

# ADAPTATION OF THE REVISED FIVE-TO-FIFTEEN (5-15R) QUESTIONNAIRE INTO MALAY-5-15R: PRELIMINARY FINDINGS

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## ABSTRACT

**Introduction:** There is a limited number of teacher and parent-reported questionnaires available for screening developmental and behavioural issues in children and adolescents in the Malay language. Therefore, there is a need for research on the translation and development of such a survey, particularly in the Malay language, to enhance the treatment and intervention process by the related professionals. **Objective:** The aims of the current study are to translate and adapt the Revised Five-To-Fifteen (5-15R) questionnaire into the Malay language, creating the Malay-5-15R, and to examine the content validity of the Malay-5-15R for potential use as a parent-reported questionnaire for screening purposes. **Method:** The 5-15R questionnaire was translated into the Malay language through a cross-cultural adaptation and translation process. This process involved several stages, including: 1) forward translation; 2) synthesizing forward translation; 3) backward translation; 4) synthesizing backward translation; 5) expert committee review; and 6) finalization. **Results:** The initial version of the Malay-5-15R questionnaire demonstrated a high content validity index. The Malay-5-15R questionnaire was found to be culturally acceptable, with all 181 items from the original version retained within specified domains. Minor amendments were made to several items to improve the sentence structures and to ensure the questionnaire's clarity and understandability for the Malaysian population, especially Malay speakers. These improvements involved refining the phrases, providing examples and explanations, and correcting the grammatical aspects. **Conclusions:** Despite the preliminary findings of the adaptation process, the Malay-5-15R questionnaire has significant potential as a screening tool for the Malay-speaking population.

**KEYWORDS:** Five-to-Fifteen (FTF) questionnaire, 5-15R questionnaire, adaptation, development, children, behaviour

## INTRODUCTION

Globally, among the questionnaires that commonly used by the parents and teachers for screening developmental and behavioural issues in children and adolescents, four well-established instruments are (1) the Five-To-Fifteen Revised (5-15R) questionnaire (Kadesjö et al., 2017), (2) the Child Behaviour Checklist (CBCL) (Achenbach, 1991), (3) the Behaviour Assessment System for Children (BASC) (Reynolds & Kamphaus, 1992), and (4) the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997). Among these questionnaires, the 5-15R questionnaire, originally referred to as the Five to Fifteen (FTF) questionnaire (Kadesjö et al., 2004)), is widely utilised by researchers and clinician in clinical practice (Lindblad et al., 2011). This is because, it offers more comprehensive information on developmental and behavioural issues in children and adolescents, shedding light on various critical of their development.

The 5-15R questionnaire was developed by Scandinavian and Finnish research groups as a comprehensive screening tool for the assessment of neurodevelopmental-neuropsychiatric disorders and related conditions, such as attention deficit hyperactivity disorders (ADHD), autism spectrum disorders (ASD), oppositional defiant disorder (ODD), tic disorders, developmental coordination disorder (DCD), conduct disorder (CD), among others (Kadesjö et al., 2017). This questionnaire represents an enhanced and re-standardized iteration of the previously known FTF questionnaires (Kadesjö et al., 2004). Notably, the 5-15R questionnaire expands its utility by involving teachers in the data collection process and extends its applicability to individuals aged between 5 and 17 years (Kadesjö et al., 2017). f This instrument encompasses a total of 181 items, which are further categorised into eight subdomains, encompassing motor skills, executive functions (inclusive of ADHD symptoms following DSM-IV criteria), perception, memory, language, tic disorders, learning, social skills and autism, and emotional/behavioural problems (Lindblad et al., 2011).

Kadesjö et al. (2004) articulated the rationale behind the development of a questionnaire, which aimed to serve as a preliminary instrument for clinical assessment, particularly in cases involving ADHD or related conditions. In Denmark, healthcare practices also place significant emphasis on parental reports to gain insights into children's disabilities that impact their daily lives (Illum & Gradel, 2014). The original FTF questionnaire was initially designed as a parental screening tool. However, the revised version, known as 5-15R, accommodates input from teachers, facilitating the collection of information from both home and school environments. This multifaceted approach enables clinicians to access a more comprehensive understanding of children's behaviour, as perceived by multiple stakeholders in various contexts. Prior studies (Farooqi et al., 2013; Linblad et al., 2011) have indicated the value of considering both parental and teacher ratings to attain a comprehensive assessment of children's well-being.

The 5-15R questionnaire serves a versatile role, not limited to neurodevelopmental-neuropsychiatric disorders but extending to other conditions, such as Unilateral Cerebral Palsy (Forsman & Eliasson, 2016). Neurodevelopmental disorders primarily encompass conditions associated with the nervous system and brain function. Children with neurodevelopmental disorders often experience challenges in motor skills, behaviour, language and speech, memory, learning, or other neurological functions (Forsman & Eliasson, 2016). Symptoms and behaviours in these disorders can evolve as children age, although some disabilities may persist throughout life. Consequently, the diagnosis and treatment of neurodevelopmental disorders necessitate a comprehensive approach, combining professional therapies, pharmacological interventions, and home- and school-based programs. Speech-language therapists (SLTs) play a pivotal role in addressing speech and language issues within the spectrum of neurodevelopmental disorders. SLTs typically craft interventions based on thorough assessments across diverse areas and skills, including speech, language, pragmatics, social communication disorders, cognitive-communication disorders, and swallowing disorder) (American Speech-Language-Hearing Association [ASHA], n.d.), as well as the additional information from the observation, and parental reports (Ebert, 2017).

In addition to assessments by qualified professionals, parental perspectives, as gleaned from screening outcomes and reports, contribute significantly to early identification and intervention programs (Ebert, 2017). Parents naturally harbour considerable concerns and expectations regarding their children's well-being, especially concerning health, followed by academic and social performance. Professionals must acknowledge and address these parental concerns in their management strategies. Parental awareness of their children's developmental and behavioural issues can catalyse the early identification process by professionals, thus enabling timely and appropriate intervention or treatment programs (Breiner et al., 2016). The utilization of the 5-15R questionnaire empowers parents to articulate their concerns about their children's well-being to professionals, while simultaneously enabling professionals to gather essential information, aiding in the accurate diagnosis and formulation of tailored management plans for these children.

In the specific context of Malaysia, there exists a notable scarcity of parent-reported questionnaires or scales designed for the purpose of screening developmental and behavioural issues in children and adolescents. Malaysia, a nation renowned for its diverse cultural and linguistic landscape, encompasses a populace composed of various ethnic groups, each possessing distinct cultural heritages and languages such as Malay, Chinese, Indian, and indigenous peoples of Borneo. Malay, the official language of Malaysia, is employed in government affairs, educational institutions, and media outlets. Among the few questionnaires that have been translated into Malay language, one noteworthy example is the Strengths and Difficulties Questionnaire (SDQ) developed by Robert Goodman in 1997. The SDQ represents a widely utilised psychological screening tool that aims to evaluate the emotional and behavioural well-being of children and adolescents. However, it is essential to note that the SDQ predominantly centres on the identification of potential emotional and behavioural challenges encountered by children and adolescents.

The selection of the 5-15R questionnaire in this study is underpinned by several compelling reasons. First, it offers a comprehensive evaluation, encompassing a wide array of aspects, transcending the exclusive focus on behaviour and emotion, as observed in instruments like the SDQ. This breadth is essential for a holistic understanding of children and adolescents, assessing not only behaviour and emotion but also their abilities in various domains, including motor skills, executive functions (which includes the evaluation of ADHD symptoms accordance with DSM-IV criteria), perception, memory, language, tic disorders, learning, social skills/autism, and emotional/behavioural problems (Lindblad et al., 2011). Second, the 5-15R questionnaire possesses the unique advantage of being applicable to both parents and teachers, allowing for the acquisition of complementary data pertaining to children's development and behaviours in home and school settings. Prior research studies (Farooqi et al., 2013; Lindblad et al., 2011) have advocated for the amalgamation of information gathered from both parental and teacher ratings to obtain a comprehensive perspective on children's well-being. Furthermore, it finds utility within the domain of Speech-Language Therapy, with specific questions related to language and communication development, thus facilitating a comprehensive assessment of children's current performance. Third, the FTF questionnaire, currently known as 5-15R, exhibits sensitivity to sociodemographic variables, including gender, age, area of residence and parental education. This sensitivity positions the FTF questionnaire as an instrumental tool for delineating specific problem areas within the field of child neuropsychiatry (Bohlin & Janols, 2004). These findings were highlighted based on a study by Bohlin and Janols (2004) who conducted comparative analysis between the FTF questionnaire and CBCL with three primary aims; 1) to investigate the congruence of information obtained from these instruments in relation to the association between the problem scores with socio-demographic characteristics; 2) to establish a correlation between scores in certain domains of the FTF questionnaire and the three CBCL main scales (internalizing, externalizing and mixed problems); and 3) to evaluate the superordinate structure of the FTF subdomain scales through factor analysis (Bohlin & Janols, 2004).

As the 5-15R questionnaire is yet to be translated into Malay; a critical cross-cultural adaptation and translation process is imperative. This process is essential to enable the questionnaire's utilization within the Malay-speaking population as a screening tool for the early identification and intervention of

developmental and behavioural issues. The Malay version of the questionnaire holds the potential for widespread use not only within Malaysia but also in various parts of the Asia-Pacific region where Malay is employed in daily communication, including countries such as Brunei, Indonesia, and Singapore. Hence, as an initial exploratory study, the objective of this research encompasses two primary aims: 1) to undertake a cross-cultural translation and adaptation of the Five-To-Fifteen Revised (5-15R) questionnaire into the Malay language, resulting in the creation of the Malay-5-15R, and 2) to conduct a comprehensive examination of the content validity of the Malay-5-15R.

## **METHODOLOGY**

### **Ethical considerations**

Ethical clearance was granted by the International Islamic University Malaysia (IIUM) Research Ethics Committee (IREC) before the study was conducted. Every participant provided informed consent, receiving comprehensive information about the research process and the option to withdraw from the study at any point. They were guaranteed the confidentiality of their personal data, with exclusive access limited to the researcher.

### **Study Design**

Adapting and translating a questionnaire for use in a different cultural or linguistic context is a critical step in ensuring the validity and reliability of the research instrument. Therefore, a cross-sectional study design was selected to assess the characteristics, opinions, or behaviours of a specific population at a single point in time. This approach can help to determine the relevance and appropriateness levels of the questionnaire for the target audience.

### **Materials**

In this study, the Five-To-Fifteen Revised (5-15R) questionnaire, developed by Kadesjö and colleagues in 2017, was utilised. The questionnaire comprises eight primary domains, further subcategorised into 22 subdomains. These subdomains encompass a wide range of aspects, including gross and fine motor skills, attention, hyperactivity-impulsivity, hypoactivity, planning or organizing, perception of space, time, and body, visual perception, speech, communication skills, memory, comprehension, reading or writing, mathematics, general learning, coping skills during learning, social skills, obsessive-compulsive behaviour and internalizing and externalizing behaviour (Lambek & Trillingsgaard, 2015). For the questionnaire responses, a scoring system featuring three levels is employed: 0 (indicating 'does not apply'), 1 (reflecting 'applies sometimes or to some extent'), and 2 (signifying 'definitely applies')

### **Methods**

In order to enable the utilization of the 5-15R questionnaire within the Malay-speaking population, a cross-cultural translation and adaptation process was undertaken. This process adhered to the recommended guidelines outlined by Beaton et al. (2002) and World Health Organization (WHO) (2017). The translation and adaptation process consisted of several distinct stages: 1) forward translation; 2) synthesizing forward translation; 3) backward translation; 4) synthesizing backward translation; 5) expert committee review; 6) finalization.

### **Cross-Cultural Adaptation and Translation Procedures**

The objective underlying the translation, adaptation, and validation of the 5-15R questionnaire was to produce a Malay version of the 5-15R, denoted as Malay-5-15R. This Malay version is intended to serve as an apt assessment and screening tool for utilization by the Malay-speaking population, particularly for parents, teachers, and related professionals.

### ***Stage 1: Forward Translation***

The forward translation process was carried out by two independent bilinguals with the goal of rendering the questionnaire into the target language, which is Malay, following established guidelines (Beaton et al., 2002; Hambleton, 2005). The 5-15R questionnaire was independently translated from English to the Malay language by two speech-language therapists possessing sound knowledge of developmental disorders in children. The first translator (T1) held an academic position in the field of speech-language pathology at IIUM Kuantan Campus, while the second translator (T2) worked as a clinician, specifically speech-language therapist, at IIUM Hearing and Speech Clinic, IIUM Kuantan Campus. Both translators were native speakers of Malay language and were bilingual in both Malay and English. The translators were instructed to focus on conceptual rather than literal translations and to employ natural and easily understandable language for the general population, adhering to guidelines set forth by the World Health Organization (2017). Given that both translators possessed similar undergraduate qualifications, the translation of the 5-15R questionnaire was conducted in a manner that preserved the conceptual integrity and content of the questionnaire while benefiting from distinct perspectives on the same contextual framework. This process yielded two forward-translated versions of the instrument, denoted as 5-15R (BM1) and 5-15R (BM2), derived from the translations by T1 and T2, respectively.

### ***Stage 2: Synthesis of the Forward Translation***

These two translated instruments, namely 5-15R (BM1) and 5-15R (BM2), were subsequently synthesized, summarized and compiled into a harmonized version of the forward-translated instrument (denoted as BM-H). The consolidation was achieved through consensus reached between both translators and the authors.

### ***Stage 3: Backward Translation***

The backward translation procedure involved two distinct translators tasked with independently translating the BM-H version back into English. This step constitutes a vital component of the validation process, aimed at ensuring that the translated version maintains fidelity to the original content and concepts (Beaton et al., 2002; Borsa et al., 2012). Both translators were proficient bilingual, being native speakers of Malay and English, who possessed no prior exposure to the 5-15R questionnaire. Notably, their academic backgrounds did not pertain to medicine or health sciences, a deliberate measure taken to mitigate potential information bias and the emergence of unforeseen interpretations of the questionnaire items (Beaton et al., 2002). For the backward translation phase, the participating translators were an English teacher at a secondary school (T3) and an English lecturer at the Centre of Foundation Study (CFS), IIUM Gambang (T4). Both translators had accrued over five years of teaching experience. It is pertinent to emphasize that during the backward translation, the translators were required to render the BM-H version back into English autonomously, refraining from any reference to the original version of the 5-15R questionnaire. This meticulous process yielded two distinct versions of the translated instrument, denominated as 5-15R (E1) and 5-15R (E2).

### ***Stage 4: Synthesized of the Backward Translation***

Both backward-translated versions (5-15R (E1) and 5-15R (E2)) were subsequently synthesized and revised by the translators in collaboration with the research team. The synthesis aimed to scrutinize any significant disparities in comparison to the original version of the 5-15R questionnaire, encompassing wording, concepts, and contextual aspects.

### ***Stage 5: Expert Committee Review***

The harmonized Malay-5-15R version (BM-H) underwent a rigorous review process led by an expert committee composed of five members with diverse academic backgrounds, encompassing expertise in three distinct areas: speech-language pathology (n=3), audiology (n=1), and psychiatry (n=1). This comprehensive approach was in accordance with the recommendation by Guillemin et al. (1993), which stipulated that an expert committee should comprise individuals proficient in the disease under investigation and the conceptual framework guiding the exploration. The review undertaken by the expert

committee embraced three primary facets: (1) an overarching evaluation of the questionnaire, (2) a qualitative assessment of content validity, and (3) a quantitative content validity analysis. Expert committee members were tasked with assessing the translated versions of the questionnaire (BM-H and E-H) alongside the original 5-15R questionnaire. This evaluation aimed to identify any discrepancies and verify the consistency of the translated versions in comparison to the original questionnaire. Next, the content validation encompassed qualitative considerations, involving recommendations related to wording, grammar, sentence structure. Additionally, a quantitative dimension was introduced, involving the computation of the Content Validity Index (CVI), comprising the Item-level CVI (I-CVI) and the overall scale-level CVI (S-CVI) (Waltz & Bausell, 1981). For I-CVI, the expert committee members were required to rate each item for intelligibility and relevance to the underlying concept using a 4-point Likert scale, ranging from not relevant (1 point) to highly relevant (4 points) (Davis, 1992). The I-CVI was subsequently computed using the formula for expert agreement, by summing the scores of 3 or 4 points provided by the expert committee members for each item and dividing by the number of experts. Regarding S-CVI, two calculation methods were employed: S-CVI/UA, computed as the items rated with scores of 3 or 4 by the expert committee divided by the total number of items (181), and S-CVI/Ave, which entailed summing the I-CVI scores and dividing by the total number of items (181).

### ***Stage 6: Finalization***

Following the completion of the content validation process and subsequent analysis, a conclusive deliberation was conducted to formalize the BM-H2 version as the preliminary Malay rendition of the 5-15R questionnaire, hereby denominated as Malay-5-15R.

### **Statistical Analysis**

All data in this study were underwent a comprehensive descriptive analysis, encompassing both quantitative and qualitative approaches.

## **RESULTS**

The initial version of the Malay-5-15R questionnaire was established subsequent to the conclusion of the cross-cultural translation and adaptation processes. Throughout the synthesis of the forward translation, a minor adjustment was introduced to three out of the 181 items, following discussion between both translators and the authors. These revisions were made to enhance the questionnaire's alignment with the Malaysian population by providing more pertinent examples and terminology. Detailed modifications to the items are documented in Table 1. The harmonized version, a culmination of these two translated versions (BM-H), was achieved following extensive discussion between the translators and the researchers. This phase focused on identifying any unsuitable translation choices and refining them to ensure accuracy and suitability. In the analysis of the synthesis of the backward translation, no significant disparities were identified between the translated version and the original version. Consequently, it can be inferred that the translated version maintains the same conceptual framework and contextual integrity as the original version.

In the context of the expert committee review, translated versions of the questionnaire (BM-H and E-H) were found to be generally satisfactory and closely aligned with the original version. Minor amendments were made exclusively to the BM-H version, primarily focusing on sentence structure, terminology selection, and the inclusion of culturally appropriate example that resonate with the Malaysian context. Qualitative content validity analysis identified a series of enhancements aimed at refining the structure and content of the questionnaire. These revisions encompassed the following aspects: 1) the addition of further explanations and examples; 2) refinement of phrases or sentences; 3) improvement in grammatical accuracy; and 4) alterations in word selections. Among the 181 items, a total of 33 were subject to these minor adjustments, following extensive deliberations among the expert committee members. Selected examples illustrating the qualitative content validity analysis of specific affected items in BM-H

(prior to its finalization into BM-H2) are detailed in Table 2. These enhancements were undertaken with the objective of achieving a high level of equivalency between the original and translated versions of the questionnaire, ultimately culminating in the creation of the second version of the Harmonized Malay-5-15R (BM-H2).

Table 1: Detailed Modifications to the Items of BM-H

Item No.	Original Version	BM-H	Remarks on Changes Made
Item 66	Difficulty remembering events that occurred some time ago, such as what happened on a trip, what <b>Christmas</b> presents he/she got etc	Kesukaran mengingat peristiwa yang berlaku suatu ketika dahulu, seperti apa yang berlaku ketika melancong, apa hadiah <b>hari jadi</b> yang dia dapat dan lain-lain	Used different examples as the main celebration for the Malaysian population is not Christmas.
Item 79	Difficulty finding words or explaining to other people, says: <b>"the, the, the ..."</b>	Kesukaran mencari perkataan atau menjelaskan kepada orang lain, berkata: <b>"itu, itu, itu... atau emm, emm, emm..."</b>	Added examples that are usually used in real life.
Item 90	Difficulty telling about experiences or situations so that the listener understands (e.g., what happened during the day or during the <b>summer vacation</b> )	Kesukaran menceritakan pengalaman atau situasi agar difahami oleh pendengar (contoh, apa yang berlaku pada siang hari atau <b>semasa cuti sekolah</b> )	Used different examples as there is no summer vacation in Malaysia.

Table 2: The Examples of Qualitative Content Validity Index Analysis of Several Items in BM-H

Item No.	Original Version	BM-H	BM-H2	Remarks on Changes Made
Item 12	Difficulty using knife and fork	Kesukaran menggunakan <b>pisau dan garfu</b>	Kesukaran menggunakan <b>pisau, sudu dan garfu</b>	Added example
Item 13	Difficulty buttoning or tying shoelaces	Kesukaran <b>membutang</b> atau mengikat tali kasut	Kesukaran <b>mengenakan butang</b> atau mengikat tali kasut	Refined the phrases
Item 27	Often avoids, dislikes, or is reluctant to engage in tasks that require sustained mental effort (such as homework)	Sering mengelak, tidak suka, atau enggan melibatkan diri dalam tugas yang memerlukan <b>usaha mental</b> yang berterusan (seperti kerja rumah)	Sering mengelak, tidak suka, atau enggan melibatkan diri dalam tugas yang memerlukan <b>usaha mental (tumpuan pemikiran)</b> yang berterusan (seperti kerja rumah)	Added further explanation of the phrases
Item 40	Difficulty understanding consequences of own actions (e.g., climbs in dangerous places, careless in traffic)	Kesukaran memahami akibat daripada tindakan sendiri (contoh, memanjat di tempat berbahaya, <b>cuai di trafik</b> )	Kesukaran memahami akibat daripada tindakan sendiri (contoh, memanjat di tempat berbahaya, <b>tidak mematuhi aturan lalu lintas</b> )	Refined phrases

The quantitative content validity analysis employed a two-tiered approach, focusing on two distinct forms of Content Validity Index (CVI): Item-level CVI (I-CVI) and overall scale-level CVI (S-CVI) (Waltz & Bausell, 1981). In the present study, the I-CVI was computed for all 181 items, and the findings revealed that the I-CVI for most of the items (98.34%) was 0.80 or higher. Notably, except for items 4, 7 and 12, which exhibited an I-CVI of 0.60, the remaining items attained an I-CVI score of 0.80 or greater. The averages I-CVI (I-CVI/Ave) for the entire set of items was computed at 0.97, indicating a high degree of appropriateness for most items in the BM-H2 version. Moreover, the S-CVI/UA for the BM-H2 was calculated as 0.84, while S-CVI/Ave achieved a score of was 0.97. These values are indicative of the BM-H2 version's attainment of satisfactory scale-level content validity, as defined by the criteria established by Polit and Beck (2006). A comprehensive breakdown of the I-CVI and S-CVI calculations is presented in Table 3.

Table 3: The summary of quantitative content analysis of BM-H2

Items No.	Panel 1	Panel 2	Panel 3	Panel 4	Panel 5	Panels in Agreement	I-CVI
1-3, 5-6, 9-11, 15-20, 22-24, 28-39, 41-46, 48-72, 74-79, 81-85, 87-104, 106-109, 111-123, 125-127, 129-130, 133-134, 136, 138-143, 146-168, 170-171, 173, 176-181	√	√	√	√	√	5	1.00
80	√	X	√	√	√	4	0.80
8, 13, 21, 25, 40, 73	√	√	X	√	√	4	0.80
14	√	√	√	√	X	4	0.08
26, 27, 47, 86, 105, 110, 124, 128, 131, 132, 135, 137, 144, 145, 169, 172, 174, 175	√	√	√	X	√	4	0.08
4, 7	√	√	X	X	√	3	0.60
12	√	X	√	X	√	3	0.06
<b>Average I-CVI</b>							0.97
Proportion relevant	1.00	0.99	0.96	0.89	1.00		

Note: √ = rating of 3 or 4; X = rating of 1 or 2; BM-H2 = Second Version of the Harmonized Translation; I-CVI = Item Level-Content Validity Index

### Stage 6: Finalization

Following the completion of the content validation process and its accompanying analysis, a conclusive discussion was conducted with the objective of formalizing the BM-H2 version as the foundational Malay rendition of the 5-15R questionnaire, hereby referred to as Malay-5-15R. The domains and components within Malay-5-15R remained unaltered; however, select items underwent modifications to ensure alignment with the cultural and linguistic attributes of the Malaysian population.



## DISCUSSION

The study was conceived with the intent to facilitate the cross-cultural translation and adaptation of the 5-15R questionnaire, originally in English, into the Malay language, thus rendering it accessible to the Malaysian population, particularly Malay-speaking population. The primary objective was to undertake a cross-cultural adaptation process to verify the congruence of the translated questionnaire's contents with the original version in terms of conceptual alignment. Additionally, the study sought to assess the appropriateness of the translated questionnaire for utilization by the Malaysian population, particularly parents and teachers, in terms of contextual relevance, conceptual alignment, and semantic equivalence of the questions.

Based on the findings, it can be generally inferred that the Malay-5-15R questionnaire demonstrated a notable degree of cultural acceptability. In essence, all 181 items from the original version were retained with only minor adjustments. These modifications were primarily aimed at enhancing sentence structures and ensuring the clarity and comprehensibility of the questionnaire for the Malaysian population. The refinement efforts encompassed fine-tuning phrasing, introducing illustrative examples and explanations, and rectifying grammatical aspects. Given the distinct linguistic and cultural contexts of the original and translated versions, these minor changes were essential to maintain conceptual and content equivalence, in alignment with the principles outlined by Guillemain et al. (1993). Notably, certain examples within the items underwent slight alterations to better align with the Malaysian population. For example, in Item 66, the reference to "Christmas celebration" was substituted with "birthday celebration", reflecting the more universal and culturally relevant nature of the latter within the Malaysian context, as opposed to the former. Similarly, Item 85, saw the transformation of English terms into Malay, such as "screwdriver" being changed to "*infrastruktur*", while still retaining the original item's conceptual and contextual integrity (i.e., complex word), thereby rendering it more pertinent for the Malaysian population, instead of opting for a literal translation, such as "*pemutar skru*".

The content validity analysis was conducted to measure the inclusiveness and representativeness of the content within the Malay-5-15R questionnaire. The findings from this analysis revealed that most items in the Malay-5-15R questionnaire exhibited high content validity, with the I-CVI values for each item and overall items ranging between 0.80 and 1. These values exceeded the recommended threshold of 0.79, as indicated by Abdollahpour et al. (2010), underscoring the translated version's strong alignment with the original context. However, three items, specifically Items 4, 7 and 12, yielded lower I-CVI values, each at 0.60. This discrepancy among the experts primarily revolved around sentence structure refinement, such as changing the word selection (e.g., Item 4: "*permainan sukan*" to "*sukan*") and incorporating culturally relevant examples (e.g., Item 12: "*Kesukaran menggunakan pisau dan garfu*" to "*Kesukaran menggunakan pisau, sudu dan garfu*"). Consequently, these items were amended by modifying their sentence structures in accordance with the recommendations put forth by the expert committee. The goal was to achieve a more refined sentence structure for these items, aligning them more suitably with the Malaysian population's linguistic nuances. Regarding the scale-level content validity for the BM-H2 version, the S-CVI/UA was calculated at 0.84, while the S-CVI/Ave yielded a score of 0.97. These values surpassed the thresholds proposed by Shi, Mo, and Sun (2012), where excellent content validity is indicated by an I-CVI of 0.78 or higher and S-CVI/UA and S-CVI/Ave of 0.8 and 0.9 or higher. Consequently, the content validity results affirm that the Malay-5-15R questionnaire exhibited strong comprehensiveness and was a representative instrument for the study population.

The comparability of the CVI results for the Malay-5-15R version with prior studies is hindered by the absence of previously published studies that have conducted comprehensive CVI analyses on the original version of the FTF questionnaire and its revised counterpart, the 5-15R questionnaire. Notwithstanding, Kadesjo et al. (2004) have noted that the items in the FTF questionnaire were highly relevant and effectively covered each sub-domain. Several studies, including those by Korkman et al. (2004) and Bohlin & Janols (2004), have established the FTF questionnaire's commendable validity and reliability.

However, these studies do not offer explicit details regarding content validity or CVI. Consequently, the present study's findings concerning CVI represent pioneering efforts in quantitatively analysing content validity, potentially serving as a foundational reference for forthcoming research endeavours.

## **CONCLUSION**

This study has ascertained that the Malay-5-15R questionnaire possesses commendable content validity, an essential psychometric property that establishes its readiness for application in the intended population. As a result, the Malay-5-15R questionnaire emerges as a valuable instrument for screening and assessing children aged 5 to 17 who confront neuropsychological challenges. The parental reports integrated into this questionnaire offer substantive insights into their children's behaviours and various dimensions. This, in turn, equips professionals with the necessary information to deliver comprehensive care for the managing these children within a holistic framework. The information gleaned from this questionnaire has the potential to enhance the comprehensive management of cases, including the identification of the appropriate professionals to engage in the child's care and the strategies these professionals can employ to enhance the child's quality of life. Furthermore, serving as a screening tool for parents, this questionnaire can also foster increased parental awareness and understanding of their children's behaviours, strengths, and areas requiring intervention. In doing so, it contributes to the early identification and intervention processes, thereby further supporting the child's well-being.

## **LIMITATIONS OF THE STUDY AND FUTURE RECOMMENDATIONS**

This study entails several notable limitations that warrant acknowledgment. Firstly, it is essential to underscore that, at this stage, the Malay-5-15R questionnaire is not yet fully prepared for application within the target population, given that the adaptation process has been completed only up to the stage of content validation analysis. As such, future investigations should prioritize the comprehensive evaluation of the questionnaire's psychometric properties, with a particular emphasis on aspects such as reliability, test-retest reliability, construct validity, and divergent and convergent validity. This rigorous evaluation is vital to ascertain that the Malay-5-15R questionnaire is both reliable and valid for use within the designated population. Furthermore, it is worth considering that the current iteration of the questionnaire, while encompassing a multitude of items, retains its comprehensive approach to measuring various critical domains. Subsequent research endeavours may contemplate the possibility of revising the questionnaire to produce a condensed version that maintains its domain coverage and comprehensiveness while reducing the overall number of items. Such an adaptation aims to streamline the questionnaire, making it more time-efficient for parents to complete while still extracting the necessary information.

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