ORIGINAL ARTICLE

Translation, validation and cross-cultural adaptation of the Malay emotion regulation checklist (ERC-M): A preliminary study

Fatin Nabilah Jamal, BAuD (Hons)[1], Ahmad Aidil Arafat Dzulkarnain, PhD[1], Fatin Amira Shahrudin, BAuD (Hons)[1], Ramli Musa, MMed[2], Shahrul Na'im Sidek, PhD[3], Hazlina Md Yusof, PhD[3], Madihah Khalid, PhD[4]

[1]Department of Audiology and Speech-Language Pathology, Kulliyyah of Allied Health Sciences, International Islamic University Malaysia, Pahang, Malaysia, [2]Department of Psychiatry, Kulliyyah of Medicine, International Islamic University Malaysia, Pahang, Malaysia [3]Department of Mechatronic Engineering, Kulliyyah of Engineering, International Islamic University Malaysia, Kuala Lumpur, Malaysia, [4]Department of Curriculum and Instruction, Kulliyyah of Education, International Islamic University Malaysia, Kuala Lumpur, Malaysia

ABSTRACT

Introduction: Emotion Regulation Checklist (ERC) has been used globally and translated to several languages, including Brazilian Portuguese, Italian and Persian. The aim of this study is to translate and validate ERC to the Malay language and to measure the reliability and validity of the translated version of this scale among Malaysian parents.

Methods: This study involved forward and back translation method. The translated questionnaire was then pretested and piloted among 10 parents and 50 participants, respectively. The procedure was repeated using the same questionnaire to evaluate the test-retest reliability.

Results: The ERC-Malay (ERC-M) has excellent qualitative and quantitative measurements in both item-level content validation index (I-CVI) and scale-level content validation index (S-CVI). In addition, the ERC-M demonstrated good internal consistency from Cronbach's alpha and test-retest reliability based on the Intraclass Correlation Coefficient (ICC) in all domains.

Conclusion: ERC-M can potentially be used as a tool to evaluate emotion for the population with emotional dysregulation issue, such as autism spectrum disorder.

KEYWORDS:
Autism, Emotional Regulation, Malay, Translation, Validation

INTRODUCTION

Emotion is a fundamental aspect in generating information-processing in the brain of humans. Emotion is generated through one's environment, experience and stimulation, which is later processed and receptively seen through expressions. The regulation of emotions is influenced by three response mechanisms that include neurophysiological-biochemical, motor expressive and cognitive experience.[1] These three mechanisms are interrelated; for example, any changes in the neurophysiological system may lead to changes in both motor and cognitive mechanisms. When there is any disruption of these mechanisms, it could lead to emotional dysregulation. Emotion dysregulation can occur in typically developing children, and more frequently in children with certain disorders, such as those with Autism Spectrum Disorder (ASD). According to Shields and Cicchetti,[2] school-aged children are prone to have difficulty in controlling their emotions, especially in unfavorable situations. Therefore, it is crucial to identify any emotion dysregulation in school children for immediate intervention. In response to this issue, several tests have been developed to evaluate emotion dysregulation concurrent with other behavioral issues among school children using general physiological tests, observational methods, interviews and questionnaires.[3-5] However, these assessments only cover the gross information on behavioral, psychosocial, intellectual, and academic functioning but not specifically evaluating the emotional aspect.[5] Dante and Shields developed a parental/teacher reported questionnaire that specifically assesses the emotional aspects of children, known as the Emotion Regulation Checklist (ERC). ERC allows clinician or researchers to evaluate the personality of an individual and to understand their emotion regulation abilities. The checklist is rated by parents or teachers, thus, minimizing clinician bias and has excellent internal consistency, reliability, and validity.[2]

Whilst several questionnaires are available to evaluate emotional regulation,[6,7] Emotion Regulation Checklist (ERC) has been proven to truly reflect the overall children emotional behaviour by giving information on emotional characteristics that are mostly possessed or least possessed in them.[2] In addition, ERC has excellent criterion validity where it can distinguish emotion regulation between maltreated (abused) children with non-maltreated children.[8] ERC has been used worldwide and has been translated into several languages, including Brazilian Portuguese, Italian and Persian.[9-11] Till now, no publication has translated and validated neither the ERC questionnaire nor other emotion regulation questionnaire into the Malay language for the use of Malay-speaking parents and teachers especially for children. Therefore, the aim of this study was to translate the ERC to the Malay language and validate and measure the reliability of the translated version among Malaysian parents.

MATERIALS AND METHODS

Study Design
The authors used forward and back translation processes followed by the validation study design. Figure 1 shows the summary of the translation and validation process of ERC. This study was approved by the International Islamic University Malaysia (IIUM) Research Ethics Committee (IREC). Permission was obtained from the original author of ERC (Dante Cicchetti) before the whole process initated. In addition, all parents consented to participate after the explanation of the research was given.

Materials
ERC developed by Shields and Cicchetti and the questionnaire contains 24 items of two domains (negative liability domain and emotion liability domain). This questionnaire accurately measures the positive and negative liability of an individual as it comprises both positive and negative weighted items.[12] This questionnaire targeted only school-aged children of up to 16 years old that included important items in assessing emotion regulation for this population.[2,13]

Forward and Back Translation Process
The translation process started with forward translation. The original English Version of ERC was translated into the Malay language following the guidelines by Guillemin, Bombardier, and Beaton.[14] The authors used the forward and back translation method where the forward translation was performed by two independent Malay native speakers with good command in English and health sciences background related to the context of the questionnaire (Psychology and Speech-language Pathology).[15] The forward translation proceeded from the original English version of ERC to the target mother tongue language, the Malay language. The translators were not aware of the original version of ERC.[14] Next, the translations from both translators were then harmonized and re-conciliated to produce a harmonized version (ERCBMH1).

For the back translation process, another two expert language translators translated back the harmonized version, ERCBMH1 into the original language independently.[15] Using the same procedure in the forward translation, both back translators were also not aware of the existence of the original version of the questionnaire to prevent any information bias.[14] The back translations were later harmonized into ERCH after discussion between both translators.

Expert Committee Review
The third stage was the committee review and cross-cultural adaptation of the ERC-M. The roles of the experts in the committee were to consolidate all the version of questionnaires and develop the pre-final version to be used in the pre-testing stage.[15] For this stage, three committee members reviewed and compared the ERCH version and the original ERC version. The three committee members were working as academicians with a PhD degree in the field of Health Sciences (audiology, speech-language pathology, and psychology). The expert committee were not involved in the forward and back translational process, do not know each other before and they had good command in both Malay and English languages. All the items were reviewed in a group discussion among the panels that consisted of different ethnics who understood the Malaysian context to avoid any potential cultural bias. For the group discussion, they were asked to check : (a) the comprehension, semantics and content of the ERCBMH1 so that the instrument has equivalent meaning to the original ERC version despite alterations in the sentence construction to make adaptation easier[14] and thus, producing ERCBMH2; and (b) to identify the translated items were acceptable to the target culture or if they require additional modification to enhance their relevance to the target culture. No items required any modification for cultural adaptation since all translated items were relevant to Malaysian context as agreed by the expert committee.

Face Validation of ERCBMH2
The newly translated questionnaire was pre-tested among ten parents with children aged 6 to 17 years, and the children met the following criteria: i) bilateral normal hearing and ii) normal physical development. To check the face validity at this stage, three aspects was considered as follows: i) clear and concise sentences, ii) easy to understand and iii) free from typographical errors. Once the pre-testing stage was completed, the face validity score was then calculated. Next, the ERCBMH2 was sent to two independent proofreaders for editorial check to correct any punctuation and grammatical errors in the questionnaires, thus producing the final version known as ERC-Malay (ERC-M) .

Pilot Study and Test-Retest Reliability
This study was then administered among 50 parents to check for internal consistency and was repeated twice using the same questionnaire to check the test-retest reliability between two intervals (Test 1 and Test 2) of 7 to 14 days after the first test (Test 1).

Data Analysis
The content validation index (CVI) of the questionnaire was computed specifically for item-level CVI (I-CVI) and scale-level CVI (S-CVI). For I-CVI, the items were scored according to the relevance scale by three expert committees. If the relevance scale was given as 3 or 4, the rating score will be taken as 1, whereas, if the relevance scale was given as 1 or 2, the rating score will be taken as 0.[16] To obtain S-CVI, all I-CVI scores were averaged and divided by three (number of our expert committees). A good and excellent I-CVI had to be more than 0.78 and more than 0.9 for S-CVI.[17] The face validity index was calculated by taking the item agreement across ten participants for each aspect; i) sentence clearer and concise, ii) easy to understand and iii) free from typographical errors. A value of 80% and above was considered as a satisfactory level of face validity.[18] The Cronbach's alpha and Intraclass Correlation Coefficient (ICC) values were analyzed using IBM SPSS Statistic Version 26. The recommended value for Cronbach's alpha and ICC for this study is summarized in Table I.[19,20]

Table I: The cut-off score of the acceptable Cronbach's alpha[19] and ICC value.[20]

Cronbach's alpha		ICC	
More than 0.9	Excellent	More than 0.9	Excellent
More than 0.8	Good	0.75-0.9	Good
More than 0.7	Acceptable	0.5-0.75	Moderate
More than 0.6	Questionable	Less than 0.5	Poor
More than 0.5	Unacceptable		
Less than 0.5	Poor		

Table II: The summary of validity and reliability analysis findings of the ERC-M (ERC-M, Emotion Regulation Checklist Malay version; α, Cronbach's Alpha; I-CVI, item level content validity index; S-CVI, scale level content validity index).
Note that item no 12 is not scored in either domain as it was initially not added to the validation process of ERC original version

Domains	Item No.	Content Validity Analysis (I-CVI)	Reliability Analysis (Cronbach's Alpha)	
Negative Liability	2.	1.00	Domain Level	Scale level
	4.	1.00	0.75	0.78
	5.	1.00		
	6.	1.00		
	8.	1.00		
	9.	1.00		
	10.	1.00		
	11.	1.00		
	13.	1.00		
	14.	1.00		
	17.	1.00		
	19.	1.00		
	20.	1.00		
	22.	1.00		
	24.	1.00		
Emotion Regulation	1.	1.00	0.69	
	3.	1.00		
	7.	1.00		
	15.	1.00		
	16.	1.00		
	18.	1.00		
	21.	1.00		
	23.	1.00		
Average I-CVI or S-CVI	1.00			

Table III: Intraclass Correlation Coefficient (ICC) between two domains (negativity liability domain and emotion regulation domain) and overall score

Items	ICC
Negative Liability	0.762
Emotion Regulation	0.772
Overall	0.814

RESULTS

ERC-M had a satisfactory level of face validity with a value of 98% to 99% for three aspects (sentence clearer and concise, easy to understand and free from typographical errors). The ERC-M had excellent qualitative and quantitative measurements in both I-CVI and S-CVI analyses, as shown in Table II. In addition, the ERC-M demonstrated a good internal consistency for the overall scale (Cronbach's alpha, $\alpha = 0.78$). The Cronbach's alpha for the negative liability domain was 0.75 and the emotion regulation domain was 0.69. A good test-retest reliability was also obtained between Test 1 and Test 2, where the ICC value for the negative liability domain = 0.76, emotion regulation = 0.77 and an overall ICC = 0.81, as shown in Table III. All these findings concluded that the validity, reliability, and test-retest reliability of ERC-M was established.

DISCUSSION

This study aimed to translate and validate the Malay version of ERC. The findings suggest that ERC-M has a good face and content validity, internal consistency and test-retest reliability, which indicates that this translated version of the checklist is appropriate and has the potential to be used among school-aged children in Malaysia. These findings were consistent with previous cross-cultural adaptation and
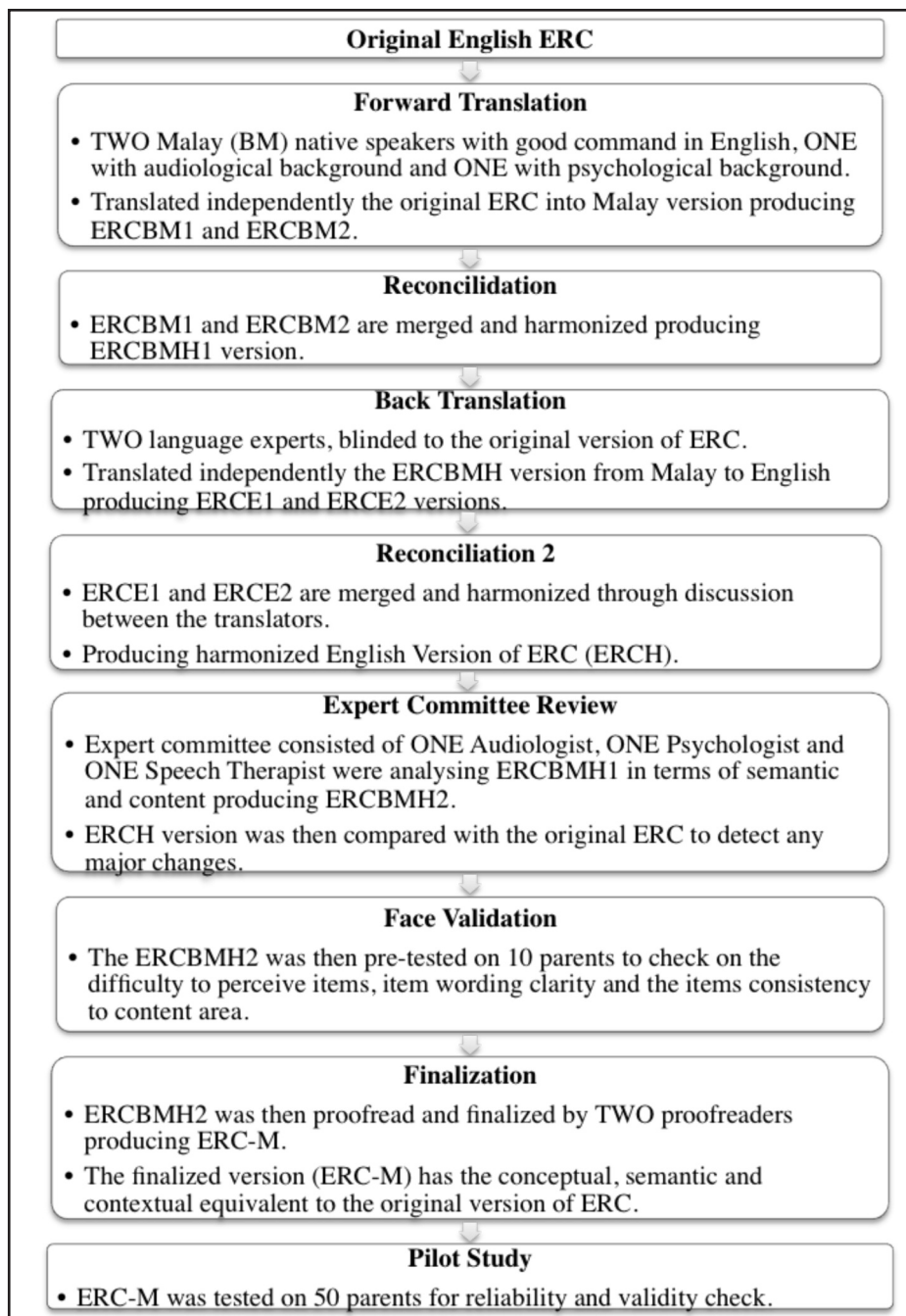
Fig. 1: Overview of the whole process of translation, cross cultural adaptation, and validation of ERC-M.

validation of ERC in Brazilian Portuguese, Italian and Persian language.[9-11] The ERC has been designed as an early detection tool to monitor the emotion regulation of school-aged children based on the perception reported by teachers and parents. The ERC results may suggest further diagnosis or referral to the related medical or healthcare professionals. From this study, it was observed that it only required about 15 minutes to complete the parental report questionnaire without the need for further assistance from the researcher. This suggested that the questions are understandable and easy to administer.

The findings of this study indicates that the ERC questionnaire represents a simple and quick instrument to detect which part of liability possessed more by a child. In other words, this instrument can be easily implemented by professionals, including general practitioners, psychiatrists, psychologists, pediatricians, speech therapists, audiologists, and teachers to measure the emotional regulation in children with emotional issues, such as among Autism Spectrum disorder (ASD) children. This study is limited to only 50 respondents and in future, further psychometric validation and criterion validity studies should be conducted in a larger population to ensure and reaffirm the validity of this checklist.

CONCLUSION

In this study the Malay version of ERC was successfully translated and validated. The ERC-M shows good to excellent reliability to be used as an early detection tool for emotional regulation in children and for the known population to have poor emotional regulation, such as ASD children. This ERC scale, therefore, can be used for screening or as a diagnostic tool in identifying the emotional status of children for further intervention strategies in regulating their emotions. In future, this translated Malay version of ERC can also be used not only in Malaysia, but also in neighbouring countries such as Indonesia, Brunei, and Singapore that use the Malay language.

ACKNOWLEDGEMENT

CONFLICT OF INTEREST

None to declare.

REFERENCES

1. Dodge KA. Emotion and social information processing. 1991: 159-81.
2. Shields A, Cicchetti D. Emotion Regulation Among School-Age Children: The Development and Validation of a New Criterion Q-Sort Scale. Dev Psychol 1997; 33: 906-16.
3. Al-Ayadhi L, Alhowikan AM, Halepoto DM. Impact of Auditory Integrative Training on Transforming Growth Factor-beta1 and Its Effect on Behavioral and Social Emotions in Children with Autism Spectrum Disorder. Med Princ Pract,2018; 27: 23-9.
4. Jane E, Thomas B. Music Therapy for People with Autism Spectrum Disorder: Oxford University Press 2015.
5. Maedgen JW, Carlson CL. Social Functioning and Emotional Regulation in the Attention Deficit Hyperactivity Disorder Subtypes. J Clin Child Psychol 2000; 29: 30-42.
6. Petrides KV. Psychometric Properties of the Trait Emotional Intelligence Questionnaire (TEIQue). J Pers Assess 2009; 88: 85-101.
7. Williams JH, Cameron IM, Ross E, Braadbaart L, Waiter GD. Perceiving and expressing feelings through actions in relation to individual differences in empathic traits: the Action and Feelings Questionnaire (AFQ). Cogn Affect Behav Neurosci 2016; 16: 248-60.
8. Shields A, Cicchetti D. Parental Maltreatment and Emotion Dysregulation as Risk Factors for Bullying and Victimization in Middle Childhood. J Clin Child Psychol 2001; 30: 16.
9. Meybodi FA, Mohammadkhani P, Pourshahbaz A, Dolatshahi B, Mousavi ME, Heydari H. Psychometric Properties of the Persian Version of the Emotion Regulation Checklist. World Family Medicine Journal: Incorporating the Middle East Journal of Family Medicine 2018; 99: 1-6.
10. Molina P, Sala MN, Zappulla C, Bonfigliuoli C, Cavioni V, Zanetti MA, et al. The Emotion Regulation Checklist–Italian translation. Validation of parent and teacher versions. Eur J Dev Psychol 2016; 11: 624-34.
11. Reis AH, Oliveira SES, Bandeira DR., Andrade NC, Abreu N, Sperb TM. Emotion Regulation Checklist (ERC): Preliminary studies of cross-cultural adaptation and validation for use in Brazil. Temas em psicologia 2016; 24: 97-116.
12. Cicchetti D, Ganiban J, Barnett D. Contributions from the study of high-risk populations to understanding the development of emotion regulation. Cambridge University Press, UK 1991: 15-48.
13. Weiss JA, Thomson K, Chan L. A Systematic Literature Review of Emotion Regulation Measurement in Individuals With Autism Spectrum Disorder. Autism Res 2014; 7: 629-48.
14. Guillemin F, Bombardier C, Beaton D. Cross-Cultural Adaptation of Health-Related Quality of Life Measures: Literature Review and Proposed Guideliness. J Clin Epidemiol 1993; 46: 16.
15. Beaton DE, Bombardier C, Guillemin F, Ferraz MB. Guidelines for the Process of Cross-Cultural Adaptation of Self-Report Measures. SPINE 2000; 25: 3186-91.
16. Yusoff MS. ABC of content validation and content validity index calculation. Resource 2019; 11: 49-54.
17. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? Appraisal and recommendations. Res Nurs Health 2007; 3: 459-67.
18. Andrew Chin RW, Chua YY, Chu MN, Mahadi NF, Wong MS, Yusof MSB, et al. Investigating validity evidence of the Malay translation of the Copenhagen Burnout Inventory. J Taibah Univ Med Sci 2017; 13: 1-9.
19. George D, Mallery P. SPSS for Windows Step by Step; A Simple Guide and Reference Fourth Edition (11.0 update) 4th Edition. Boston: Allyn & Bacon 2003
20. Koo TK, Li MY. A Guideline of Selecting and Reporting Intraclass Correlation Coefficients for Reliability Research. J Chiropr Med 2016; 15: 155-63.