VALIDATION OF MOTOR OBSERVATION QUESTIONNAIRE FOR TEACHERS (MOQ-T) MEASUREMENT ITEMS USING CONTENT VALIDITY RATIO (CVR)

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Abstract

There are limited studies that address the quality of measurement items in motor observation questionnaire for teachers (MOQ-T) even though their use has gained attention locally. One aspect of the item quality that can be reviewed is content validity through expert consensus. Therefore, this study aims to examine the content validity of MOQ-T instrument items using an expert panel. A total of 15 experts in the areas of measurement and evaluation, occupational therapy, motor development and special education were selected for this study through purposive sampling. A total of 18 MOQ-T items were analysed using Content Validity Ratio (CVR) analysis and the items were reviewed through email correspondence and face to face during meeting sessions with experts. The findings showed that all items are significant as they exceed the critical CVR value of 0.49. However, one new item was added as one of the items was broken down to two sentences in response to expert suggestions to avoid items that are 'double barrelled' where conjunctions like 'and' are used to describe two different issues for one intended response. Subsequently, new items were derived to measure the skills needed. This study contributed to new MOQ-T with 19 items that can be used by teachers to study special needs students in Malaysia. For further research, it is proposed that new psychometric measurement theories, such as the Rasch measurement model can be added to improve the reliability of motor measurement items for teachers including MOQ-T. In addition, this study created an opportunity to review the localised version of MOQ-T that can
be used for the initial screening of developmental coordination disorder (DCD) problems in the context of special needs students in Malaysia.

**Keywords:** content validity, expert panel, content validity ratio, Motor observation questionnaire for teachers (MOQ-T), special needs student, Developmental coordination disorder (DCD)

I. Introduction

Ensuring adapted and translated questionnaire items are contextually appropriate is challenging. This is especially true in attaining an adapted questionnaire that fulfils an effective psychometric criterion to be used in a research [XIX], [LXXXI], [LXXXIII]. One of the challenges faced is ensuring the measurements aspects of the item fulfils the validity and accountability of an instrument [V],[LVI]. In this regard, measurements that use invalid instrument will cause the data to be interpreted inaccurately to the extent it will affect the intervention process [V], [XXXVIII]. Instrument validity refers to the evaluation of each item to ensure that it measures what its intents to measure. Evaluating validity is an important procedure in the process of instrument development [I],[V], [XIII], [XXXVII],[LXXX],[LXXV]. In this light, the validity of the instrument lies on whether instrument is being used as intended and is determined by content validity, construct validity, and criteria validity [XXV], [LXXII], [LXXIV].

Content validity is normally measured while adapting instrument items in a scientific research [XXI]. The content validity of measurement item in a research is a matter that has needs be taken into consideration because the instrument used could determine performance data, behaviour or observational data [XXI], [LXIX]. Therefore, expert consensus must be obtained when identifying and modifying items [LXXXIII]. In this regard, despite tedious and rigorous process of content validation, experts have proven its effectiveness [V], [LXXXIII]. The involvement of experts’ panel strengthens the evidence of validating process and further enhances the validity of the instrument [XI], [XXXIX], [L]. This process is needed for improvement and to put forward suggestions for improvement. In this light, the expert’s panel provides invaluable feedback to the researcher to develop and evaluate dimension or sub-dimension for items and making sure that the items cover all the content of the domains to be tested [V], [LXXII], [LXXIX].

I.i. Problem Statement

Developmental coordination disorder (DCD) among children is more evident when they enter primary school. Therefore, teachers need to identify children with DCD, adapt refer these children to health professionals as needed and to adapt their teaching methods to suit these children [XVI]. Studies found that early assessment of children with DCD risk could avoid secondary physical, cognitive, language and social emotions disturbances [XV], [LX], [LXVI]. Among the issues in identifying children with DCD is that the existing instruments, such as Bruininks-Oseretsky Test of Motor Proficiency – Second Edition (BOT-2) must be administered by professionals [XLIX],[LX]. In this regard, there are limited instruments that can be
used by non-professionals. The absence of measurement tools that meet the gold standard for teachers to assess children with DCD makes it more difficult for teachers to plan activities based on the students’ abilities [VI],[XXVIII], [LVIII]. Besides, language problem also exists whereby most of measurement tools are developed using English and thus, limiting the initial assessment that is carried out.

One of the popular instruments and widely used to measure and assess motor function in children is Motor Observation Questionnaire for Teachers (MOQ-T). The MOQ-T was developed by Van Dellen and Kalverboer[LXXXIV]. The original MOQ-T was revised in 2003 [LXV] and it has been used in previous studies in European countries [VI],[VII], [XII],[XXVI], [XXXIV], [XLV], [XLIX], [LV], [LXV], middle east country [XXXVI] and Japan [LIII]. This study shows that MOQ-T item can be potentially adapted for use in the local context. The process of adapting items to these instruments is in line World Health Organisation, [LXXXIX] recommendation that the process of adapting a valid and standardised instrument based on the cross-cultural studies is cheaper, faster and can contribute to studies on international children population [XIV].

MOQ-T itself is verified as a valid and reliable DCD screening tool [VI], [LXVII]. Its measurement items have been translated globally in other languages such as Japanese [LIII], Italian [XXXIV] Persian [XXXVI] and Finnish [XI]. However, the adaptation of MOQ-T items for local context requires a reliable item validity test, to date, the MOQ-T items have not been translated into Malay and this makes it difficult to make initial assessment of the local context. Most importantly, there are little efforts to test the psychometric properties of MOQ-T items in the Malaysian context. This is very important because psychometric items with high validity will help provide empirical evidence to show whether the MOQ-T items can be used for Malaysian sample. One of the important psychometric aspects is validity, item validity, especially content validity, can measure how well an item is could appropriately reflect a specific domain using quantitative techniques [LXIII]. In fact, content validity evaluation using field experts makes it easy to identify errors [V], [LXIII] and allows the dynamic improvement of the items[LXXV],[LXXXV].

There are many ways to use expert input to test the content validity. These include Cohen’s kappa; Tinsley–Weiss T index; Content Validity Ratio, James, Demaree, and Wolf’s index and many more. However, Content Validity Ratio (CVR) method is simpler, user-friendly, and is easy to analyse and interpret. CVR concept is based on classic measurement method, more practical in terms of time and cost, easy to administer and fast in execution [I],[LI], [LII]. The possibility of using CVR in the local context is very evident through its use by local and foreign researchers as an initial step in developing the instrument [III],[XXVII], [LXII]. Therefore, the study will validate the use of MOQ-T items to assess children’s motor function using CVR measurement analysis technique through teacher observation. This study will be done in two phases, determining the validity of items through expert’s consensus and determining expert feedback through CVR analysis.
II. Literature Research

MOQ-T Instrument

Motor Observation Questionnaire for Teachers (MOQ-T) is one of the questionnaires developed to facilitate the screening of children with DCD that can be administered by teachers. This questionnaire is the first step in the screening process and has been suggested as a measurement tool to collect information about DCD symptoms [LX], [LIX]. The MOQ-T (originally known as Groninger Motor Scale Observation) was developed in the Netherlands to help teachers identify 6-11-year-olds who are at risk of having DCD (Van Dellen & Kalverboer, 1987). For the past 20 years, this questionnaire has been used both in clinical research and practice [LXVII]. This instrument is used to measure students’ use of fine and gross motor skills in a variety of situations [LV].

Initially, the MOQ-T contained 20 original items before being modified to be an 18-item questionnaire based on the reliability data. In addition, new norms were calculated using a large database of 1919 children and the age range of five to six years was added [LXVII]. The final MOQ-T consisted of assessment items that reflect motor behaviour of DCD children and used for the screening of school population for children aged 5-11 years old [XXXIV], [LV], [LXVII]. The final MOQ-T has 18 items to assess motor function through teachers’ observation and teachers are required to give ratings on children’s motor behaviour. This instrument uses a four-point scale (1 = not true for this child; 4 = always true for this child) [LV]. The determination of the MOQ-T scores is adjusted based on the children’s age and gender with a score ranging between 18-72. The higher scores indicate motor skills performance of at-risk children with DCD [LXVII]. The composition distribution of MOQ-T is described in Table 1.

<table>
<thead>
<tr>
<th>Skills</th>
<th>Item</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross Motor</td>
<td>1</td>
<td>The movement of this child is very similar to a younger child.</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>This child is having difficulty in doing activities that involve whole body movements (such as putting on clothes, catching a ball).</td>
</tr>
<tr>
<td></td>
<td>4</td>
<td>This child’s movement has no continuity, inflexible and a lot of stops in between movement.</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>The child can easily lose his/her balance.</td>
</tr>
<tr>
<td></td>
<td>7</td>
<td>When this child makes a movement using the right or left, the same movement occurs on the other part of the body.</td>
</tr>
<tr>
<td></td>
<td>8</td>
<td>This child makes the right moves according to the situation but not at the right time.</td>
</tr>
<tr>
<td></td>
<td>10</td>
<td>This child movement is inflexible and stiff.</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>This child has difficulty in performing rhythmic movements.</td>
</tr>
<tr>
<td></td>
<td>13</td>
<td>This child has to plan his/her movement while his/her peer can do it automatically.</td>
</tr>
</tbody>
</table>
Besides MOQ-T, there is a motor function assessment tool and early screening tool developed for teachers to identify the symptoms of DCD [VI]. Table 2 is adapted from Asunta et al. 2019 [VI] and presents the skills and motor function assessment used by teachers in their studies.

**Table 2: List of the skills and motor function assessment use by teacher**

<table>
<thead>
<tr>
<th>Skills</th>
<th>Item</th>
<th>Statement</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>14</td>
<td>This child cannot respond to a ball throwing action.</td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>This child can easily lose control of the movement when in a hurry.</td>
</tr>
<tr>
<td></td>
<td>16</td>
<td>This child faces difficulty in buttoning the shirt and tying shoe laces.</td>
</tr>
<tr>
<td></td>
<td>17</td>
<td>This child has difficulty playing dexterity games.</td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>This child is incompetent, always dropping things.</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>Fine Motor</td>
</tr>
<tr>
<td></td>
<td>6</td>
<td>This child writes less well when spelling or writing material that requires more attention compared to his/her peer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>This child has difficulty in doing activities that require fine motor movements (for example crafts, writing)</td>
</tr>
<tr>
<td></td>
<td>9</td>
<td>This child has a problem with tasks that require eyes and hands coordination.</td>
</tr>
<tr>
<td></td>
<td>12</td>
<td>This child’s handwriting is disorganised compared to his/her other peer.</td>
</tr>
</tbody>
</table>

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Table 2: List of the skills and motor function assessment use by teacher

<table>
<thead>
<tr>
<th>Instrument</th>
<th>Country</th>
<th>Age range</th>
<th>Studies involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>ChAS-T</td>
<td>Israel</td>
<td>4–8 years</td>
<td>Rosenblum (2006)[LXIV]</td>
</tr>
<tr>
<td>Checklist</td>
<td>UK</td>
<td>5-12 years</td>
<td>Dussart (1994)[XXIX]</td>
</tr>
<tr>
<td>GMRS</td>
<td>Netherlands</td>
<td>3–7 years</td>
<td>Netelenbos (2005)[LIV]</td>
</tr>
<tr>
<td>M-ABC-C / M-ABC-2-C</td>
<td>UK</td>
<td>5.4–15.6 years</td>
<td>Capistrano et al. (2015)[XVII]; De Milander (2016)[XXIV]; Green et al. (2005)[XXXV]; Junaid et al. (2000); Piek &amp; Edwards (1997)[XLIII]; Schoemaker et al. (2003)[LXV]; Schoemaker et al. (2012)[LXVIII]; Wright et al. (1994)[XC]; Wright &amp; Sugden (1996)[XCI]</td>
</tr>
<tr>
<td>MOQ-T</td>
<td>Netherlands</td>
<td>5–11 years</td>
<td>Asunta et al. (2017)[VIII]; Giofreet al. (2014)[XXXIV]; Schoemaker et al. (2008)[LXVII]</td>
</tr>
<tr>
<td>TEAF</td>
<td>Canada</td>
<td>6–11 years</td>
<td>Engel-Yeger et al. (2012)[XXXI];</td>
</tr>
</tbody>
</table>

Note: ChAS-T= Children Activity Scale for Teachers; GMRS= Gross Motor Rating Scale; M-ABC-C= Movement Assessment Battery for Children Checklist; M-ABC-2-C= Movement Assessment Battery for Children Checklist – Second Edition; MOQ-T= Motor Observation Questionnaire for Teachers; TEAF= Teacher Estimation of Activity Forms.

As shown Table 2, [IX] discussed the psychometric properties of the instrument and the psychometric aspects that need to be taken into account are i) the value of sensitivity; ii) the shallowness of the validity process; iii) the reliability among assessors; iv) number of samples [IX]. According to [LIX], teachers are faced with many challenges while administering motor skill measurement instrument amongst
children. Among the issues that emerged are i) the lack of knowledge in administering the instrument; ii) inadequate instruction in the test-kit causes teachers to be unclear and biased in scoring; iii) the instrument contains complex and long questions; iv) limited knowledge and skills of a class teacher or other teachers compared to physical education teacher. Therefore, teachers administered instrument should use simple language and it is essential to have accurate items on motor development [XXVI]. Thus, MOQ-T instrument is clearly valuable and needed as a preliminary screening tool for teachers to identify children at-risk of having DCD [XLII]. The MOQ-T has been used and extended several studies due to its excellent psychometric properties and high internal consistency values. (Cronbach's alpha = 0.95) [IX], [XXXIV], [LXVII]. Previous studies show that validity of MOQ-T has been tested in several studies. MOQ-T has been found to be able to differentiate children with and without motor problems using Movement Assessment Battery for Children (MABC). MABC is an instrument known as a 'gold standard' of concurrent validation. Meanwhile, another study examined the relationship between MOQ-T and the MABC test score shows that MOQ-T is significantly correlated with MABC (r=0.57) [LXVII].

In regard to the measurement aspect, concurrent validation shows a strong correlation between MOQ-T and equivalent instruments, such as Development Coordination Disorder Questionnaire (DCD-Q) [LXXXVI]. DCD-Q is commonly used to identify motor coordination disorders based on parental assessment. Schoemaker et al. (2008) stated that the correlation value (r =0.64) of DCD-Q and MOQ-T only fulfils the concurrent validation but there is a need for further studies to test the MOQ-T psychometric properties, especially in relation to its validity and adaptability in various languages and countries [XXXIV]. Past studies showed there is a clear gap that item testing aspect has to be done more deeply on the validity of the content through experts, rather than just evaluating through concurrent validation by previous studies [LXII], [LXXII].

Content Validity Ratio, CVR

The content validity of MOQ-T for special needs students will be measured using quantitative measurement procedure by Lawshe (1975) that is Content Validation Ratio (CVR). CVR is used to measure the validity of an item’s content through empirical measurement by measuring expert consensus on the importance of a particular item [V], [LXII]; [LXX] CVR is calculated using the following formula:

\[
CVR = \frac{Ne-N/2}{N/2}
\]

Where \( Ne \) refers to the number of experts who choose “It is essential” (important) and \( N \) is the number of experts. The Three-point scale was used for every item, the scale ranges from (1) important, scale (2) useful but not important and (3) unnecessary. After CVR of every item has been calculated, the value of Content Validity Index (CVI) is derived from the entire instrument [XLVI]. However, in the context of this study, the focus is on the value of CVR compared to CVI. This is because the CVR
approach using the Lawshe formula is the most solid and strongest method [II], [X]. Besides that, the popularity of Lawshe’s approach for scale development for health science and educational research is evident through the numbers published articles on CVR in local and global research [V], [XLII],[LI], [LXII], [LXXXII],[XCII].

The CVR value is within the -1 to +1 range, where the value closes to +1 indicates that experts agree that the item is critical for the validity of content. Lawshe (1975) suggested that if more experts involved in the study deemed the item as important, then the content of the item is considered as valid. On the other hand, a negative CVR value can be obtained when less than half of the experts described the item as “important” [XVIII]. Lawshe (1975) also created a CVR value table that as a reference to get critical CVR values which was then reviewed and improved by [LXXXVIII]. Based on the CVR value table, expert counts were referred to find the critical CVR value of each item at value of CVR α = .05. Therefore, if the items are less than the critical value, then they need to be refined or considered to be dropped from the instrument.

III. Research Methodology

This research adopts the quantitative approach and data were collected through a survey questionnaire. [XXII] Stated the quantitative method is an appropriate way to check relationship between variables based on statistical analysis. In addition, through the quantitative approach under certain circumstances, the results can be represented by groups outside the samples involved in the survey [XIX]. The assessment team is selected using one of the purposive sampling techniques (purposive sampling) which is expert sampling (judgement sample) [XXIII], [LXXII]. This sampling is based on the selection of individual experts in a particular field to meet the purpose of the study [XL]. Positive and accurate information can obtain through a detailed review of all items [LXXIX]. In this light, the item review helps to ensure the items cover all the domains based on improvements, suggestions and experts’ views [XXXII]. All experts were contacted through the phone and emails to obtain their consent to join this study. Official appointment letters were either posted or emailed to each expert. Each of them was given two weeks to complete the content validity for the 18 items of MOQ-T. Experts were asked to rate and validate the importance of each item based on the three-point scale by Lawshe (1975). The experts were also given the chance to share their opinion or comment in the provided space. The content validation process in this study was divided into two phases namely i) content validity by expert panel and ii) feedback analysis using CVR technique.

III.i. Phase One –Content Validity by Expert Panel

An instrument’s content validity can be determined based on the perspective of the expert panel [XCII]. [IV] Suggested that the expert panel selected should be involved and experienced in the related domain [I], [V], [XXI], [LI]. The panel of experts selected in this study consisted of academics, practitioners and professionals.

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[I],[III],[LXII] stated that experts are highly skilled individuals in the field of study and have the responsibility to seriously evaluate each item before deciding whether to retain or remove the proposed item[V], [XXX], [LXIII]. There are two types of experts usually involved in content validation, namely professional experts and field experts [LXII], [LXXIX], [XCII]. Professional experts are those with research experience or still work in the field and are still active in the publication in the related field [LXIX], [LXII], [LXXXIII]. Meanwhile, field experts are the end users of the instrument, general practitioners, someone skilled in the field. They make up of population representatives related to the study [LXXIX],[LXXXV]. Lynn (1986) opined it would be sufficient to have 5 to 10 experts in a panel while [L] mentioned that at least four experts are needed in a study. At the early stage of the study, 20 experts were contacted but only 15 experts agreed to participate in the study. They consist of 10 professional experts and 5 field experts. The number of 15 experts fulfil the needs of Lawshe (1975) [XLVI] and Lynn (1986) [XLVII].

The 10 professional experts in this study were selected based on (a) their experience and involvement in the study of special education field, children’s motor development and psychometric for at least 10 years [I]; (b) knowledgeable and experienced in the field related to special needs students; experienced in implementing children’s motor skills: knowledgeable in the theory and statistical measurement; (c) must have at least a Doctorate of Philosophy [XIV] and lastly, (d) willing to contribute their expertise [LXXIII], [LXXV]. Of these 10 professional experts, eight are public university lecturers and two are still serving with Minister of Education Malaysia. All of them have given their consent to take part in this study. Besides 10 professional experts, this study also appointed five field experts. Of the 5, two are special education teachers, one is a lecturer at Institute of Teacher education and two are Occupational therapists. The field experts are experienced in to handling issues such as unclear terms, examining the clarity of the sentence or terms and to suggest important and relevant items [L] criteria namely (a) direct involvement with special needs students, (b) knowledge in special education, (c) at least 10 years’ experience in teaching, (d) have exposure to basic training in special education and lastly is (e) the consent of the panel to participate in the study [XXX], [XXVII], [XLIV], [XCI].

A total of 15 expert panellists comprised of ten professional experts and five field experts. This study complies with the suggestion by [LVII] who suggested at least three experts for every field and the study of [V] in turn suggested five to ten experts in content validity. The number of experts involved in this study exceeded the number of experts suggested by Lawshe’s that is four experts [III], [LXXXVIII] and also in several previous studies [I],[II], [III], [XXX], [XLVIII], [LXII], [LXXXVI].

III.ii. Phase Two – Feedback Analysis Using CVR Technique

Experts agreement using CVR technique were calculated using Microsoft Excel (2016) software. The feedback from the panellists was measured using CVR calculation [XLVI]. Table 3 shows the minimum or critical value of CVR that must be complied with for acceptance and refinement. In this study, matching experts with
the critical value indicates that a critical value of 0.49 must be reached for 15 experts. Every item with a CVR value less than 0.49 could be removed from the questionnaire for not reaching experts’ consensus. Table 3 is adapted from the study of [II]. The suggestion also was given by the experts for improvement.

Table 3: Lawshe’s Table (CVR critical value, one-tailed test p<0.05)

<table>
<thead>
<tr>
<th>Expert Number</th>
<th>10</th>
<th>11</th>
<th>12</th>
<th>13</th>
<th>14</th>
<th>15</th>
<th>20</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVR minimum value</td>
<td>0.62</td>
<td>0.59</td>
<td>0.56</td>
<td>0.54</td>
<td>0.51</td>
<td>0.49</td>
<td>0.42</td>
</tr>
</tbody>
</table>

IV. Results and Discussion

All of the questionnaire distributed to 10 professional experts and 5 field experts involved were collected back. The demographic profile shows that five the experts are male (33%) and ten experts are female (67%). In terms of experience, five experts have less than 15 years’ experience in the field (27%), while the remaining 10 experts have 15 years or more experience (73%). Meanwhile, the expertise of the panels is i) measurement and psychometric (4 experts); ii) motor development and physical education (5 experts); iii) work therapy (3 experts) and iv) special education (3 experts). The majority of the expert panel were selected from the main public universities in Malaysia, namely University of Malaya, Putra University Malaysia, National University of Malaysia, University of Science Malaysia and MARA University of Technology. Experts from Institute of Teachers Education and Ministry of Education were also selected to participate in this study.

Table 4, show the result of the final analysis of the CVR findings of MOQ-T items. Based on the CVR calculations, 10 items have the CVR value = 1, six items have CVR value = 0.867 and two items have CVR value = 0.733. All items have CVR values exceeding the critical value set for 15 expert panel = 0.49. This means all items in the questionnaire are accepted. The adapted MOQ-T instrument meets the psychometric properties of the aspect of content validity through experts’ consensus. This finding has empirically proven that the 18 items are appropriate to measure the motor function of special needs students in Malaysia. The feedback from expert panel shows that MOQ-T items should be retained in the questionnaire. The feedback received is summarised in Table 5.

Table 4: CVR Finding Analysis of MOQ-T item

<table>
<thead>
<tr>
<th>CVR</th>
<th>Number of Items</th>
<th>Item No.</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.000</td>
<td>10</td>
<td>2,5,6,8,9,10,11,13,14,15</td>
<td>Accepted</td>
</tr>
<tr>
<td>0.867</td>
<td>6</td>
<td>1,4,7,12,17,18</td>
<td>Accepted</td>
</tr>
<tr>
<td>0.733</td>
<td>2</td>
<td>3,16</td>
<td>Accepted</td>
</tr>
<tr>
<td>&lt;0.49</td>
<td>0</td>
<td>-</td>
<td>To be reviewed</td>
</tr>
</tbody>
</table>
### Table 5: Feedback and suggestion of expert panel

<table>
<thead>
<tr>
<th>Expert</th>
<th>Field</th>
<th>Feedback and suggestion</th>
</tr>
</thead>
</table>
| 1,2,3  | Psychometric | Item 1: include age range  
Item 3: use simpler word  
Item 14: good item shows what a child can do related to the specific motor activity.  
Item 15: change the use of the word “in a hurry”  
Item 16: *double barrelled*  
Item 18: the term “not competent” is confusing |
| 4,5,6,7 | Motor Development and Physical Education | Consistency in the use of the words “the child or the student”  
Item 1: Set an age limit for example <5 years, because a child's motor development is individual and still considered normal at a certain age range.  
Item 3: confusing sentence structure  
Item 12: check for irregular words  
Item 17: please check agile games and “dexterity games” give examples  
Item 18: use other terms that are easier to understand such as “not competent” |
| 8,9    | Occupational Therapy | Synchronise the words “the assessed child” to “this child”  
Item 3: when spelling or writing materials that need more focus, this child writes less neatly compared to their peers  
Item 12: change the word “organised” to “uniformed” or “neat”  
Item 17: please check the term ‘dexterity games’ |
| 10     | Special Education | Item 3: sentence is a bit confusing, please check  
Item 11: give examples of rhythmic movement  
Item 16: separate the item into 2 skills  
Item 17: examples of ‘dexterity games’  
Item 18: the term “clumsy” can be refined more |
| 11,12  | Special Education | Item 3: use a simpler and clearer sentence  
Item 11: give examples of rhythmic movements  
Item 16: 2 different skills, please separate the item  
Item 17: give examples  
Item 18: use easier and simpler terms |
| 13     | Work Therapy | Item 3: sentence not very clear  
Item 16: there are 2 skills being measure  
Item 17: give examples  
Item 18: the term “clumsy” change to another term |
| 14     | Measurement | Item 1: include age limit  
Item 3: sentence not very clear  
Item 16: 2 items tested |
| 15     | Motor Development | Item 1: propose equivalent movements to that of younger children  
Item 11: give examples of rhythmic movements  
Item 14: respond (catch/kick)  
Item 17: give examples  
Item 18: change “clumsy” to “not competent” |

**Note:** expert 1 – expert 10 are professional expert panel; expert 11 – expert 15 are field expert panel.

The feedback and suggestions of the expert panel were taken into consideration to develop accurate items for measuring the motor function and skills of special needs children. The majority of the expert panel suggested that the research changed the word ‘the assessed child’ to ‘the children’ or ‘the student’. Therefore, item 1 was
restructured to be ‘this child's movement is the same as that of a younger child’. For item 3, a majority of experts responded that the sentence is not clear and suggested the use of a simpler and clearer sentence. Meanwhile, for item 16, a majority of the panel responded that the item is ‘double barrelled’ as it seems to evaluate two skills. A combination of two different items in a statement will cause confusion and subsequently, measurement errors, inconsistent responses and inaccurate assessment to describe the real skill tested. As a result, item 16 was broken down into two different items. Hence, the initial statement in Item 16 ‘This child has difficulty in fastening buttons and tying shoelaces’, was separated into two items, which are item 16 a: ‘This child has difficulty fastening buttons.’; Item 16 b: ‘This child has difficulty in tying shoelaces.

For item 11 and 17, most of the experts suggested for the researcher to give examples. This will make it easier for the assessor to make an assessment through a clear and correct description. Furthermore, item 11 was modified to, ‘this child has difficulty in making rhythmic movement (following a rhythm, jumping and ‘skipping’); Item 17 was rephrased to ‘this child shows limited ability when playing ‘dexterity games’ (Jenga, pickup sticks)’. Meanwhile the statement in item 12 changed to this child’s handwriting is as neat as his/her peers while item 18 was changed to, ‘this child is clumsy, always dropping things’.

The content validation process was carried out in two phases, content validity was determined by the expert panel and feedback analysis was conducted using the CVR technique. The verification of the 18 items the questionnaire was done meticulously and in detail by the expert panel. All members of the expert panel have more than 15 years’ experience in the field of research in different fields including measurement, psychometric, special education, motor development, occupational therapy and physical education. These experts have the capability to verify whether the items can really measure what it should measure. Written suggestions from the expert panel strengthen the clarity of the statements used in this instrument. These items were refined based on the suggestions from the expert panel to ensure the item is clearly written and the most appropriate response can be obtained and strengthen the robustness and measurement of the measurement of MOQ-T items based on the abilities of special needs students’ in Malaysia.

The use of CVR technique in the panel feedback analysis has simplified the process of analysing the expert consensus regarding this study. In this regard, Lawshe presents a simple, easy to apply formula based on the critical value table. The researcher has also used Microsoft Excel software expedite the data analysis process and to avoid errors in calculations. The strength of MOQ-T instrument with good psychometric properties has been proven clearly based on previous studies; all 15 experts agreed that these 18 items are important in measuring the motor skills of special needs students. All items have high CVR value and exceeded the critical value of 0.49. The use of the CVR method has empirically confirmed the validity of MOQ-T instrument. The analysis of expert findings to retain, review or remove an item was done clearly and confidently through CVR method. All items reviewed and updated will be prepared for the next process to evaluate the reliability of the instrument.
Therefore, after the content validity process, the initial 18 items have become 19 items. These items will be tested through a pilot testing.

V. Conclusion

In general, ensuring content validity through experts’ consensus is an important process in a research to ensure that an instrument is suitable and appropriate to be used as a measuring tool for the population being studied. The feedback from the expert panel involved in the study is clear and easy to analyse statistically using CVR method. The study findings show that the strength of the 18 items in the MOQ-T instrument is retained, one item was divided into 2 items to form 19 items based on the suggestions from the experts. In this regard, the validity test has proven that the items in MOQ-T are valid measuring tools that can be used in the context of special needs students in Malaysia. On the other hand, it is recommended that updated MOQ-T items should be tested in a pilot study using real respondents. Furthermore, the validity and reliability of an item in an empirical analysis can be analysed using the Rasch model. This analysis could identify the quality of an item in-depth through the Rasch model based on the aspects like item polarity analysis, item dimension, item compatibility, local freedom, functional differences, scale calibration, item difficulty level, individual and item reliability index and individual and item isolation index.

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