408-Article_Text-1317-1-2-20220114.docx

by Muryanti Muryanti2022

Submission date: 17-Jan-2022 11:24AM (UTC+0700)
Submission ID: 1742789500
File name: 408-Article_Text-1317-1-2-20220114.docx (126.88K)
Word count: 2387
Character count: 14395

Original Research/Systematic Review

The Relationship between *Auditory Memory Digit* and Receptive Language Ability of Preschool Age Child in Surakarta

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Background: Preschool child is the one aged 3-6 years. A three year old child usually can attend playgroup program, while the 4-6 year old child can attend kindergarten program. The development of preschool child involves motor, personal, social, and language development (Septiani et al., 2016). Language development in child is divided into three: language element establishment, definition, and vocabulary, and language use (Mangoenprasodjo & Hidayati, 2005). The capacity of working memory is a complex limited cognitive ability in saving temporarily and manipulating information to learn, think, pay attention, calculate, remember, define reading source, and solve problem (Putra et al., 2017).

Objective: The objective of research is to find out a) the prevalence of *Auditory Memory Digit* ability of preschool child in Surakarta b). Find out the prevalence of receptive language ability in preschool children in Surakarta, and c) the relationship between *Auditory Memory Digit* and receptive language ability of preschool age child in Surakarta.

Method: The research was conducted in three Private Kindergartens existing in the Ministry of Education and Culture of Surakarta's environment: TK Sri Juwita Hanum Mojosongo, TKIT Al-Kautsar Mojosongo, and TK 'Aisyiyah Mojosongo. This study was a quantitative research. The research design used in this study was observational correlation with cross sectional approach. The sample of research consisted of 58 students.

Result: The result of hypothesis testing using *Chi Square* test shows ρ value of 0.778.

ARTICLE HISTORY
Received :…………………
Accepted:………………….

KEYWORDS
Preschool child, Language Development, Receptive Language, Auditory Memory Digit.

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Conclusion: Based on the result of hypothesis testing, it can be concluded that *auditory memory digit*_is not correlated to the receptive language ability of preschool age children. (Khosibah & Dimyati, 2021) in his research journal revealed the receptive language ability of 3-6 year old children, in which children show that they have understood the grammar in conversation, children begin to be interested in reading source or story, they begin to understand the relation of sound to word. The factor dominantly affecting the receptive language ability of 3-6 year children is communication occurring during interaction or doing activities, like reading or telling story, along with parents.

Cite this as: ………………………….

INTRODUCTION

Preschool child is the one aged 3-6 years. A three year old child usually can attend playgroup program, while the 4-6 year old child can attend kindergarten (Indonesian: *Taman Kanak-kanak* or TK) program. Kindergarten (thereafter called TK) is a form of early age child education unit in formal education holding education program for 4(four) to 6 (six) year old children (Permendikbud RI, 2010) about the management and the organization of education). Preschool is a golden age in which stimulation of all developmental aspects plays an important role for the further developmental task, where 80% of child's cognitive development has been achieved in preschool age (Septiani et al., 2016)

Language development is an ability of acquiring and using verbal and nonverbal symbols of concept or definition, corresponding to linguistics (semantics and syntax). Language development in child can be divided into three: the creation of language element, definition and vocabulary, and language use (Mangoenprasodjo & Hidayati, 2005). Language development is related to cognitive development, meaning that cognitive factor affects the language ability development very significantly.

Cognitive development relates to intelligence. Cognitive ability is more passive or static, the potency or capacity to fulfill something, while intelligence is more active, an actualization of power or capacity or potency in the form of activity or behavior (Solihin, 2011). Memory is complex and the center of many cognitive operations. *Short Term Memory* (STM) is the capacity to retain a little information available for short term. Working Memory plays a very important role in an effective communication, particularly in speaking and language understanding.

Auditory Working Memory is a process of retaining sound in the mind for 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 very important in achieving the listening and speaking skills (Roy, 2018). *Auditory Memory* is a factor most commonly causing learning disorder but most frequently neglected. *Auditory Memory digit* is a test held to find out the term memory using successive digit that can be memorized by an individual who hears it.

This research aims to find out the relationship between *Auditory Memory Digit* and receptive language ability in preschool age child in Surakarta.

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's environment: TK Sri Juwita Hanum Mojosongo, TKIT Al-Kautsar Mojosongo, and TK 'Aisyiyah Mojosongo. This research was conducted from March to November 2021.

The population of this study were students in three kindergartens in Surakarta with a total of 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 there were 2 samples that could not be used as research samples based on the inclusion criteria in determining the sample.

The instrument of research used in this study was *Digit Forward* Form to find out the auditory memory digit of sample and the *Assessment of Children's Language Comprehension* form to find out the receptive language ability of sample. The test of the validity of the digit forward form has been carried out by previous researchers with the results $\rho < 0.05$ 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 find out the relationship between Auditory Memory Digit and receptive language ability of preschool age child in Surakarta. Hypothesis testing was carried out using Chi Square test.

RESULTS

Data collection was carried out in three Kindergartens existing in the Ministry of Education and Culture (Kemendikbud) of Surakarta's environment. The sample consisted of the students of TK Sri Juwita Hanum Mojosongo, TKIT Al-Kautsar Mojosongo, and TK 'Aisyiyah Mojosongo. The research implementation began in January – October 2021 and data collection was conducted in August 2021.

Data univariate analysis shows the distribution of frequency for the research data including auditory memory test ability of sample using auditory 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. This was done by the researcher because it was in accordance with the research objectives.

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

	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%) obtain the result of *auditory memory digit* ability above average, and 24 students (41.4%) obtain result below average.

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

	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 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%) obtain receptive language ability result above average and 23 students (39.7%) obtain result below average.

Table 4.3 Hypothesis Testing using *Chi Square* test

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	.079[a]	1	.778
N of Valid Cases	58		

From the result of hypothesis testing using Chi Square hypothesis, from 58 sample it can be found ρ value of 0.778. Therefore, it can be concluded that *auditory memory digit* does not has relationship with receptive language ability in preschool age child, because significance value more than 0.05 (ρ>0.05).

DISCUSSION

Language development is the development of learning abilities related to a child's cognitive abilities (McAfee & Shipley, 2016). The factors that influence language development according to (Khoiriyati, 2019), include: Brain and intelligence development, Gender, Physical Conditions, Family Environment, Economic Conditions, and Social/Environment-Cultural Settings

(Fatwikiningsih, 2014) said 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 what is heard to help children develop listening skills, identify concepts through understanding the labeling of words, and improve the ability to respond to any communication. Expressive language is the ability to communicate symbolically both visually and auditory to help children to express their needs, desires, and feelings verbally. 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)

Memory is a process by which knowledge is received, stored, and then retrieved. (Putranto, 2009) explains Memory (memory) is an individual's ability to store information and that information can 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 the ability to retrieve information that is presented orally, processing information starting from storing information and then recalling what has been heard. It involves skills such as 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, it can be found the result of bivariate analysis with Chi Square test as shown in table 4.3 indicating p value of 0.778. From the result, it can be concluded that *auditory memory digit* has no relationship with the Receptive Language Ability in preschool child.

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. Ability of knowing each other and responding to an individual in an event is also a receptive language. (Khosibah & Dimyati, 2021) in their journals revealed the receptive language ability of 3-6 year old children, in which children begin to show their ability of understanding grammar in conversation and their interestedness in reading material or story, and begin to 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 interaction or doing activities along with parents, such as reading fairy tale or telling story. In addition, another factor affecting the receptive language development of preschool age children in environment factor, in which parents' education level and stress affects the children caretaking by 8% (Sylvestre et al., 2012).

CONCLUSION AND SUGGESTION

The prevalence of *Auditory Memory Digit* ability in preschool age children in Surakarta from the three Kindergartens (TK Sri Juwita Hanum Mojosongo, TK IT Al-Kautsar Mojosongo, and TK 'Aisyiyah Mojosongo) with 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 (TK Sri Juwita Hanum Mojosongo, TK IT Al-Kautsar Mojosongo, and TK 'Aisyiyah Mojosongo) with totally 58 samples indicates that 35 students obtain result 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= 0.86; CI =95%: 0.29-2.50; p value= 0.778).

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

ACKNOWLEDGEMENT

Thank you to all participants in this research.

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