

## Discrete Trial Teaching Method to Improve Receptive Language Skills in Children with Global Developmental Delay

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### ABSTRACT

The purpose of this study was to determine the effectiveness of the Discrete Trial Teaching method in improving the receptive language skills of children with Global Developmental Delay. The receptive language skills provided in this intervention are recognizing body parts in the facial area. This research is an-experimental research with a single subject research, which uses the A-B-A model. Baseline measurements were carried out twice, namely before and after the implementation of the intervention. This study used 20 sessions consisting of 5 sessions for the first baseline, 10 intervention sessions and 5 sessions for the second baseline. The participant of this study was a boy aged 3 years and 6 months who was diagnosed with Global Developmental Delay. Data analysis used in this study is visual analysis which includes 6 components. The results showed that there was an increase in scores and with an upward trend and good stability, so it can be concluded that the Discrete Trial Teaching method can effectively improve the receptive language skills of children with Global Developmental Delay.

**Keywords:** Receptive Language, Global Developmental Delay, Discrete Trial Teaching, Behavior Modification

### INTRODUCTION

Language is an important aspect of child development because it supports children's ability to be able to communicate and express their feelings (Levine & Munsch, 2019). The development of language in each individual begins with the ability to understand the spoken language heard, which is known as receptive language. This listening process is an active cognitive process that includes the ability to distinguish sound sounds, understand the meaning of words, syntax and make conclusions based on the content of speech (Nadig, 2013). Receptive language skills that develop will be able to support the development of more complex languages.

Language development in each child varies greatly depending on the conditions of each child, especially if the child experiences Global Developmental Delay. Vasudevan and Suri (2017) define Global developmental delay (GDD) as a condition in which a child cannot achieve developmental tasks according to the average child of his age. Objectively, this occurs in children under the age of five where children cannot achieve two or more aspects of their development targets. The development aspect itself consists of gross motor skills, fine motor skills, language, cognition, personal-social abilities and abilities in daily activities (AAID in Vasudevan & Suri, 2017)).

Children with Global Developmental Delay who have delays in language development, especially in receptive language skills can make it difficult for them to communicate. This

condition has an impact on all aspects of a child's life, such as difficulties in meeting basic needs which have broader consequences for education and participation in family and community life (Joshua & Ledum, 2021). Furthermore, Gill, Moorner-Cook, Armstrong and Gill (2012) explained that children who have difficulty understanding spoken language may find it difficult to follow instructions, unable to respond to statements and questions. In an educational environment, some of the difficulties that children will experience include having a low attention span, having difficulty listening to material and being at risk of having behavioral problems.

Language development problems that children still experience when they enter school can increase the risk of experiencing problems with behavior, social interaction and emotional well-being when they reach adolescence and even adulthood. (Botting, Durkin, Toseeb, Pickles, & Conti-Ramsden, 2016; Conti-Ramsden, Mok, Pickles, & Durkin, 2013). Barriers to language development and lack of social communication make these individuals have problems in peer relations. (Mok, Pickles, Durkin, & Conti-Ramsden, 2014). Some literature states that even when these language development problems have improved in childhood, it is possible that there will still be difficulties in literacy and sentence structure. (Duff, Reen, Plunkett, & Nation, 2015; Rescorla & Turner, 2015; Rice, 2008).

The problem of delays in language development experienced by children needs to be addressed early on. One of the effective techniques in improving children's language skills is the Discrete Trial Teaching method (DiGennaro-Reed, Reed, Baez, & Maguire, 2011; Conallen & Reed, 2016; Ingvarsson & Hollobaugh, 2010). The Discrete Trial Teaching method is a behavior modification technique using the basic principles of Applied Behavior Analysis (ABA) (deBoer, 2018). The Discrete trial Teaching (DTT) approach, which combines verbal instructions with simple gestures, is proven to be more effective and efficient in improving receptive language skills (Kurt, 2011; Lestari, 2016).

According to Leaf, Cihon, Leaf and McEachin (2016) the DTT approach has at least three main components, namely 1) discriminatory stimuli, such as therapist instructions; 2) the client's response and 3) a consequence, such as reinforcement or punishment. The fourth component that is optional is giving a prompt before a response from the client, which can enable the client to respond correctly. Other additional components that need to be considered include the interval between trials.

DTT method is initiated by providing material through giving instructions by the therapist, then the therapist waits for the child's response for a few seconds. If the child has not responded, the therapist will continue with the second instruction, then wait for the child's response for a few seconds. If there is still no response from the child, the therapist continues by giving the third instruction, then the therapist immediately provides assistance (prompt) and ends with reinforcement in the form of a reward.

The DTT method is often used as a form of early intervention for child development problems. One of the things that makes the DTT approach effective for children with special needs is that the skills taught are broken down into several simple stages with repeated experiments (Kurt, 2011). Various studies regarding the DTT method are generally given to children with Autism with a variety of specific objectives such as increasing skills in following orders (Lestari, 2016); train eye contact (Jaleha & Mirnawati, 2019), receptive language skills (Kurt, 2011), and ability to do daily activities of living (Summer, et al, 2011). However, research on the application of DTT for children with Global Developmental Delay is still limited.

Based on the description above, it can be concluded that the delay in language development experienced by children with Global Developmental Delay can have a variety of negative impacts on individuals, so an intervention is needed that can improve language skills. Therefore this research was conducted to see the effect of the Discrete trial teaching method in improving receptive language development in children with Global Developmental Delay.

## **METHOD**

This research is an experimental study using a single subject, where the single subject method focuses on observing changes in behavior in participants who receive treatment (Kpolovie, 2016; Kratochwil, 2013). This single subject only involves a few, even one participant (Gravetter & Forzano, 2012). Therefore, this single subject is very suitable for research in special education (Cakiroglu, 2012). More specifically, the design used in this study is the A-B-A design to see whether the application of Discret Trial Teaching is effective in improving receptive language skills in children.

The participant of this study was LN, a boy who was 3 years and 7 months old and was diagnosed with Global Developmental Delay based on examinations by doctors and psychologists. Based on the results of the assessment, it was found that LN experienced delays in all aspects of its development. The ability that is most mastered by LN is gross motor skills which are equivalent to children aged 1 year. For fine motor, cognitive, language, and socio-emotional abilities, LN abilities are equivalent to children under 1 year old. For social skills, LN has not been able to carry out interactions or reciprocal relationships. This is related to foreign language skills that have not been able to communicate verbally or non-verbally. He also does not understand other people's movements or words. This language ability is the target of intervention in this study, because it is a basic ability for children to be able to learn other aspects of development.

The dependent variable in this study is receptive language skills. Receptive language is defined as the child's ability to understand the contents of the speech conveyed by the other person and carry it out (Cahyanti & Hitipeuw, 2020). Referring to the findings of LaPrairie (2018) that children aged 2 to 3 years are expected to be able to point to objects mentioned and respond to commands involving body parts, the receptive language skills that will be taught in this study are children's ability to recognize body parts. Receptive language ability is calculated based on observational data which shows the child's ability to recognize body parts correctly. While the independent variable in this study is the Discrete Trial Teaching method.

Based on the A-B-A design used in this study, the research procedure is: 1) Defining goals in behavior that can be observed and measured accurately, namely recognizing (holding) body parts; 2) The first Baseline measurement (A1) is carried out repeatedly for 5 sessions to obtain a stable condition. The measurement was carried out by recording the number of successes (trials) of the target behavior on the field observation sheet to determine the initial conditions of the participants' receptive language skills before receiving treatment; 3) Intervention (B) in the form of providing interventions using the Discrete Trial Training method which is carried out repeatedly for 10 sessions to train receptive language skills; 4) The second Baseline measurement (A2) is carried out repeatedly for 5 sessions.

Data collection in this study used field observation guidelines with an event recording system based on trial measurements to show the number of activities (trials) to achieve the

target behavior. The target behavior in this study is the child's receptive language skills in recognizing body parts in the facial area. The score range given in one trial was 0 to 2, where a score of 0 was given when the participant could not show the limbs correctly, a score of 1 was given when the participant was able to show the facial member with a prompt (help) and a score of 2 was given when the participant succeeded in showing the member. face properly without prompt.

Data analysis from single subject research uses visual inspection analysis, namely the analysis is carried out by making direct observations of the data that has been displayed in the graph. The visual inspection analysis used in this study is an analysis of conditions. The visual analysis component for this condition includes six components, namely (1) length of condition, (2) estimation of trend direction, (3) trend of stability, (4) data trace, (5) level of stability, and (6) range/level of change .

## RESULT AND DISCUSSION

The results of measuring receptive language skills carried out in the baseline 1, intervention and baseline 2:

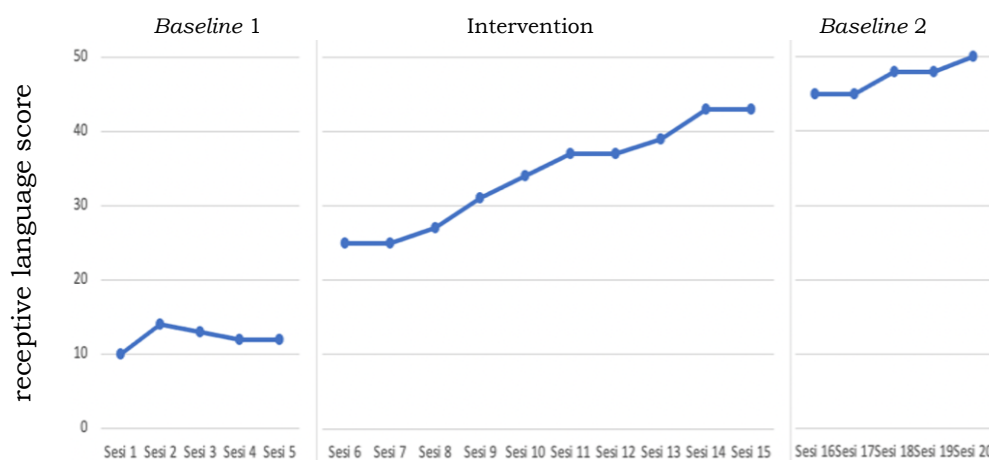








Figure 1. Receptive Language Ability Score

Based on Figure 1. above, it can be seen that the participants experienced an increase in receptive language skills during the intervention phase and after the intervention was completed, namely in baseline phase 2. Before the intervention was given or in baseline phase 1, the participants' receptive language abilities were around a score of 10. After the participants were given the intervention using the Discrete Trial Teaching method for 10 sessions, the participants' receptive language skills increased from a score of 25 to 43. Then in the phase after the intervention was carried out, the participants' receptive language skills increased from a score of 45 to 50.

Detailed visual inspection analysis is carried out through 6 components, namely (1) length of condition, (2) estimation of trend direction, (3) trend of stability, (4) data trace, (5) level of stability, and (6) range/level of change . A summary of the results of the visual inspection analysis can be seen in table 1 below:

Table 1. Summary of Visual Analysis Results

Visual Analysis	Phase		
	A1	B	A2
Condition Length	5	10	5
Directional Trend	 (+)	 (+)	 (+)
Stability Trends	Stable (100%)	Variable (60%)	Stable (100%)
Data Trace	 (+)	 (+)	 (+)
Stability Level and Range	Table 10-14	Variable 25-43	Table 45-50
Level Change	$\frac{12-10}{(+2)}$	$\frac{43-25}{(+18)}$	$\frac{50-45}{(+5)}$

Based on the summary of the results of the visual analysis above, it can be seen that the length of the condition at baseline 1 (A1) before the intervention was given was 5 sessions, the trend in the direction shown was increasing. While the results of the percentage of stability is 100%, classified as stable because it is above the criteria for the percentage of stability. In the tendency of data traces from one data to another there is a tendency (up) with the range of data obtained 10-14 while the data is also relatively stable. Changes in the level in the baseline stage 1 (A1) there is a change (+2). The (+) symbol indicates an increase in the participant's acquisition score for the skill to follow a sit order. This indicates that intervention can be carried out immediately to see whether the subject's acquisition score for the ability to follow orders to sit can increase or not. At the intervention stage (B), the researcher used a discrete trial training technique with a length of condition that was carried out for 10 sessions. stability. In the tendency of data traces from one data to another there is a tendency (increase) with the range of data obtained by the subject, namely 25-43, then the stability level and range are declared unstable (variable). Changes in the level in the intervention stage there is a change of +18. The (+) symbol indicates an increase in the participant's acquisition score for receptive language skills. These changes indicate that interventions using discrete trial training techniques can improve receptive language skills in participants.

At baseline stage 2 (A2), the researcher did not use the discrete trial training technique. The length of the condition carried out is for 5 sessions. The indicated direction trend is upward on the chart. At baseline stage 2 (A2) the percentage of stability is 100%, this percentage indicates that the tendency for stability is stable because it exceeds the criteria for percentage stability. In the tendency of tracking data from one data to another there is a tendency (increasing) with the range of data obtained by the subject being 45-50, then the level of stability and the range are declared stable. Changes in the level in the intervention stage there is a change of +5. The (+) symbol indicates a decrease in the participant's score for receptive language skills. This change indicates that after the

intervention was carried out using the discrete trial training technique, the participant's score could increase. These results convinced the researchers that this study could improve the receptive language skills of the participants.

Based on the results of visual analysis, it is known that there is an increase in receptive language skills in participants after receiving intervention using the Discrete Trial Teaching method. This is in line with previous research that the Discrete Trial Teaching method is effective for teaching new skills to children who experience developmental delays (DiGennaro-Reed, Reed, Baez, & Maguire, 2011; Conallen & Reed, 2016; Ingvarsson & Hollobaugh, 2010).

Several things make the application of the Discrete Trial Teaching method effective in improving participants' receptive language skills, including because this method divides complex skills into skills with smaller units (Leaf, et al, 2016). In this study, receptive language skills were represented by the child's ability to recognize body parts which were broken down into the smallest unit, namely the body part recognition material in the face area. The smallest units of material taught in this study are eyes, nose, lips, ears and hair

In addition, the simple material being taught is given repeatedly, where each instruction given is called a trial. Providing repetitive material increases children's understanding and makes it easier for children to master the skills being taught (Lestari, 2016). In this study, each material was given repetition five times, where at a higher repetition rate, the participants' responses increased.

Handojo (2009) also explained that the benefits felt by children from the application of the Discret Trial Teaching method were obtained because children were not subjected to violence during the intervention process, stimulation in the form of sensory and motor was given sufficiently, consistently, thoroughly and continuously. This has an influence on children's brain activity where the continuous and enjoyable stimulation received by children makes new behaviors easier to form and tends to be stable.

The increase in receptive language skills in participants was also influenced by the provision of assistance (prompt). This prompt is an additional part of the DTT component that aims to increase the frequency of occurrence of the target behavior (Miltenberger, 2012). This technique is given when the participant has not been able to respond to instructions correctly after being given 3 instructions. The types of prompting used in this research are verbal and physical prompting. Based on research conducted by Cintaka and Djuwita (2019), providing verbal and physical prompting can encourage the formation of new skills.

## **CONCLUSION**

Providing intervention using the Discrete Trial Teaching method can improve receptive language skills in children with Global Developmental Delay. The results showed that there was a change in the score of receptive language skills before the intervention and after the intervention with an upward trend, a stable stability trend, and an increasing data footprint. This Discrete Trial Teaching technique can also be continued by parents who have received training on DTT to develop the skills needed by children in everyday life. The application of the DTT method still uses the DTT concept which is limited to simple areas of ability, so it requires further studies in evaluating the effectiveness of the DTT to improve complex skills. In addition, the administration of the DTT method can be modified with a progressive approach.

## REFERENCES

- Botting, N., Durkin, K., Toseeb, U., Pickles, A., & Conti-Ramsden, G. (2016). Emotional health, support, and self-efficacy in young adults with a history of language impairment. *British Journal of Developmental Psychology*, 34(4), 538–554.
- Conallen, K., & Reed, P. (2016). A teaching procedure to help children with autistic spectrum disorder to label emotions. *Research in Autism Spectrum Disorders*, 23, 63–72.
- Conti-Ramsden, G., Mok, P. L. H., Pickles, A., & Durkin, K. (2013). Adolescents with a history of specific language impairment (SLI): Strengths and difficulties in social, emotional and behavioral functioning. *Research in Developmental Disabilities*, 34(11), 4161–4169.
- DeBoer, S.R. (2018). *Discrete Trial Training*. USA : PRO-ED Publishing
- DiGennaro Reed, F. D., Reed, D. D., Baez, C. N., & Maguire, H. (2011). A parametric analysis of errors of commission during discrete-trial training, 44(3), 611–615.
- Duff, F. J., Reen, G., Plunkett, K., & Nation, K. (2015). Do infant vocabulary skills predict school-age language and literacy outcomes? . *Journal of Child Psychology and Psychiatry*, 56(8), 848–856.
- Gill, C., Moorer-Cook, L., Armstrong, E.S., & Gill, K. (2012). The Ability to Follow Verbal Directions: Identifying Skill Levels and Measuring Progress. *Canadian Journal of Speech-Language Pathology and Audiology*, 36(3), 234-247
- Handojo, Y. (2009). *Autisme pada Anak*. Jakarta: PT Bhuana Ilmu Populer,
- Ingvarsson, E. T., & Hollobaugh, T. (2010). Acquisition of intraverbal behavior: teaching children with autism to mand for answers to questions. *Journal of Applied Behavior Analysis*, 43(1), 1– 17.
- Jaleha, S. & Mirnawati. (2019). Application of DTT (Discrete Trail Training) Method in Improving the Eye Contact Ability of Autistic Children. *Journal of ICSAR*, 2(3), 48-52.
- Joshua, S.F & Ledum, B.R. (2021). Early Intervention On Receptive And Expressive LanguageDevelopment Among Children With Hearing Impairment InRivers State. *International Journal of Arts Humanities and Social Sciences Studies*, 6(4), 47-53
- Kurt, O. (2011). A Comparison of Discrete Trial Teaching with and without Gestures/Signs in Teaching Receptive Language Skills to Children with Autism. *Educational Sciences: Theory & Practice*, 11(3), 1436 – 1444.
- LaPrairie, C. (2018). Assessment and Analysis of Receptive and Expressive English Language Development in Spanish Speaking ELLs and Native English Speakers Using the Pre-KLBA". *Masters Theses*. Eastern Illinois University
- Leaf, J.B., Cihon, J.H., Leaf, R. & McEachin, J. (2016). A Progressive Approach to Discrete Trial Teaching: Some Current Guidelines. *International Electronic Journal of Elementary Education*, 9(2), 361-372
- Lestari, M.N. (2018). Penggunaan Teknik Discrete Trial Training Untuk Meningkatkan Keterampilan Mengikuti Perintah Pada Anak dengan Autisme. *Skripsi*. Universitas Negeri Jakarta.
- Miltenberger, R. G. (2012). *Behavior Modification*. USA: Wadsworth.
- Mok, P. H., Pickles, A., Durkin, K., & Conti-Ramsden, G. (2014). Longitudinal trajectories of peer relations in children with specific language impairment. *Journal of Child Psychology & Psychiatry*, 55(5), 516–527.

- Nadig, A. (2013). Listening Comprehension. *Encyclopedia a/Autism Spectrum Disorders*, 1743.
- Rescorla, L., & Turner, H. L. (2015). Morphology and syntax in late talkers at age 5. *Journal of Speech, Language, and Hearing Research*, 58(2), 434–444.
- Rice, M. L. (2016). Specific Language Impairment, nonverbal IQ, attention-deficit/hyperactivity disorder, autism spectrum disorder, cochlear implants, bilingualism, and dialectal variants: Defining the boundaries, clarifying clinical conditions, and sorting out causes. *Journal of Speech, Language, and Hearing Research*, 59(1), 122–132
- Summers, J., Tarbox, J., Findel-Pyles, R. S., Wilke, A. E., Bergstrom, R., & Williams, W. L. (2011). Teaching two household safety skills to children with autism. *Research in Autism Spectrum Disorders*, 5(1), 629-632. doi: 10.1016/j.rasd.2010.07.008
- Vasudevan, P., & Suri, M. (2017). A clinical approach to developmental delay and intellectual disability. *Clinical Medicine*, 17(6), 558–561