

Original Research**The Relationship Between Auditory Memory Digit And Receptive Language Ability Of Preschool Age Child In Surakarta****Muryanti Muryanti^{1*}, Windiarti Dwi Purnaningrum²**^{1,2} Department of Speech Therapy, Poltekkes Kemenkes Surakarta**ABSTRACT**

Background: Receptive language is the ability to understand what is seen and heard to help children develop listening skills, identify concepts through understanding the labeling of words, and improve the ability to respond to any communication. Auditory memory involves the ability to retrieve information presented orally. This study analyzed the relationship between auditory memory digit and preschool-age child receptive language ability.

Methods: This study was quantitative research. The research design used in this study was an observational correlation with a cross-sectional approach. The research sample consisted of 58 students in three Private Kindergartens existing in the Ministry of Education and Culture of Surakarta. Auditory memory testability of sample using hearing forward test and receptive language ability of sample using Assessment of Children's Language Comprehension form. Hypothesis testing using the Chi-Square hypothesis.

Results: The result it can be concluded that auditory memory digit does not have a relationship with receptive language ability in preschool-age children because significance value more than 0.05 ($p > 0.05$) with an OR value of 0.857, this means that the auditory memory digit is above average has a meager chance of influencing receptive language ability above average, which is only 0.857.

Conclusion: The dominant factor influencing the receptive language skills of children aged 3-6 years is communication during interactions or activities with parents, such as reading fairy tales or telling stories. Receptive language skills predicted symbolic understanding as reflected in picture comprehension and how language skills are interrelated with social skills.

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INTRODUCTION

The language component consists of five aspects, namely phonology, morphology, semantics, syntax, and pragmatics. Phonology is the study of the speech

sound system, including the rules for combining and using phonemes. Morphology is a study of linguistics that regulates the combination of morphemes that make a word have meaning.

The syntax is a word strung together into a grammatical sentence in a language. Semantics is the study of language that discusses the meaning of a word, and finally, pragmatics is the rules for using language in conversation in social and social contexts (ASHA, 2019). Language development is the development of learning abilities related to cognitive abilities (McAfee & Shipley, 2016).

States that children's language development includes the development of receptive language (understanding language) and expressive language (expressing language). Receptive language is the ability to understand what is seen and heard to help children develop listening skills, identify concepts through understanding the labeling of words, and improve the ability to respond to any communication (Fatwikiningsih, 2014). Receptive vocabulary develops rapidly in early childhood and forms the basis of language acquisition and literacy. Fluctuations in receptive vocabulary are associated with variability in children's academic performance, and lack of receptive vocabulary is a risk factor for school failure (Taylor et al., 2013).

At school, children will be nurtured in their visual receptive language skills (reading) and trained in visual expressive language skills (writing). Listening and reading skills are receptive language skills that involve visual and verbal symbols. Listening is listening to spoken language symbols, which involves understanding to obtain information, capturing content or messages, and understanding the meaning of communication conveyed verbally and stored as auditory memory (Maghfirah, 2019). Auditory memory involves retrieving information presented orally, processing information starting from storing information and then recalling what has been heard. It involves skills such as attention, listening, processing, storing, and remembering (Plessis, 2018).

Auditory Working Memory is a process of retaining sound in the mind for the short term when the sound abides and no longer abides in the environment. Auditory feedback is a process of listening to self-speech (self-monitoring) over what is uttered. This feedback is essential in achieving listening and speaking skills (Roy, 2018). Auditory memory is most commonly causing learning disorders but is most frequently neglected. Auditory Memory digit is a test held to find the term memory using successive digits that can be memorized by an individual who hears it.

They were stated that 13% of children aged 4-5 years out of 4983 children in Australia experienced language delays (Giovannone & Theodore, 2021). The 2013 Basic Health Research (Riskesdas) results show that the percentage of speech-impaired children aged 24-59 months ranges from 0.14 out of all samples in Indonesia (Badan Litbang Kesehatan, 2013). Based on the 2018 Basic Health Research (Riskesdas) results, an increase in the percentage of speech-impaired problems experienced by children aged 24-59 months to 0.15 of the entire sample in Indonesia (Badan Litbang Kesehatan, 2018).

This research aims to determine the relationship between Auditory Memory Digit and receptive language ability in the preschool-age child in Surakarta because of the increasing percentage of speech-impaired problems and the absence of previous research that explicitly examines matters related to auditory memory and receptive language ability.

MATERIALS AND METHOD

This research took place in three private Kindergartens (Indonesian: Taman Kanak-Kanak or TK) existing in the Ministry of Education and Culture (Kemendikbud) of Surakarta. This research was conducted from March to November 2021.

The population of this study was students in three kindergartens in Surakarta, with 150 students. The sample size was determined by the Slovin formula using simple random sampling. The sample size in this study was 58 students, which should have been 60 samples, but two samples could not be used as research samples based on the inclusion criteria in determining the sample. Inclusion criteria in determining the sample: The sample attends TK Surakarta, is willing to be a respondent in the study, and does not experience cognitive problems.

The instrument of research used in this study was Digit Forward Form to find out the auditory memory digit of the sample and the Assessment of Children's Language Comprehension form to find out the receptive language ability of the sample. The test of the validity of the digit forward form has been carried out by previous researchers with the results $p < 0.05$, which means it is valid so that the researcher does not test the validity again.

Analysis was conducted using univariate and bivariate analyses. Bivariate analysis is used to determine the relationship between Auditory Memory Digit and receptive language ability of the preschool-age child in Surakarta. Hypothesis testing was carried out using the Chi-Square test.

RESULTS

Data univariate analysis shows the distribution of frequency for the research data, including auditory memory testability of sample using hearing forward test and receptive language ability of sample using Assessment of Children's Language Comprehension form. Determination of the average value by using the total value of the sample in working on the research instrument divided by the total number of samples. The researcher did this because it was by the research objectives.

Table 1. Result of *Auditory Memory* with *Digit Forward* form

Description	Frequency	Percent	Valid Percent
Above average	34	58.6	58.6
Below average	24	41.4	41.4
Total	58	100.0	100.0

From the data presented in Table 1, the result of Auditory Memory using Digit Forward form shows that out of 58 samples, 34 students (58.6%) obtained the result of auditory memory digit ability above average, and 24 students (41.4%) obtained result below average.

Table 2. Result of Receptive Language Ability test with *Assessment of Children's Language Comprehension* Form

Description	Frequency	Percent	Valid Percent
Above Average	35	60.3	60.3
Below Average	23	39.7	39.7
Total	58	100.0	100.0

From table 2 presenting the Result of the Receptive Language Ability test with Assessment of Children's Language Comprehension Form, it can be concluded that out of 58 samples, 35 students (60.3%) obtained receptive language ability results above average and 23 students (39.7%) obtain result below average.

Table 3. Hypothesis Testing using *Chi Square* test

<i>Auditory Memory Digit</i>	Receptive Language Ability			ρ value	OR (95% CI)
	Above Average	Below Average	Total		
	n (%)	n (%)	n (%)		
Above average	20.5 (34.5)	13.5 (24.1)	34 (58.6)	0.993	0.857
Below average	14.5 (25.9)	9.5 (15.5)	24 (41.4)		
Total	35 (60.3)	23 (39.7)	58 (100)		

The results of the analysis of the relationship between auditory memory digits and receptive language ability of preschool children in Surakarta showed that the above-average auditory memory digit ability was 34 samples, of which 13.5% had below-average receptive language ability while hearing ability below-average digital memory ability was 24 samples, 9.5% of them have receptive language ability below average.

From the result of hypothesis testing using the Chi-Square hypothesis, 58 samples can be found ρ value of 0.993. Therefore, it can be concluded that auditory memory digit does not have a relationship with receptive language ability in preschool-age children because significance value more than 0.05 ($p > 0.05$) with an OR value of 0.857, this means that the auditory memory digit above average has a meager chance of influencing receptive language ability above average, which is only 0.857.

DISCUSSION

Memory is a process by which knowledge is received, stored, and retrieved. (Putranto, 2009) explains that Memory (memory) is an individual's ability to store information and be recalled for later use. According to (Atkinson & Shiffrin, 2000), memory is stored in four information storage systems, namely sensory memory (sensory memory), long-term memory (long-term memory), short-term memory (short-term memory), and working memory (working memory). Auditory memory involves retrieving information presented orally, processing information starting from storing information and then recalling what has been heard. It involves paying attention, listening, processing, storing, and remembering (Plessis, 2018).

Based on the data processing conducted in the research entitled the between Auditory Memory Digit and Receptive Language Ability of Preschool Age Child, the result of bivariate analysis with Chi-Square test can be found as shown in table 4.3, indicating a p-value of 0.778. The result shows that the auditory memory digit has no relationship with the Receptive Language Ability in preschool children.

Receptive language development is a complex process. Receptive language is early language mastery ability, i.e., understanding and being understandable, receiving and coding, or interpreting the language by observing both visual and verbal symbols, for example, in reading and listening activities constituting the comprehension ability. Knowing each other and responding to an individual in an event is also receptive language. Their journals revealed the receptive language ability of 3-6-year-old children

(Khosibah & Dimiyati, 2021). Children begin to show their ability to understand grammar in conversation and their interest in reading material or story and understand the relationship between sound and word.

The factor affecting the receptive language ability of 3-6-year-old children dominantly is communication occurring during the interaction or doing activities along with parents, such as reading fairy tales or telling stories. In addition, another factor affecting the receptive language development of preschool-age children is the environmental factor, in which parents' education level and stress affect the children caretaking by 8% (Sylvestre et al., 2012).

Explored the differences of expressive and receptive language skills predicted symbolic comprehension in the picture between late talking and typically developing children; this study showed a correlation between language and social skills (Cheung et al., 2022).

CONCLUSION

The prevalence of Auditory Memory Digit ability in preschool-age children in Surakarta from the three Kindergartens with a totally 58 samples indicates that 34 students obtain the result of auditory memory digit above average and 24 students obtain result below average. The prevalence of receptive language ability in preschool-age children in Surakarta from the three Kindergartens with a totally of 58 samples indicates that 35 students obtain results above average, and 23 students obtain result below average. There is no relationship between Auditory Memory Digit and receptive language ability in preschool-age children in Surakarta (OR= 0.857 and ρ value= 0.993).

Further research should expand the scope of research so that the result can be generalized more related to the receptive language ability of children.

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