JMCH Journal of Maternal and Child Health (2020), 5(3): 235-242
Masters Program in Public Health, Universitas Sebelas Maret

Research

Factors Affecting Early Detection and Stimulation by Mothers and their Impact on Receptive Language Skills of Children Age 4 to 6 Years

Anggi Resina Putri[1)], Eti Poncorini Pamungkasari[2)], Hanung Prasetya[3)]

[1)]Masters Program in Public Health, Universitas Sebelas Maret
[2)]Faculty of Medicine, Universitas Sebelas Maret
[3)]Health Polytechnics Ministry of Health, Surakarta

ABSTRACT

Background: Language is a communication tool used by humans since birth. Receptive language can be interpreted as the ability to communicate symbolically both visual and auditory. Through early detection measures, parents can find out the problem of child growth and development early, so that prevention, stimulation, healing, and recovery efforts can be given with clear indications at critical times of the child's growth and development process. This study aimed to analyze the relationships between early detection and early stimulation with the receptive language skills of preschool children using Health Belief Model.

Subjects and Method: This was a cross sectional study conducted in Surakarta, from December 2019 to January 2020. A sample of 200 children was selected by fixed disease sampling. The dependent variable was receptive language ability. The independent variables were perceived susceptibility, perceived seriousness, cues to action, self-efficacy, early detection, and early stimulation. The data were collected by questionnaire and screening of receptive language skills (ROWPVT). The data were analyzed by path analysis run on Stata 13.

Results: Receptive language skill is directly improved with early detection (b= 0.83; 95% CI= 0.19 to 1.47; p= 0.011) and early stimulation (b= 0.87; 95% CI= 0.28 to 1.47; p= 0.004). It was indirectly affected by perceived susceptibility, perceived seriousness, cues to action, and self-efficacy.

Conclusion: Receptive language skill is directly improved with early detection and early stimulation. It is indirectly affected by perceived susceptibility, perceived seriousness, cues to action, and self-efficacy.

Keywords: receptive language skill, early detection, early stimulation, health belief models.

Correspondence:
Anggi ResinaPutri. Masters Program in Public Health. Universitas Sebelas Maret, Jl. Ir. Sutami 36A, Surakarta, Jawa Tengah, Indonesia, 57126. Email: anggiresinaputri@gmail.com. Mobile: 085727387689

Cite this as:
Putri AR, Pamungkasari EP, Prasetya H (2020). Factors Affecting Early Detection and Stimulation by Mothers and their Impact on Receptive Language Skills of Children Age 4 to 6 Years. J Matern Child Health. 5(3): 235-242. https://doi.org/10.26911/thejmch.2020.05.03.02

BACKGROUND

Language is a communication tool used by humans. Children's language development from birth to age 12 in particular has acquired many of the same vocabulary, phonological, grammatical, and complex rules in many social settings. There are two aspects of language, namely receptive language and expressive language. Receptive language is the ability to understand language. Meanwhile, expressive language is the ability to produce symbolic communication. Optimal development in children requires good language development and receptive language skills that meet their chronological age. However, in reality not a few children who experience va-

rious problems, especially receptive language disorders that will inhibit the overall language ability. Children with problematic language skills will have difficulty communicating (Nippold, 2018).When communicating, there are many things that need to be discussed apart from just saying a word or sentence. The body language used for example; give each other eye contact, facial expressions, ways of behaving, intonation, and body style (Saputri et al., 2015).

Early detection is an assessment of growth and development that can be done as early as possible since the child is born. Early detection is an attempt by parents to carry out a comprehensive screening carried out to find deviations in child development and parents can early know the risk factors in early childhood. Through early detection measures, parents can find out the child's growth and development problems early, so that prevention, stimulation, healing and recovery efforts can be given with clear indications at critical times of the child's growth and development process (Shipley and McAfee, 2015)

Stimulation of child growth and development is carried out by mothers and fathers who are the closest people to children, other family members and community groups in their respective households and in everyday life. Lack of stimulation can cause deviations in child development and even permanent disorders (Inglebret et al., 2017).

The results of the study conducted in the United States show that 10% of children aged 3 years' experience language disorders (Longo et al., 2017). Other studies have argued that stimulation by parents is associated with improved communication and language in children with moderate effect sizes; the greatest benefit is seen by children with language development problems. This study was conducted using a sample of children under five with age 3.5 years, 27 children with autism spectrum disorders (ASD), 10 children with developmental language disorders, 34 children with the risk of language disorders such as, premature, siblings with ASD, low family economy (Roberts et al., 2019).

SUBJECTS AND METHOD

1. Study Design

This was an analytic observational study with a retrospective cohort design. The study was conducted in eight kindergartens in Surakarta, from December 2019 to January 2020.

2. Population and Sample

The study population was preschool children. A sample of 200 children aged 4-6 years was selected the fixed disease sampling.

3. Study Variables

The dependent variable was receptive language. The independent variables were perceived susceptibility, perceived seriousness, cues to action, self-efficacy, early detection, and early stimulation.

4. Operational Definition of Variables

Perceived susceptibility underlies someone acting to overcome or prevent disease. A preventive measure for a disease will arise if the individual has felt that he is vulnerable to an illness. The data were collected by questionnaire. The measurement scale was continous, but for data analysis, it was transformed into dichotomous, coded 0= low and 1= high.

Perceived Seriousness was having a relationship with healthy behavior if the perception of severity is high then the individual will behave healthy. The data were collected by questionnaire. The measurement scale was continous, but for data analysis, it was transformed into dichotomous, coded 0= low and 1= high.

Cues to action was stimuli needed to trigger the decision making process to accept health actions recommended for early detection. The data were collected by questionnaire. The measurement scale was con-

tinous, but for data analysis, it was transformed into dichotomous, coded 0= no; 1= yes.

Self-efficacy is that this leads to a person's level of trust in his ability to successfully conduct behavior. The measuring instrument used was a questionnaire. The scale of the data is continuous and for analysis purposes, the data is converted into a dichotomy with code 0= weak; 1= strong.

Early detection was early detection is an attempt by parents to carry out a comprehensive screening carried out to find deviations in child development and parents can early find out risk factors in early childhood. The data were collected by questionnaire. The measurement scale was continous, but for data analysis, it was transformed into dichotomous, coded 0=poor; 1= good.

Early stimulation was early stimulation which is a stimulus that is carried out every day, to stimulate all the sensory systems (hearing, vision, touch, smell, taste). The data were collected by questionnaire. The measurement scale was continous, but for data analysis, it was transformed into dichotomous, coded 0=poor; 1= good.

Receptive language skill was children with problematic language skills who will have difficulty when dealing with situations that require communication. The data were measured by receptive language screening (ROWPVT). The measurement scale was continous, but for data analysis, it was transformed into dichotomous, coded 0= poor; 1= good.

5. Data Analysis

Univariate analysis was carried out to generally describe each variable studied including perceived susceptibility, perceived seriousness, cues to action, self-efficacy, early detection, early stimulation, and receptive language. Bivariate analysis performed using hi-square statistical tests and odds ratio (OR) calculations were performed with a confidence interval (CI) of 95%.Multivariate analysis is used to see the effect of more than one independent variable either directly or indirectly by using path analysis.

6. Research Ethic

The protocol in this study was approved by the Health Research Ethics Committee of Dr. Moewardi Hospital, Surakarta, Indonesia under number 118/I/HREC/2020.

RESULTS

1. Sample Characteristics

Categorical data sample descriptions describe the continous data of each study variable including vulnerability perception, seriousness perception, cues to action, efficacy of early detection, early stimulation, and receptive language. The results of the description analysis are shown in Table 1.

2. Univariate analysis

Table 2 shows good early maternal detection of 62 (31%) and poor early maternal detection 138 (69%). Good early maternal stimulation is 89 (44.5%) and poor maternal early stimulation is 111 (55.5%). Children with good receptive language skill were 91 (45.5%).

Table 1. Sample Characteristics of continuous data

No.	Variable	N	Mean	SD	Min.	Max.
1.	Perceived Susceptibility	200	3.78	0.97	1	5
2.	Perceived Seriousness	200	3.84	0.93	2	5
3.	Cues to action	200	4.14	0.82	2	5
4.	Self-Efficacy	200	3.99	0.84	2	5
5.	Early Detection	200	12.85	1.44	10	15
6.	Early Stimulation	200	16.77	2.24	11	20
7.	Receptive Language	200	53.04	19.65	18	99

Table 2. Sample Characteristics of Categorical Data

Characteristics	Frequency (n)	Percentage (%)
Perceived Susceptibility		
High	77	38.5
Low	123	61.50
Perceived Seriousness		
High	76	38
Low	124	62
Cues to action		
Yes	27	13.5
No	173	100
Self-Efficacy		
High	42	21
Low	158	79
Early Detection		
Good	62	31
Poor	138	69
Early Stimulation		
Good	89	44.5
Poor	111	55.5
Receptive Language		
Good	91	45.5
Poor	109	54.5

3. The result of bivariate analysis

Table 3 showed the results of bivariate analysis. Table 3 showed that high perceived susceptibility (OR= 3.60; p <0.001), high perceived seriousness (OR= 2.06; p= 0.014), strong cues to action (OR= 2.73; p= 0.018), trong self-efficacy (OR= 1.81; p= 0.088), good early detection (OR= 2.80; p= 0.001), and good early stimulation (OR= 2.82; p <0.001) increased receptive language skill.

Table 3. Bivariate Analysis (Chi-square Test)

Variables	Receptive Language				Total		OR	p
	Good		Poor					
	N	%	n	%	N	%		
Perceived Susceptibility								
High	82	75.23	27	24.77	109	100	3.70	< 0.001
Low	41	45.05	50	54.95	91	100		
Perceived Seriousness								
High	76	69.72	48	30.28	109	100	2.06	0.014
Low	33	30.28	43	47.25	91	100		
Cues to action								
Yes	100	91.74	73	80.22	109	100	2.73	0.018
No	9	8.26	18	19.78	91	100		
Self-Efficacy								
High	91	83.49	67	73.63	109	100	1.81	0.088
Low	18	16.51	24	26.37	91	100		
Early Detection								
Good	86	78.90	52	57.14	109	100	2.80	0.001
Poor	23	21.10	39	42.86	91	100		
Early Stimulation								
Good	73	66.97	38	41.76	109	100	2.82	<0.001
Poor	36	33.03	53	58.24	91	100		

4. The result of path analysis

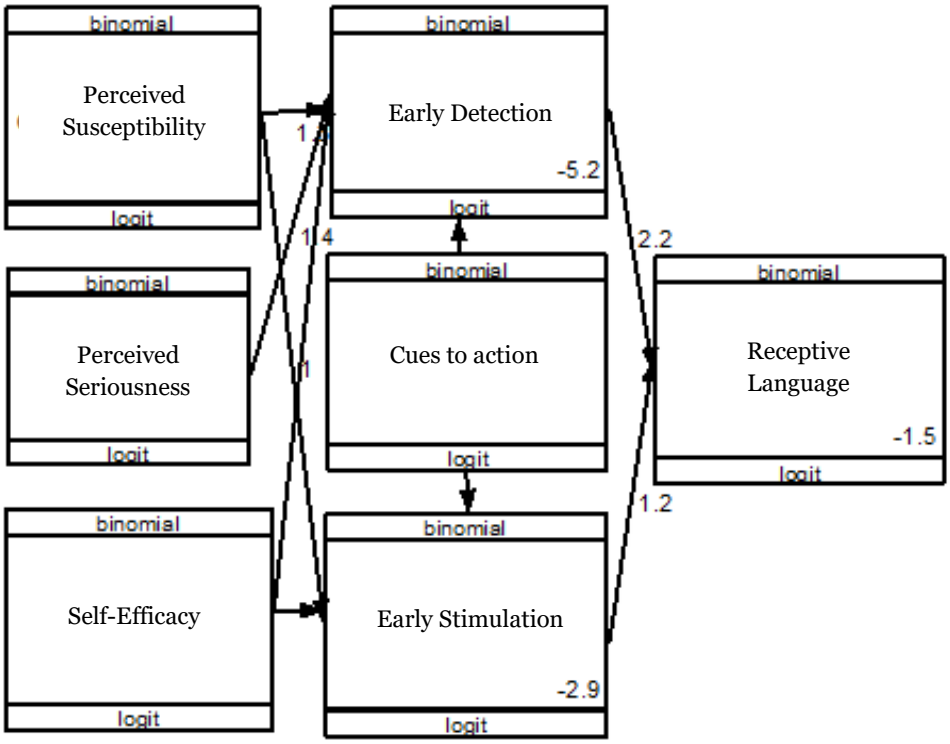

Figure 1. Path Analysis Model on Factors Affecting Early Detection and Stimulation by Mothers and their Impact on Receptive Language Skills of Children Age 4 to 6 Years

Table 4. The Results of Path Analysis

Dependent Variable		Independent Variable	Path Coefficient (b)	95% CI		p
				Lower Limit	Upper Limit	
Direct Effect						
Receptive Language Skills	←	Early Detection	0.83	0.19	1.47	0.011
	←	Early Simulation	0.87	0.28	1.47	0.004
Indirect Effect						
Early Detection	←	Perceived Susceptibility	1.68	0.82	2.54	<0.001
	←	Perceived Seriousness	2.20	1.30	3.09	<0.001
	←	Cues to action	2.63	1.39	3.87	<0.001
	←	Self-Efficacy	2.29	1.22	3.35	<0.001
Early Stimulation	←	Perceived Susceptibility	0.90	0.27	1.52	0.005
	←	Cues to action	1.57	0.57	2.57	0.002
	←	Self-Efficacy	0.90	0.13	1.67	0.021
n observation = 200						
Log Likelihood = -139.10						

Figure 1 presents a path analysis diagram of the relationship of perception of vulnerability, perception of seriousness, cues to action, and self-efficacy with receptive language skills through early detection and early stimulation. Table 4 shows the relationship of early detection with direct receptive language skills.

Mothers who did early detection well had the possibility of having children with good receptive language skills by 0.83 units higher than mothers who did not do well detection early (b= 0.83; 95% CI= 0.19 to 1.47; p= 0.011). The relationship of early stimulation with receptive language skills is statistically significant. Mothers who did early stimulation well had a probability (log-odd) of having children with good receptive language skills of 0.87 units than mothers who did not do good stimulation early (b= 0.87; 95% CI= 0.28 to 1.47; p= 0.004).

There are several variables related indirectly and statistically significant, namely perception of vulnerability, perception of seriousness, cues to action, and self-efficacy with early detection and the relationship of perception of vulnerability, cues to action, and self-efficacy with early stimulation.

DISCUSSION

1. The relationship between early detection and receptive language skills

The results of this study are in line with previous study which shows that study subjects with high early detection have good receptive language skills. Early detection for children can prevent or even reduce the difficulty of receptive language abilities in subsequent abilities (Linde et al., 2019).

Early detection is an action that can prevent or reduce as early as possible the ability of communication difficulties in children, and can also prevent medical costs if the child has difficulty communicating (Eve and Spanoudis 2014). Children who get early detection behavior from parents by screening abilities or monitoring will make language skills better (Guralnick 2013).

2. The relationship between early stimulation and receptive language

The results of this study are in line with previous study which shows that study subjects with high early stimulation have good receptive language skills. Early stimulation carried out in children from infancy will have a positive impact on children's cognitive and receptive language. The most important component of early stimulation behavior provided by parents, children are better able to socialize with their environment as a foundation or basis for future language and communication skills. Language is one of the most important skills, language is strongly influenced by the behavior of early stimulation that is carried out in everyday life (Keith et al., 2016).

3. The relationship between perceived susceptibility and early detection

The results of this study are in line with previous study which shows that study subjects with strong perceptions of vulnerability will influence parental attitudes to make early detection of children's language abilities well (Rendal et al., 2017). Rosenstock in Murti (2018) suggests that the perception of vulnerability is a subjective perception of a person regarding the risk of contracting the disease. In order for someone to act to treat or prevent disease, he feels that he is vulnerable to the disease.

4. The relationship between perceived seriousness and early detection

In another study it was mentioned that early detection of children's language abilities would be easier to find out early on the child's receptive language problems. The perception of strong seriousness will create the confidence of study subjects to have treatment (Adefolalu et al., 2018).

This is consistent with an study by Elsabbagh et al., (2011) that the perception of seriousness about early detection of receptive language skills. The results of this study are in line with previous study which shows that study subjects with a strong perception of seriousness will influence the attitudes of parents to make early detection of children's language abilities well.

Perceived seriousness is a subjective assessment of a person on the severity of a disease, as well as what possibilities can be caused if not treated or prevented. It is if an individual considers a serious illness to be more likely to take the action necessary to prevent that from happening (Murti 2018).

5. The relationship between cues to action and early detection

The results of this study are in line with previous study which shows that study subjects with accepted cues to action will influence the attitude of mothers to make early detection of children's language abilities well (Burnside et al., 2017). The Health Belief Model explains that individual behavior is influenced by cues to action (Sulaeman 2016). Cues to action is one of the constructs of HBM which is an event or experience both personal (physical symptoms of health conditions) and interpersonal or environment (media) that can motivate someone to take action (Tarkang and Zotor 2015).

Cues of action are as encouragement or motivation for someone to realize the desired behavior. Parents who know the language problem will have the urge or cues to action to do early detection actions on children because parents know the effects of early detection behavior that is not done at all. One of the concerns of parents of language problems that arise in their children is that children will experience a lack of social interest and eventually children will have difficulty in socializing or adapting to the surrounding environment (Burnside et al., 2017).

6. The relationship between self-efficacy and early detection

The results of this study are in line with previous study which shows that study subjects with strong self-efficacy will influence the attitudes of parents to make early detection of children's language abilities well. Low self-efficacy is a barrier to compliance with rehabilitation. Before early detection can be implemented to improve self-efficacy, assessment is needed (Picha et al., 2018).

Self-efficacy is defined as a person's belief in his ability to succeed in carrying out a particular action. (Bandura 1997; Eklun and Tenenbaum 2014). Theoretically self-efficacy in early detection of parental adherence in making early detection will increase (Picha et al., 2018).

AUTHOR CONTRIBUTION

Anggi Resina Putri conducted the study, analyzed the data, and wrote the manuscript. Eti Poncorini formulated the framework of study. Hanung Prasetya formulated the study method and discussion of results.

CONFLICT OF INTEREST

There is no conflict of interest in the study.

FUNDING AND SPONSORSHIP

This study is self-funded.

ACKNOWLEDGEMENT

We would like to thank Kindergarten in Surakarta

REFERENCE

Adefolalu AO (2018).Cognitive-behavioural theories and adherence: Application and relevance in antiretroviral therapy. Southern African Journal of HIV Medicine. 19(1): 762. doi: 10.4102/sajhivmed.v19i1.762

Burnside K, Wright K, Poulin-Dubois D (2017). Social motivation and implicit theory of mind in children with autism spectrum disorder. International Society for Autism Research, Wiley Periodicals, Inc.10: 1834–1844. doi: 10.1002/-aur.1836.

Guralnick MJ (2017). Early intervention for children with intellectual disabilities: An update. Journal of Applied Research in Intellectual Disabilities. 30: 211–229. doi: 10.1111/jar.12233.

Hawa VV, Spanoudis G (2014). Toddlers with delayed expressive language: an overview of the characteristics, risk factors and language outcomes. Research in DevelopmentalDisabilities 35: 400-407. doi: 10.1016/j.ridd.2013.10.027

Herman KC, Conen D, Owens S, Latimore T, Reinke WM, Burrell L, McFarlane E, Duggan A (2016). Language delays and child depressive symptoms: The role of early stimulation in the home. Society for Prevention Research. doi: 10.1007/-s11121-016-0647-2

Inglebret E, Bailey S, Clothiaux JA, Skinder-Meredith A, Monoson K, Cleveland L (2017). Reporting of sosioeconomis status in pediatric language research. American Journal of Speech-Language Pathology.15;26 (3): 1042-1052. https:-//doi.org/10.1044/2017_AJSLP-16-0-229

LindeJVD, Swanepoel DW, Hanekom L,Lemmer T, Schoeman K, Glascoe FP, Vinck B (2016). Early detection of communication delays with the PEDS tools in at-risk South African infants. African Journal of Disability. 5(1): a223. doi.org/10.4102/ajod.v5i1.223

Longo AI, Tupinelli GG, Hermogenes C, Ferreira LV, Avejonas DRM (2017). Prevalence of speech and language disorders in children in the western region of Sao Paulo Brazil. 29(6): e20160036.doi: 10.1590/2317-1782/20172016036

Murti B (2018). Teori Promosi dan Perilaku Kesehatan. Surakarta: Universitas Sebelas Maret.

Nippold MA (2018). Language development in children who stutter: A review of recent research. International Journal of Speech-Language Pathology.21 (4) : 368-376. https://doi.org/10.1080/17-549507.2018.1457721

Owens JR, Robert E (2014). Language disorders: Afuctional approach to assessment and intervention. Sixth Edition. USA: Pearson Education.

Picha KJ, Jochimsen KN, Heebner NR, Abt JP, Usher EL, Capilouto G, Uhl TL (2018). Measurements of self-efficacy in musculoskeletal rehabilitation: A systematic review. Musculoskeletal Care. 16: 471-488.

Rendal AR, Perrino PA, LoTurco JJ, Fitch RH (2017). Evaluation of visual motion perception ability in mice with knockout of the dyslexia candidate susceptibility gene Dcdc2. International Behavioural and Neural Genetics Society. 18:e12450. DOI: 10.1111/gbb.12450

Roberts MY, Curtis PR, Sone BJ, Hampton LH. Association of Parent Training With Child Language Development: A Systematic Review and Meta-analysis. JAMA Pediatr 2019;173(7):671–680. doi:10.1001/jamapediatrics.2019.1197

Saputri W (2015). Peningkatan kemampuan berbicara melalui media gambar pada anak kelompok A di TK Bener Yogyakarta. Retrieved from http.eprints.-uny.ac.id129921SKRIPSI%20Windriantari%20Saputri%20%20NIM%20%2011111247029.pdf.

Shipley KG, McAfee JG (2015). Assessment in Speech-Language Pathology. Fifth Edition. Delmar:Cengage Learning.

Tarkang EE, Zotor FB (2015). Application of the health belief model (HBM) in HIV prevention: A literature review. 1 (1): 1–8. https://doi.org/10.11648/j.cajph.20-150101.11.