Verbal Memory as A Predictor of Oral Language Ability in Preschool Children

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Abstract

Background: Language ability is one of the variables that influences social communication, apart from social interaction, social cognition, pragmatics (verbal and nonverbal). Apart from influencing social communication, language skills have been documented to be an important variable in the development of written language skills (reading and writing).

Objective: This study aims to assess the predictive power of verbal short-term memory on language abilities.

Method: Data analysis in this study used correlation tests and linear regression tests with JASP.

Results: The results of the study showed that there was a significant relationship between verbal short term memory and language ability ($r = 0.635$; $p < 0.001$).

Conclusion: This research explains that verbal short-term memory has a significant influence on language development, amounting to 40%. However, the presence of deficits in this ability cannot significantly cause low language abilities.

Key words: verbal memory; spoken language; speech therapy; Indonesia; preschool

INTRODUCTION

Language ability is one of the variables that influence social communication, in addition to social interaction, social cognition, pragmatics (verbal and nonverbal). Apart from influencing social communication, language skills have been documented as an important variable in the development of written language skills (reading and writing). This ability is strongly influenced by various variables, one of which is cognitive ability. Based on the Connectionist (Information-Processing) Theory, it is explained that every child uses cognitive abilities (eg, memory) and receives input from the social environment to build language competence, both receptive and expressive (Nelson, 2010).

Memory skills related to language development are known as verbal short term memory (VSTM) (Baddeley, 2000). Verbal short term memory is the ability to temporarily store verbal information without manipulating verbal information (Baddeley, 1996; Lambardino, 2012). The nature of the causal relationship between verbal short term memory and spoken language is still being discussed in the developmental language disorders and dyslexia groups (Nourbury et al., 2008). Several studies explain that language disorders occur due to deficits in verbal short term memory skills or sometimes known as phonological memory deficits (Nourbury et al., 2008). In studies in Indonesia, it was also explained that verbal short term memory deficits are one of the characteristics of children with language disorders (Taruna & Syaf, 2018). On that basis, this study seeks to explain the relationship between verbal short term memory and language development in typical children in Indonesia.

METHOD

This research is a non-expression quantitative research. Participants in this study consisted of 50 typical children attending kindergarten. The first language used by all participants was Indonesian. In the procedure, each participant's verbal memory and spoken language abilities were measured using the Test of Auditory Processing Skill (Martin & Brownell, 2005) and Developmental Profile 3 (Alpern, 2007). Data analysis in this study used correlation analysis and linear regression using standard score data (M = 100; SD = 15), which was then analyzed using JASP.

RESULT

1. Descriptive statistics

   Fifty one subjects were involved in the study, consisting of 24 males (48%) and 26 females (52%). Then subjects with four years of age were one person (2%), five years old were 24 people (48%), and six years old were 25 people (50%). Short-term memory verbal ability (M= 92; SD − 8.87) and language skills (M − 95; SD − 5.78) are included in the average category.

2. Correlation and Regression Test

   Based on the correlation test analysis, it is known that verbal short-term memory has a significantly positive relationship with language skills (r = 0.635; p <0.001). So, it can be concluded that the higher the short-term memory verbal ability, the higher the language ability. Furthermore, based on regression analysis, it is known that 40% of language development is influenced or explained by verbal short-term memory skills, while the rest is influenced by other variables not included in this study

Table 1. Correlation Analysis Results

Variabel	VSTM	Bahasa
VSTM	-	
Bahasa	0.635 (p < 0.001)	-

Table 2. Regression Analysis Results

Model	R	R2
Ho	0.000	0.000
H1	0.635	0.404

DISCUSSION

This study shows that verbal short term memory has an influence on language skills by 40%, while the rest is influenced by abilities other than verbal short term memory. This finding basically shows that verbal short term memory is not the only variable that can influence or explain the

development of spoken language skills. According to research conducted by Semel et al (2003), spoken language processing is influenced by three intelligence or cognitive abilities, which consist of processing speed, perceptual reasoning, and working memory (verbal memory). Then, processing speed, perceptual reasoning, and working memory (verbal memory) not only affect spoken language skills as a whole, but also affect receptive language, expressive language, language content and language structure (Semel et al., 2003).

In clinical practice, there is a group of children who have nonverbal intelligence within normal limits but show significant deficits in receptive and/or expressive language skills. These children are referred to as children with specific language impairment or developmental language disorders (Nelson, 2010). Although these children have nonverbal intelligence within normal limits, they have specific deficits in intelligence or cognitive abilities in verbal memory abilities, such as verbal short-term memory.Furthermore, Gathercole et al.(2005) explained that verbal memory deficits have an effect on language learning and play a causal role in cases of developmental language disorders.However, not all children with verbal memory deficits have language deficits (Gathercole et al. , 2005), especially deficits that only occur in VSTM alone cannot cause children to experience developmental language disorders (Nourbury et al., 2008).

CONCLUSION

This study explains that verbal short-term memory has a significant influence on language development, amounting to 40%. However, a deficit in this ability cannot significantly lead to significantly lower language skills.

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