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Effectiveness of the Discrete Trial Training Method for Improving Receptive Language Skills in Children with Autism Spectrum Disorder (ASD) At Al-Fatih Center

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ABSTRACT
Children with Autism Spectrum Disorder (ASD) often experience difficulties in receptive language, which affects their daily communication. This study aims to examine the effectiveness of the Discrete Trial Training (DTT) method in improving receptive language skills of children with ASD. The research employed an experimental design using One Group Pretest-Posttest with a sample of six children aged 5 years at Al-Fatih Center. The Receptive Verbal Vocabulary Test (TKV-R), validated and reliable in Indonesia, was used as the measurement instrument. The intervention consisted of 12 sessions, and data were analyzed using Wilcoxon Signed Rank Test. The results showed a significant improvement in receptive language, with the mean score increasing from 1.33 (SD = 2.066) at pretest to 10.00 (SD= 0.00) at posttest (p = 0.023). These findings clearly indicate that DTT is effective in achieving the research objective of enhancing receptive language skills in children with ASD, particularly in improving their ability to follow instructions and identify objects appropriately.

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INTRODUCTION

Autism Spectrum Disorder (ASD) is a complex neurodevelopmental condition characterized by persistent difficulties in social communication and restricted, repetitive patterns of behavior (American Psychiatric Association, 2022). In addition to challenges in social interaction, many children with ASD experience deficits in language development, particularly in receptive language, which is the ability to understand spoken or written language. Receptive language is an important foundation for communication and learning, as it enables children to understand instructions, identify objects, follow conversations, and participate in social interactions (Abdullah et al., 2024; Neherta & Mulyasari, 2023). Without adequate receptive language skills, children with ASD are at higher risk of experiencing limitations in academic, social, and daily functional activities.

Several studies show that receptive language impairment is more severe than expressive language difficulties in children with ASD (Muldoon & Gray Rebecca, 2023). Research also shows that boys with ASD between the ages of 4 and 11 show much slower receptive vocabulary development compared to their typically developing peers (McDaniel et

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al., 2018). Similarly, another study found that children with ASD consistently had lower receptive vocabulary scores than children without ASD (Brignell et al., 2018). These findings emphasize the urgency of providing effective interventions that target receptive language to support the communication of children with ASD.

This urgency is further reinforced by the increasing prevalence of ASD globally and in Indonesia. The World Health Organization (2022) estimates that one in every 100 children worldwide has ASD. In Indonesia, epidemiological studies report alarming figures in Yogyakarta, where the prevalence of autism is estimated at 1 in 150 children, while in Pontianak it is 1.28 per 1,000 children. The Indonesian Ministry of Health also estimates that approximately 2.4 million children live with ASD, with approximately one in every 100 births affected each year (Marini, 2024). These figures underscore the importance of developing and evaluating effective interventions for children with ASD in the Indonesian context.

Discrete Trial Training (DTT), a structured teaching method rooted in Applied Behavior Analysis (ABA), has been recognized as one of the most effective interventions for children with ASD (Hegde, 2018; Yadeta & Golga, 2023). DTT uses highly structured sessions led by therapists who break down learning into small, manageable units, reinforced with prompts and consequences. This approach provides children with multiple learning opportunities, consistency, and immediate feedback, which are crucial for skill acquisition in children with ASD. Several international studies have demonstrated the effectiveness of DTT in improving receptive vocabulary and following instructions (Al-Gashany & Chandra, 2022; Kurt, 2011), while studies in Indonesia have also shown promising results (Faadhil, 2023; Prasetyo, 2018).

However, there is still a significant research gap. First, many previous studies in Indonesia have used measurement instruments that are not fully validated and reliable for the Indonesian population, thus limiting the generalization of findings. Second, there is still a lack of empirical research that specifically focuses on the effectiveness of DTT in improving receptive language skills in Indonesian children with ASD. Addressing this gap is crucial to ensure culturally and contextually appropriate evidence-based intervention practices.

Therefore, this study aims to examine the effectiveness of the DTT method in improving receptive language skills in children with ASD at the Al-Fatih Center. By using the Receptive Verbal Vocabulary Test (TKV-R), which has been validated and tested for reliability in Indonesia, this study is expected to provide stronger empirical evidence about the role of DTT in improving receptive language skills. Ultimately, these findings are expected to have practical implications for speech therapy interventions in Indonesia and contribute to optimizing the communication skills of children with ASD.

METHODS

This study used a quantitative approach with a One-Group Pretest-Posttest experimental design. The study was conducted at Al-Fatih Center, with the population consisting of all children with ASD at Al-Fatih Center. The sample consisted of six 5-year-old children with ASD. The sampling technique used was Non-Probability Sampling. One of the sampling methods chosen was Purposive Sampling. There were several inclusion and exclusion criteria:

1. There were several inclusion criteria, namely:

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a. Children with Autism Spectrum Disorder (ASD)
b. Children with receptive language problem
c. Children who had never undergone intervention using the Discrete Trial Training method at the Al-Fatih Center
d. Children aged 5 years

2. In addition, there were exclusion criteria, namely:
   a. Children who withdrew during the study
   b. Children who did not complete therapy during the study
   c. Children who were no longer clients at Al-Fatih during the study
   d. Children with ASD with receptive language disorders, but whose families did not agree to participate in the study

The instrument used was the Receptive Verbal Vocabulary Test (TKV-R). This test has been validated and reliability tested for Indonesian speakers. The author also coducted validity and reliability tests on children with ASD, which resulted in 10 valid items. The reability result was 0.705.

The data collection procedure was as follows: each subject was given a pretest in the form of the Receptive Verbal Vocabulary Test (TKV-R) to determine the subject's receptive language ability. After that, the subjects were given 12 intervention sessions. The treatment was in the form of the Discrete Trial Training method. After receiving the intervention, the subjects were given a posttest using the same test, namely the TKV-R. Data analysis used univariate analysis to describe the characteristics of the subjects and their pretest and posttest scores. Bivariate analysis was performed using the Wilcoxon Test.

Figure 1. Research Design

RESULTS AND DISCUSSION

This study aims to determine the effectiveness of the Discrete Trial Training method in improving the receptive language skills of 5-year-old children with ASD at the Al-Fatih Center. The sample size used in this study was 6 respondents. Data collection was conducted using the Receptive Verbal Vocabulary Test (TKV-R) instrument. The research design used was a One-Group Pre-Test and Post-Test, with a total of 12 intervention sessions.

Receptive language skills prior to implementing the Discrete Trial Training method

Before conducting the intervention using the Discrete Trial Training method, the author conducted a pre-test using the Receptive Verbal Vocabulary Test (TKV-R) instrument, which showed that the average receptive language ability of children with ASD was 1.33 with a standard deviation of 2.066, where the lowest score was 0 and the highest score was 4.

Table 1 Frequeny Distribution of Average Receptive Language Ability Before Treatment

Variabel	N	Minimum	Maximum	Mean	Std. Deviation

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Pre-Test	6	0	4	1.33	2.066
Valid N (listwise)	6				

Source: research data, 2025

Based on these measurements, data showed that six children with ASD had low language comprehension. According to the author, this characteristic is consistent with children with ASD, who have low receptive language skills, so these skills need to be developed to support their language abilities by providing an appropriate method according to the client's condition. This is reinforced by research conducted by Brignell et al, which found that children with ASD scored lower on receptive vocabulary than children without ASD (Brignell et al., 2018). According to Kover et al., cited by McDanial et al., research shows that boys with ASD aged 4-11 years show slower receptive vocabulary skills (McDaniel et al., 2018).

By providing intervention using the DTT method, these obstacles can be minimized. This is because children are given the opportunity for repeated practice and direct feedback. This aligns with research conducted by Muldoon & Gray, who stated that the receptive language of children with ASD more often experiences barriers than expressive language (Muldoon & Gray Rebecca, 2023). Therefore, providing DTT intervention is important to help stimulate understanding.

Receptive language skills after implementing the Discrete Trial Training method

The results of measurements after treatment or post-test using the Receptive Verbal Vocabulary Test (TKV-R) instrument show that the average receptive language skills in children with ASD is 10.00 with a standard deviation of 0.000, where the lowest score is 10 and the highest score is 10. All respondents in this study received treatment for 12 sessions, and the data showed an increase in the average TKV-R test score from 1.33 ± 2.066 to 10.00 ± 0.000.

Table 2 Frequency Distribution of Average Receptive Language Ability After Treatment

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
Post-Test	6	10	10	10.00	.000
Valid N (listwise)	6				

Source: research data, 2025

Table 3 Frequency Distribution of Respondents' Receptive Language Ability Comparison Before and After Treatment

Variabel	N	Minimum	Maximum	Mean	Std. Deviation
Pre-Test	6	0	4	1.33	2.066
Post-Test	6	10	10	10.00	.000
Valid N (listwise)	6				

Source: research data, 2025

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Based on these results, the children's receptive language skills improved after the intervention. Before the intervention, the respondents often did not respond to simple instructions and had difficulty pointing to an object that matched the stimulus. However, after the intervention using the DTT method, the respondents responded more accurately, understood instructions more quickly, and were able to point to objects that matched the instructions. This condition illustrates a positive shift in the client's receptive language skills.

The improvement achieved by several clients illustrates that they were better able to understand simple instructions after being given consistent intervention using the DTT method. According to the author, the DTT method is very systematic, and there are several trials given to clients so that they have many opportunities to learn a particular material. Each DTT session also consists of clear instructions, the child's response, consequences or reinforcement, and a short pause before the next instruction. This pattern is very suitable for children with ASD who need structured and consistent learning. In addition, distractions are provided when giving the target item, and its placement is random so that clients do not memorize the material. This can support the improvement of clients' ability to understand the material provided. Furthermore, the use of reinforcement for correct responses has been proven to increase children's motivation to repeat appropriate behaviors. Thus, trial repetition accompanied by reinforcement plays an important role in forming receptive language skills and storing them in long-term memory. These results support the DTT theory, namely that it produces rapid learning, many learning opportunities can be provided quickly because learning is directed by the therapist, and it helps individuals with ASD learn structured work expectations (Tarbox & Tarbox, 2017).

Effectiveness of Discrete Trial Training in improving receptive language

The normality test used Shapiro-Wilk because there were only six respondents. From Table 4, it can be seen that the results of the data using Shapiro-Wilk show that the pre-test data has a significance value of 0.001, which means ($p < 0.05$). Therefore, it can be concluded that the data is not normally distributed.

Table 4 Pre-Test and Post-Test Normality Test

	Shapiro-Wilk		
	Statistic	Df	Sig.
Pre-Test	.640	6	.001
Post-Test		6	

Source: research data, 2025

The parametric test used in this study was the Wilcoxon Signed Rank Test, because the normality test showed that the data was not normally distributed. Based on the results of the Wilcoxon Test analysis, a p-value of 0.023 was obtained. Since the p-value is < 0.05, the research hypothesis is accepted. This shows the effectiveness of the Discrete Trial Training method in improving the receptive language of children with Autism Spectrum Disorder (ASD) at the Al-Fatih Center.

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Table 5 Wilcoxon signed rank test

	N	Test Statistic	Standard Error	Standardized Test Statistic	Asymptotic Sig. (2-sided test)
PreTest-PostTest	6	21.000	4.623	2.271	.023

Source: research data, 2025

These results reinforce the research conducted by Prasetyo, who reported a significant improvement in the receptive language of children with autism in Jakarta after being given DTT intervention (Prasetyo, 2018). The effectiveness of DTT is in line with the findings of Al-Gashany et al, who stated that DTT is more effective than Incidental Teaching in improving the receptive language skills of children with ASD (Al-Gashany & Chandra, 2022).

These research results reinforce the view that structured, systematic, and reinforcement-based learning strategies for children with ASD can help them understand language better. This is in line with research conducted by Yadeta & Golga, which explains that DTT, by breaking down skills into small units and using positive reinforcement, can help children improve their concentration and minimize distractions during the learning process (Yadeta & Golga, 2023).

In this study, the respondents initially had difficulty understanding simple instructions such as “point to the paper” or “point to the empty one,” but after being given repetition using the DTT method, they showed a significant improvement in understanding, namely, the clients were able to point to items according to the stimulus. According to the author, the success achieved by these six clients was influenced by the use of prompting and fading techniques in DTT. These techniques helped the children to associate words with real objects more systematically. The prompting technique used in this study was errorless learning or most to least prompting. This technique helped the clients to point to items according to the stimulus, and then, when the clients had mastered it, the prompts were gradually reduced. This is in line with research conducted by Leaf et al., comparing errorless learning and error correction in teaching receptive skills to individuals with ASD. The results showed that both Most to Least (MTL) and error correction (EC) were effective in teaching receptive labeling to two children diagnosed with ASD (Leaf et al., 2014).

This study is also in line with research conducted by Kasari, et al (2023), which used a Randomized Clinical Trial (RCT) design in children with ASD, comparing two methods, namely DTT and JASPER. The results of the study found that receptive scores on the Mullen Scales of Early Learning (MSEL) increased more in children who received DTT than in those who received Joint Attention, Symbolic Play, Engagement, & Regulation (JASPER) at the follow-up stage. It is possible that children who received DTT during the active treatment phase were better able to access the strategies taught in DTT, such as direct instructions on object recognition. Additionally, DTT prioritizes teaching pre-academic skills such as matching, receptive object labeling, and object imitation. These abilities can be assessed directly or are highly correlated with standardized tests. The teaching style in the DTT method involves asking children to respond to specific instructions, which are similar to those given

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on standardized tests (Kasari et al., 2023). This is in line with research conducted by Lestari, which found that the use of the DTT method can improve command-following skills in children with ASD (Lestari, 2016).

The DTT method has also been proven effective in improving children's ability to understand instructions. All respondents in this study, when compared before and after treatment, showed an increase in their ability to understand instructions. This is in line with research conducted by Faadhil, which found that the use of the Discrete Trial Training method can improve the receptive language skills of children with Autism Spectrum Disorder (Faadhil, 2023).

Overall, according to the author, the use of the DTT method in 12 intervention sessions showed positive results. This was influenced by the condition of the clients, who needed structured, consistent, and repetitive learning. Clients with ASD often have difficulty understanding simple instructions and are easily distracted. Through DTT, clients have the opportunity to practice intensively with clear guidance, positive reinforcement, and the systematic use of prompting and fading techniques, enabling them to build associations between words and real objects in a more systematic manner. This condition has been proven to help clients process information more easily, remember instructions, and ultimately significantly improve their receptive language skills.

From a practical point of view, this study provides clinical implications that the DTT method can be used as a reference by speech therapists in Indonesia in ASD child intervention programs. With the use of the DTT method, children not only show an increase in language comprehension but also have the potential to develop expressive abilities and social skills. This is in line with the recommendations provided by Urrea et al, who stated that structured behavioral intervention contributes to the long-term development of children with ASD (Urrea et al., 2024). This is in line with the research by Justin B. Leaf et al., which states that the potential benefits of teaching receptive language skills to individuals with Autism Spectrum Disorder (ASD) can help improve expressive language, learn names related to objects or pictures, increase attention, and follow instructions (Leaf et al., 2018). The consistency and longer duration of this intervention can have a positive impact on improving children's receptive language skills. The results of this study can also provide a basis for applying this method more widely, such as in schools, family environments, etc., so that it is hoped that children's communication skills can be developed.

CONCLUSION

This study demonstrated that the Discrete Trial Training (DTT) method is effective in improving receptive language skills in children with Autism Spectrum Disorder (ASD) at the Al-Fatih Center. After 12 intervention sessions, the children's receptive language scores significantly increased from a pretest mean of 1.33 to a posttest mean of 10.00 ($p = 0.023$), indicating that DTT provides structured, consistent, and repetitive learning opportunities that enhance children's ability to follow instructions and identify objects. These findings highlight the potential of DTT as a practical approach for speech therapists and parents to support communication development in children with ASD. However, this study was limited by its

small sample size and single-group design. Future research should involve larger and more diverse samples, use control groups for comparison, and explore the long-term impact of DTT as well as its integration with other therapeutic methods to optimize receptive and expressive language outcomes in children with ASD.

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