Early Child Development Questionnaire for 0-2 Years (ECD-Questionnaire)

Vidya Anindhita
Department of Development and Clinical Psychology
Faculty of Psychology Universitas Padjadjaran
Sumedang, Indonesia
vidya.anindhita@unpad.ac.id

Hendriati Agustiani
Department of Development and Clinical Psychology
Faculty of Psychology Universitas Padjadjaran
Sumedang, Indonesia
hendriati.agustiani@unpad.ac.id

Laila Qodariah
Department of Development and Clinical Psychology
Faculty of Psychology Universitas Padjadjaran
Sumedang, Indonesia
laila.qodariah@unpad.ac.id

Mutiara Amanah
Research and Development Division
SEAMEO CECCEP
Bandung, Indonesia
mutiara.amanah@seameo-ceccep.org

Syipa Husni Fadilah
Psychology Undergraduate Study Program
Faculty of Psychology Universitas Padjadjaran
Sumedang, Indonesia
husnifadilah.shf@gmail.com

Abstract*— Learning and development are in their most rapid period during the first 5 years. Early identification and detection of developmental aspects in infant and young children is essential to maximize the child's potential, and to detect developmental delays early, so that appropriate interventions can be given. Developmental screening tools used in Indonesia today are still translations of screening tools in other countries and there has been no testing regarding their validity and reliability. Therefore, this study aims to develop an Early Child Development Questionnaire for 0-2 Years (ECD-Q) that is suitable for Indonesian children as a source of developmental screening tools. In this research, the process of developing this ECD-Q for 0-2 years old has used the design of measuring instrument development by Cohen & Swerdlik (2009), which consists of a test conceptualization, test construction, test tryout, analysis and revision. The analysis carried out in testing the ECD-Q is the value of internal consistency testing (Cronbach's Alpha), validity testing using CVI, and item analysis testing. Based on trials conducted on 280 mothers with children aged 0-24 months (Age of Mother: M=20.42; SD=4.3 and Age of Children: M=11.3 months; SD=6.8 months). This ECD-Q is a valid instrument based on content validity by expert review. Gross motor, cognitive, and self-help skills are reliable, and most of the items are also valid and have good discriminatory power. Developmental aspects of fine motor skills and language are reliable and can still be sensitive to distinguish the abilities of children over 13 months. In this final version of the ECD-Q, items that have an I-CVI score below 0.8 and have an item-total correlation of below 0.1 are deleted because they are considered less sensitive to distinguish children's abilities. Based on this ECD-Q trial, we recommend further research to increase the number of samples so that they can better represent the condition of children in Indonesia. The results of large-scale trials can be continued to establish group norms from this ECD-Q. A test-retest test would also be very good to see the consistency of this measuring instrument.

Keywords: child development, ECD-Q, psychometric properties, screening tools, test conceptualization

I. INTRODUCTION

In the clinical setting, children commonly present for an evaluation of developmental domains are often accompanied by anxious parents wondering if their child is "normal." Development usually is categorized into the domains of language, fine motor, gross motor, personal-social, and cognitive. Delays can occur in one or any combination of these domains (Kimmel & Ratliff-Schaub, 2012). A thorough understanding of what differentiates normal from abnormal is necessary to diagnose developmental disorder and to advise in a proficient way. Evaluation may lead to any number of outcomes: diagnosis, recommendations for intervention or additional observation, or assurance that there is no disorder (Edwards & Sarwark, 2005; Guevara et al., 2012).

Early identification and detection of developmental aspects in infant and young children is, therefore, essential to maximize the child's potential for positive developmental and functional outcomes. Learning and development are in their most rapid period during the first 5 years. Early identification takes advantage of this critical developmental period and provides a window of opportunity to maximize the benefits of early intervention programs (Edwards & Sarwark, 2005; Jackson, et. al., 2012; Cardoso et.al, 2010; Warren et al, 2016). In addition to helping the child, early intervention can be a positive experience for the parents. Authors of some studies have shown that early intervention can strengthen the relationship between the parent and child and can raise the parents' confidence in their ability to care for the child outside of therapy. Early intervention also serves to help the parents feel as if they are doing everything they can to enhance the child's life (Edwards & Sarwark, 2005).

The most accurate assessments of development involve monitoring the child's behavior and performance with time. Evaluation of development is aided by the use of several screening instruments. As child development is dynamic, screening tools have been developed to detect emerging disabilities in children with a multifocal approach that assesses language, fine motor, gross motor, cognitive, and adaptive behaviors. Developmental screening is used to identify children who should receive a more intensive assessment or intervention. To facilitate this process, it is important not only from primary care physicians, neuropediatric, but having both the parent and other caregiver (grandparent, babysitter, child daycare, teacher in play school) complete a screening questionnaire again may provide a common base from which to discuss problem areas and highlight children's differences and similarities in behaviors across settings (Edwards & Sarwark, 2005; Bricker & Squires, 1989; Cardoso, et al, 2010).

Longitudinal evaluation of children's growth and development consists of observing and monitoring the attainment of specific age-appropriate milestones (e.g., cognitive, speech/language, motor) in order to determine if children are on target with their overall development (Cardoso et.al, 2010). Milestones should be extracted from the developmental history as well as from observations during examination. It is important to keep in mind that for each milestone, there is a range of ages during which a child will usually meet it (Edwards & Sarwark, 2005).

An estimated 15% of children in the United States have at least one developmental delay, yet less than one-fifth of those children receive early intervention services before three years of age (Vitrikas et al., 2017). It is also known that 1% - 3% of the population of children under 5 years have global developmental delay or GDD (Mithyantha, et al., 2017; Diemer et al., 2020). In Indonesia, data on the number of GDD in children are not known with certainty, but IDAI estimates that around 1-3% of children under the age of 5 years experience general developmental delays (Medise, 2013).

Several studies show that parental reports of a child's current skills are predictive of developmental delay (Edwards & Sarwark, 2005; Squires, 1998; Cardoso et al, 2010). The participation of parents, guardians, and other caregivers in their children's care is important to the development of young children, especially parents' involvement in child care and, consequently, in monitoring child

development. The inter-relationships among parents/ caregivers and professionals was made evident, as well as the importance of communication among nurses, other health professionals, and the parents or caregivers, and also parents' communication with their infants (Cardoso et al, 2010). Although screening tools for use by parents clearly address the cost criteria, a general concern has been raised about parental ability to reliably and accurately assess their children's developmental status. An associated concern has been whether accurate assessment of child behavior is dependent on parents having certain characteristics, such as knowledge, educational background, and their ability to observe accurately (Bricker & Squires, 1989).

In Indonesia, there is already a developmental screening program in health facilities, namely SDIDTK (Stimulation, Detection, and Early Intervention on Growth and Development). Monitoring of child development and early detection of developmental delays is carried out by measuring weight, monitoring maternal and child health, screening child development, and hearing and vision tests (Bahan Ajar Kesehatan Ibu Anak, 2015). Efforts to carry out comprehensive early detection of developmental aspects are carried out using the KPSP (Development Pre-Screening Questionnaire) which was adapted from the Denver Development Screening Test (DDST) in 1967. Another developmental screening tool that is often used by child development professionals in Indonesia is the Vineland Social Maturity Scale (VSMS), and Denver II which has been translated into Indonesian. The comparison of measuring tools can be seen in Table 1 below.

Table 1 The comparison of child development screening measuring tools used in Indonesia

Developmental Screening Tools	Description
Denver Developmental Screening Test	A global test used to screen fine motor, gross motor, personal skills, and social skills for children up to 6 years. This questionnaire can be completed in just a few minutes and can be used to help identify children who should be referred for further evaluation
Vineland Social Maturity Scale	The VSMS consists of 117 items grouped into 9 categories, namely Self-help general (SHG), Self-help eating (SHE), Self-help dressing (SHD), Self-direction (SD), Occupation (O), Communication (C).), Locomotion (L), and Socialization (S). Items are arranged in order of abilities that a person can master according to their age. The main purpose of each item is to represent a particular aspect of the ability to look after one's own practical needs. VSMS was meant to measure maturation in social independence or social competence from infant to young adult, i.e. from age '0 to 25+'.
The Bayley Scales of Infant and Toddler Development, Third Edition (BSID-III)	It provides an assessment that differentiates the areas of concern by domain (i.e, cognitive, language, fine, and gross motor). The BSID-III Screening Test can be administered by any member of a transdisciplinary team who has experience and training in assessment and test interpretation and experience with young children born through 3.
Kuesioner Pra-Skrining Perkembangan (KPSP)	KPSP is a tool used for early detection of child developments recommended in the Regulation of the Minister of Health of the Republic of Indonesia No. 66 of 2014 (PMK RI No. 66, 2014). This form contains 9–10 questions about the developmental abilities the child has achieved. KPSP can be used for children aged 0–72 months.

Unfortunately, KPSP has not been able to fully detect developmental delays in children, as described in a study conducted by Dhamayanti (2016) on 494 children aged 15-18 months in Puskesmas Padasuka, Kiara Condong and Garuda, showed the use of KPSP can cause underdetection in screening developmental delay. As far as the researcher observes, there are no studies that measure the validity

and reliability of the KPSP screening tool. Developmental screening tools used in Indonesia today are still translations of screening tools in other countries and there has been no testing regarding their validity and reliability, even though sociocultural factors are very important for child development (Santrock, 2018), with repeated intervals, can improve early detection (Vitrikas, et.al, 2017). Developmental screening tools developed in accordance with social and cultural characteristics in Indonesia have the opportunity to have good validity and reliability so that they can more accurately measure development and detect developmental delays in Indonesian children. It is hoped that measuring instruments will also be available for use by parents as the first observer for child development. Thus this research aims to:

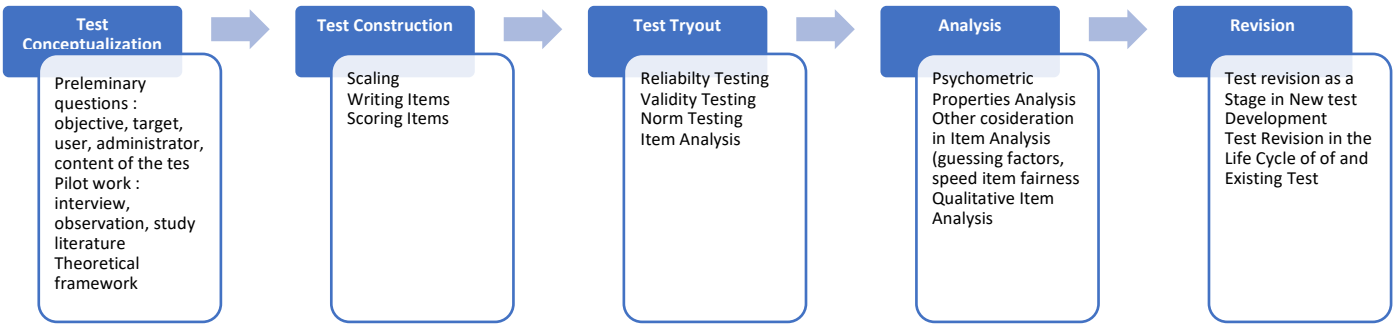
1. Develop an Early Child Development Questionnaire for 0-2 Years (ECD Questionnaire) that is suitable for Indonesian children
2. Testing psychometric properties on the ECD Questionnaire

II. METHODS

I.1 Research design

In this research, the process of developing this ECD Questionnaire for 0-2 years old has used the design of measuring instrument development by Cohen & Swerdlik (2009), as illustrated in Figure 1.

Figure 1. Design properties stages Cohen & Swerdlik (2009)



I.1.1 Test conceptualization

In this stage, the researcher conducted a literature study and developed a research framework. The contents of the literature study include: developmental psychology of children aged 0-2 years, aspects of development for children aged 0-2 years, developmental milestones for each aspect of children aged 0-2 years, critical period and sensitivity period for every aspect of child development aged 0- 2 years, developmental test kits that already exist globally, and developmental test kits that already exist in Indonesia.

I.1.2 Test construction

At this stage the researcher begins to make instrument items based on the objectives, content, and literature studies that have been carried out at the conceptualization test stage. Furthermore, at this stage, the researcher also reviews the instrument items with the panelists in the group of research members and expert reviewers.

1. Scaling : determining the scaling, types of scale, and scaling methods
2. Writing Items : a.) arrange the blueprint of the instrumen, determine the variables, aspects, indicators, conceptual and operational definition. b.) create and arrange the items
3. Administration and Scoring : determining how the instrument will be administered, example : online, offline, etc and how it will be scored.

4. Review : The relevance, the importance, and the clarity of the items were reviewed by experienced child clinical psychologists. The results were analyzed by using Content Validity Index.
5. Revision, deletion, selecting item : We used a discussion method at this stage. Each item is characterized according to its strengths and weaknesses. Items found to have many weaknesses are considered as items to be removed or revised.

I.1.3 Cognitive interview

Cognitive interviews were conducted on mothers with children aged 0-24 months. The interviews were conducted using the think out loud test administration test by online meeting in order to get input, criticism, and suggestions for the instrument developed. Content of the interview include:

- Comprehension (participants' understanding about the content item)
- Retrieval (participants' thought about the content)
- Judgment (participants' steadiness about the content)
- Response (participants' feeling while reading the item)
- General impression about the instrument
- Duration to complete the instrument
- Evaluation of the duration to complete the task

The results of the cognitive interview are input and discussed again in the research team. Some items that were quite difficult for respondents to understand were corrected. Improvements to items include adding visual examples, replacing words with words that are often used by respondents, adding indicators of ability, and changing sentence structure. The results of this improvement were transferred to the google form for testing.

I.1.4 Test try out

At this stage, we conduct trials of the instrument from cognitive interview. Survey methods were carried out on mothers in Indonesia who had similar characteristics with mothers who will be the user of the instrument. In this stage, the instrument that has been revised is tested in google from.

I.1.5 Analysis

This study using Psychometric Properties Analysis includes reliability testing using the value of internal consistency testing (Cronbach's Alpha), validity testing using CVI, and item analysis testing.

1. Reliability Testing
   Internal consistency analysis was done by calculating Cronbach's Alpha coefficient for the overall scale and each scale. The criteria that are used to determine the level of reliability are Helmstadler Criteria, 1964 (in Friedenberg, 1955). The criteria are <0.47 = Poor / Less reliable; 0.47-0.79 = Moderate / quite reliable; 0.80-0.98 = Good / reliable.

2. Validity Testing
   Validity based on content-related evidence is carried out through the assessment of three experts in child development. The expert assessment results were then calculated into a scale's content validity (CVI). A CVI value in the study was calculated in two ways, namely (1) computed for each item on a scale (which we refer to as I-CVI) as well as for the (2) overall scale (which we call an S-CVI). Items with an I-CVI lower than .78 would be considered candidates for revision, and those with very low values would be candidates for deletion. Polit et al. (2007) recommend that for a scale to be judged as having excellent content validity, it would be composed of items that had I-CVIs of .78 or higher and an S-CVI/Average of .90 or higher (Polit, Beck, & Owen, 2007).

3. Item Analysis Testing

Item analysis is a process to assess the quality of those items and of the test as a whole. Item analysis is especially valuable in improving items which will be used again in later tests, but it can also be used to eliminate ambiguous or misleading items in a single test administration. In this research we used item discrimination index to compare item responses to total test scores using high and low scoring groups of mothers. provides an estimate of the degree to which an individual item is measuring the same thing as the rest of the items. Items with low discrimination indices are often ambiguously worded and should be examined. Items with negative indices should be examined to determine why a negative value was obtained. In practice, values of the discrimination index will seldom exceed .50 because of the differing shapes of item and total score distributions. Based on several statistic software classifies item discrimination as "good" if the index is above .30; "fair" if it is between .10 and.30; and "poor" if it is below .10.

I.2 Research participant

I.2.1 Cognitive interview

The participants are 10 parents who have been selected by convenience sampling based on the children's age group. The criteria of cognitive interview participants are mothers who a) have children aged 0-2 years and not having problems in prenatal, post natal, and developmental delays, b) have no psychology background, and c) familiar with google from. As seen in Table 2, the participants in this cognitive interview were 10 mothers with children aged 0-24 months, which were divided into 5 categories of child age. This group of participants is dominated by full-time working mothers.

Table 2 Demographic characteristics for cognitive interview (N=10)

Characteristic	Min-Max	Mean (SD)
Age of Mother	27-36 years	31.20 (2.94)
Age of Children	1-20 months	10.10 (5.86)
Characteristics		**n (%)**
Mother's Education		
Diploma		4 (40)
Bachelor		4 (40)
Postgraduate (S2/S3/Specialist)		2 (20)
Mother's Work Status		
Not Working		3 (30)
Working Part Time		1 (10)
Working Full Time		6 (60)
Gender of Children		
Male		5 (50)
Female		5 (50)
Children's Age		
0 – 4 Months		2 (20)
5 – 8 Months		2 (20)
9 – 12 Months		2 (20)
13 – 18 Months		2 (20)
19 – 24 Months		2 (20)

I.2.2 Try out

The pilot testing was carried out through direct observation of the parents to their children. The characteristics of the participants are mothers who a) have children aged 0-2 years, b) have no problems in pregnancy, childbirth, or 3 months after the childbirth, and c) the child have no developmental delay. The participants were divided into 5 age groups. The sampling technique uses

a quota sampling technique where the researcher determines the desired sample, so that the results are quite proportional.

I.3 Procedures

Ethical clearance was obtained from the Universitas Padjadjaran Ethical Committee (No. 839/UN6.KEP/EC/2021). Data collection was performed from October 15 to November 3, 2021, by using Google Forms. The research team shared the survey link through their networks, social media, instant messenger applications, and other means of communication to the target respondents who match the sample criteria. Informed consent was obtained from all respondents included in the study before they completed the online questionnaires.

III. RESULTS AND DISCUSSION

III.1 *Results*

III.1.1 *Socio demographic of participants*

The majority of participants were not single mothers (70%). Participants' education is dominated by higher education graduates (55%). Meanwhile, the participants' jobs are fairly evenly distributed, starting from housewives, working part-time, and working full-time. For economic conditions, participants are more dominated by high SES/can save (56.1%) and can meet their needs. The majority of participants live on the island of Java (67.9%). The 0-24 month age group with male and female sex has a balanced proportion. This age group is divided into 5 age categories which also have fairly balanced proportions.

Table 3 Demographic characteristic of pilot testing (N=280)

Characteristic	Min-Max	Mean (SD)
Age of Mother	20-46 years	30.42 (4.434)
Age of Youngest Child	0-24 months	11.30 (6.775)
Age of Oldest Child	0-216 months	46.49 (47.581)
Age of Children	0-24 months	11.75 (6.832)
Characteristics		**n (%)**
Mother's Status		
Not Single Parent		196 (70.0)
Single Parent		84 (30.0)
Number of Children		
1		127 (45.4)
2		93 (33.2)
3		42 (15.0)
4-6		18 (6.4)
Mother's Education		
Senior High School		42 (15.0)
Diploma		27 (9.6)
Bachelor		154 (55.0)
Postgraduate (S2/S3/Specialist)		57 (20.4)
Mother's Work Status		
Not Working (Housewife)		109 (38.9)
Working Part Time		82 (29.3)
Working Full Time		89 (31.8)
Family's economic condition		
Low		24 (8.6)
Middle		99 (35.4)
High		157 (56.1)

Location of Residence	
Sumatra Island	34 (12.1)
Java Island	190 (67.9)
Bali Island	43 (15.4)
Others (Kalimantan, Sulawesi, Nusa Tenggara, Kepulauan Riau)	13 (4.6)
Gender of Children	
Male	146 (52.1)
Female	134 (47.9)
Usia Anak	
0 – 4 Months	50 (17.9)
5 – 8 Months	52 (18.6)
9 – 12 Months	52 (18.6)
13 – 18 Months	65 (23.2)
19 – 24 Months	61 (21.8)

III.1.2 *Reliability and validity analysis*

Table 3 Demographic characteristic of pilot testing (N=280)

Developmental Aspect	Total Item	Validity (S-CVI)			Reliability (Cronbach's Alpha)
		Relevance	Important	Clarity	
0-4 months					
Gross Motor	9	1.00	1.00	0.96	0.798
Fine Motor	1	1.00	1.00	0.67	
Language	2	1.00	1.00	1.00	0.320
Socio-emotional	3	1.00	1.00	1.00	0.310
5-8 months					
Gross Motor	7	1.00	1.00	1.00	0.494
Fine Motor	11	1.00	1.00	1.00	0.598
Language	2	1.00	1.00	1.00	5.107E-15
Socio-emotional	6	1.00	1.00	1.00	0.156
9-12 months					
Gross Motor	10	1.00	1.00	1.00	0.450
Fine Motor	7	1.00	1.00	0.95	0.724
Language	3	1.00	1.00	1.00	0.100
Socio-emotional	12	0.89	0.89	0.97	0.203
13-18 months					
Gross Motor	9	0.83	0.90	0.83	0.659
Fine Motor	7	0.95	0.95	0.81	0.603
Cognitive	5	0.87	0.93	0.87	0.442
Language	8	0.96	1.00	0.92	0.732
Socio-emotional	7	0.95	0.90	0.95	0.124
Self-Help	10	0.83	0.90	0.83	0.727
19-24 months					
Gross Motor	20	0.92	0.90	0.90	0.639
Fine Motor	12	0.94	0.94	0.89	0.378
Cognitive	11	1.00	1.00	0.97	0.741
Language	9	0.81	0.85	0.89	0.829
Socio-emotional	12	1.00	1.00	0.89	0.580
Self-Help	9	0.85	0.93	0.85	0.632

Table 4 shows the range of CVI scores from all aspects of development in 5 groups of children aged 0-24 months ranging from 0.67-1.00. This score range indicates that the instrument is classified as valid (Polit, Beck, & Owen, 2007). In the 0-4 months age group, the reliability of language development and socio-emotional aspects is in the range of 0.310-0.320 which indicates low

reliability (Friedenberg, 1955). As for the aspect of gross motor development, the reliability is classified as moderate. In the 5-8 months age group, only the socio-emotional development aspect showed low reliability (0.156). For other aspects of development, namely gross motor, fine motor, and language, it is in the range of 0.494-0.598 which indicates moderate reliability. In the age group of 9-12 months, the aspects of fine motor development showed moderate reliability. However, the gross motor, language, and socio-emotional aspects show a relatively low reliability, which is in the range of 0.1-0.45. In the age group of 13-18 months, the reliability of cognitive and socio-emotional development aspects is in the range of 0.124-0.442 which indicates a relatively low reliability. Cronbach's alpha score on other aspects of development is in the range of 0.603-0.732 which indicates moderate reliability. In the 19-24 months age group, almost all aspects of development are in the range of 0.58-0.741, which indicates moderate reliability. The language development aspect has a Cronbach's alpha score of 0.829 which indicates good reliability. Only the fine motor development aspect shows a relatively low reliability (0.378).

III.1.3 *Item analysis*

The results of the item analysis for each developmental aspect of the five age groups can be seen in Appendix A. Items that require revision or removal are marked in red.

ECD-Q for 0-4 months age group has one item with negative index (SE.3), therefore it will be removed. Items MK1, MK9, B1, B2, SE1, dan SE4 have fair discrimination index, while the other items have a good item discrimination index. Two items have an I-CVI value of 0.67 on the clarity area, item MK1 and MH1 and have been corrected. The other items have an I-CVI value of 1.00 both on the relevance of the item with developmental aspect (relevance area), the importance of the item in assessing developmental aspect (importance area), and the clarity of the item's writing (clarity area). This can prove that the items on the ECD-Q for 0-4 months age group is valid.

ECD-Q for 5 – 8 months has one item with a negative index (SE.6), therefore this item will be deleted. There are also 13 items with poor discrimination index that must be revised, e.g. items MK1, MK3, MK4, MH1, MH2, MH4, MH9, MH10, B1, B2, SE1, SE2, and SE4. The other 12 items had fair and good item discrimination index. Each item on the ECD-Q instrument for 5 – 8 months has an I-CVI value of 1.00 both on the relevance of the item with developmental aspect (relevance), the importance of the item in assessing developmental aspects (importance), and the clarity of the item's writing (clarity). This can prove that the items on the ECD-Q for the 5-8 months age group is valid.

ECD-Q for 9 – 12 months has three items with negative index (B3, SE9, and SE1), therefore these items will be deleted. There are also 10 items with poor discrimination index that must be revised, e.g. item MK1, MK3, MK4, MK5, MH2, B1, SE2, SE6, SE8, and SE10 items. The other 19 items had fair and good discrimination index. There are three items that have an I-CVI value of 0.67 (MH4, SE10, and SE11), and one item that has an I-CVI value of 0.33 (namely SE9). All four items have been revised. The other items have an I-CVI value of 1.00 both on the relevance of the item with the developmental aspect (relevance), the importance of the item in assessing developmental aspects (importance), and the clarity of the item's writing (clarity). This can prove that the items on the ECD-Q for the 9-12 months age group is valid.

ECD-Q for 13 – 18 months has one item with negative index (SE1), therefore that item will be deleted. There are also 10 items with poor discrimination index (MK1, MK2, MH1, MH5, MH7, B5, SE2, SE3, SE4, and SE5) and need to be revised; while the other 35 items had fair and good discrimination index. There are 17 items that have an I-CVI value <1.00, and all 17 items have been revised. The other items have an I-CVI value of 1.00 both on the relevance of the item with the developmental aspect (relevance), the importance of the item in assessing developmental aspects (importance), and the clarity of the item's writing (clarity). This can prove that the items on the ECD-Q 13-18 months age group is valid.

ECD-Q for 19 – 24 months has one item with a negative index (SE1), therefore this item will be deleted. There are also 24 items with poor discrimination index, e.g. MK1, MK2, MK3, MK6, MK7, MK8, MK9, MK14, MK19, MK20, MH2, MH3, MH4, MH5, MH6, MH7, MH12, K10, SE4, SE5, SE8, BD5, BD6, and BD7, and that need to be revised; while the other 49 items had fair and good discrimination index. There are 28 items that have an I-CVI value of < 1.00, and have been corrected. The other items have an I-CVI value of 1.00 both on the relevance of the item with the developmental aspect (relevance), the importance of the item in assessing developmental aspects (importance), and the clarity of the item's writing (clarity). This can prove that the items on the ECD-Q 19-24 months age group is valid.

III.2 *Discussion*

In general, if we review the reliability of this instrument, the gross motor aspect both at infancy age and older children (13-18 months and 19-24 months) is quite reliable. As a screening tool of child development, the gross motor aspect should have good reliability. Assessing healthy development begins with taking an accurate patient history and doing a physical examination. Determining motor development regression versus progress is important information. If uncertain, or if a developmental plateau is noted, a repeat clinical exam is necessary to clarify. When assessing motor development in the infant and child, there are five essential areas of focus: (1) motor milestones, (2) the classic neurological examination, (3) primitive reflex and postural reaction patterns, (4) change in neurological and functional status with time, and (5) other evidence supporting neurological dysfunction or injury (Edwards & Sarwark, 2005). Thus the items on the gross motor aspect are reliable enough to be used as a valid source from parents to support examinations by experts or doctors regarding child development.

This is also in line with the experts who state that the items on the gross motor aspect are valid in terms of relevance to the concept, important, and are said to be clear enough to understand. However, it is necessary to pay attention to aspects that have a low discrimination index value to be reviewed in terms of item clarity, such as: MK 9. Each arm and leg moves easily when he is supine (0-4 months); MK10. Each arm and leg moves easily when he is supine (5-8 months). according to the findings in the cognitive interview that these items are still abstract and difficult for mothers to imagine. While items like Roll over (one way); Look left and right; crawl; stand up; and running were less able to describe the difference between groups of children who had mastered or not, this item became less sensitive to indicate a delay in gross motor development.

Fine motor skills are the use of small muscles involved in movements that require the functioning of the extremities to manipulate objects (Gallahue & Ozmun, 2006). Fine motor skills play a role in many activities of daily life such as dressing and feeding oneself, in addition to being essential in writing and drawing (Cools et al., 2009; Summers et al., 2008). Therefore, separate observations for aspects of fine motor skills are not easy because this aspect is closely related to children's daily activities. Aspects of fine motor skills will be more easily observed in children over the age of 18 months (Kapaun, 2007)

In this study, the fine motor aspect can still be said to be reliable enough to be used over the age of 9 months, but it is necessary to reconsider the items that lack discriminant power to be revised or deleted because they are less sensitive to distinguish children who are able and unable to do it at that age. As in the case of locomotor development, proficiency in eye coordination, reaching and manipulating, and vocalization could be measured only in descriptive terms. The only way of deciding that the item "eyes follow tape swung in a circle" represented a higher degree of skill than "watch person" was to compare the ages of appearance of the two reactions. Manipulatory skill in the period from 26 to 49 weeks was somewhat overshadowed by the richness of gross motor development; during this time appeared such reactions as sitting alone, creeping, climbing to stand, and walking with help. This can make it difficult for parents to make clear observations on aspects of fine motor skills rather than gross motor skills.

In the aspect of language development, the development of early vocalizations seems to be difficult for parents to observe. Items in the language aspect begin to look more reliable at the age of 13 months, where the appearance of the first word is easier to observe. So that aspects of early vocalization such as crying, laughing, and babbling are not considered important by parents as markers of children's language development milestones. The appearance of the first words such as "ma-ma" or "pa-pa" became a more significant marker for early childhood language development. Non-verbal language, such as gestures, is also not a sensitive marker of children's language development based on parents' reports. Items related to verbal language, such as the first word, sentence formation, number of vocabulary items are items that are quite good in distinguishing children's language skills with an average discriminant index score above 0.3.

The infant's first spoken word is a milestone eagerly anticipated by every parent. This event usually occurs between 10 and 15 months of age and at an average age of about 13 months. However, long before babies say their first words, they have been communicating with their parents, often by gesturing and using their own special sounds. The appearance of first words is a continuation of this communication process (Santrock, 2017; Owen, 2008).

In this ECD-Q measurement, in general, this aspect of social emotion is more reliable for screening children over the age of 18 months. Based on item analysis, there are several items that have a negative correlation with the total score, so it would be better if these items were deleted, while maintaining items that have good discriminant power to enhance the reliability score.

Emotional expression is involved in infants' first relationships. The ability of infants to communicate emotions permits coordinated interactions with their caregivers and the beginning of an emotional bond between them (Easterbrooks et al., 2013; Thompson et al., 2013). In other words, these interactions are mutually regulated (Bridgett et al., 2009). Cries and smiles are two emotional expressions that infants display when interacting with parents. These are babies' first forms of emotional communication. The infant's social smile can have a powerful impact on caregivers (Bates et al., 2008). This can also be seen in items related to children's ability to smile reciprocally with social context, which are sensitive items to distinguish children's social skills. Following weeks of endless demands, fatigue, and little reinforcement, an infant starts smiling at them and all of the caregivers' efforts are rewarded (Santrock, 2017).

The social-emotional aspect is closely related to social competence and children's ability to regulate their emotions in a social environment, this becomes easier to observe when children are in a social situation (Santrock, 2017). Positive items become easier for parents to observe and become sensitive enough to show social-emotional skills in young children, as in items 19-24 months related to SE 3. Willing to be asked for help to get something; SE 10. Tells her desire to eat, drink, go to the toilet; SE 11. Shows desire without crying or whining; and SE 12. Play with other children. While the items with a negative tone are not sensitive to distinguish children's social-emotional skills. This is in line with the opinion of Jones et al (2016) in his literature review study that they identified a significant challenge that emotion understanding may be difficult for a teacher or parent to describe or rate, as it does not involve observation of behavior. They also address the lack of comprehensive coverage of the subdomains of social and emotional development and differences in the quality and reliability of data collected from parents vs. teachers vs. direct child observation (Jones et al., 2016)

On the ECD-Q instrument, the items of aspects of cognitive ability can be found in the age group above 12 months. Based on item analysis, almost all of the items on the 12-18 months age group and also 19-24 months age group have positive correlation with total score. There is only one item in the group 19-24 months, K.10 knowing the end of an activity, indicated by saying "thank you," "bye", "everyone has gone", etc; has correlation 0.001 so it would be better if this item were deleted.

Cognitive development is the ability to problem solve through intuition, perception and verbal and non-verbal reasoning. This ability helps children to retain information learned and understood and to apply it when needed (Rydz, 2005). Cognitive phenomena cannot be observed directly, which makes monitoring changes even more complex. However, we can directly observe their external products: language, memory, or reasoning (Escolano-Pérez et al, 2010).

In 0-24 months, children construct an understanding of their world by coordinating sensory experiences with physical, motoric action. It begins with simple reflexes and by the end of the sensorimotor stage, 2-year-olds can produce complex sensorimotor patterns and use primitive symbols (Santrock, 2020). This major growth in these aspects represents the transition from infancy to childhood (Dosman et.al, 2012).

Clearly information from multiple sources (e.g. systematic observation, parent or caregiver interview), multiple tests, and a multidisciplinary assessment approach is necessary when we measure cognitive aspects (Bradley-Johnson, 2001). As stated above, we can observe the product of children's information processing especially when children do some tasks, such as playing, or when interacting with their caregivers. As seen in all cognitive items (K1-K5) in the 13-18 months age group that show children's behavior in play settings. All of these items have a positive correlation with the total score. Items in the 19-24 months age group show the children's behavior during activities and when interacting with their caregivers. All of the items (K1-K11) have positive correlation with total score, except item K10. We conclude that positive items in the form of children's behavior in an interaction setting will make it easier for parents to fill out the instrument.

Items for self-help aspects can be found in the 13-18 months and 19-24 months age group in ECD-Q instruments. Based on item analysis, all of the items of self-help aspect in the 12-18 months age group and almost all of the items in the 19-24 months age group have positive correlation with total score. There is only two item in the group 19-24 months, BD.5 "trying to feeding himself using the spoon, it's okay if it still spills" and BD.6 "give an empty cup or plate to an adult after he finishes eating or ask for more" has correlation below 0.1 so it would be better if this item were deleted.

Self-care or self-help skills are the child's ability to care for himself or herself in the daily routine as needed. This skill is part of adaptive behavior. Adaptive behavior is defined as behavior that has been learned and is performed to meet society's expectation across living settings, including the home, school, work, and other community settings (Schalock et al., 2010 in Tasse, 2017). The three adaptive behavior skill areas have been defined as follows: (1) conceptual skills consist of communication skills, functional academics, and self-direction; (2) social skills consist of interpersonal skills, social responsibility, following rules, self-esteem, and avoiding victimization; and (3) practical skills consist of basic personal care skills such as hygiene, domestic skills, health and safety as well as work skills (Tasse, 2017). The tasks or activities encompassed by adaptive behavior (and, plausibly social competence) as in infancy and early childhood: sensorimotor development, communication skills, self-help skills, socialization, and interaction with others (Grossman, 1983 in Reschly et al., 2002).

In the age group of 13-18 months, the moment when infants can feed themselves becomes a significant marker for self-help skills. Most infants can feed themselves with food held in their hands by the age of eight months. They will begin to try to feed themselves from a spoon without spilling between eight months and two years. Most infants can feed themselves from a spoon quite well at about 15 - 18 months (Carruth, 2004). Items related to feeding such as drinking, chewing, and trying to scoop food from a plate are items that are quite good in distinguishing children's self-help skills with an average discriminant index score above 0.3.

In the age group of 19-24 months, infant's dressing activity becomes a significant marker for self-help skills, while feeding themselves or toilet activity is not a significant marker based on parents' reports. Dressing is a fundamental independent living skill that uses visual-fine motor skills. In the

typically developing context, the age and stage expected to achieve independent dressing skills remains unclear. Ideally, independent dressing is a skill to be mastered by all children before entering primary school, however this is largely anecdotal as published literature is lacking (Hayton, Wall, & Dimitriou, 2019). We found that items related to dressing such as put on/off hat, take off socks, put on shoes by themselves, and open/close the large zipper are items that are good in distinguishing children's self-help skills with an average discriminant index score above 0.3. In this age group the focus of self-help in the dressing area is trying to undress or take off the hat, socks, pants. This is in line with the opinion of Tasse (2017) that adaptive behavior is indexed on chronological age because as a society, we have different expectations of all members of our community as they age. As the children grow, they become more capable in dressing and undressing themselves.

Observing the development of infants under 2 years of age is indeed a difficult thing to do, especially if stimulation or examination is needed in infants and infants are less cooperative, so that observations are only seen in general and cannot see the quality of motor movement. After the age of 2 or 3 years, the child becomes more cooperative and the examination becomes easier and more meaningful, although observational skills are still important (Edwards & Sarwark, 2005). The participation of parents, guardians, and other caregivers in their children's care is important to the development of young children. A childhood is portrayed as living together with adults as dependent for care and support in many aspects of life. As a result of carrying out these studies, we observed the importance of parents' involvement in child care and, consequently, in monitoring child development. Therefore, we see that it is very important for parents to be sensitive to every detailed and specific change in children's behavior that shows the developmental milestones of children in all aspects, including gross motor skills, fine motor skills, language, cognitive, as well as social and emotional, as well as self-help skills.

Finally, the cost of using the questionnaires is modest when compared with other tracking systems or the use of standardized measures for screening purposes. Therefore, the questionnaires provide a cost effective strategy for screening large numbers of at-risk infants. The information collected on the questionnaires is encouraging both in terms of many parents' ability to accurately monitor their infant's development and in the psychometric soundness of the questionnaires. The 0-4-month questionnaire is the most problematic. These data suggest that monitoring of infants is not enough just from parents or significant persons at home, but needs to be monitored by experts, such as pediatricians, neurologists, or child development experts.

IV. CONCLUSION AND RECOMMENDATION

Development usually is categorized into the domains of language, fine motor, gross motor, personal-social, and cognitive. Delays can occur in one or any combination of these domains (Kimmel & Ratliff-Schaub, 2012). Early identification and detection of gross motor and cognitive delays in infant and young children is, therefore, essential to maximize the child's potential for positive developmental and functional outcomes. In general, this ECD-Q is a valid instrument based on content validity by expert review. Gross motor, cognitive, and self-help skills are reliable, and most of the items are also valid and have good discriminatory power. Developmental aspects of fine motor skills and language are reliable and can still be sensitive to distinguish the abilities of children over 13 months. In this final version of the ECD-Q, items that have an I-CVI score below 0.8 and have an item-total correlation of below 0.1 are deleted because they are considered less sensitive to distinguish children's abilities, while taking into account that there are still other items that are still adequate and important in every aspect.

Observing the development of infants under 2 years of age is indeed a difficult thing to do, therefore, we see that it is very important for parents to be sensitive to every detailed and specific change in children's behavior that shows the developmental milestones of children in all aspects. We also

suggest that in the process of screening or detecting growth and development of children aged 0-24 months it can not only be done by parents, but also by other significant persons involved in child care such as caregiver or grandparent, and by other professionals, such as midwives, pediatrics, and child development experts. Based on this ECD-Q trial, we recommend further research to increase the number of samples so that they can better represent the condition of children in Indonesia. The results of large-scale trials can be continued to establish group norms from this ECD-Q. A test-retest test would also be very good to see the consistency of this measuring instrument.

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REFERENCES

Bates, J. E., Goodnight, J. A., & Fite, J. E. (2008). Temperament and emotion. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotions* (pp. 485–496). The Guilford Press.

Bradley-Johnson, S. (2001). Cognitive assessment for the youngest children: A critical review of tests. *Journal of Psychoeducational Assessment, 19*(1), 19–44. https://doi.org/10.1177/073428290101900102

Bricker, D., & Squires, J. (1989). The Effectiveness of Parental Screening of At-Risk Infants: The Infant Monitoring Questionnaires. *Topics in Early Childhood Special Education, 9*(3), 67–85. https://doi.org/10.1177/027112148900900306

Bridgett, D. J., Gartstein, M. A., Putnam, S. P., McKay, T., Iddins, E., Robertson, C., Ramsay, K., & Rittmueller, A. (2009). Maternal and contextual influences and the effect of temperament development during infancy on parenting in toddlerhood. *Infant behavior & development, 32*(1), 103–116. https://doi.org/10.1016/j.infbeh.2008.10.007

Cardoso, M. V. L. M. L., Maia, P. C., Silva, L. P., da Silva, G. R. F., Hayes, V. E., & Harris, S. R. (2010). Infant development and parents' perceptions associated with use of the Harris infant neumotor test. *Rev Rene, 11*, 124-132.

Carruth, B. R., Ziegler, P. J., Gordon, A., & Hendricks, K. (2004). Developmental milestones and self-feeding behaviors in infants and toddlers. *Journal of the American Dietetic Association, 104*(1 Suppl 1), s51–s56. https://doi.org/10.1016/j.jada.2003.10.019

Cohen, R., & Swerdlik, M. (2009). *Psychological testing and assessment: An introduction to tests and measurement* (7th ed.). New York: McGraw-Hill.

Cools, W., Martelaer, K. D., Samaey, C., & Andries, C. (2009). Movement skill assessment of typically developing preschool children: a review of seven movement skill assessment tools. *Journal of sports science & medicine, 8*(2), 154–168.

Dhamayanti, M., (2016). Kuesioner Pra Skrining Perkembangan (KPSP) anak. *Sari Pediatri, 8*(1), 9-15. http://dx.doi.org/10.14238/sp8.1.2006.9-15

Diemer, M.C., & Gerstein, E. D. (2020). Developmental delay and parenting: The role of behaviour problems in toddlers. *Infant and Child Development. 29*(6), e2199. https://doi.org/10.1002/icd.2199

Dosman, C. F., Andrews, D., & Goulden, K. J. (2012). Evidence-based milestone ages as a framework for developmental surveillance. *Paediatrics & Child Health, 17*(10), 561–568. https://doi.org/10.1093/pch/17.10.561

Easterbrooks, M. A., Bartlett, J. D., Beeghly, M., & Thompson, R. A. (2013). Social and emotional development in infancy. In R. M. Lerner, M. A. Easterbrooks, J. Mistry, & I. B. Weiner (Eds.), *Handbook of psychology: Developmental psychology* (pp. 91–120). John Wiley & Sons, Inc.

Edwards, S. L., & Sarwark, J. F. (2005). Infant and child motor development. *Clinical Orthopaedics and Related Research, 434*, 33-39.

Escolano-Pérez, E., & Sastre-Riba, S. (2010). Early infant cognitive assessment. *Behavior Research Methods, 42*, 759–767. https://doi.org/10.3758/BRM.42.3.759

Friedenberg, L. (1995). *Psychological testing: Design, analysis, and use*. Massachusetts: A Simon & Schuster Company.

Gallahue, D., & Ozmun, J. (2006). *Understanding motor development: Infants, children, adolescents, adults* (6th ed.). New York: McGraw-Hill.

Guevara, J., Gerdes, M., Localio, R., Huang, Y., Pinto-Martin, J., Minkovitz, C., Hsu, D., Kyriakou, L., Baglivo, S., Kavanagh, J., & Pati, S. (2012). Effectiveness of developmental screening in an urban setting. *Journal of The American Academy of Pediatrics.* http://pediatrics.aappublications.org/content/131/1/30

Hayton, J., Wall, K., & Dimitriou, D. (2019). Let's get it on: Dressing skill development in children with vision impairment and children with down syndrome. *Frontiers in Education, 4*, 149.

Jackson, B. J., Needelman, H., Roberts, H., Willet, S., & McMorris, C. (2012). Bayley scales of infant development screening test-gross motor subtest. *Pediatric Physical Therapy, 24*(1), 58–62. https://10.1097/pep.0b013e31823d8ba0

Jones, S. M., Zaslow, M., Darling-Churchill, K. E., Halle, T. G. (2016). Assessing early childhood social and emotional development: Key conceptual and measurement issues. *Journal of Applied Developmental Psychology, 45*, 42-48. https://doi.org/10.1016/j.appdev.2016.02.008

Kapaun, N. (2007). Early childhood fine motor assessment. *Occupational Therapy Capstones, 242*. https://commons.und.edu/ot-grad/242

Kementerian Kesehatan Indonesia. (2015). *Buku ajar kesehatan ibu dan anak*. Jakarta: Pusat Pendidikan dan Pelatihan Tenaga Kesehatan.

Kimmel, S. R., & Ratliff-Schaub, K. (2012). Growth and development. In R. E. Rakel, & R. D. P., *Textbook of family edition* (8th ed., pp. 421-441). W.B Saunders.

Medise, B. E. (2013, September 5). *Mengenal keterlambatan perkembangan umum pada anak*. https://www.idai.or.id/artikel/seputar-kesehatan-anak/mengenal-keterlambatan-perkembangan-umum-pada-anak

Mithyantha, R., Kneen, R., McCann, E., & Gladstone, M. (2017). Current evidence-based recommendations on investigating children with global developmental delay. *Archives of Disease in Childhood, 102*(11), 1071–1076. https://doi.org/10.1136/archdischild-2016-311271

Owens, R. E. (2008). *Language development: An introduction*. Boston: Pearson/Allyn and Bacon.

Polit, D. F., Beck, C. T., & Owen, S. V. (2007). Focus on research methods: Is the CVI an acceptable indicator of content validity? Appraisal and recommendations denise. *Research in Nursing & Health, 30*, 459–467. https://doi.org/10.1002/nur.20199

Reschly, D. J., Myers, T. G., Hartel, C. R., & National Research Council. (2002). The role of adaptive behavior assessment. In *Mental retardation: Determining eligibility for social security benefits*. Washington (DC): National Academies Press (US). https://www.ncbi.nlm.nih.gov/books/NBK207541/

Rydz, D., Shevell, M. I., Majnemer, A., & Oskoui, M. (2005). Developmental screening. *Journal of child neurology, 20*(1), 4–21. https://doi.org/10.1177/08830738050200010201

Santrock, J. W. (2017). *A topical approach to lifespan development* (9th ed.). McGraw-Hill Education.

Santrock, J. W. (2018). *A topical approach to lifespan development* (9th ed.). New York: McGraw-Hill Education

Santrock, J. W. (2020). *A topical approach to lifespan development* (10th ed.). New York: McGraw-Hill Education.

Squires, J. K., Potter, L., Bricker, D. D., & Lamorey, S. (1998). Parent-completed developmental questionnaires: Effectiveness with low and middle income parents. *Early Childhood Research Quarterly, 13*(2), 345–354. doi:10.1016/s0885-2006(99)80043-x

Summers, J., Larkin, D. & Dewey, D., (2008). Activities of daily living in children with developmental coordination disorder: dressing, 102 personal hygiene, and eating skills. *Human Movement Science, 27*(2), 215–229.

Tasse, M. J. (2017). Development of the diagnostic adaptive behavior scale, In K. A. Shogren, M. L. Wehmeyer, & N. N. Singh, *Handbook of positive psychology in intellectual and developmental disabilities: Translating research into practice*. New York: Springer

Thompson, R. A., Virmani, E. A., Waters, S. F., Raikes, H. A., & Meyer, S. (2013). The development of emotion self-regulation: The whole and the sum of the parts. In K. C. Barrett, N. A. Fox, G. A. Morgan, D. J. Fidler, & L. A. Daunhauer (Eds.), *Handbook of self-regulatory processes in development: New directions and international perspectives* (pp. 5–26). Psychology Press. https://doi.org/10.4324/9780203080719.ch2

Vitrikas, K., Savard, D., & Bucaj, M. (2017). Developmental delay: When and how to screen. *American Family Physician, 96*(1), 36–43.

Warren, R., Kenny, M., Bennett, T., Fitzpatrick-Lewis, D., Ali, M. U., Sherifali, D., & Raina, P. (2016). Screening for developmental delay among children aged 1-4 years: A systematic review. *CMAJ open, 4*(1), E20–E27. https://doi.org/10.9778/cmajo.20140121

APPENDIX 1. Item Analysis and Index CVI per Item of ECD-Q

Code	Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	I-CVI		
				R	I	C
	0-4 Months					
MK1	Mengangkat kepala sebentar (5-10 detik) jika ia tertelungkup di permukaan yang datar	.233	.803	1.00	1.00	0.67
MK2	Mengangkat kepala 45 derajat saat ia tertelungkup di permukaan yang datar	.350	.794	1.00	1.00	1.00
MK3	Mengangkat kepala 90 derajat saat ia tertelungkup di permukaan yang datar	.747	.736	1.00	1.00	1.00
MK4	Mengangkat tubuhnya dengan kedua lengannya dalam posisi tengkurap	.589	.763	1.00	1.00	1.00
MK5	Tertelungkup	.363	.799	1.00	1.00	1.00
MK6	Jika dipangku, bayi bisa menahan kepalanya tetap tegak	.533	.772	1.00	1.00	1.00
MK7	Memasukkan benda-benda ke dalam mulutnya	.614	.759	1.00	1.00	1.00
MK8	Mengambil mainan dengan spontan	.692	.746	1.00	1.00	1.00
MK9	Masing-masing lengan dan tungkai bergerak dengan mudah ketika ia terlentang	.192	.806	1.00	1.00	1.00
MH1	Pandangannya dapat mengikuti benda yang digerakkan sekitar 15 cm dari wajah, melewati garis tengah dari satu sisi ke sisi lainnya			1.00	1.00	0.67
B1	Mengeluarkan suara selain tangisan	.272	.	1.00	1.00	1.00
B2	Tertawa keras walau tidak digelitik atau diraba-raba	.272	.	1.00	1.00	1.00
SE1	Tersenyum sebagai respons terhadap senyum Anda	.287	-.076[a]	1.00	1.00	1.00
SE2	Memusatkan pandangan pada wajah, terutama bagian mata	.287	-.076[a]	1.00	1.00	1.00
SE3	Berespons terhadap suara melalui berbagai cara, seperti misalnya refleks terkejut, menangis, terdiam	-.058	.500	1.00	1.00	1.00
	5-8 Months					
MK1	Menahan kepala dengan ajeg ketika ditarik ke posisi duduk	.000	.508	1.00	1.00	1.00
MK2	Mengangkat dada dengan kedua lengannya sebagai penyangga, ketika ia tengkurap di permukaan yang datar	.239	.467	1.00	1.00	1.00
MK3	Mempertahankan posisi kepala dalam keadaan tegak dan stabil ketika dipangku	.000	.508	1.00	1.00	1.00
MK4	Menggulingkan badan (satu arah)	.000	.508	1.00	1.00	1.00
MK5	Menahan berat pada kakinya ketika dipegangi (tangan ibu berada di bawah ketiak anak) dalam posisi berdiri	.558	.249	1.00	1.00	1.00
MK6	Ketika diposisikan duduk, anak bisa menyeimbangkan tubuhnya dan mempertahankan posisi duduknya (minimal 5 detik)	.363	.401	1.00	1.00	1.00
MK7	Mengesot atau merangkak sepanjang lantai, boleh maju atau mundur	.415	.423	1.00	1.00	1.00
MH1	Menengok ke kiri dan ke kanan	.000	.604	1.00	1.00	1.00
MH2	Menengok ke atas dan ke bawah	.000	.604	1.00	1.00	1.00
MH3	Memusatkan perhatian pada benda kecil sebesar kacang merah	.309	.567	1.00	1.00	1.00
MH4	Menjatuhkan, membuang atau memukul-mukul segala sesuatu yang dipegangnya	.000	.604	1.00	1.00	1.00
MH5	Mengambil mainannya yang jatuh	.551	.489	1.00	1.00	1.00

MH6	Memindahkan benda dari satu tangan ke tangan lainnya	.522	.504	1.00	1.00	1.00
MH7	Memungut benda sebesar kacang merah dengan kepalannya	.465	.512	1.00	1.00	1.00
MH8	Memungut dua benda, masing-masing tangan pegang satu benda pada saat yang bersaman	.260	.589	1.00	1.00	1.00
MH9	Menggenggam tangannya sendiri	.000	.604	1.00	1.00	1.00
MH10	Menggenggam jari orang lain	.000	.604	1.00	1.00	1.00
MH11	Makan biskuit kering sendiri	.281	.580	1.00	1.00	1.00
B1	Mengeluarkan suara gembira bernada tinggi atau memekik tetapi bukan menangis	.000	.	1.00	1.00	1.00
B2	Babbling (ba-ba-ba atau ma-ma-ma)	.000	.	1.00	1.00	1.00
SE1	Tersenyum dengan spontan	.000	.162	1.00	1.00	1.00
SE2	Tersenyum pada wajah-wajah yang dikenalnya	.000	.162	1.00	1.00	1.00
SE3	Tersenyum ketika melihat mainan/gambar yang menarik saat bermain sendiri	.276	-.044[a]	1.00	1.00	1.00
SE4	Menoleh ke arah suara	.000	.162	1.00	1.00	1.00
SE5	Takut jika ditinggalkan dengan orang yang belum dikenal	.198	-.095[a]	1.00	1.00	1.00
SE6	Bermain sendiri tanpa ditemani	-.060	.350	1.00	1.00	1.00
			9-12 Months			
MK1	Merangkak di lantai	.000	.456	1.00	1.00	1.00
MK2	Bangun dan duduk sendiri dari posisi tertelungkup/merangkak	.177	.432	1.00	1.00	1.00
MK3	Duduk sendiri selama 60 detik tanpa disangga oleh bantal, kursi atau dinding	.000	.456	1.00	1.00	1.00
MK4	Ditarik dari posisi duduk ke posisi berdiri	.000	.456	1.00	1.00	1.00
MK5	Menyangga sebagian berat badan dengan kedua kaki, ketika diangkat melalui ketiaknya ke posisi berdiri	.000	.456	1.00	1.00	1.00
MK6	Mengangkat badannya ke posisi berdiri tanpa bantuan	.336	.345	1.00	1.00	1.00
MK7	Berdiri dengan berpegangan pada seseorang atau sesuatu benda selama 30 detik	.157	.432	1.00	1.00	1.00
MK8	Berdiri sendiri	.551	.161	1.00	1.00	1.00
MK9	Berjalan dengan bantuan	.152	.444	1.00	1.00	1.00
MK10	Berusaha mengambil mainan yang diluar jangkauannya/jatuh	.157	.432	1.00	1.00	1.00
MH1	Menggenggam erat pensil	.544	.687	1.00	1.00	1.00
MH2	Melepaskan mainan dengan sengaja	.000	.745	1.00	1.00	1.00
MH3	Memungut benda kecil dengan ibu jari dan telunjuknya	.576	.653	1.00	1.00	1.00
MH4	Memasukkan benda ke mulut (misalnya : memasukkan makanan menggunakan sendok/tangan ke arah mulut)	.128	.751	1.00	1.00	0.67
MH5	Mempertemukan dua kotak kecil yang ia pegang	.812	.569	1.00	1.00	1.00
MH6	Mencari benda yang jatuh	.260	.732	1.00	1.00	1.00
MH7	Memungut 2 kotak dengan masing-masing tangan memegang satu kubus	.681	.616	1.00	1.00	1.00
B1	Meniru 2-3 kata yang didengar	.093	-.062[a]	1.00	1.00	1.00
B2	Menyebut 2-3 suku kata yang sama, misalnya "ma-ma", "pa-pa", "da-da"	.158	-.011[a]	1.00	1.00	1.00
B3	Bereaksi terhadap suara yang perlahan atau bisikan	-.015	.186	1.00	1.00	1.00
SE1	Menolak jika Anda mencoba mengambil mainannya	.340	.083	1.00	1.00	1.00
SE2	Bermain ‘cilukba’ atau tepuk tangan	.000	.205	1.00	1.00	1.00
SE3	Mengerti kata ’tidak/jangan’ (tetapi tidak selalu mematuhinya)	.340	.083	1.00	1.00	1.00

SE4	Menunjukkan beberapa benda yang Anda sebut namanya	.204	.046	1.00	1.00	1.00
SE5	Mencari benda yang Anda sembunyikan (Ia melihat tempatnya)	.114	.172	1.00	1.00	1.00
SE6	Mengulurkan tangan/badan untuk meraih mainan yang diinginkan	.000	.205	1.00	1.00	1.00
SE7	Mengenal anggota keluarga, takut pada orang yang tidak dikenal	.114	.172	1.00	1.00	1.00
SE8	Mengeksplorasi sekitar, ingin tahu, ingin menyentuh apa saja	.000	.205	1.00	1.00	1.00
SE9	Sudah bisa makan makanan ringan sendiri, menggunakan tangan/sendok/garpu (misalnya : makan buah, biskuit, atau snack)	-.152	.320	0.33	0.33	1.00
SE10	Saat anak ditinggal sendiri, anak meminta perhatian dengan cara memanggil atau menangis.	.000	.205	0.67	0.67	0.67
SE11	Sudah bisa minum dari cangkir/gelas (bukan dari dot/botol susu) walaupun masih dibantu	-.128	.285	0.67	0.67	1.00
SE12	Menuruti petunjuk-petunjuk sederhana	.114	.172	1.00	1.00	1.00
		13-18 Months				
MK1	Berdiri dengan berpegangan pada perabot rumah walaupun kadang-kadang terduduk kembali	.000	.670	1.00	1.00	1.00
MK2	Berdiri sendiri tanpa berpegangan minimal 5 detik	.000	.670	0.67	0.67	0.67
MK3	Berjalan sambil berpegangan pada perabot rumah	.408	.628	1.00	1.00	1.00
MK4	Berjalan sendiri beberapa langkah tanpa bantuan	.447	.610	1.00	1.00	1.00
MK5	Berjalan tanpa terjatuh atau terhuyung-huyung	.659	.525	1.00	1.00	1.00
MK6	Berjalan mundur 5 langkah	.624	.543	1.00	1.00	1.00
MK7	Memindahkan bola dari satu kotak ke kotak lainnya	.156	.667	0.67	0.67	0.67
MK8	Menggelindingkan bola dengan kedua tangan	.208	.660	0.67	0.67	0.67
MK9	Membungkuk untuk memungut benda di lantai dan kemudian berdiri kembali	.354	.631	1.00	1.00	0.67
MH1	Meraih dan menggengam benda yang ada di dekatnya	.000	.620	1.00	1.00	1.00
MH2	Menyusun dua kotak kecil/balok kecil ukuran ± 3 cm ke atas	.565	.471	1.00	1.00	0.33
MH3	Menaruh satu kotak di atas kotak lainnya (dapat dilakukan sendiri ataupun diberi contoh)	.601	.429	1.00	1.00	1.00
MH4	Membuat coretan-coretan dengan menggunakan krayon/alat tulis lain walaupun belum berbentuk	.604	.462	1.00	1.00	1.00
MH5	Mengambil benda kecil seperti kacang, kismis, atau potongan biskuit dengan cara menjumput menggunakan ibu jari dan jari telunjuk	.069	.621	1.00	1.00	0.67
MH6	Membawa benda tanpa terlepas dari genggaman tangan (misalnya : menenteng tas kecil, memegang gelas)	.223	.594	0.67	0.67	0.67
MH7	Memindahkan benda-benda dari satu tempat ke tempat lain dalam jangkauan anak	.000	.620	1.00	1.00	1.00
K1	Menaruh suatu benda di atas benda lain	.274	.387	0.67	1.00	1.00
K2	Memasukkan benda-benda ke dalam botol/wadah	.405	.331	1.00	1.00	1.00
K3	Membalikkan botol untuk mengeluarkan isinya	.335	.317	1.00	1.00	1.00
K4	Mencocokkan bentuk geometris (lingkaran, segitiga, persegi) ke bentuk yang serupa	.204	.500	1.00	1.00	1.00
K5	Mengatasi rintangan-rintangan sederhana (misalnya : menghindari benda yang menghalangi jalannya)	.154	.437	0.67	0.67	0.33
B1	Mengucapkan dengan dua suku kata, seperti ma-ma, pa-pa	.313	.728	1.00	1.00	1.00

B 2	Mengatakan panggilan untuk ayah ketika melihat atau memanggil ayahnya (Ayah, Papa, Abah, Abi, Daddy, Yayah, Baba, dll)	.484	.693	1.00	1.00	1.00
B3	Mengatakan panggilan untuk Ibu ketika melihat atau memanggil Ibunya (Ibu, Mama, Bunda, Mami, Bubu, dll)	.571	.671	1.00	1.00	1.00
B4	Mengoceh berbagai suara dengan menggunakan pola-pola nada (misalnya nada tinggi untuk marah. nada bertanya, atau nada bercerita)	.147	.742	0.67	1.00	1.00
B5	Menggunakan gerakan-gerakan untuk membantunya menyampaikan maksudnya kepada orang lain. Gerakan-gerakan yang umum ialah: menganggukkan kepala untuk menyatakan "ya", menggelengkan kepala untuk menyatakan tidak,menggerakkan pergelangan tangan untuk menyatakan "habis", dan lambaian tangan sebagai "selamat tinggal".	.000	.747	1.00	1.00	1.00
B6	Mengucapkan kata tapi tidak mengucapkan beberapa konsonan awal dan akhir kata-kata, seperti endok untuk sendok	.574	.671	1.00	1.00	1.00
B7	Mengucapkan kata pertama selain ma-ma/ da-da dengan jelas	.565	.672	1.00	1.00	1.00
B8	Memiliki minimal 6 kosa kata yang bisa diucapkan dengan jelas	.574	.671	1.00	1.00	1.00
SE1	Mengulang perilaku yang membuat orang lain tertawa	-.045	.170	1.00	1.00	1.00
SE2	Merespon musik yang ia dengar, misalnya dengan menggerak-gerakkan badan/ berjoget	.000	.127	1.00	1.00	1.00
SE3	Mengerti terhadap ekspresi muka seseorang, misalnya dengan membalas senyuman	.000	.127	1.00	1.00	1.00
SE4	Mulai menunjukkan rasa humor, ia tertawa karena hal-hal yang menurutnya aneh/ lucu	.000	.127	1.00	1.00	1.00
SE5	Bertepuk tangan atau melambai-lambai saat tertarik pada sesuatu	.000	.127	1.00	0.67	1.00
SE6	Menunjukkan apa yang diinginkannya tanpa menangis atau merengek (menunjuk, menarik tangan ibu atau mengeluarkan suara yang menyenangkan)	.133	-.032[a]	1.00	1.00	1.00
SE7	Memperlihatkan rasa cemburu/bersaing (misalnya, ketika ibu menggendong orang lain, anak menangis atau protes)	.140	-.034[a]	0.67	0.67	0.67
BD1	Bekerjasama pada saat berpakaian dengan mengulurkan tangan dan kaki pada saat berpakaian	.383	.706	1.00	1.00	1.00
BD2	Membuka kaos kaki dengan tangan	.503	.684	1.00	1.00	1.00
BD3	Menggenggam cangkir/gelas kecil dengan kedua tangannya	.195	.728	0.67	0.67	0.67
BD4	Minum dengan hati-hati sehingga tidak banyak yang tumpah	.443	.696	0.67	1.00	0.67
BD5	Mengunyah makanan	.104	.734	0.67	1.00	1.00
BD6	Dapat menyendok makanan dari piring	.452	.694	1.00	1.00	0.67
BD7	Minum dari cangkir/gelas tanpa bantuan	.531	.678	0.67	0.67	0.67
BD8	Menunjukkan rasa tidak nyaman bila celananya kotor	.439	.696	1.00	1.00	1.00
BD9	Bersedia ke toilet terutama untuk BAB	.314	.717	1.00	1.00	1.00
BD10	Tidak ngompol pada saat tidur siang	.387	.705	0.67	0.67	0.67
		19-24 Months				
MK1	Berdiri sendiri tanpa berpegangan 5 detik	.000	.641	1.00	1.00	1.00
MK2	Berdiri sendiri tanpa berpegangan 30 detik	.000	.641	1.00	1.00	1.00

MK3	Berjalan tanpa terhuyung/jatuh	.000	.641	1.00	1.00	1.00
MK4	Berjalan ke samping	.157	.635	1.00	1.00	1.00
MK5	Berjalan mundur minimal 5 langkah	.229	.629	0.67	0.67	1.00
MK6	Menarik mainan beroda/ bertali sambil berjalan	.000	.641	1.00	1.00	1.00
MK7	Berjalan berkeliling sambil mendorong kursi	.000	.641	1.00	1.00	1.00
MK8	Mendorong dan menarik mainan yang besar atau benda-benda lainnya (Contoh: Galon air kosong)	.000	.641	1.00	1.00	0.67
MK9	Memposisikan diri duduk di kursinya tanpa bantuan	.000	.641	1.00	1.00	1.00
MK10	Melempar bola ke depan dengan tangan di sisi tubuh ataupun di atas kepala (dengan tangan tidak di depan dada)	.455	.592	0.67	0.67	0.67
MK11	Melempar ke arah sasaran, tidak apa jika lemparannya terkadang tidak tepat	.630	.562	1.00	0.67	0.67
MK12	Menendang bola	.512	.582	0.67	0.67	0.33
MK13	Menggelindingkan bola ke arah sasaran	.190	.643	1.00	1.00	0.67
MK14	Merayap naik turun anak tangga	.089	.642	0.67	0.67	1.00
MK15	Naik turun tangga dengan bantuan	.298	.624	1.00	1.00	1.00
MK16	Naik ±3 anak tangga tanpa bantuan, dengan kedua kaki berhenti sejenak di setiap anak tangga	.439	.590	1.00	1.00	1.00
MK17	Turun dari kursi orang dewasa	.229	.629	0.67	0.67	1.00
MK18	Berdiri 1 kaki dengan memegang tangan orang dewasa	.353	.609	1.00	1.00	1.00
MK19	Berlari	.000	.641	1.00	1.00	1.00
MK20	Membungkuk untuk memungut benda kecil di lantai dan berdiri kembali tanpa berpegangan	.000	.641	1.00	1.00	1.00
MH1	Menyusun tiga kotak kecil/balok kecil ukuran ± 3 cm ke atas	.169	.344	1.00	1.00	1.00
MH2	Kedua tangan masing-masing memegang benda tanpa terjatuh	.000	.381	1.00	1.00	0.67
MH3	Mengambil dan meletakkan benda, misalnya mainan	.000	.381	1.00	1.00	1.00
MH4	Memegang cangkir dengan kedua tangannya	.000	.381	1.00	1.00	1.00
MH5	Mengangkat dan memasukkan sendok ke mulut (menyuap)	.000	.381	1.00	1.00	1.00
MH6	Membalikkan halaman buku, walaupun belum tepat per lembar	.000	.381	0.67	0.67	0.67
MH7	Menaruh benda ke dalam wadah	.000	.381	0.67	0.67	0.67
MH8	Mengambil benda kecil seukuran kacang merah dengan ibu jari dan jari telunjuk atau jari tengah	.160	.351	1.00	1.00	1.00
MH9	Memasukkan keping bulat ke papan bentuk (Contoh: koin ke celengan, menutup botol minuman)	.308	.307	1.00	1.00	1.00
MH10	Meniru gerakan melipat kertas, meskipun hasilnya belum rapi	.331	.235	1.00	1.00	1.00
MH11	Meniru gerakan membuat garis vertikal (dari atas ke bawah atau sebaliknya)	.262	.289	1.00	1.00	1.00
MH12	Membuka bungkusan permen atau coklat	.082	.411	1.00	1.00	0.67
K1	Menunjukkan letak anggota tubuhnya berdasarkan perintah yang diberikan, misalnya: ia akan menunjuk hidungnya ketika ditanya “mana hidung?”	.242	.738	1.00	1.00	1.00
K2	Menunjukkan letak benda-benda di sekitarnya seperti mainan, perlengkapan makan, dan pakaian	.463	.728	1.00	1.00	1.00
K3	Menyadari mainannya hilang dengan bertanya atau mencarinya	.301	.733	1.00	1.00	1.00
K4	Membawa benda-benda dari ruangan lain atas permintaan, misalnya: “ambilkan sepatumu yang ada di kamar!”	.515	.718	1.00	1.00	1.00

K5	Menunjukkan benda-benda yang ia kenal pada saat disebutkan	.476	.711	1.00	1.00	1.00
K6	Menunjuk gambar dari benda yang ia ketahui	.573	.703	1.00	1.00	0.67
K7	Menjawab pertanyaan sederhana seperti : ”ibu ke mana?”	.611	.683	1.00	1.00	1.00
K8	Menunjukkan pada diri sendiri bila ditanya: “ mana…?” (nama anak)	.702	.666	1.00	1.00	1.00
K9	Memasukkan 2-3 keping berbeda bentuk (bulat, segitiga sama sisi, bujursangkar) ke papan bentuk, tidak apa jika masih mengalami kesulitan pada saat memasukkannya	.313	.736	1.00	1.00	1.00
K10	Mengetahui berakhirnya suatu aktivitas, ditunjukkan dengan mengucapkan kata seperti “terima kasih”, “dah...”, “semua sudah pergi”,dlsb	.001	.759	1.00	1.00	1.00
K11	Mengetahui jenis kelamin diri sendiri, perempuan atau laki-laki	.316	.745	1.00	1.00	1.00
B1	Menirukan kata-kata yang ia dengar	.491	.816	1.00	1.00	1.00
B2	Mengatakan "tidak"/ "No", dengan ucapan atau menggunakan bahasa tubuh seperti menggelengkan kepala atau memalingkan wajah	.350	.830	0.67	0.67	1.00
B3	Menggunakan satu kata yang dipahami untuk menyatakan keinginannya, seperti “makan” yang sebenarnya berarti ”saya mau makan kue itu	.425	.823	1.00	1.00	1.00
B4	Perbendaharaan kata cukup banyak (Sekitar ±50 kata	.657	.799	0.67	1.00	0.67
B5	Mengatakan panggilan untuk ayah ketika melihat atau memanggil ayahnya (Ayah, Papa, Abah, Abi, Daddy, Yayah, Baba, dll)	.528	.817	0.67	0.67	1.00
B6	Mengatakan panggilan untuk Ibu ketika melihat atau memanggil Ibunya (Ibu, Mama, Bunda, Mami, Bubu, dll)	.528	.817	0.67	0.67	1.00
B7	Memiliki minimal 6 kosa kata yang bisa diucapkan dengan jelas (selain kata mama dan papa)	.662	.796	1.00	1.00	1.00
B8	Menyebut nama-nama benda yang dikenal	.667	.795	1.00	1.00	1.00
B9	Berbicara dengan menggunakan kalimat pendek yang terdiri dari 2-3 kata (contoh: Mama haus, Mau makan, dll)	.630	.803	0.67	0.67	0.33
SE1	Senang terus menerus berada dekat dengan anggota keluarganya, ia akan mengikuti atau mungkin menangis pada saat ditinggalkan.	-.071	.601	1.00	1.00	1.00
SE2	Memahami benda-benda apa saja yang merupakan miliknya dan milik orang lain, misalnya dapat menjawab pertanyaan “ini mainan punya siapa?”	.254	.564	1.00	1.00	1.00
SE3	Bersedia dimintai tolong untuk mengambilkan sesuatu	.389	.518	1.00	1.00	1.00
SE4	Meniru perilaku orang di sekitarnya, misalnya menyisir rambut, dan perilaku membaca koran	.000	.585	1.00	1.00	1.00
SE5	Cenderung melakukan sesuatu sesuai dengan keinginannya	.000	.585	1.00	1.00	0.67
SE6	Mengendalikan orang lain dalam bentuk perintah-perintah, penolakan dsb	.246	.558	1.00	1.00	1.00
SE7	Menunjukkan ekspresi suka atau tidak suka terhadap orang, benda, atau tempat tertentu	.167	.572	1.00	1.00	0.67
SE8	Menunjukkan rasa iri akan perhatian yang diberikan kepada orang lain (contoh: saat Ibu menggendong anak lain)	.020	.604	1.00	1.00	0.67
SE9	Anak mudah meniru perilaku orang dewasa di sekitarnya	.341	.541	1.00	1.00	0.67

SE10	Memberitahu keinginannya untuk makan, minum, pergi ke toilet	.623	.456	1.00	1.00	1.00
SE11	Menunjukkan keinginannya tanpa menangis atau merengek	.348	.530	1.00	1.00	1.00
SE12	Bermain dengan anak-anak lain	.319	.541	1.00	1.00	1.00
BD1	Mengenakan atau melepaskan topi sendiri	.395	.595	0.67	0.67	1.00
BD2	Mencoba melepaskan kaos kaki sendiri	.439	.568	0.67	1.00	1.00
BD3	Mencoba sendiri mengenakan sepatu model tanpa tali	.571	.527	1.00	1.00	1.00
BD4	Membuka dan menutup resleting besar tanpa memasang pengaitnya	.440	.567	1.00	1.00	1.00
BD5	Mencoba menyendokkan makanan, tidak apa jika masih tumpah	.000	.642	1.00	1.00	1.00
BD6	Memberikan cangkir atau piring kosong kepada orang dewasa setelah ia selesai makan atau minta tambah.	.081	.641	1.00	1.00	0.33
BD7	Memegang dan minum dari cangkir dengan menggunakan satu tangan, dan tidak tumpah	.103	.661	0.67	0.67	1.00
BD8	Buang Air Besar (BAB) / Buang Air Kecil (BAK) pada umumnya sudah teratur	.250	.626	0.67	1.00	0.67
BD9	Mengucapkan kata yang menunjukkan BAK/BAB, tetapi setelah ia BAK/BAB	.430	.572	1.00	1.00	0.67

Note:

MK = Motorik Kasar (Gross Motor Skill); MH = Motorik Halus (Fine Motor Skill); = Bahasa (Language); SE = Sosial-Emosional (Socio-Emotional); BD = Bantu Diri (Self-Help Skill); R = Relevance; I = Important; C = Clarity

[a] *The value is negative due to a negative average covariance among items. This violates reliability model assumptions. You may want to check item codings.*