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Devising a Phonological Awareness Test for Indonesian Children: A Pilot Study

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ABSTRACT

The few existing phonological awareness (PA) studies in the Indonesian language have mainly concentrated on primary school children. PA in young preschool Indonesian children, particularly those aged below 4, has been neglected. Some aspects of PA, including error patterns and early reading abilities in preschool children, have all been neglected. The potential impact of gender on PA has also not been analyzed. It is essential to develop a PA test for use by professionals (e.g., speech therapists) to identify children with poor PA and to provide early remediation to enable them to cope well later in primary school. This study aims to describe the development process of a newly devised PA test, the Indonesian Phonological Awareness Test (IPAT). The purpose of the study is to propose items that are valid and reliable and to administer them to a small sample of 16 Indonesian children aged 3–6 as a trial before conducting the test on a larger sample size to strengthen its validity. The IPAT comprised two sections: PA tasks (syllable detection, syllable deletion, rhyme detection, rhyme oddity, alliteration detection, phoneme deletion) and reading tasks (letter knowledge, non-word reading, word reading, and sentence reading. The results show that the IPAT is proven to be valid and reliable based on the findings of face validity, content validity, and inter-rater reliability. It can be developed into a standardized screening test to identify the potential risk of reading disorders in Indonesian preschool children. Future studies with larger samples are recommended to strengthen the statistical power of the IPAT.

Keywords: Early reading, emergent literacy, phonological sensitivity, preschool children, reading development

INTRODUCTION

Reading is one of the critical abilities children develop during their school age; they access academic information and knowledge through reading scripts. Children with reading and writing difficulties will impact their academic achievement later in school (Duff et al., 2023; Majorano et al., 2021). A meta-analysis study estimated that the worldwide prevalence of developmental dyslexia (a specific learning disorder in reading) is around 7.10% (Yang et al., 2022). Phonological awareness (PA) has been proven to be one of the critical factors for early literacy acquisition, besides print knowledge and oral language that developed before school entry (Milankov et al., 2021; Palomino et al., 2021). PA develops when the mental lexicon representations of words change to identify, analyze, and modify the structure of words into segmental representations, allowing them to access smaller speech sound segments in a word, helping them decode novel words when reading (e.g., syllable level: *sunshine* can be broken down into *sun + shine*, and combine with another syllable, for example, *sun + rise → sunrise*. Phoneme level: *gold*, if the initial phoneme is deleted, the word can be *old*; Lonigan et al., 2013).

PA represents a cognitive skill measured by various tasks. Since the critical role of PA in identifying the risk of reading disability and early remediation purposes has been proven, assessment is necessary because children learn to read at the preschool and kindergarten levels (Veríssimo et al., 2021). PA tests have been widely developed in many countries and across languages with various tasks to identify PA development and remediation purposes.

In contrast, studies on PA in Indonesian children remain underexplored; an investigation in the early 2000s through a longitudinal study of early school-aged children was initiated by Winskel and Widjaja (2007) and an unpublished work by Wibawati (2018). Later studies of PA in preschool-age children by Siswanto and Pratomo (2019) and Taruna et al. (2019) have provided useful preliminary information. Nevertheless, investigation in this area must be increased because existing small-scale studies have recruited children with narrow age ranges (4–6 years old). In addition, based on previous Indonesian PA studies, advanced PA tasks must be added, such as syllable deletion and phoneme deletion tasks for preschoolers and sentence reading tasks for children who can already read.

This study aimed to develop a new PA test for Indonesian preschool children, which addresses several gaps in previous studies in Indonesia, including the addition of subtests for syllable and phoneme deletion, and an expanded age range to include children as young as 3–3 years 11 months old. Moreover, a sentence-reading task was provided for children aged 5–6 years 11 months old.

LITERATURE REVIEW

Research indicates that PA skills typically develop from larger units (rhymes and syllables) to smaller units (phonemes),

according to the theory of grain size (Justi et al., 2021). However, several studies suggest that PA skills development occurs in overlapping rather than strictly discrete stages (Cassano & Steiner, 2016). Cassano and Schickedanz (2015) found that among typically English-speaking children aged 3 to 5, the syllable units developed earlier and proved to be the easiest for various tasks (e.g., syllable segmentation /*water*/ → *water*). However, onset-rime (e.g., what is the first sound of /*big*/? → /*b*/) and phoneme segmentation *(*e.g., /*big*/→ /*b*/+/*i*/+/*g*/) tasks were particularly challenging, not emerged by age 3; and even by age 5, the mean percentage of correct responses did not exceed 20%. Similar to the study on *Brazilian Portuguese-speaking* children aged 6 years, syllable tasks were found to be easier than rhyme and phoneme tasks. Phoneme segmentation proved to be the most challenging; even after one year of schooling, this PA skill only reached a mean score of 7% (Justi et al., 2021).

On the other hand, syllable segmentation was reported to be more challenging than rhyme and phoneme-level PA tasks for *Arabic-speaking* children aged 5 years and 6 months to 8 years and 6 months (Abou-Elsaad et al., 2016). The Arabic beginner readers were observed to have relatively poor PA towards the final coda in closed syllable words *(*e.g. /*lo:n*/ color). One plausible reason might be the impact of early program instruction, which concentrates on the cohesive CV unit (letter and diacritic) represented by a consonant and a short vowel (CV) as the most basic unit for

decoding words. Other diacritic aspects, such as the null vowel and consonantal geminate, have all been neglected.

PA studies in Southeast Asian countries, such as Malaysia, have indicated that syllables are the easiest task rather than the phoneme task for Malaysian Malay-English-speaking children (Manisah, 2005). Relevant to the study, phoneme segmentation is the most difficult task for Chinese English-Malay-speaking children (Chan et al., 2024). Similar to the previous studies, in Singaporean Mandarin-Chinese-English (CE) speaking children, children who had Chinese as their L1 were more sensitive to syllables (Yeong & Liow, 2012).

Previous Indonesian PA studies consistently indicated that syllables are more salient and develop earlier than rhymes and phonemes (Wibawati, 2018; Winskel & Widjaja, 2007; Siswanto & Pratomo, 2019; Taruna et al., 2019) in Indonesian language-speaking children. Winskel and Widjaja (2007) revealed that phoneme awareness (measured through a phoneme deletion task) was the strongest predictor of PA in Indonesian school-age children. Indonesian language has a highly transparent orthography and close correspondence between letter names and sounds, facilitating access to phoneme-level units (Winskel & Lee, 2013; Winskel & Widjaja, 2007).

Reading abilities involve understanding the meaning of printed words (text), which requires association among orthography, phonology, and semantics (Milledge & Blythe, 2019). Heilmann et al. (2018) found that 85% of children only knew

fewer than 10 letters *(*e.g., *A, B, O)* before entering preschool at age 3. Piasta et al. (2022) showed that children aged 4-5 could master 12%–50% of letters. In the next stage, several studies indicated that by the end of kindergarten (aged 6 years old), approximately 63%–70% of children could accurately read single words (Malling et al., 2022; Ne'eman & Shaul, 2021). Once word recognition becomes more automatic, reading fluency will be improved, and reading comprehension will be easier (Milledge & Blythe, 2019).

Several factors have been discerned to influence PA and reading abilities in children, for example, age, gender, socio-economic (SES) skills and language (phonology) skills (Fröhlich et al., 2013; Niklas et al., 2016; Vlachos & Papadimitriou, 2015). The age of children is claimed to be a particularly strong influencing underlying factor in the development of childhood PA and reading abilities. Older children are observed to have outperformed younger children (Abou-Elsaad et al., 2016; Mohamed et al., 2021; Milankov et al., 2021). Gender, SES, and literacy exposure have also been reported to influence PA and reading abilities in children. Children from middle SES (middle income) have been reported to have outperformed children from low SES (low income) on the PA tasks (Bilvashree et al., 2010). The findings on the impact of gender on PA are more controversial; some researchers have reported significant gender effects (Lundberg et al., 2012), while others have reported no significant gender effects (McTigue et al., 2020).

The process of reading involves interaction with the phonological pathway. Accurate processing of speech sounds and letter-speech sound mappings (decoding) is important in the early stages of reading development (Verwimp et al., 2021). Studies exploring the types of error patterns children make on PA tests are still limited. In general, error patterns could be divided into 10 types, namely substitutions, repetition, omissions, additions, reversals, segmentations, rhyme, alliterations, no responses, and other errors (Chan et al., 2024; Lim, 2018; Winskel & Widjaja, 2007). A preliminary study by Hayward et al. (2017) analyzed the types of common error patterns in phonemic segmentation tasks among English-speaking children, and the most prevalent error patterns were additions, insertions, and multiple errors. The findings provide initial insights into the PA performance characteristics of children and the strategies they used to respond to instructions in the PA tasks.

The newly developed IPAT in this study aims to design a culturally and linguistically appropriate test for Indonesian preschool children by addressing gaps identified in the previous studies, considering sociolinguistic characteristics of the Indonesian language, and providing developmental error pattern analysis to strengthen the interpretation of PA performance.

METHODS

Participants and Materials

The newly developed Indonesian PA test, named the Indonesian Phonological

Awareness Test (IPAT), is a set of early literacy screening measures for Indonesian preschoolers administered to a total of 16 typically developing Indonesian children with ages ranging from 3:0 to 6:11 years old who were recruited using a simple random sampling of kindergarteners in urban areas of Surakarta, Central Java, Indonesia, where the Indonesian language is dominant. As this pilot study was designed as the first step in a larger research project, only approximately 10% (16 subjects) of the main study's participants (104 subjects) from one preschool were recruited. Nevertheless, the participating children were representative of the Javanese preschool children. They were all controlled for potential biases in the small sampling in that only those subjects who met the following inclusionary criteria were recruited: (1) the subjects were not undergoing speech therapy services or had a history of receiving speech therapy services, (2) no reported hearing loss, intellectual disabilities, and other syndrome disorders, (3) middle to high SES, middle to high household monthly income, (4)

minimal literacy exposure, learning to recognize vowels in Indonesian language and alphabetical letters, (5) one additional literacy exposure criterion for the older children (5 years old and above) should be learning to read (syllables, words, and sentences). The reading tasks (word reading, non-word reading, and sentence reading) were evaluated in this age range.

With the small number of participants, the present study aims to gather preliminary data and insights for the subsequent stages of developing PA assessment tools for Indonesian preschool children. In the first pilot study, eight typically developing Indonesian children aged 3 to 6 years and 11 months (four boys and four girls) were recruited using simple random sampling. After making several adjustments, another group of eight different children was recruited for the second pilot study. Table 1 provides the demographic profile of the participants in both sets of the pilot study. Nevertheless, only the subjects in the second pilot study were assessed using the finalized version of the IPAT.

Table 1

Demographic profile of the participants in both sets of the pilot study

Age group	Age range	Subject	Gender	Age (months)	
				First Pilot Study	**Second Pilot Study**
1	3;00–3;11	1	Girl	41	45
		2	Boy	43	45
2	4;00–4;11	3	Girl	58	55
		4	Boy	52	56
3	5;00–5;11	5	Girl	62	64
		6	Boy	64	62
4	6;00–6;11	7	Girl	77	80
		8	Boy	77	83

The development of the PA test was based on linguistic unit variations, task operations, and word familiarity (Cassano & Steiner, 2016), which have been adjusted to suit the Indonesian culture and language for preschool children. All children recruited in both sets of pilot studies used the Indonesian language as their primary language, even though they also received exposure to the Javanese language, which is a widely spoken local language in Java. Indonesian is the national language of Indonesia. It is a primary language that must be mastered and used as a language of instruction at all school levels. In urban areas, people prefer to use the Indonesian language as their primary language of communication (Lamb & Coleman, 2008). Cross-linguistic transfer when communicating does not significantly affect Indonesian speakers. The selected test items include words that Indonesian preschool children are familiar with, covering all word classes (nouns, verbs, adjectives, and adverbs), as well as Indonesian vowels, consonants, and various syllable structures (Herdini, 2015; Lapoliwa, 1981; Soderberg & Olson, 2008).

The PA test in the present study comprises two sections: (1) the phonological awareness tasks and (2) the early reading tasks (letter knowledge tasks and reading tasks). The present study was conducted in three phases: (1) face validity by the experts, (2) conducting pilot study set 1, (3) revision, finalization and content validity, and (4) pilot study set 2. This study has been approved by the Research Ethics Committee at The National University of Malaysia (UKM PPI/111/8/JEP-2022-435).

The Development of the Indonesian Phonological Awareness Test (IPAT)

The initial construct of the IPAT comprised nine tasks: (1) syllable detection, (2) syllable segmentation, (3) syllable deletion, (4) rhyme awareness, (5) isolating coda, (6) rhyme judging, (7) alliteration awareness, (8) phoneme segmentation, and (9) phoneme deletion. The reading tasks included letter knowledge, non-word reading, word reading, and reading passage comprehension. In the reading passage comprehension task, children were given a short passage titled *"Pergi ke Sekolah (Goes to School)."* The reading passage consisted of 10 simple sentences narrating a series of student activities involved in preparing for school in the morning. After reading the passage, children were asked to answer five simple multiple-choice questions according to the information provided in the passage. Several modifications were reconstructed based on expert face validity comments.

Face Validity

Face validity was conducted to check the instrument's appropriateness based on the rate of agreement by the experts before using it on the subjects. This instrument was rated by six Indonesian experts consisting of an Indonesian linguistic lecturer (a male aged 55 years with 27 years of experience), three Indonesian speech therapists (a male aged 46 years, a female aged 36 years, and a female 31 years with 9–13 years of experience), and Indonesian kindergarten teachers (two females aged 26–27 years with more than three years

teaching experiences). All the experts were familiar with Indonesian language.

Experts were asked to rate the feasibility of the instrument using a dichotomous scale with categorical options "Yes" and "No" through the criteria illustrated by Desai and Patel (2020; Appendix 1), including (1) the appropriateness of grammar, (2) the clarity and unambiguity of items, (3) the correct spelling of words, (4) the correct grammar of the sentence structure, (5) the appropriateness of font size and space, (6) legible printout, (7) the adequacy of instruction, (8) constructing the instrument in a well-thought-out format, (9) the appropriateness of the level of difficulty, and (10) the reasonableness of the items with the purpose of the instrument.

Based on the rating agreement among the six experts, the agreement rate for the PA tasks was high: 86.677%, the word-level reading task was 96.67%, and the reading passage comprehension task was 95%. Through this process, several comments were obtained to improve the test construct. Table 2 provides modifications based on the expert's recommendations.

First Pilot Study

The first pilot study was conducted on eight children (Table 1) to check the suitability of the initial test construct. Table 3 provides the modifications based on the findings of the pilot study set 1. It is worth noting that isolating coda and phoneme segmentation was removed since all children, including the eldest children, scored zero marks for both tasks. This finding was congruent with the previous findings on Indonesian children (Siswanto & Pratomo, 2019; Taruna et al., 2019). Syllable segmentation was also removed as it is redundant with syllable

Table 2

Modifications based on the expert's recommendations

No	Modifications	Examples
1	The variety of word classes (most of the items were nouns).	*pepaya/* papaya → *belajar/* study (noun) (verb)
2	The variety of the number of syllables (Most of the items were disyllabic.)	*bantal/* pillow → *sepeda/* bicycle (disyllable) (trisyllable)
3	The variety of syllable structures (Most of the items were open syllables.)	*pagi/* morning → *langit/* sky (open syllable) (closed syllable)
4	The pronoun and its meaning in the reading comprehension passage. (The first sentence is partially repetitive of the second one; the pronoun "*aku*" (I) is less child-friendly.)	*Setiap hari aku bangun pagi. Aku selalu bangun jam enam pagi agar tidak terlambat ke sekolah.* (Literally, every *morning I wake up. I always wake up at six o'clock in the morning so that I will not be late for school.* →*Adi adalah siswa taman kanak-kanak. Adi selalu bangun jam enam pagi agar tidak terlambat ke sekolah.* *(Adi is a preschool child. Ada always wakes up at six o'clock in the morning so that he will not be late for school.*

deletion. Both tasks required children to identify and separate syllables in words, but having to separate each syllable in the word by pausing each syllable was more challenging than leaving out a syllable in the word for the youngest children. Rhyme judging and alliteration awareness tasks were renamed into rhyme oddity and alliteration oddity, followed by changing the instructions and items (e.g., "*topi–kaos–jaket*, which one rhyme with *kopi*?" → "Which one does not sound similar *suka–duka–malu?*"). Similar to the rhyme task, instruction and items in the alliteration task were changed (e.g., "Does *bola–pola* start with the same sound?" → "Which one does not start with the same sound *kucing–burung–kambing*?"). The instruction of the phoneme deletion was changed without involving the examiner in pronouncing the target sound but directly giving examples. The items were changed to include all phoneme categories based on place of articulation and manner of articulation (e.g., "Delete the first sound and say the remaining part of the word!" "*kuda*" → "*uda*" (instructing without pronouncing the target phoneme). Syllable and phoneme deletion tasks only included the initial target position. In instructing the rhyme awareness tasks, the term "rhyme" was changed to "sounds similar" ("*bola–pola*, does it sound the same?"). The modifications were made, and the examples of each subtest are described in Table 3.

A letter knowledge subtest was added for all age ranges, as the reading abilities of younger children have not yet emerged. The reading passage was broken down into

Table 3

Modification of test items based on the findings of the first pilot study

No.	Original Version	Finalized Version
1	*Syllable Segmentation* The child was asked to separate each syllable in the word by pausing each syllable. e.g., *pisang* → *pi – sang*	This task was removed because it seemed redundant with the syllable detection task (which was easier for the child to do).
2	*Syllable Deletion* The child was asked to delete one syllable (initial, medial and final positions) of the words and say the remaining parts of the words. e.g., "Say *buku* without *bu* → *ku*" "Say *sepeda* without *pe* → *seda*"	The instruction was changed only to delete the initial syllable of the words because it was easier to do than in other positions and recall the last remaining syllables they heard, e.g., *buku* becomes *ku*.
3	*Rhyme Awareness* The child was given a pair of words and asked to judge whether both words rhymed. e.g., *bola–pola*, do the two words rhyme? → *yes*.	*Rhyme Detection* The name of the task was changed to rhyme detection to highlight the task's operation (detection).
4	*Isolating Coda* The child was asked to pronounce the final sound of the word provided, e.g., What is the last sound of *lem*?→ /m/.	This task was removed because it was too difficult for the participants in all age ranges; Indonesian children were unfamiliar with phoneme production.

Table 3 *(continue)*

No.	Original Version	Finalized Version
5	*Rhyme Judging* The child was provided with a series of four words; children were asked to choose one of the words that rhymed with the target word given. e.g., *topi – kaos – jaket*, which one rhymes with *kopi*? → *topi.*	*Rhyme Oddity* The word stimulus was limited to only three words helpful in reducing a child's memory load. The more words presented, the harder it would be for them to remember. The child was asked to choose a word that did not rhyme with the other two, which made it easier than the previous instruction. e.g., Which one doesn't sound similar: *Suka–duka–malu?* → *malu.*
6	*Alliteration Awareness* The child was given a pair of words and asked to judge whether both words start with the same sound. e.g., *tikus–timun, do the two start with the same sounds?* → *Yes.*	*Alliteration Oddity* The word was changed into three words, and the child was asked to choose one of the words that did not start with the same sound. This change prevented the child from responding based on their previous experience with the rhyme detection task. e.g., Which one does not start with the same sound: *Kucing–burung–kambing* → *burung*
7	*Phoneme Segmentation* The child was asked to clap the number of phonemes in a word while segmenting each of the phonemes. *e.g., Say each of the sounds in the word sapi while clapping your hands!* → /s/ /a/ /p/ /i/ (4)	This task was removed because it proved too difficult for participants across all age ranges, and Indonesian children were unfamiliar with phoneme production.
8	*Phoneme Deletion* The child was asked to delete one of the sounds (initial and final position) of the words and say the remaining parts of the words. *e.g., Say baju without /b/ → aju*	The instruction was changed only to delete the initial syllable of the words because it was easier to delete the initial position and recall the last remaining syllables they heard. The instruction was changed to directly provide the example without saying the deleted targeted phoneme. Indonesian children were unfamiliar with phoneme production. Children were asked to delete only the initial phoneme of the words because it was easier to do than other positions and recall the last remaining parts they heard, e.g., *buka* becomes *uka*.
9	*Letter Knowledge (* The child must name every single lowercase letter presented randomly on a 12 × 9 cm card. The correct response is if the child produces the letter sound or a combination of vowel and consonant as a syllable.	Retained.
10	*Non-Word Reading.* The child was asked to read ten non-words from the word list, e.g., *ma*, *dis*, *nejo.*	Retained.
11	*Word Reading* The child was asked to read ten familiar words from the word list, e.g., *jam*, *roda*, *gajah.*	Retained.

Table 3 *(continue)*

No.	Original Version	Finalized Version
12	*Reading Passage* The child was asked to read aloud a simple passage and was provided with five simple multiple-choice questions based on the story.	The passage was broken down into sentences, and children were asked to read each sentence to assess their reading accuracy. The modification was made because children did not yet understand how to answer the questions and were still in the word recognition stage rather than the comprehension stage.

sentences and only evaluated for accuracy, not comprehension. Word reading, non-word reading, and reading passage tasks are only for students aged 5–6 years.

Content Validity

The IPAT was finalized based on the face validity comments and the result of the first pilot study modifications. In the next step, content validity was carried out to assess if an instrument is relevant and representative of the targeted construct it measures (Rusticus, 2014). Four speech therapists (two males aged 29–46 years with 9–13 years of experience, and two females aged 35–36 years with 13 years of experience) and two kindergarten teachers (females aged 27–30 years with more than four years teaching experiences) rated each item in the PA test to measure its relevance based on a scale of 1–5 (Appendix 2). The degree of agreement among experts was calculated using two formulas: CVI for items (I-CVI) and CVI for scales (S-CVI). I-CVI is the proportion of the content experts giving the item a relevance rating. The calculation formula for I-CVI is the number of experts in agreement divided by the total number of experts. S-CVI is the average of the I-CVI scores for all

items on the scale or the average of the proportion relevance judged by all experts. The calculation formula for S-CVI is the average of I-CVI scores across all items. Based on the calculation, it was found that I-CVI = 0.83 and S-CVI = 0.98, which was based on Polit et al. (2007), the acceptable cut-off score of CVI for six experts is at least 0.83; it can be concluded that IPAT was declared valid.

Table 4 presents the final construct, along with a description of each task for IPAT, following the first pilot testing, revision, and finalization of the test items, and examination of content validity. Six PA tasks remained: (1) syllable detection, (2) (initial) syllable deletion, (3) rhyme detection, (4) rhyme oddity, (5) alliteration oddity, and (6) (initial) phoneme deletion. The reading tasks remained with four subtests: (1) letter knowledge, (2) non-word reading, (3) word reading, and (4) sentence reading.

The finalized IPAT consisted of two sections: the PA tasks and early reading tasks (Appendix 3: Scoring Form of the IPAT). The PA tasks consisted of six tasks (syllable detection, syllable deletion, rhyme detection, rhyme oddity, alliteration oddity, and phoneme deletion). The reading tasks

consisted of four tasks (letter knowledge, word reading, non-word reading, and sentence reading). The letter knowledge task consisted of 26 lowercase letters of the alphabet printed on paper size 12.7×7.62 cm. The letter knowledge task was given to all subjects; the non-word reading, word reading, and sentence reading were only given to the children in the age groups 5–5 years 11 months old and 6–6 years 11

Table 4
Description of test items in the finalized IPAT

No.	Tasks	Description	Examples
	PA		
1	Syllable Detection	This task is used to assess the child's ability to identify the number of syllables in a word. This task involves segmenting a word into syllables and clapping for each syllable.	Repeat the word I say while clapping for each syllable! *'Bola'*/ball → *'bo'-'la'* (while twice hand claps to represent two syllables).
2	Syllable Deletion	This activity is used to assess a child's ability to manipulate words by removing the initial syllable of a word and reciting the remaining syllables.	Delete the initial syllable and say the remaining part of the word. *'Pagi'*/ morning → '*gi*'
3	Rhyme Detection	This activity is used to assess the child's ability to detect whether two words have a similar or identical final sound.	I have two words: Say 'yes' if the two words sound similar, and say 'no' if they are different. '*Bola-pola*' (ball-pattern), does it sound similar?
4	Rhyme Oddity	This activity is used to assess the child's ability to identify the odd one word that does not have a similar final sound to the other two words.	I have three words; choose the one that sounds different. '*Suka-duka-malu*' (like-grief-shy) → '*malu*'
5	Alliteration Oddity	This activity is used to assess the child's ability to identify the odd one out by word, which does not start with the same initial sound as the other two words.	I have three words; choose one word with a different initial sound. '*Kucing–burung–kambing*' (cat-bird-goat) → '*burung*'
6	Phoneme Deletion	This activity is used to assess the child's ability to manipulate words by removing the initial sound of the word and saying the remaining parts of the word.	Delete the initial sound and say the remaining parts of the word. '*Baju*' (shirt) → '*aju*'
	Reading		
1	Letter Knowledge	The printed lowercase alphabets were presented to the child randomly, and each child was given the same order of the letters. The child was asked to name each letter.	*e.g., e, b, k, u.*
2	Non-Word Reading	The child was asked to read 10 nonsense words from the word list that consisted of no longer than three syllables.	*e.g., ma, dis, nejo. kiwaga.*
3	Word Reading	The child was asked to read 10 familiar words that consisted of no longer than three syllables.	*e.g., jam, roda, sepatu*
4	Sentence Reading	The child was asked to read five sentences. Each sentence contained a different number of words; the total number of words in all sentences was 51.	*e.g., Adi adalah siswa taman kanak-kanak.*

months old. The reading tasks were designed to assess reading accuracy through read-aloud activities.

Second Pilot Study

The second pilot study was conducted to ensure that the finalized IPAT (Appendix 3) would be suitable for the subjects for whom the construct tests had been adjusted and finalized. The second pilot study was conducted on eight children (four girls and four boys) with the same criteria as the first pilot study (Table 1). The children were able to complete the revised items, and all of them were appropriate.

Testing Procedures

The children were tested individually in a separate room from their kindergarten class. All the data was collected using video recordings (Canon EOS M10 Camera), supported by a wireless microphone to enhance the volume and clarity of the recorded session. The test lasted between 20 and 30 minutes for each child. Before each subtest, the children were given two practice trials. A maximum of three attempts would be given if the child did not respond.

Scoring Procedure

A mark was given for the correct response in PA and reading tests, and a zero mark was given for the wrong or no response, except for the reading sentences. In the reading task, each sentence will be scored two marks if the children read each word accurately, and inaccurate responses will be scored using Equation 1:

$$\text{Score (sentence reading)} = \frac{\text{number of correct words}}{\text{total number of words in sentence}} \times 2 \quad [1]$$

The maximum score for the phonological awareness test is 60, while the maximum score for letter knowledge is 26, non-word reading is 10, word reading is 10, and sentence reading is 10. The reading tasks were only tested on children aged 5 and 6 years.

Inter-Rater Reliability

The second pilot study results were independently scored by a local speech-language therapist who speaks the Indonesian language fluently. This rater was a lecturer in the Speech Therapy program in Indonesia. Video recordings and scoring forms were provided. The degree of agreement was calculated based on the percentage of the agreement. The overall agreement was high: 99.6% for phonological awareness tasks and 100% for each letter knowledge, non-word reading, word reading, and sentence reading tasks.

RESULTS

The difference in PA and reading task performance across age groups was determined using statistical analysis, namely parametric One-Way Analysis of Variance (One-Way ANOVA), whilst the difference in performance for the same tasks between gender groups was determined using the Independent Sample t-test. Qualitative analysis was also provided to analyze the

developmental pattern of PA skills among typically developing children.

Statistical Analysis

Statistical analysis confirmed a significant age effect on the total score of PA (F(3, 4) = [70.738], p = 0.001). Least Significant Difference (LSD) test for multiple comparisons found that the mean value of total PA score was significantly different between age groups 1 and 3 (p = 0.01, 95% C.I. = [-29.34, -14.65]; age groups 1 and 4 (p = 0.00, 95% C.I. = [-38.34, -23.65]; age groups 2 and 3 (p = 0.01, 95% C.I. = [-29.34, -14.65]; age groups 2 and 4 (p = 0.00, 95% C.I. = [-38.34, -23.65]; and age groups 3 and 4 (p = 0.027, 95% C.I. = [-16.34, -1.65]. However, no statistically significant difference exists in the total PA scores between age groups 1 and 2 (p = 1.000).

This pattern of results indicates that children aged 3 years showed little improvement in PA skills over the subsequent year when they reached 4 years old. However, beyond 4 years old, they showed more significant improvement in their PA skills, which could be attributed to more mature cognitive skills that come with biological maturation or an input (literacy exposure) factor that is associated with the age factor, i.e., the older the children, the more literacy input they receive.

Tables 5 and 6 show each mean score and standard deviation on each subtest of PA and reading tasks of all subjects, together with the One-Way ANOVA results. Table 5 indicates that PA skills were developed based on age maturity, with older children performing better than younger children. In the syllable detection, rhyme detection,

Table 5

Performance of the six subtests for PA (mean, SD) with the statistical comparison between age groups

	3–3 years 11 months (n=2)	4–4 years 11 months (n=2)	5–5 years 11 months n=2)	6–6 years 11 months (n=2)	*p*, F
Syllable detection (n=10)	1.50 (0.70)	6.00 (4.24)	9.00 (1.41)	9.50 (0.70)	*p*=0.074 F=5.143
Syllable deletion (n=10)	0.50 (0.70)	1.00 (1.41)	5.50 (0.70)	7.50 (2.12)	*p*=0.017* F=12.511
Rhyme detection (n=10)	6.00 (1.41)	3.50 (2.12)	7.00 (1.41)	8.50 (0.70)	*p*=0.110 F=3.926
Rhyme oddity (n=10)	4.50 (2.12)	2.00 (2.82)	4.00 (0.00)	7.00 (2.82)	*p*=0.313 F=1.650
Alliteration oddity (n=10)	2.50 (0.70)	2.50 (0.70)	4.50 (2.12)	4.50 (0.70)	*p*=0.290 F=1.778
Phoneme deletion (n=10)	0.00 (0.00)	0.00 (0.00)	7.00 (4.24)	9.00 (0.00)	*p*=0.026* F=9.778
Total PA Score (n=60)	15.00 (2.82)	15.00 (1.41)	37.00 (4.24)	46.00 (0.00)	*p*=0.001** F=70.738

Notes. *p<0.05 level; **p<0.01 level; n=2 each: two children per age group; n=10: number of target items for each PA and reading task; n=26: number of target items for letter knowledge task

Table 6
Performance of four subtests for reading (mean, SD) with the statistical comparison between age groups

	3–3 years 11 months (n=2)	4–4 years 11 months (n=2)	5–5 years 11 months (n=2)	6–6 years 11 months (n=2)	*p*, F
Letter knowledge (n=26)	7.50 (7.77)	14.00 (8.48)	23.00 (1.41)	23.50 (0.70)	*p*=0.128 F=3.506
Non-word reading (n=10)	Not Tested	Not Tested	7.00 (1.41)	8.00 (2.82)	*p*=0.012* F=15.133
Word reading (n=10)	Not Tested	Not Tested	7.00 (4.24)	9.50 (0.70)	*p*=0.024* F=10.261
Sentence reading (n=10)	Not Tested	Not Tested	5.00 (7.07)	9.28 (0.19)	*p*=0.145 F=3.211
Total reading (n=30)	Not Tested	Not Tested	19.00 (12.72)	26.78 (3.55)	*p*=0.033* F=8.464

Notes. *Difference is significant at the *p*<0.05 level; n=2 each: two children per age group; n=10: number of target items for each PA and reading task; n=26: number of target items for letter knowledge task

rhyme oddity, and alliteration oddity subtests, no age differences were found. Age differences were found in the syllable deletion, phoneme deletion, and total PA (*p*<0.05). These results indicate that younger children (3–4 years old) showed comparable performance to older children (5–6 years old) on all PA tasks except for syllable deletion and phoneme deletion tasks. The deletion task, a form of manipulative task, posed significant challenges to children under 5, and it could serve as a distinctive marker for PA to distinguish younger children from older children beyond 5 years old (Figure 1).

The total score of reading tasks found a significant difference across age groups (F(3, 4) = [8.464], *p* = 0.033). Table 6 shows that there were no statistically significant differences in the performance of letter knowledge and sentence reading across age groups. At 3 years old, some children can name a few letters. At 5 years and above, it can be observed that Indonesian children have mastered almost 90% of the 26 letters. The underlined point is the letter-sound correspondence, and the relationship between oral and written language begins to develop at the age of 5 because children can name letters even in the previous year (under 5 years), but they cannot immediately read. Children aged 5 years start learning to read at the word level and become fluent at the sentence level by the time they are 6 years old.

It is worth noting that, owing to the small sample size used in the present analysis, future research using a larger sample size is desirable to validate the present findings of age effects on PA and reading task performance in Indonesian children.

On the other hand, the results of the statistical analysis *t*-test show that there were no significant differences between boys and girls for the performance on PA tasks (t(6)=0.-179, *p*=0.86), letter knowledge task (t(6)=0.078, *p*=0.94), and reading tasks (t(2)=0.660, *p*=0.577; Table 7). These
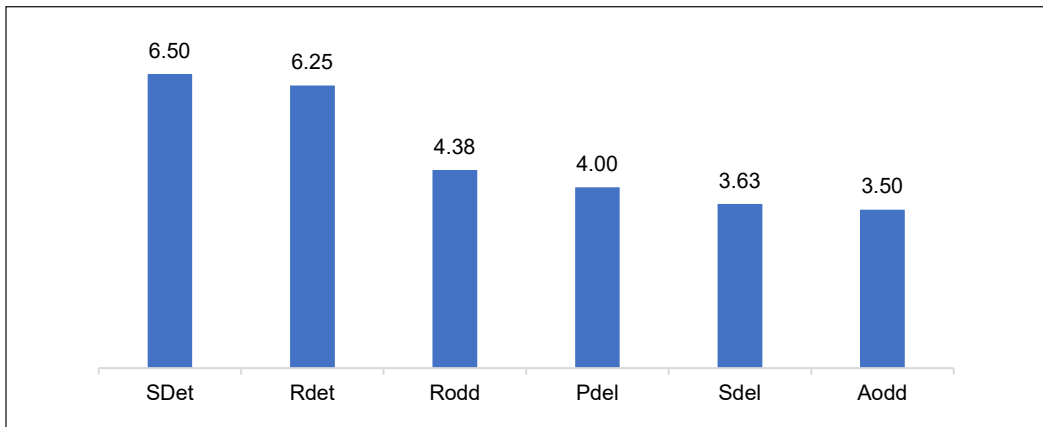
Figure 1. Mean scores comparison of each PA task

patterns of findings suggest that, overall, male and female subjects showed comparable performance on the PA and reading tasks. In other words, gender does not have a significant impact on the PA and reading skills in Indonesian children. However, given the small sample size, this finding of a negative gender impact on PA and reading skills in Indonesian children ought to be interpreted with some caution; future studies using a larger sample size are recommended to validate the present finding.

Qualitative Analysis

Figure 1 shows the differences in the mean score between each rank, from the easiest to the most difficult task, based on the mean score by descriptive statistics of each subtest obtained by the subject. Accordingly, the easiest to the most difficult were syllable detection (6.50 ± 3.81), rhyme detection (6.25 ± 2.25), rhyme oddity (4.38 ± 2.56), phoneme deletion (4.00 ± 4.62), syllable detection (3.63 ± 3.33), and alliteration oddity (3.50 ± 1.41). The larger linguistic

Table 7
The total mean score for PA skills, letter knowledge, and reading abilities between genders

Tasks	Gender (n=4 each)	
	Boys	Girls
PA (n=60)	27.25 (15.56)	29.25 (16.11)
Letter Knowledge (n=26)	17.25 (8.05)	16.75 (9.91)
Reading (n=30)	19.65 (13.64)	26.13 (2.63)

Notes. n=60: sixty items in PA tasks; n=26: twenty-six items in the letter knowledge task; n=30: thirty items in reading tasks; n=4 each: four children per gender, except reading tasks n=2 each

units (syllables) developed earlier than the smaller ones (phoneme level). This pattern of results supports the grain size theory. Analysis tasks, such as detection tasks, were easier than manipulation tasks, such as deletion, except for the alliteration oddity.

Table 8 shows the developmental patterns of errors occurring in children who could not consistently detect/separate syllables in words, detect rhymes, detect alliteration, and delete syllables and

phonemes. Some have not responded or were partial respondents to those tasks. However, at age 5 years and above, it was found that children had more consistent awareness at the level of detection and manipulation, though some showed a tendency to delete phonemes as syllables in the phoneme deletion task. These developmental patterns of PA skills provide useful preliminary information for professionals, such as SLTs, dealing with Indonesian children to plan for therapy. More studies with large samples are necessary to provide further insights into the developmental patterns of PA, as these errors implicate typical, common patterns of PA demonstrated by typically developing children. Children who make atypical patterns may have a potential risk of delayed or disordered PA skills that require remediation.

Table 8
Developmental pattern of PA

Tasks	Patterns	Examples	Occurrences
Syllable detection	Absence of segmentation	*man-di* → 1 (clap hands)	21
	Partial segmentation	*se-mang-ka* → 2 (clap hands)	5
	Additional segmentation	*ke-le-la-war* → 5 (clap hands)	2
Syllable deletion	No response to syllable deletion	No response	25
	Absence of syllable deletion	Say "*pagi*" without /pa/ → *pagi*	9
	Partial syllable deletion	Say "*sepeda*" without /se/ → *da*	14
	Unrelated response	Say "*langit*" without /la/ → *satu*	3
Rhyme detection	Unable to detect rhyme	*jatuh – jari*, rhyming or not? → yes	30
Rhyme oddity	Unable to odd out that did not rhyme	Which one does not rhyme, *batu – kota – ratu*? → *ratu*	41
	Unintelligible response	Which one does not rhyme, *senang – jarum – benang*? → *benan*	4
Alliteration oddity	Unable to identify that did not start with the same initial sound	Which one does not start with the same sound, *timun – tomat – bayam*? → *tomat*	50
	Unintelligible response	Which one does not start with the same sound, *gelas – botol – garpu*? → *dapu*	1
	No response to alliteration oddity	No response	1
Phoneme deletion	Absence of phoneme deletion	Delete the initial sound of *senang* → *senang*	3
	Deleting as a syllable	Delete the initial sound of *hitam* → *tam*	7
	Pronounce the initial phoneme as a syllable	Delete the initial sound of *padi* → *pa*	7
	Unintelligible response	Delete the initial sound of *guru* → *ugu*	2
	No response to phoneme deletion	No response	29

DISCUSSION

The present study aims to investigate the feasibility of the newly developed PA test for Indonesian preschool children, specifically the Indonesian Phonological Assessment Test (IPAT). Experts found strong agreement on the test's face validity, although some adjustments were needed during the first pilot study. After these changes, content validity was conducted, and it was confirmed that it was valid. No changes were made after the second pilot study. Lastly, IPAT indicated a high level of inter-rater reliability agreement. Hence, the IPAT was proven to be a valid and reliable clinical test tool.

Age differences were analyzed to investigate the importance of separating norms for IPAT based on age. The analysis revealed a significant age effect on PA performance. Age is one of the strongest factors influencing the development of PA skills (Fröhlich et al., 2013). Older children performed better than young children (Abou-Elsaad et al., 2016; Cassano & Schickedanz, 2015; Justi et al., 2021). Santos et al. (2020) found a weak, yet significant, correlation between PA skills and age. Notably, children aged 6 performed significantly higher than those aged 4 and 5, suggesting the emergence of the metacognitive domain of language. This is relevant to Melogno et al. (2022), who indicated that children aged 5 and above have more advanced metalinguistic skills. The results of the age effect on PA skills reflect the need for separate age-based norms for IPAT.

However, post-hoc analysis showed no significant differences in PA between the age groups 3 00–3 11 and 4 00–4 11. These findings may be affected by the fact that children are still at the preschool level and receive only limited literacy exposure. Children aged 5 and 6 experienced a richer literacy exposure, which may enhance their early literacy skills before entering primary school. Santos et al. (2020) indicated that schooling factors influenced PA skills.

The present study also revealed significant age differences in reading tasks and points to a need for separate age norms for reading tasks. Nevertheless, post-hoc analysis revealed no age differences for the performance on letter knowledge and sentence reading tasks, although older children outperformed younger children. These patterns of results could be due to the early emergence of letters in the youngest children, aged 3, and the limited progress with sentence reading over a year (from age 5 to age 6), given the minimal literacy exposure to initial reading, with only about 60 minutes per week. Caution must be exercised with the present interpretation of age effects on PA and reading skills, as the sample size used for statistical analysis is small. Future studies with a larger sample size and more robust statistical analysis are highly recommended to validate the present findings.

The present small-scale study was the first to investigate the impact of gender on PA and reading skills in Indonesian children. The results of the statistical analysis showed that there were no statistically significant gender differences in test performance for PA and reading skills. However, given the small sample size, this novel finding ought to be validated by future research with a

larger sample size and more sophisticated statistical analysis.

Based on the mean score of each subtest, indicating the level of difficulty of the overall tasks, from the easiest to the most difficult, i.e., syllable detection, rhyme detection, rhyme oddity, phoneme deletion, syllable deletion, and alliteration oddity. This agrees with the psycholinguistic grain size theory that PA skills develop from larger linguistic units (syllable or rhyme) to the smallest ones (phoneme; Ziegler & Goswami, 2005). Syllable awareness emerged early and could be observed from ages 3–4 years, while phoneme awareness would only exist at the end of the kindergarten stage (O'Brien et al., 2019; Vazeux et al., 2020). Phoneme tasks were often the most challenging in many studies across various languages (Cassano & Schickedanz, 2015; Justi et al., 2021). Furthermore, PA studies indicate similar trends, underscoring the saliency of syllables at the beginning of PA skills development in Indonesian children (Siswanto & Pratomo, 2019; Taruna et al., 2019; Winskel & Widjaja, 2007). The findings of this qualitative analysis on the order of task difficulty pointed to a need to reorder the tasks included in IPAT (Appendix 3) from the easiest to the most difficult as described above: syllable detection, rhyme detection, rhyme oddity, phoneme deletion, syllable deletion, and alliteration oddity. This reordering of tasks will be less burdensome, particularly for the youngest children aged 3, to complete the IPAT.

The analysis of error patterns in children's PA skills still needs to be explored. The most prevalent error patterns, as analyzed in Table 8, showed that the most common patterns were no responses (especially in syllable and phoneme deletion), alliteration errors, and rhyme oddity errors. No responses in syllable and phoneme deletion showed that these two tasks were quite difficult for children under the age of 5 because these tasks are cognitively more complex than detection tasks. The deletion task is considered a high-level PA task because it requires a two-step operation (Cassano & Steiner, 2016). The findings provide consideration to test the syllable and phoneme deletion tasks only for children aged 5 and above. Secondly, the most prevalent error patterns observed were in tasks involving alliteration and rhyme oddity. This suggests that alliteration (onset) and rhyme are not widely accessible in the Indonesian language, as most Indonesian words are disyllabic (Lapoliwa, 1981). Similarly, Chan et al. (2024) also indicated alliteration errors as one of the most prevalent error patterns in English-Malay-speaking Chinese children; the participants in the study tended to choose words with related meanings to complete the task (more focus on semantics rather than the first sound of each word tested).

However, since more than 90% of syllable structures in the Indonesian language are disyllabic, Indonesian children may use a disyllabic, rhyme-based analogy (which includes alliteration and rhyme awareness) less effectively in learning to read. Larger studies are needed to obtain more representative error patterns on PA skills in Indonesian children. Carefulness is

needed when determining the type of errors for children under 5 years old, since the acquisition of speech sounds is not complete until 5 years old. If SLP faces unintelligible speech due to a speech sound acquisition issue by the child during the PA assessment session, it should not be categorized as an error in the PA tasks.

It is important to note that this pilot study's limited number of subjects may have influenced the findings. Future studies also need to include other potential factors (e.g., language skills) related to PA and reading performance.

CONCLUSION

The pilot study results provide valuable insights into the development of PA skills and early reading performance among preschool children in Indonesia. This research further requires recruiting more subjects to standardize the PA test that has been piloted and use the instrument to assess a larger population of Indonesian preschoolers.

Furthermore, the present findings contribute to the existing literature on PA and early reading abilities in children. The study also provides preliminary, useful clinical information to professionals, such as speech-language therapists (SLTs), dealing with Indonesian children.

Limitation

This pilot study recruited only a few Indonesian preschoolers, which may provide preliminary findings on the possibility and suitability of making several modifications based on related considerations. Therefore,

the generalization of the present findings to children from backgrounds other than Javanese in Indonesia is limited.

Recommendation for Future Research

This research further requires recruiting more subjects to standardize the PA test that has been piloted and using the instrument to assess a larger population of Indonesian preschoolers, including those from non-Javanese backgrounds.

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APPENDIX

(I) FORM OF FACE VALIDITY

INDONESIAN PHONOLOGICAL AWARENESS TEST (IPAT)

No	Kriteria yang Dinilai *(Criteria)*	Respon	
		Ya *(Yes)*	Tidak *(No)*
1	Kesesuaian tata bahasa. *(Appropriateness of grammar).*		
2	Kejelasan instruksi dan item tes tidak ambigu. *(The clarity and unambiguity of items).*		
3	Ketepatan ejaan kata-kata. *(The correct spelling of words).*		
4	Ketepatan struktur kalimat. *(The correct structuring of the sentences).*		
5	Kesesuaian ukuran huruf dan spasi. *(Appropriateness of font size and space).*		
6	Naskah tes dapat terbaca dengan jelas. *(Legible printout).*		
7	Instruksi pada instrument yang adekuat. *(Adequacy of instruction on the instrument).*		
8	Struktur instrumen ditinjau dari konstruksi dan format (dipikirkan dengan baik/ matang). *(The structure of the instrument in terms of construction and well-thought-out format).*		
9	Kesesuaian tingkat kesulitan instrumen bagi subjek penelitian. *(Appropriateness of difficulty level of the instrument for the participants).*		
10	Kewajaran item (berkaitan dengan tujuan dari instrument), termasuk pemilihan kosa kata dan kesesuaian usia subjek penelitian. *(Reasonability of items in the instrument, including vocabulary selection and age appropriateness of research subjects).*		
Komentar *(Comments)*			
Diisi oleh *(Name of expert)*			
Kualifikasi/ Jabatan *(Qualification)*			
Total Pengalaman (Tahun) *(Years of experiences)*			
Profesi *(Profession)*			
Tanggal Penilaian *(Date)*			

Source: Desai & Patel (2020)

(II) FORM OF CONTENT VALIDITY

*Berikan penilaian dengan tanda √ pada kolom nilai revelansi

Aspek	Indikator	Aitem	Pemberian Instruksi	Estimasi Usia (dalam tahun)	Nilai Relevansi				
					1	2	3	4	5
PA: Suku kata	Deteksi	1. pas	Pisahkan sambil tepuk tangan kata "pas"	3;00-6,11					
		2. mandi	Pisahkan sambil tepuk tangan kata "mandi"						
		3. malam	Pisahkan sambil tepuk tangan kata "malam"						
		4. lompat	Pisahkan sambil tepuk tangan kata "lompat"						
		5. besar	Pisahkan sambil tepuk tangan kata "besar"						
		6. jendela	Pisahkan sambil tepuk tangan kata "jendela"						
		7. semangka	Pisahkan sambil tepuk tangan kata "semangka"						
		8. belajar	Pisahkan sambil tepuk tangan kata "belajar"						
		9. kelelawar	Pisahkan sambil tepuk tangan kata "kelelawar"						
		10. matahari	Pisahkan sambil tepuk tangan kata "matahari"						
	Penghapusan	1. pagi	Hapus "pa" pada kata "pagi", jadi?	3;00-6,11					
		2. ambil	Hapus "am" pada kata "ambil", jadi?						
		3. lampu	Hapus "lam" pada kata "lampu", jadi?						
		4. langit	Hapus "la" pada kata "langit", jadi?						
		5. terbang	Hapus "ter" pada kata "terbang", jadi?						
		6. sepeda	Hapus "se" pada kata "sepeda", jadi?						
		7. bendera	Hapus "ben" pada kata "bendera", jadi?						
		8. alpukat	Hapus "al" pada kata "alpukat", jadi?						
		9. sederhana	Hapus "se" pada kata "sederhana", jadi?						
		10. keluarga	Hapus "ke" pada kata "keluarga", jadi?						
PA: Rima	Deteksi	1. bagi-lagi	"bagi-lagi", apakah terdengar sama?	3;00-6,11					
		2. jatuh-jari	"jatuh-jari", apakah terdengar sama?						
		3. satu-simpan	"satu-simpan", apakah terdengar sama?						

			Age
	4.beras-deras	"beras-deras", apakah terdengar sama?	
	5.jas-jin	apakah terdengar sama?	
	6.tali-kali	"tali-kali", apakah terdengar sama?	
	7.kasur-kursi	"kasur-kursi", apakah terdengar sama?	
	8.baca-kaca	"baca-kaca", apakah terdengar sama?	
	9.pisau-pantai	"pisau-pantai", apakah terdengar sama?	
	10.taman-paman	"taman-paman", apakah terdengar sama?	3;00-6,11
Kejanggalan	1.batu-kota-ratu	Pilih satu kata yang terdengar beda, "batu-kota-ratu"!	
	2.buka-luka-sapu	Pilih satu kata yang terdengar beda, "buka-luka-sapu"!	
	3. kayu-baja-raja	Pilih satu kata yang terdengar beda, "kayu-baja-raja"!	
	4.senang-jarum-benang	Pilih satu kata yang terdengar beda, "senang-jarum-benang"!	
	5. tanah-raket-paket	Pilih satu kata yang terdengar beda, "tanah-raket-paket"!	
	6.miring-sendok-piring	Pilih satu kata yang terdengar beda, "miring-sendok-piring"!	
	7. panas-nanas-sikat	Pilih satu kata yang terdengar beda, "panas-nanas-sikat"!	
	8. sawah-pohon-bawah	Pilih satu kata yang terdengar beda, "sawah-pohon-bawah"!	
	9.sandal-sarung-karung	Pilih satu kata yang terdengar beda, "sandal-sarung-karung"!	
	10. tuang-buang-makan	Pilih satu kata yang terdengar beda, "tuang-buang-makan"!	
Kejanggalan (aliterasi)	1.timun-tomat-bayam	Pilih satu kata yang bunyi paling depannya beda, "timun-tomat-bayam"!	3;00-6,11
	2.pita-kartu-kertas	Pilih satu kata yang bunyi paling depannya beda, "pita-kartu-kertas"!	
	3. gelas-botol-garpu	Pilih satu kata yang bunyi paling depannya beda, "gelas-botol-garpu"!	
	4.pagar-rantai-rumput	Pilih satu kata yang bunyi paling depannya beda, "pagar-rantai-rumput"!	
	5. madu-minyak-garam	Pilih satu kata yang bunyi paling depannya beda, "madu-minyak-garam"!	

PA: Fonem

	Item	Instruksi	Usia
Penghapusan	6. duduk-lempar-lompat	Pilih satu kata yang bunyi paling depannya beda, "duduk-lempar-lompat"!	
	7. cicak-cacing-semut	Pilih satu kata yang bunyi paling depannya beda, "cicak-cacing-semut"!	
	8. hotel-pasar-hutan	Pilih satu kata yang bunyi paling depannya beda, "hotel-pasar-hutan"!	
	9.jagung-pisang-jeruk	Pilih satu kata yang bunyi paling depannya beda, "jagung-pisang-jeruk"!	
	10.pintu-panci-kaleng	Pilih satu kata yang bunyi paling depannya beda, "pintu-panci-kaleng"!	
	1.hitam	Hapus bunyi paling depan pada kata "hitam", jadi?	3;00-6,11
	2.padi	Hapus bunyi paling depan pada kata "padi", jadi?	
	3. merah	Hapus bunyi paling depan pada kata "merah", jadi?	
	4. guru	Hapus bunyi paling depan pada kata "guru", jadi?	
	5. roti	Hapus bunyi paling depan pada kata "roti", jadi?	
	6. lima	Hapus bunyi paling depan pada kata "lima", jadi?	
	7. noda	Hapus bunyi paling depan pada kata "noda", jadi?	
	8. jambu	Hapus bunyi paling depan pada kata "jambu", jadi?	
	9. cuci	Hapus bunyi paling depan pada kata "cuci", jadi?	
	10. senang	Hapus bunyi paling depan pada kata "senang", jadi?	
Ketepatan — **Membaca kata tidak bermakna**	1.ma	Ini dibaca apa?	5;00-6;11
	2.dis	Ini dibaca apa?	
	3. nejo	Ini dibaca apa?	
	4.roha	Ini dibaca apa?	
	5.goyak	Ini dibaca apa?	
	6.pilung	Ini dibaca apa?	
	7.nyisam	Ini dibaca apa?	
	8.triko	Ini dibaca apa?	
	9.kiwaga	Ini dibaca apa?	
	10.cibatu	Ini dibaca apa?	

			5;00-6;11							
Membaca kata bermakna	Ketepatan	1.jam	Ini dibaca apa?							
		2.roda	Ini dibaca apa?							
		3.gajah	Ini dibaca apa?							
		4.santai	Ini dibaca apa?							
		5.kerbau	Ini dibaca apa?							
		6.nyamuk	Ini dibaca apa?							
		7.payung	Ini dibaca apa?							
		8.wajan	Ini dibaca apa?							
		9.celana	Ini dibaca apa?							
		10.sepatu	Ini dibaca apa?							
Membaca kalimat	Ketepatan	1.Adi adalah siswa taman kanak-kanak.	Ini dibaca apa?	5;00-6;11						
		2.Adi selalu bangun jam enam pagi agar tidak terlambat ke sekolah.	Ini dibaca apa?							
		3.Adi segera mandi dan berganti baju untuk bersiap pergi ke sekolah.	Ini dibaca apa?							
		4.Lalu, Adi makan nasi goreng yang sudah disiapkan ibu di meja makan.	Ini dibaca apa?							
		5.Selesai makan, Adi pergi ke sekolah diantar oleh ayah naik motornya.	Ini dibaca apa?							

Catatan:
1: sangat tidak relevan
2: tidak relevan
3: cukup relevan
4: relevan
5: sangat relevan
Source: Polit et al. (2007)

(III) The Scoring form of the finalised Indonesian Phonological Awareness Test (IPAT)

LEMBAR PENILAIAN TES KESADARAN FONOLOGI

Nama:	Tanggal lahir:
Jenis kelamin:	Tanggal pemeriksaan:
Nama sekolah:	Usia:

Anak diberikan maksimal 3 kali percobaan. Respon benar = 1 (satu), respon salah/tidak merespon = 0 (nol).

1. **Deteksi suku kata (*Syllable detection*)**

   Instruksi:

   "Tirukan kata yang aku ucapkan sambil tepuk tangan di setiap bagian suku katanya!". Contoh: *gigi →*
   gi-gi (2 kali tepuk tangan)

   Catat jumlah tepuk tangan pada kolom respon.

   Percobaan:

No	Stimulus	Target
1	cat	1
2	balon	2

   Ujian:

No	Stimulus	Target	Respon	Nilai
1	pas	1		
2	mandi	2		
3	malam	2		
4	lompat	2		
5	besar	2		
6	jendela	3		
7	semangka	3		
8	belajar	3		
9	kelelawar	4		
10	matahari	4		
Jumlah nilai				10

2. **Penghapusan suku kata (*Syllable deletion*)**

   Instruksi:

   "Hapus suku kata paling depan dan ucapkan bagian kata yang tersisa!"

   Contoh: Hapus '*bu*' pada kata '*buku*'! → '*ku*'

   Percobaan:

No	Stimulus	Suku kata yang dihapus	Target
1	putih	pu	tih
2	boneka	bo	neka

   Ujian:

No	Stimulus	Suku kata yang dihapus	Target	Respon	Nilai
1	pagi	pa	gi		
2	ambil	am	bil		
3	lampu	lam	pu		
4	langit	la	ngit		
5	terbang	ter	bang		

6	sepeda	se	peda		
7	bendera	ben	dera		
8	alpukat	al	pukat		
9	sederhana	se	derhana		
10	keluarga	ke	luarga		
Jumlah nilai					10

3. **Deteksi rima (*Rhyme detection*)**
   Instruksi:
   "Aku punya dua kata, bilang 'ya' kalau terdengar sama, bilang 'tidak' kalau terdengar beda!"
   Contoh:
   bola – pola, apakah terdengar sama? (ya)
   melon – mulut, apakah terdengar sama? (tidak)
   Percobaan:

No	Stimulus	Target
1	palu – malu	Ya
2	kaya – kotor	Tidak

   Ujian:

No	Stimulus	Target	Respon	Nilai
1	bagi – lagi	Ya		
2	jatuh – jari	Tidak		
3	satu – simpan	Tidak		
4	beras – deras	Ya		
5	jas – jin	Tidak		
6	tali – kali	Ya		
7	kasur – kursi	Tidak		
8	baca – kaca	Ya		
9	pisau – pantai	Tidak		
10	taman – paman	Ya		
Jumlah nilai				10

4. **Kejanggalan rima (*Rhyme oddity*)**
   Instruksi: "Aku punya tiga kata, pilihlah satu yang terdengar beda!"
   Contoh: *suka – duka – malu*? → *malu.*
   Percobaan:

No	Stimulus	Target
1	mata – dasi – kata	dasi
2	gula – paku – saku	gula

   Ujian:

No	Rima	Target	Respon	Nilai
1	batu – kota – ratu	kota		
2	buka – luka – sapu	sapu		
3	kayu – baja – raja	kayu		
4	senang – jarum – benang	jarum		
5	tanah – raket – paket	tanah		

6	miring – sendok – piring	sendok		
7	panas – nanas – sikat	sikat		
8	sawah – pohon – bawah	pohon		
9	sandal – sarung – karung	sandal		
10	tuang – buang – makan	makan		
Jumlah nilai				10

5. **Kejanggalan aliterasi (*Alliteration oddity*)**

Instruksi:

"Aku punya tiga kata, pilihlah satu yang bunyi paling depannya beda!"

Contoh:

kucing – burung – kambing? → burung.

Percobaan:

No	Stimulus	Target
1	kurma – kacang – permen	permen
2	sapi – tikus – singa	tikus

Ujian:

No	Stimulus	Target	Respon	Nilai
1	timun – tomat – bayam	bayam		
2	pita – kartu – kertas	pita		
3	gelas – botol – garpu	botol		
4	pagar – rantai – rumput	pagar		
5	madu – minyak – garam	garam		
6	duduk – lempar – lompat	duduk		
7	cicak – cacing – semut	semut		
8	hotel – pasar – hutan	pasar		
9	jagung – pisang – jeruk	pisang		
10	pintu – panci – kaleng	kaleng		
Jumlah nilai				10

6. **Penghapusan fonem (*Phoneme deletion*)**

Instruksi:

"Hapus bunyi paling depan dan ucapkan bagian kata yang tersisa!"

Contoh: kata *'kuda' → 'uda'.*

Percobaan:

No	Stimulus	Fonem yang dihapus	Target
1	baju	/b/	aju
2	sore	/s/	ore

Ujian:

No	Stimulus	Fonem yang dihapus	Target	Respon	Nilai
1	hitam	/h/	itam		
2	padi	/p/	adi		
3	merah	/m/	erah		
4	guru	/g/	uru		
5	roti	/r/	oti		

6	lima	/l/	ima		
7	noda	/n/	oda		
8	jambu	/dʒ/	ambu		
9	cuci	/tʃ/	uci		
10	senang	/s/	enang		
Jumlah nilai					10

(IV) LEMBAR PENILAIAN MEMBACA

A. **Pengetahuan tentang Huruf (Letter knowledge)**

Intruksi: Tunjukkan kartu bergambar huruf kepada anak, minta anak untuk menamai huruf tersebut "Ini huruf apa?"

No	Target	Respon	Nilai
1	e		
2	b		
3	k		
4	u		
5	p		
6	m		
7	a		
8	l		
9	g		
10	o		
11	h		
12	c		
13	t		
14	r		
15	d		
16	i		
17	x		
18	z		
19	n		
20	w		
21	s		
22	j		
23	f		
24	y		
25	q		
26	v		
Jumlah nilai			26

B. **Membaca Kata Tidak Bermakna (*Non-Word Reading*)**

Instruksi: "Bacalah kata-kata berikut!"

No	Target	Respon	Nilai
1	ma		
2	dis		

3	nejo		
4	roha		
5	goyak		
6	pilung		
7	nyisam		
8	triko		
9	kiwaga		
10	cibatu		
Jumlah nilai			10

C. **Membaca Kata** *(Word Reading)*

Instruksi: "Bacalah kata-kata berikut!"

No	Target	Respon	Nilai
1	jam		
2	roda		
3	gajah		
4	santai		
5	kerbau		
6	nyamuk		
7	payung		
8	wajan		
9	celana		
10	sepatu		
Jumlah nilai			10

D. **Membaca Kalimat** *(Reading Sentences)*

Instruksi: Bacalah kalimat-kalimat di bawah ini!
Garis bawahi kata yang salah diucapkan dan tulis respon versi peserta di kolom yang disediakan.
Beri nilai 2 untuk setiap kalimat yang dibaca dengan benar.

No	Target	Kesalahan	Nilai
1	Adi adalah siswa taman kanak-kanak. (6)		
2	Adi selalu bangun jam enam pagi agar tidak terlambat ke sekolah. (11)		
3	Adi segera mandi dan berganti baju untuk bersiap pergi ke sekolah. (11)		
4	Lalu, Adi makan nasi goreng yang sudah disiapkan ibu di meja makan. (12)		
5	Selesai makan, Adi pergi ke sekolah diantar oleh ayah naik motornya. (11)		
Jumlah nilai			10