Preschool Age Spoken Language Assessment and Intervention Framework in Indonesia: A Preliminary Study

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STIKes Mercubakti Jaya Padang

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Abstract

Background: A consensus framework for assessment and intervention of language disorders in preschool children in Indonesia has not been established, due to a lack of underlying scientific evidence. However, one of the references used in the Autism Spectrum Disorders course module in the Speech Therapy Study Program (STIKes Mercubaktijaya Padang) is the decision tree for intervention planning in the emerging language stage (DTIP-ELE)

Objective: This study aims to provide initial evidence regarding the important role of prelinguistic abilities in language development. This research involved 29 preschool children.

Method: Each child is assessed individually using a developmental profile and assessment of social and communication skills.

Results: After all the data is obtained, the data on each variable will be converted into a z-score before statistical analysis is carried out. Based on correlation analysis, it is known that there is a relationship between joint attention and language ($r = 0.697$; $p < .001$), symbolic play and language ($r = 0.820$; $p < .001$), imitation and language ($r = 0.680$). ;$p < .001$), and gestures with language ($r = 0.697$; $p < .001$).

Conclusion: This study provides initial evidence that it is important to consider prelinguistic abilities in language skills assessment and intervention.

The Speech Therapy Journal (JAWARA) is a scientific journal containing publications on new ideas, theoretical and practical elaborations and case studies related to language disorders, speech, voice, dysfluency and swallowing. The existence of the JAWARA journal is a form of Politeknik Arutala Johana Hendarto to participate in a scientific reference source for skills and services in the field of speech therapy, child development, special education. neurolinguistics and other scientific communities related to the rehabilitation of swallowing and communication functions.

Key words: joint attention, symbolic play, gestures, imitation, language, Indonesia

INTRODUCTION

Spoken language disorders are generally defined as deviations in the understanding and/or use of spoken language modalities. Spoken language disorders can occur in primary, secondary, and acquired forms. Spoken language disorders are said to occur primarily when these disorders are not part of other conditions, such as autism spectrum disorders (ASD), down syndrome (DS), intellectual disability (ID), and hearing impairment (HI) (Paul et al., 2014). Unlike the spoken language disorder that occurs secondary. Secondary spoken language disorders are disorders that are part of other conditions, such as autism spectrum disorders, down syndrome, intellectual disability, and hearing impairment (Paul et al., 2014). Spoken language disorders that occur primarily are known as diagnoses of language disorders, while others use the terms expressive language disorder, mixed receptive-expressive language disorder, specific language impairment, and developmental language disorders (Bishop et al., 2016; Bishop et al., 2017) ; Norbury, Tomblin, & Bishop, 2008). In addition to spoken language disorders that can occur in primary and secondary forms, spoken language disorders in children can also occur in acquired disorders, and the terminology that refers to this condition is acquired aphasia and Landau Kleffner Syndrome (LKS). The national prevalence of speech language disorders in Indonesia is not yet available due to differences in terms and references to diagnostic criteria. However, data from the RSCM Medical Rehabilitation Department in 2006, out of 1125 visits to pediatric patients, 10.13% of children were diagnosed with speech and language delays (Sari et al., 2015). Furthermore, data from the THTKL Department of dr. Moh. Hoesin, Neurootology subdivision, from January 2010 to March 2012, found a population of 513 children with speech delays (Sari et al., 2015).

A consensus framework for the assessment and intervention of language disorders in preschool-aged children in Indonesia has not been established, due to a lack of underlying scientific evidence. However, one of the references used in the Autism Spectrum Disorders course module in the Speech Therapy Study Program (STIKes Mercubaktijaya Padang) is the decision tree for intervention

planning in the emerging language stage (DTIP-ELE) (Paul et al., 2014). According to the preschool language disorder assessment and intervention framework (Kaderavek, 2014; Paul et al., 2014), children must have the ability to symbolic play and nonverbal communication (eg, gesture) before learning a language. If the symbolic play and gesture abilities are adequate, then receptive and expressive language interventions can be carried out. DTIP-ELE was further developed and elaborated on in the ASD course module in the Speech Therapy Study Program (STIKes Mercubaktijaya Padang). Imitation skills and joint attention must be assessed and intervened before performing symbolic play and gesture interventions. Stein-Rubin and Fabus (2012) explained that it is important for speech therapists to assess and intervene not only in spoken language skills, but also in pre-linguistic skills which consist of imitation, joint attention, symbolic play, and gesture..

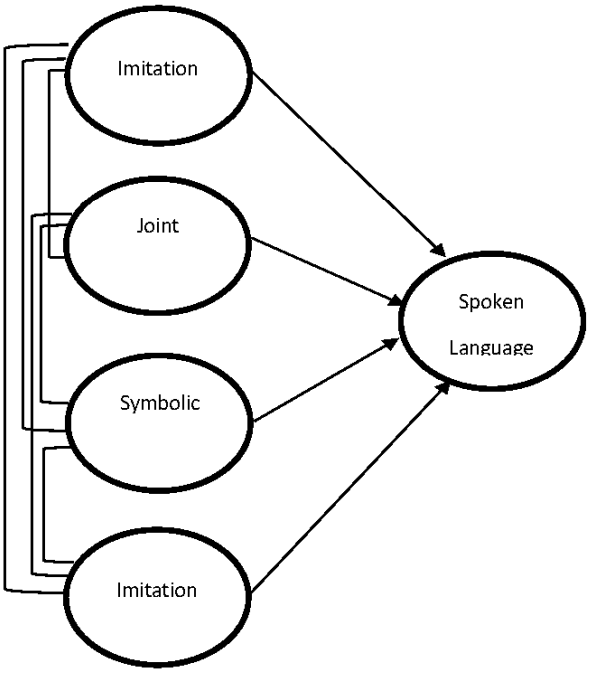

Figure 1. DTIP-ELE ASD STIKes Mercubaktijaya Module Version

DTIP-ELE has been widely applied and certainly has been supported by various research results, such as symbolic play and joint attention interventions that have a positive impact on the development of spoken language (Kasari et al., 2008; Lieberman & Yoder, 2012). However, although

DTIP-ELE is well understood, until now there is no scientific evidence to support this framework for application to children with language disorders (eg, ASD, DLD) in Indonesia. On this basis, as a preliminary study, the purpose of this research is to identify patterns of relationship between prelinguistic skills and prelinguistic relationships with spoken language abilities.

MATERIALS AND METHOD

Quantitative research with the type of correlational research is the type of research used in this study. Correlational research is a quantitative method designed to show the relationship between two or more variables (Lodico, Spaulding, & Voegtle, 2006). This research was conducted with the permission of the head of one of the preschool educational institutions in Pekanbaru. Participants in this study amounted to 29 preschool children, aged five to six years. Joint attention, imitation, symbolic play, gesture and language abilities were assessed individually for each participant using the developmental profile – 3 (Alpern, 2007) and assessment of social and communication skills (Quill & Brusnahan, 2017). After all the data is obtained, the data on each variable will be converted into a z-score before statistical analysis is carried out.

RESULTS

Twenty-nine preschool age children, aged five (93%) to six (7%) years were enrolled in this study. 16 boys (55%) and 13 girls (45%). Joint attention (z-score 0.0; SD 1.048), imitation (z-score 0.0; 1.030), symbolic play (z-score 0.0; SD 1.026), gesture (z-score 0.0; SD 1.048), and language (z -score 0.0; SD 1.008) within normal limits. There are no significant differences between joint attention, verbal imitation, symbolic play, gesture, and language in males and females (Table 2).

Table 1. Descriptive Statistics

Joint attention		**Imitation**	**Symbolic play**	**Gesture**	**Language**
Valid	29	29	29	29	29
Missing	0	0	0	0	0
Mean	0.003	0.014	0.021	0.003	0.014
Std. Deviation	1.048	1.030	1.026	1.048	1.008
Minimum	-1.700	-1.700	-2.200	-1.700	-2.200
Maximum	0.900	0.800	0.600	0.900	1.800

Table 2. Independent Samples T-Test			
	Test	**Statistic**	**p**
Joint attention	Student	0.016	0.988
	Mann-Whitney	103.0	0.981
Imitation	Student	-0.043	0.966
	Mann-Whitney	101.5	0.921
Symbolic play	Student	0.311	0.758
	Mann-Whitney	110.0	0.759
Gesture	Student	0.016	0.988
	Mann-Whitney	103.0	0.981
Language	Student	0.578	0.568
	Mann-Whitney	115.5	0.611

1. Intercorrelation of Prelinguistic Skills

a. Joint attention

Based on Table 3, it is known that there is a correlation between joint attention and imitation ($r = 0.949$; $p < .001$), joint attention and symbolic play ($r = 0.830$; $p < .001$), and joint attention and gesture ($r = 1$; $p < .001$). Referring to the level of correlation and significance, it can be concluded that joint attention has a very strong relationship to imitation, symbolic play, and gesture. The higher the ability of joint attention, the higher the ability of imitation, symbolic play, and gesture.

b. Imitation

Based on Table 3, it is known that there is a correlation between imitation with joint attention ($r = 0.949$; $p < .001$), imitation with symbolic play ($r = 0.859$; $p < .001$), and imitation with gesture ($r = 0.949$; $p < 001$). Referring to the level of correlation and significance, it can be concluded that imitation has a very strong relationship to joint attention, symbolic play, and gesture. The higher the imitation ability, the higher the ability of joint attention, symbolic play, and gesture.

c. Symbolic play

Based on Table 3, it is known that there is a correlation between symbolic play with joint

attention (r = 0.830; p <.001), symbolic play with imitation (r = 0.859; p <.001), and symbolic play with gestures (r = 0.830; p<.001). Referring to the level of correlation and significance, it can be concluded that symbolic play has a very strong relationship to joint attention, imitation, and gesture. The higher the ability of symbolic play, the higher the ability of joint attention, imitation, and gesture.

d. Gesture

Based on Table 3, it is known that there is a correlation between gesture and joint attention (r = 1; p <.001), gesture and symbolic play (r = 0.830; p <.001), and gesture and imitation (r = 0.949; p <

001). Referring to the level of correlation and significance, it can be concluded that gesture has a very strong relationship to joint attention, imitation, and symbolic play. The higher the gesture ability, the higher the ability of joint attention, imitation, and symbolic play.

Table 3. Pearson's Correlations

Variable	**Joint attention**			**Imitation**		**Symbolic play**		**Gesture**		**Language**
1. Joint attention	Pearson's r	—								
	p-value	—								
2. Imitation	Pearson's r	0.949	***	—						
	p-value	< .001		—						
3. Symbolic play	Pearson's r	0.830	***	0.859	***	—				
	p-value	< .001		< .001		—				
4. Gesture	Pearson's r	1.000	***	0.949	***	0.830	***	—		
	p-value	< .001		< .001		< .001		—		
5. Language	Pearson's r	0.697	***	0.680	***	0.820	***	0.697	***	—
	p-value	< .001		< .001		< .001		< .001		—
* p < .05, ** p < .01, *** p < .001										

2. Correlation of Prelinguistic Skills with Language

Based on the correlation analysis (Table 3), it is known that there is a correlation between joint attention and language (r = 0.697; p <.001), symbolic play and language (r = 0.820; p <.001), imitation and language (r = 0.680). ;p <.001), and gesture with language (r = 0.697; p <.001). Referring to the results of the analysis, it can be concluded that the four prelinguistic abilities (joint attention, imitation, gesture, symbolic play) have a relationship with spoken language skills. Joint attention, gesture, and imitation have a strong relationship with spoken language. Meanwhile, the ability of symbolic play has a very strong relationship with spoken language. The higher the prelinguistic skill, the higher the spoken language ability.

3. Symbolic Play Skill Prediction based on Joint Attention and Imitation

Based on multiple regression analysis, it is known that joint attention and imitation have an influence on symbolic play (R2 = 0.741; p <.001). Referring to this, it can be concluded that joint attention and imitation simultaneously can predict the ability of symbolic play by 74%, while the rest, symbolic play is influenced by other abilities, besides joint attention and imitation (Table 4 and Table 5).

Table 4. Model Summary - Symbolic play

Model	R	R^2	Adjusted R^2	RMSE
H_0	0.000	0.000	0.000	1.026
H_1	0.861	0.741	0.721	0.542

Table 5. ANOVA – Symbolic Play

Model	Sum of Squares		df	Mean Square	F	p
H_1	Regression	21.823	2	10.911	37.110	< .001
	Residual	7.645	26	0.294		
	Total	29.468	28			

4. Gesture Skill prediction based on Symbolic Play

Based on multiple regression analysis, it is known that symbolic play has an influence on gesture (R2 = 0.688; p <.001). Referring to this, it can be concluded that symbolic play is able to

predict the ability of gestures by 68%, while the rest, gestures are influenced by other abilities, besides symbolic play (Table 6 and Table 7).

Table 6. Model Summary - Gesture

Model	R	R^2	Adjusted R^2	RMSE
H_0	0.000	0.000	0.000	1.048
H_1	0.830	0.688	0.677	0.596

Table 7. ANOVA - Gesture

Model	Sum of Squares		df	Mean Square	F	p
H_1	Regression	21.172	1	21.172	59.564	< .001
	Residual	9.597	27	0.355		
	Total	30.770	28			

5. Prediksi Language Skill berdasarkan Symbolic Play dan Gesture

Based on multiple regression analysis, it is known that symbolic play and gesture have an influence on language (R2 = 0.673; p <.001). Referring to this, it can be concluded that symbolic play and gesture simultaneously can predict language skills by 63%, while the rest, language skills are influenced by other variables, besides symbolic play and gesture (Table 8 and Table 9).

Table 8. Model Summary - Language

Model	R	R^2	Adjusted R^2	RMSE
H_0	0.000	0.000	0.000	1.008
H_1	0.821	0.673	0.648	0.598

Table 9. ANOVA - Language

Model	Sum of Squares		df	Mean Square	F	p
H_1	Regression	19.171	2	9.586	26.789	< .001
	Residual	9.303	26	0.358		
	Total	28.474	28			

DISCUSSION

The first finding in the statistical analysis shows that there is a relationship between language learning prerequisites such as joint attention, symbolic play, imitation and gesture on language skills.

Joint attention and imitation are two abilities that are important for the development of symbolic play and can be used as predictors of symbolic play ability. Direct handling of joint attention and symbolic play has been scientifically proven to affect the ability of joint attention and symbolic play itself, when compared to a group of children who do not receive joint attention and symbolic play intervention (Kasari et al., 2006). Symbolic play has been considered as a representation of the sensorimotor and preoperational cognitive stages, and is closely related to early language skills (Casby, 2003). The same thing was also found in the relationship between joint attention and language skills (Kasari et al., 2008). Furthermore, there is evidence showing that there is a more significant increase in expressive language for children who receive joint attention and symbolic play interventions, when compared to the control group. These findings demonstrate the significant clinical benefits of providing joint attention and symbolic play interventions to children on language development (Kasari et al., 2006, 2008).

The next finding in this study is the importance of gesture skills in language development. Various previous studies have also shown a relationship between gesture and language skills (Goldin-meadow, 2018; Singleton, 2017). First, children who produce more gestures early have a larger expressive vocabulary later in development. Then, a child who points or shows an object is likely to learn the word for that object within 3 months. Next, the children combined gestures with words before they combined words with words. Finally, children with expressive language delays have greater language advantages when their parents use gestures and words at the same time during interactions with their child (Goldin-meadow, 2018; Singleton, 2017). The last finding that will be explained in this study is the importance of the ability to imitate all the variables examined in this study, such as joint attention, symbolic play, gesture, and language skills. Imitation skills in this study have a significant correlation with joint attention, symbolic play, gestures, and language skills. Various studies have identified a multiplier effect that results when the ability to imitate is increased (Ingersoll, 2008; Ingersoll & Schreibman, 2006). First, the child's ability to imitate gestures and body movements is a predictor of their language skills. Then, the child's ability to imitate actions with

objects is related to the development of symbolic play. Furthermore, their children need to develop some imitation skills before they can acquire joint attention skills. On this basis, it is suggested that imitation skills serve as an important foundation in language learning (Ingersoll, 2008; Ingersoll & Schreibman, 2006).

CONCLUSION

This research supports the decision tree for intervention planning in the emerging language stage (DTIP-ELE) version of the ASD module in the Speech Therapy Program (STIKes Mercubaktijaya). Furthermore, this study suggests that imitation skills and joint attention are the initial stages that must be intervened, before symbolic play and gesture interventions. Then, when the four abilities are adequate, the next stage of intervention is receptive language and expressive language. The follow-up suggestions from this study are to test this framework using experimental studies.

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