

Analysis of Short-Term Memory and Long-Term Memory Capabilities of Children Aged 4-5 with Autism

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ABSTRACT

This research is conducted to describe the ability of short-term memory and long-term memory skills of children with autism with severe categories, moderate and mild at TK Nurani Kindergarten, Summersari District, Jember Regency. This type of research is a qualitative study with data collection methods used are observation, interviews, documentation. The results showed that the short-term memory capacity of children with autism with severe, moderate, and mild categories in Kindergarten Light Kindergarten that is able to receive new information by seeing (visual), listening (auditory), and doing directly the things ordered according to instructions (kinesthetic). Whereas the long-term memory capacity of children with autism with severe, moderate, and mild categories tends to be in the form of episodic memory or imaginary coding, that is, children with autism use images of experiences or events as maps in their brains so that they often do the same thing and coherent every day.

Keywords: *Short-Term Memory Ability, Long-Term Memory Ability, Children with Autism*

1. INTRODUCTION

According to Dinie (2016) in the article on brain exercise therapy to stimulate the ability of short-term memory in autistic children in 2016 said Autism is a form of developmental disorders of children characterized by impaired social development, language, and behavior. Usually autism disorder is seen when a child is 3 years old, from its development it can look abnormal, body development and growth to different aspects from other children. Can be seen when children are unable to communicate, have language development delays, are unable to express their feelings and desires.

Children with autism disorders experience neurobiological abnormalities in the central nervous system. This disorder is in the form of brain cell growth that is not perfect in some parts of the brain. This disruption of brain cell growth occurs during young pregnancies where brain cells are being formed. Examination using a special tool called Magnetic Resonance Imaging (MRI) in the brain found that there is a specific damage in the brain in the limbic region of the system (emotional center). Although autism disorders are more commonly known as emotional disorders, their cognitive performance also changes Dinie (2016).

Associated with the cognitive development of children who have autism disorders, they usually have difficulty in understanding an information, but do not rule out the possibility for them to understand the information conveyed. They can understand an information that is conveyed in a repeated manner or repeated delivery. According to Sholihah (2016), autistic children more easily understand things that are concrete, can be seen and held.

Based on preliminary observations at the TK Nurani Jember Kindergarten in June 2019, to practice the short-term memory skills of children is to introduce new things while the long-term memory skills of autistic persons are with basic things such as remembering their own name, remembering the name of the object around, remembering the names of the accompanying teachers, remembering fruit names, remembering numbers and letters and remembering the colors of objects. These things are admittedly not easy to do by the accompanying teacher. Practicing the short-term memory skills of an autistic child requires 5-10 minutes repeatedly to be stored in his long-term memory. Whereas for long-term memory capacity (long term memory) children with autism need to be trained in a period of months until the information can be recalled and always remembered by children. One of the teachers admitted that actually children with autism

use the memorization system by looking at things that were previously introduced or known (imaginary coding).

Based on the background described above, the researcher wants to analyze the description of the ability of short-term memory related to the way children receive new information and long-term memory related to the things that are remembered previously by children with autism during the process of providing learning in kindergarten Light Nurani District Summersari, Jember Regency.

2. METHOD

The research was conducted at the Cahaya Nurani Kindergarten, Summersari District, Jember Regency. Held on 28 October 2019 to 22 November 2019 in Cahaya Nurani Kindergarten, Summersari District, Jember Regency. The subjects of this study were three children with autism with mild, moderate and severe categories as key information, three parents of students with autism with mild, moderate, and severe categories, three accompanying teachers, and consultants as supporting informants. This type of research is a qualitative descriptive study. The methods used for data collection are observation, interviews, and documentation.

Observations made in this study to analyze the short-term memory skills of children with autism with mild, moderate and severe categories associated with new information that is remembered by the child and how he received it, how many new units of information he is able to receive and remember, while for the ability long-term memory of children with autism with mild, moderate, and severe categories related to things that have been able to be remembered by children through the provision of prior learning, long-term memory related to motoric aspects, long-term memory on aspects of the good and bad value system. Observations were made at the time of providing learning and therapy in the kindergarten of Cahaya Nurani, Summersari District, Jember Regency.

The interview in this study was to gather various information related to the child's short-term memory ability regarding new information introduced to the child, how children receive and remember new information, how many units of new information can be received by children, and related to children's long-term memory abilities regarding things that have been remembered by children from previous learning.

Documentation is the process of collecting some supporting data in research activities. Supporting documents needed in this study are the profile of Cahaya Nurani Kindergarten School, Summersari Subdistrict, Jember Regency, profiles of children with autism with mild, moderate, and severe categories, certificate of diagnosis of child autism, photos of children's learning and playing activities, photos of interviews with teachers

, parents, and consultants at TK Nurani Light Summersari District, Jember Regency.

3. RESULTS AND DISCUSSION

From the research that has been carried out at TK Cahaya Nurani, the following results of the study have been obtained.

3.1 *New Information Introduced to Children (Short-Term Memory Skills)*

Children with autism as subjects with a mild category can remember a new information using 3 ways namely visual, auditory, and kinesthetic. He uses his visual ability to see and observe concrete objects such as long-sized blocks and short-sized blocks shown by the accompanying teacher in children with autism in the light category, then uses auditory to listen to words of instructions or codes and information spoken by teachers, teachers the companion revealed "this is long" by pointing out long blocks and then imitating by the child, "this is short" by pointing to short-sized objects, then imitating by the child, and kinesthetic by doing directly the things instructed by the teacher such as grouping long and short objects with separate positions, take long beams according to the command, take short beams according to the command, and designate long and short blocks according to the teacher's orders.

Children with autism as subjects in the medium category can remember new information by seeing (visual), hearing (auditory), doing (kinesthetic) ie AG seeing and observing long and short blocks of size designated by the teacher, then listening to instructions or codes such as the words "long", "short". And do direct commands given by the teacher, such as pointing at long blocks, pointing at short blocks. Not only about the size of objects but for newly introduced colors and numbers he is also able to accept in 3 ways namely seeing (auditory) seeing the numbers and colors designated by the teacher, hearing the teacher's code and utterances, and verbally (pronouncing) mentioning the intended color and say the tens of numbers pointed to by the teacher.

Children with autism as subjects with heavy categories are able to receive new information in 3 ways namely, visual (seeing), seeing concrete objects such as blocks indicated by the teacher, then Auditory (hearing) listening to the code spoken by the teacher, when the teacher tells the size of an object, The teacher says "long" by holding a long-sized block, then says "short" by holding a short-sized block, and (verbally). Repeating the teacher's words like "long" and "short".

3.2. *Receive 1-7 Items (Short Term Memory)*

Children with autism as subjects with mild categories are able to receive more than 1-7 items in 1 day

of learning, he receives that information in 2 ways, visual and verbal. Visual (seeing), that is, SY sees letters designated by the teacher, then verbally, namely mentions letters designated by the teacher. while the numbers mentioned by SY are only verbal.

Children with autism as subjects in the medium category are able to receive more than 1-7 items in 1 learning day, they receive the information in 4 ways namely visual, auditory, verbal, and kinesthetic. Visually he sees the writing or letters shown by the assistant teacher, then auditoriously he listens to the teacher's words, kinesthetically he does directly such as writing and pairing puzzles.

Children with autism as subjects with heavy categories are able to receive more than 1-7 items in 1 day of learning, he is able to receive more than 1-7 items every 1 day of learning in 4 ways namely visual by seeing concrete objects directly shown by the teacher such as pictures - drawings, blocks, and letter cards, Auditory listens to the teacher's commands and utterances, verbally by imitating the teacher's words, then by kinesthetic which is to do directly such as tearing the paper and thickening lines.

3.3 Long-Term Memory Related to Things That Have Been Introduced Before

Children with autism as subjects with mild categories can remember information through things that have been previously introduced using three ways namely visual, auditory, and verbal. SY visually sees the concrete objects shown by the teacher beforehand and stores the information he sees in long-term memory, then auditoriously he listens to the words and information provided by the assistant teacher, and verbally he is able to repeat and re-say things that have been introduced. Things that are introduced by the teacher and parents are from things that are close to the SY world such as the names of animals that are introduced from puzzle pictures and school magazine books while at home through parents' pets such as rabbits, for the color of the objects inside class namely beam.

Children with autism as subjects in the moderate category can receive knowledge so that it is systematically arranged in their long-term memory in 3 ways namely visual, auditory and verbal. Visually, AG looks at the pictures and pointers given by the accompanying teacher, auditoriously he listens to information in the form of instructions given, words spoken by the teacher such as telling the names of objects, fruits, letters, numbers, and colors. And verbally that is by communicating or recalling things that have been previously learned such as mentioning the names of animals, fruits, colors, letters, and sequences of numbers that have been remembered by children.

Children with autism as subjects with severe categories can receive knowledge to be arranged systematically in their long-term memory in 3 ways namely visual, auditory and verbal. Visually, children with autism as subjects with heavy categories see the pictures and instructions given by the accompanying teacher, auditoriously they listen to information in the form of instructions given, words spoken by the teacher such as telling the names of objects, fruits, letters, numbers, and color. And verbally that is by communicating or recalling things that have been learned before.

3.4 Long-Term Memory for Aspects of Motor Ability

Children with autism as subjects with mild categories are able to make sweeping movements, climb spider webs, eat movements by combining knowledge to do something or what is called procedural memory. SY performs these movements by observing (visul) movements exemplified earlier by the accompanying teacher, then kinesthetic by making direct movements when playing swings, seesaws, slides, spiders webs, sweeping movements, and eating movements.

Children with autism as subjects in the category of being able to do the kicking ball, swinging by combining knowledge with things done automatically without thinking, stimulus provided by the teacher is kinesthetic by doing and helping AG to do the folding and thickening movements. Then verbally by giving orders and information to do something.

Children with autism as subjects with heavy categories have motor skills that are arranged systematically and are not easily lost such as doing movements, children use procedural memory that connects their knowledge to do something such as doing thickened perpendicular movements by pressing a pencil from the top down, things it was done repeatedly by the AD until the work was done, doing the paper tearing motion by tearing the edges of the paper. AD also made a squeezing motion by clenching the paper with his right hand. He is also able to throw and catch the ball when playing.

3.5 Long-Term Memory on Aspects of the System of Good and Bad Values

Children with autism as subjects with mild categories are able to remember things that happened before good or bad grades by linking experiences that occurred before. This relates to episodic memory, linking knowledge with images of experiences that have been experienced. The teacher invites SY to play the rainbow ladder in the class "Let's SY play this" while pointing at the rainbow ladder, then SY stomps his feet, shakes his head and whines not wanting to play the rainbow ladder.

Then the teacher still invited him to play "loh this play first" then SY said the word "no" while crying then hugged the assistant teacher. According to the tutor, he was afraid to play the rainbow ladder because there was a feeling of trauma in him because he had fallen in the middle of the rainbow ladder, his feet fell into the rainbow ladder, while the other foot still stepped on the rainbow ladder, his body had difficulty coming out of the rainbow ladder, then he cried, since that's the child with autism with this mild category does not want if invited to play on the steps of the rainbow, even to the point of crying if still invited to play.

Children with autism as subjects in the category of being able to remember things that happened before, good and bad things he remembers with previous experiences that occur, this is related to episodic memory, children use imaginary logic in remembering events that have previously happened, children associate knowledge with images of experiences that have been experienced by imagining good or bad things that have happened to him. When the assistant teacher gave the order for AG to play on the trampoline, AG did not want to, he played in another place, but when invited to hold his hand and play with the assistant teacher, AG wanted to follow, then the teacher let the AG play the trampoline alone, but AG went down like his assistant teacher. AG doesn't want to play trampoline if it's not accompanied by his accompanying teacher, he looks like he's afraid when stepping on a trampoline, AG just steps on the edge of the trampoline, doesn't dare to go to the middle, in the end he just walks not jumping, but in a few moments the teacher releases AG, and AG jumps - jump on the trampoline itself, even though it only jumps for a moment and goes down again. According to the assistant teacher he was afraid of heights, when the assistant teacher invited him to jump higher, AG held the teacher's hand so tightly, and if he was told to play himself he also did not want to.

Children with autism as subjects with severe categories are able to remember things that happened before, good and bad things he remembers with previous experiences that happened. this relates to episodic memory, associating knowledge with images of experiences that have been experienced. When the accompanying teacher invites the Army to study, the Army is not focused, it is still cool to play blocks, invited to talk and not look into the teacher's eyes. then to get the focus of the child back the teacher has the idea to sing my balloon so that AD can respond, then AD looks into the teacher's eyes and covers his ears, but the companion teacher still sings while clapping then AD stands and runs around the class while covering his ears, then the teacher stop singing and hold AD's hands and invite him to study, then AD wants to follow. According to the assistant teacher, AD felt afraid when he sang the song "balloon", but he was not afraid of the balloon, his mother was surprised and did not know the initial cause of how.

4. CONCLUSION

In Cahaya Nurani Kindergarten, Summersari Subdistrict, Jember Regency, children with autism with mild, moderate and severe categories of short-term memory skills have different ways and stimuli in receiving information. Every child with autism can remember visual, auditory, and kinesthetic information but in the weight category the ability to remember information is stronger in visual stimuli, while for autism children with mild and moderate categories are stronger in all three, namely visual, auditory and kinesthetic. When receiving new information, children with autism with mild and moderate categories are able to mimic and repeat the teacher's words through what they are modeling. While children with autism with severe categories need repetition in order to remember and repeat the example. Long-term memory skills of children with autism with all categories tend to be in the form of episodic memory or imaginary coding.

It is better if in one day of learning for children with autism in the mild and moderate category, not too much learning material is given, only one material per learning aspect so that children don't feel confused so that children are able to focus and store more information in one day. The teacher must also provide a variety of games to children, so that all aspects of children's development, both cognitive, motor and language, can develop in a balanced manner. Children with autism in the mild, moderate, and severe categories prefer to play while learning outside, therefore it is better if as a companion teacher to schedule learning and therapy outside the room more often.

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