

Adaptation of Executive Functions Rating Scale in Preschool Children

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Abstract

This study aims to develop measurement instruments for executive functions (EF) in preschool children based on behavioral observation using a rating scale to identify the level of EF ability in children from an early age. Existing EF measurement instruments are adapted and modified by the existing scale, namely the 2nd edition Behavioral Rating Inventory of Executive Functions (BRIEF) prepared by Gioia, Isquith, Guy, and Kenworthy (2015). This study was designed using a research development method consisting of several stages: translation, synthesis, back translations, expert committee review, and pretesting (Beaton et al., 2000). The results of this study indicate that in 60 items of the eight components in the Indonesian version of the executive functions rating scale, 56 items have a high total item correlation index, and four items have a low total item correlation. The reliability value of the scale is 0.965, which indicates that the Indonesian version of the executive functions rating scale is reliable for use.

Keywords

executive functions; rating scale; preschool

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INTRODUCTION

Preschool age is an important age to prepare children to enter formal education. It is a critical period for children's learning. Preschool education aims to help lay the foundations for the development of attitudes, knowledge, skills and creativity that children need in adapting to their environment, for further growth and development. When a child enters formal school, they are faced with the physical environment, processes, types of interactions, social groups and rules that are different from the experiences they had before entering school (Ladd et al., 2006). Therefore, before entering formal school, children must have adequate school readiness in order to adapt to the new environment.

In preparing children's school readiness, it is important to pay attention to the aspects of academic knowledge, physical well-being and motor development, basic thinking skills, self-discipline, social emotional maturity, and communication skills (Rahmawati et al., 2018). These aspects of school readiness can be obtained by children through their participation in preschool education. This is based on the results of research that children who do not take preschool education, their cognitive, physical and emotional abilities are considered not ready (Halimah & Kawuryan, 2010).

Several studies have found that school readiness can be predicted by executive functions (EF). EF can promote the development of cognitive abilities in children (Qehaja-Osmani, 2013), language skills, concentration, behavior (Gooch et al., 2016), social skills (Romero-López et al., 2018), regulate emotions which aspects are very important to prepare children to enter the next level of education (Hermahayu, 2019; Shaul & Schwartz, 2014).

EF is a group of mental processes needed when a person must concentrate and pay attention, when it is impossible to rely on automatic responses or rely on instinct or intuition (Diamond & Lee, 2011). EF allows mentally playing with ideas; taking time to think before acting; discovering something new, dealing with unexpected conditions; resist temptation; and stay focused (Diamond, 2013). EF is needed to concentrate and think when doing new (unfamiliar) movements and not routines (Miyake et al., 2000; Monette et al., 2011). So, it can be explained that EF is a higher cognitive ability, which is very important in the process of problem solving and planning, especially if individuals are faced with new situations or situations that arise suddenly and require a quick response. EF is a multifactor construct involving various higher-order cognitive abilities (de Frias et al., 2009), or referred to as higher neurocognitive processes that monitor and control thoughts, actions, and emotions (Carson et al., 2016), consistently associated with early achievement (Blair & Razza, 2007), and can predict math and literacy skills (Müller et al., 2008).

Some researchers suggest that EF consists of several functions, namely inhibition, working memory, shifting (Diamond, 2013; Miyake et al., 2000), sustained attention, planing dan rejecting distractions (Brocki & Bohlin, 2004). EF is also described as a higher cognitive skill that includes self control and includes metacognitive skills, namely: inhibition response, planning, attention, and working memory (Gazzaniga, 2009). There is a similar opinion that EF is divided into three core components, namely; inhibition, working memory and set shifting (Diamond, 2013; Miyake et al., 2000; Monette et al., 2011). All three form the basis for higher-order EF skills, such as reasoning, problem solving, and planning (Collins & Koechlin, 2012; Diamond, 2013; Lunt et al., 2012).

One of the EF measurement instruments formulates that the components that must be measured in EF consist of impulse control, self-monitoring, flexibility, emotional control, commissioning, work memory, planning/organization, task monitoring and orders (Gioia et al., 2015). Measurement of EF ability in preschool children needs to be done from an early age. However, in Indonesia, there is no measurement of EF for early childhood in the form of a rating scale. The EF measurement instrument that has been used in Indonesia so far is in the form of a performance test. The test has several weaknesses, including taking a long time to complete the test, the test must be done individually and each subject must be accompanied by a tester, the tester must make sure the subject understands the rules before starting the test. Therefore, an easier and faster measurement instrument is needed so that teachers or parents can quickly provide stimulation according to the measurement results.

In this study, the EF measurement instrument that will be adapted is the Behavioral Rating Inventory of Executive Functions (BRIEF) compiled by Gioia et al. (2015). This instrument is in the form of an EF rating scale by assessing the subject through his behavior. This scale will be filled in by teachers, parents/caregivers because they are considered the people who best understand the child's behavior.

METHOD

This study uses development research methods. This study aims to develop an EF behavioral assessment scale in preschool children by adapting and modifying the existing scale to suit the Indonesian language and culture. Prosedur pengembangan yang akan dilakukan dalam penelitian ini mengacu pada langkah-langkah dalam melakukan proses adaptasi suatu skala ke dalam bahasa dan konteks budaya yang berbeda dengan skala asli (Beaton et al., 2000) yang terdiri dari beberapa tahap yaitu *translation*, *synthesis*, *back translations*, *expert committee review*, dan *pretesting*.

Design

The process of language and cultural adaptation goes through the following stages:

1. The first step is to translate the original test into the target language by two professional translators.
2. The second stage is synthesis. This stage is to look for similarities and differences in the results of the translations of the two professional translators, until finally an agreed translation is obtained which is called a translation scale draft.
3. The third stage is back-translation to the original language. The draft scale from the second stage is then translated back into the original language. Back translation is done by professional translators. The results of the reverse translation are then compared with the original scale, to determine whether or not there are differences in meaning in the translation results.
4. The fourth stage is a discussion with experts, including linguists, measurement experts, child development experts, and psychology lecturers who understand EF. This discussion was conducted to ensure that there is an equality of meaning between the original scale and the translated scale. Several expert and competent raters were asked to provide an assessment of the items on the scale that had been prepared.
5. The fifth stage is pretesting/try out by testing the scale on a small number of subjects. This trial was conducted to determine whether the instructions and items on the scale could be understood well by the respondents.

After making sure that the items can be understood, the next step is to test the validity and reliability of the scale on a larger number of samples.

Participants

The subjects of this study consisted of 2 translators with an educational background in Psychology and English Education, 1 professional translator with an English Education background, 1 expert lecturer, seven kindergarten teachers as subjects in the pretesting, and at the trial stage were 78 preschool children aged 6-7 years in Magelang City. The reason for choosing this age is because at that age the child is already at the stage of preparation for entering elementary school. Pretesting sampling for research using simple random sampling, ie taking subjects randomly in a population. Through the method of taking the subject, every student has the same opportunity to be a research subject..

Instrument

The measuring instrument that will be adapted is the Behavioral Rating Inventory of Executive Functions (BRIEF) compiled by Gioia, Isquith, Guy, and Kenworthy (2015). The original English scale will then be adapted into the Indonesian version of the executive functions rating scale. This measuring instrument consists of eight measurement components, namely: dimensi *inhibit* (8 item), *self monitor* (12 item), *emotional control* (8 item), *initiate* (5 item), *working memory* (8 item), *plan/organize* (8 item), *task monitor* (5 item), dan *organization of materials* (6 item).

Data Analysis

Testing the validity and reliability coefficients of the Indonesian version of the executive functions rating scale was analyzed using SPSS 25.0. The reliability test used Cronbach's Alpha formula, and the test of the validity of the items on the scale used the corrected item-total correlation (CITC).

RESULT AND DISCUSSION

The language and cultural adaptation process

The process of adapting the executive functions rating scale begins with the process of translating the original scale by two translators with educational backgrounds in Psychology and English Education. Furthermore, the two translations are compiled as a draft translation.

The draft translation is then translated back into the original language. Next, the translation draft is checked again together with expert lecturers to see the suitability of the words used, and which have the same or different meaning as the original scale. The results of the language adaptation process found that several different words were used but still had the same meaning, which can be seen in Table 1.

In the Inhibit component the original scale statement says "Has trouble putting the brakes on his/her actions". Translator 1 defines the word 'putting the brakes' as 'mengendalikan', while translator 2 defines the word as 'mengerem'. Based on the discussion the two words have the same meaning. So it was agreed that the statement would be "Kesulitan mengendalikan tindakannya".

On the Self monitor component the original scale statement says 'Gets stuck on one'. Translator 1 interprets the word 'Gets stuck' with the word 'terpaku', while translator 2 defines it as 'terpikat'. According to the Cambridge English Dictionary the word gets stuck is the same as unable to move. From the results of the discussion, the word *tepaku* is more appropriate and has almost the same meaning. So it was agreed that the statement would be "Terpaku pada satu topik atau aktivitas".

In the Initiate component the original scale statement says 'Needs to be told to begin a task even when willing'. Translator 1 defines the word 'to be told' as 'diberi tahu', while translator 2 means 'diperintah'. Based on the discussion, the two words have the same meaning. So it was agreed that the statement was "Perlu diberi tahu untuk memulai tugas bahkan ketika ia sudah siap".

Table 1. The result of the translation of the original scale into Indonesian

Components	No item	Original Language (Inggris)	Translator 1	Translator 2
Inhibit	48	Has trouble putting the brakes on his/her actions	Kesulitan mengendalikan tindakannya	Sulit mengerem tindakan
Self Monitor	17	Gets stuck on one topic or activity	Terpaku pada satu topik atau aktivitas	Terpikat pada satu topik atau aktivitas
Initiate	38	Needs to be told to begin a task even when willing	Perlu diberi tahu untuk memulai tugas bahkan ketika ia sudah siap	Perlu diperintah dulu untuk memulai tugas bahkan ketika sudah bersedia
	19	Has trouble with chores or tasks that have more than one step	Bermasalah dengan tugas-tugas yang memiliki lebih dari satu langkah	Sulit mengerjakan rutinitas atau tugas yang punya lebih dari satu langkah
Working Memory	7	Does not plan ahead for school assignments	Tidak membuat rencana dalam mengerjakan tugas sekolah	Tidak mempersiapkan terlebih dulu tugas-tugas sekolah
Plan/Organize	15	Gets caught up in details and misses the big picture	Bisa menemukan detail tapi melewatkan gambaran besar	Terpaku pada detail dan melewatkan gambaran besar
	23	Has good ideas but does not get job done (lacks follow-through)	Memiliki ide bagus tetapi tidak menyelesaikan pekerjaan (tidak memiliki tindak lanjut)	Punya ide-ide yang bagus tapi tidak dituntaskan (kurang tindak lanjut)
	35	Has good ideas but cannot get them on paper	Punya ide bagus tapi tidak bisa menuliskannya	Punya ide bagus tapi tak dapat menuangkannya dalam tulisan
	5	Work is sloppy	Pekerjaannya tidak rapi	Hasil kerjanya berantakan
Task monitor	21	Written work is poorly organized	Pekerjaan tertulis tidak terorganisir dengan baik	Tugas tertulisnya kurang tertata
	37	Leaves messes that others have to clean up	Meninggalkan kekacauan yang membuat orang lain harus membereskannya	Meninggalkan keadaan berantakan yang harus dibersihkan orang lain
Organization of materials	63	Leaves a trail of belongings wherever he/she goes	Meninggalkan bekas barang-barangnya setiap kali ia pergi	Meninggalkan barang-barang miliknya tercecer di mana pun ia pergi

In the Working memory component the original scale statement reads 'Has trouble with chores or tasks that have more than one step'. Translator 1 defines the word 'chores' with the word 'pekerjaan rumah', while translator 2 defines it as 'rutinitas'. According to the Cambridge English Dictionary the word 'chore' is the same as a job or piece of work that is

often boring or unpleasant but needs to be done regularly. So it was agreed that the statement was "Sulit mengerjakan rutinitas atau tugas yang punya lebih dari satu langkah".

In the Plan/organize item number 7 component, the original scale statement says 'Does not plan ahead for school'. Translator 1 defines the word 'plan a head' with the word 'membuat rencana', while translator 2 defines it with the word 'mempersiapkan terlebih dahulu'. Based on the discussion, the two words have the same meaning. So it was agreed that the statement was "Tidak membuat rencana dalam mengerjakan tugas sekolah".

In the Plan/organize item number 15 component, the original scale statement says 'Gets caught up in details and misses the big picture'. Translator 1 interprets the word 'Gets caught up' with the word 'bisa menemukan', while translator 2 interprets it with the word 'bisa menangkap'. Based on the discussion, the two words have the same meaning. So it was agreed that the statement would be "Kesulitan mengendalikan tindakannya".

In the Plan/organize item number 23 component of the original scale statement, it is written 'Has good ideas but does not get job done (lacks follow-through)'. Translator 1 defines the word 'done' with the word 'menyelesaikan', while translator 2 defines it as 'menuntaskan'. Based on the discussion, the two words have the same meaning. So it was agreed that the statement was "Memiliki ide bagus tetapi tidak menyelesaikan pekerjaan (tidak memiliki tindak lanjut)".

In the Plan/organize item component number 35, the original scale statement reads 'Has good ideas but cannot get them on paper'. Translator 1 interprets the word 'get them on paper' with the word 'menuliskannya', while translator 2 defines it with the word 'menuangkannya dalam tulisan'. Based on the discussion the two words have the same meaning. So it was agreed that the statement was "Punya ide bagus tapi tidak bisa menuliskannya".

In the Task monitor component, item number 5, the original scale statement says 'Work is sloppy'. Translator 1 defines the word 'sloppy' as 'tidak rapi', while translator 2 defines it as 'berantakan'. Based on the discussion, the two words have the same meaning. So it was agreed that the statement was "Pekerjaannya tidak rapi".

In the Task monitor component, item number 21, the original scale statement said 'Written work is poorly organized'. Translator 1 defines the word 'poorly organized' as 'tidak terorganisir', while translator 2 defines it as 'kurang tertata'. Based on the discussion the two words have the same meaning. So it was agreed that the statement would be "Pekerjaan tertulis tidak terorganisir dengan baik".

In the component Organization of materials item number 37, the original scale statement is written 'Leaves messes that others have to clean up'. Translator 1 interprets the word 'leaves messes' with the word 'meninggalkan kekacauan', while translator 2 interprets it with the word 'meninggalkan keadaan berantakan'. Based on the discussion, the two words have the same meaning. So it was agreed that the statement was "Meninggalkan kekacauan yang membuat orang lain harus membereskannya".

In the Organization of materials item number 63 component, the original scale statement reads 'Leaves a trail of belongings wherever he/she goes'. Translator 1 interprets the word 'Leaves a trail of belongings' with the word 'meninggalkan bekas barang-barangnya', while translator 2 interprets it with the word 'meninggalkan barang-barang miliknya tercecer'. Based on the discussion the two words have the same meaning. So it was agreed that the statement was "Meninggalkan barang-barang miliknya tercecer di mana pun ia pergi".

After getting some similarities in meaning from the translation results, the next process is to combine the translation results into the Indonesian version of the translation

draft. The Indonesian version of the draft translation was then translated back into the original language (English) through a professional translator with an English Education background. Next, compare the words and meanings between the scale of the English version of the back translation with the original scale. Based on this comparison, basically the English translation has the same meaning as the original scale, but uses different words. The results of the comparison of several different words can be seen in Table 2

Table 2. The difference between the back-translated words and the original scale

Components	No item	Original Scale (Inggris)	Back Translation
<i>Self monitor</i>	17	<i>Gets stuck on one topic or activity</i>	<i>Be captivated by a topic or activity</i>
<i>Emotional control</i>	14	<i>Has outbursts for little reason</i>	<i>Easily angered by trivial causes</i>
<i>Plan/Organize</i>	7	<i>Does not plan ahead for school assignments</i>	<i>Do not prepare in advance school assignments</i>
	15	<i>Gets caught up in details and misses the big picture</i>	<i>Find details but skip the big picture</i>
	59	<i>Has trouble carrying out the actions needed to reach goals (saving money for special item, studying to get a good grade, etc.)</i>	<i>Difficulty taking actions needed to achieve goals (saving to buy the desired item, learning to get good grades, etc.)</i>
<i>Task monitor</i>	5	<i>Work is sloppy</i>	<i>Work is a mess</i>

Based on Table 2, the self monitor component contains the word 'stuck on'. According to the online Cambridge Dictionary, the word 'stuck on' means 'sangat tertarik'. The translator uses the word 'captivated' which means 'terpesona/terpikat'. Therefore the two words can be understood to have the same meaning. In the emotional control component there is the word 'outbursts'. According to the online Cambridge Dictionary, the word 'outbursts' means the emergence of strong emotional expressions, especially anger. The translator uses the word 'easily angered' which means 'mudah marah'. Therefore the two words can be understood to have the same meaning.

In the plan/organized item number 7 component there is the word 'plan ahead'. According to the online Cambridge Dictionary, the word 'plan ahead' means 'to plan in advance'. The translator uses the word 'prepare in advance' which means 'mempersiapkan terlebih dahulu'. Therefore the two words can be understood to have the same meaning. In the component plan/organized item number 15 there is the sentence 'Gets caught up in details and misses the big picture'. The sentence means 'mendapat rincian dan melewatkan gambaran besar'. The translator uses the phrase 'Find details but skip the big picture' which means 'menemukan detil tetapi melwatkan gambaran besar'. Therefore the two words can be understood to have the same meaning.

In the component plan/organized item number 59 there is the word 'carrying out the actions' which means doing activities. The translator uses the word 'taking actions' which means 'mengambil tindakan'. Therefore the two words can be understood to have the same meaning.

Next, on the task monitor component there is the word 'sloppy'. According to the online Cambridge Dictionary, the word 'sloppy' means 'kacau/berantakan'. Meanwhile, the translator uses the word 'mess' which means 'kacau'. Therefore the two words can be understood to have the same meaning

After the Indonesian version of the executive functions rating scale is completed, the next step is to conduct pretesting. The trial was conducted on seven kindergarten teachers to find out whether the instructions and items on the scale could be understood well by the respondents. The results show that the entire sentence of each item on the scale can be understood its meaning. The result is an Indonesian version of the executive functions rating scale which is ready to be tested on a large number of samples to determine the reliability and validity of the scale

Reliability and validity test results

The distribution of items on the Indonesian version of the executive functions assessment scale can be seen in Table 3.

Table 3. Distribution of the Indonesian version of the Executive Functions Rating Scale Items

Components	No item	Amount
<i>Inhibit</i>	1, 10, 16, 24, 30, 39, 48, 62	8
<i>Self monitor</i>	4, 13, 20, 26, 2, 11, 17, 31, 40, 49, 58, 60	12
<i>Emotional control</i>	6, 14, 22, 27, 34, 43, 51, 56	8
<i>Initiate</i>	9, 38, 50, 55, 61	5
<i>Working memory</i>	3, 12, 19, 25, 28, 32, 41, 46	8
<i>Plan/Organize</i>	7, 15, 23, 35, 44, 52, 57, 59	8
<i>Task Monitor</i>	5, 21, 29, 33, 42	5
<i>Organization of materials</i>	8, 37, 45, 47, 53, 63	6
Total		60

Based on Table 3, it can be seen the distribution of items from the eight components of the scale. From a total of 63 items, there is an Infrequency item component which consists of three items, namely items number 18, 36, and 54. These three items are used to determine the condition of children that should not normally occur. In the executive functions rating scale test, there are 60 items out of eight components, there are 56 items that have a reliability index above 0.300 with an index size of 0.319 to 0.739. The details of the reliable items are described in Table 4.

There are four items that have a reliability index below 0.300, among others, the item on the initiating item component number 9 with a correlation index of items with a total of 0.265, the working memory component item number 28, which is 0.288, the plan/organize component item number 23 which is 0.219 and item number 35 which is 0.166. Item number 9 says 'Bukan anak yang bisa memulai sesuatu sendiri'. Item number 28 reads 'Sulit mengingat, bahkan dalam beberapa menit saja'. Item number 23 reads 'Memiliki ide bagus tetapi tidak menyelesaikan pekerjaan (tidak memiliki tindak lanjut)'. Item number 35 reads 'Punya ide bagus tapi tidak bisa menuliskannya'.

Table 4. Indeks reliabilitas (Korelasi aitem dengan total) aitem skala penilaian executive functions versi Bahasa Indonesia setelah diujikan

Components	No Item	CITC	Amount of item
<i>Inhibit</i>	1, 10, 16, 24, 30, 39, 48, 62	0,547 - 0,794	8
<i>Self monitor</i>	4, 13, 20, 26, 2, 11, 17, 31, 40, 49, 58, 60	0,314 - 0,755	12
<i>Emotional control</i>	6, 14, 22, 27, 34, 43, 51, 56	0,516 - 0,713	8
<i>Initiate</i>	38, 50, 55, 61	0,319 - 0,698	4
<i>Working memory</i>	3, 12, 19, 25, 32, 41, 46	0,424 - 0,739	7
<i>Plan/Organize</i>	7, 15, 44, 52, 57, 59	0,416 - 0,735	6
<i>Task Monitor</i>	5, 21, 29, 33, 42	0,474 - 0,738	5
<i>Oganization of materials</i>	8, 37, 45, 47, 53, 63	0,344 - 0,682	6

CITC: corrected item-total correlation

In the item infrequency component, the correlation value of items with the total for item number 18 is 0.036, item number 36 is 0.318, while number 54 is 0.246. In item number 18, 86% of the subjects rated 'never'. In item number 36, 81% rate 'never'. Furthermore, in item number 54, 85% rate 'never'. The percentage where the child is assessed as 'never' is because these items are meant to see something that usually never happens to children. Item number 18 was written 'Lupa namanya sendiri'. Next item number 36 is 'Kesulitan menghitung sampai tiga'. While item number 54 reads 'Tidak bisa menemukan pintu depan rumah'.

Furthermore, the reliability value of the Indonesian version of the executive functions assessment scale itself tends to be high at 0.965, and is in line with research which shows that the reliability of the BRIEF 2nd scale is in the high category, which is 0.98 (Hendrickson & McCrimmon, 2018). The reliability value of each component of the executive functions rating scale also tends to be high, namely 0.701 to 0.899. Details of the reliability of the scale can be seen in Table 5.

Table 5. The results of the Alpha reliability coefficient on the Indonesian version of the executive functions rating scale

Components	Alpha reliability coefficient
Inhibit	0,889
Self monitor	0,848
Emotional control	0,899
Initiate	0,720
Working memory	0,822
Plan/Organize	0,701
Task Monitor	0,783
Oganization of materials	0,799

Furthermore, the correlation test between each of these components shows a high level of correlation between components. The highest correlation is between the inhibit component and the self monitor, which is 0.827. While the lowest correlation is between

the components of emotional control and organize, which is 0.492. More complete correlation test results between components can be seen in Table 6.

Table 6. Correlation test results between components

	Inh	SM	EC	Ini	WM	PI	TM	Or
Inh		,827**	,792**	,554**	,626**	,713**	,695**	,591**
SM			,729**	,701**	,669**	,813**	,809**	,791**
EC				,389**	,527**	,565**	,549**	,492**
Ini					,662**	,707**	,684**	,697**
WM						,589**	,705**	,572**
PI							,813**	,799**
TM								,731**
Or								

*Inh: inhibit; SF: self monitor; EC: emotional control; Ini: initiate; WM: working memory; PI: plan; TM: task monitor; Or: organize. **. Correlation is significant at the 0.01 level (2-tailed).*

Adaptation of executive functions assessment tools for preschoolers is necessary. This is due to the gap between research needs and the availability of measuring instruments in Indonesian. The researcher decided to adapt the executive functions measuring tool for preschool children, namely the Behavioral Rating Inventory Executive Functions (BRIEF) developed by Gioia et al. (2015). The stages and criteria for adaptation were adjusted according to the procedure for adapting the cross-cultural measuring instrument from Beaton et al. (2000). In general, the scale of the adapted version is capable of being translated and meets the equivalence of the scale of the original version.

One of the obstacles in the translation process of this scale is the existence of words in several items which are interpreted differently by the translators. There were 12 items that were translated differently by the two translators between items numbered 5, 7, 15, 17, 19, 21, 23, 35, 37, 38, 48, 63. The different translation items from the two translators were then synthesized. This is to look for similarities and differences until finally an agreed translation is obtained.

At the back translation stage, there are differences in sentences in 6 items, including numbers 5, 7, 14, 15, 17, 59. However, from the results of discussions with experts, including linguists, measurement experts, child development experts, and psychology lecturers who understands EF, it is known that there is an equivalence of meaning between the original scale and the scale that has been back translated into the original language (back translation). So, based on the results of the back translation process, it was concluded that the items on the executive functions assessment scale in Indonesian have the same meaning or meaning as those on the original version scale.

It is important to note that in adapting the language to the scale, it is also necessary to pay attention to the cultural context in which the scale will be used. If the item to be adapted turns out to be different from the environmental and cultural conditions in which the scale will be applied, then the item needs to be adapted to the local environmental and cultural conditions. Item changes are only limited to adjusting the context of the sentence to suit the environmental and cultural conditions in which the scale will be used. However, item changes still refer to indicators and the core purpose of the original item.

At the trial stage on seven kindergarten teachers, the results showed that all sentences from each item on the scale could be understood well. In testing the executive

functions rating scale with a larger sample, there are four items that have a reliability index below 0.300, including items numbered 9.23, 28, 35. These items are less reliable. This may be due to expressions that are difficult to understand by the rater to assess whether or not it is appropriate to the subject being assessed, so that improvements are needed for these items so that they are easier to understand later. Based on this analysis, it shows that language plays an important role in the existence of cultural differences.

The correlation test between each component shows a high degree of correlation between components. The highest correlation is on the inhibit component with self monitor. This may happen because inhibition itself is a child's ability to control impulses, control attention, behavior, thoughts, and/or emotions (Diamond, 2013). While self-monitoring is the ability of children to monitor, observe and evaluate their behavior. This is what allows these two components to be correlated because they both require the ability to control thoughts and behavior. This condition is in line with previous research which states that the top two components that have the highest correlation are inhibit and self-monitor (Amani et al., 2018).

While the lowest correlation is between the components of emotional control and organize. This may be because the subjects of this study were preschoolers. At that age they are still in the preoperational stage with egocentric characteristics and do not yet have a good ability to organize abstract things.

The adaptation of the executive functions assessment scale into Indonesian has been carried out according to the cross-cultural adaptation procedure of Beaton et al. (2000), however, the development of this measuring instrument still has limitations. This adapted scale still requires validation from other researchers so that this scale has a higher level of validity and reliability. Validity testing in the form of confirmatory factor analysis needs to be carried out in future studies, involving a larger sample of participants. The translation process can also involve more professional translators according to competency criteria in the field of language and executive functions, so that the results of scale adaptation are much more valid and reliable.

CONCLUSION

After going through several stages in the language and culture adaptation process as well as validity and reliability tests, it was found that 60 items out of eight components in the Indonesian version of the executive functions rating scale, there were 56 items that had a high total item correlation index, and 4 items had item correlation with low total. The reliability value of the scale is 0.965. This shows that the Indonesian version of the executive functions rating scale is reliable to use.

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