the current study are limited to ASD population with limited sample size. Future studies with a larger sample size are necessary. Also, future

studies are recommended to research the construct validity by conducting exploratory and confirmatory factor analysis and to examine other reliability analysis such as test-retest reliability.

CONCLUSION

Despite its limitations, the current study provided evidence of valid and reliable Malay version RBS-R questionnaire that covered the whole aspect of restrictive and repetitive behaviours, focusing on ASD children. This Malay version of RBS-R questionnaire on individuals with ASD has accomplished the content validity following the translational process and has acceptable content validity index with minor changes before the pre-final questionnaire produced. The pre-final version has achieved an acceptable level of face validity index without any changes before final version produced. All the subscales and the overall scale of the final version had shown acceptable internal consistency reliability with the Cronbach's alpha values above 0.7. In conclusion, this Malay version of RBS-R questionnaire or Skala Tingkah Laku Berulang – Semakan (STB-S) with 43 items and six subscales was acceptable to be used to assess RRB among children with ASD in Malay-speaking population.

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