EFFECTIVENESS OF BEHAVIORAL-DEVELOPMENTAL APPROACH INTERVENTION

TO ENHANCING VERBAL AND PERFORMANCE COGNITIVE ABILITY

ON CHILDREN WITH AUTISM SPECTRUM DISORDERS

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The purpose of this research to discover the result of an intervention using behavioral- developmental approach to verbal and performance cognitive ability of children with autism spectrum disorders. This study employed a within-group experiment using a single-subject A/B design. The intervention was given to two children under the age of four by combining learning activities whose curriculum was very well structured with play activities that could stimulate him to interact with others in a more natural setting. The intervention program was given by an educator and parents for 40 hours/ a week in twelve months. The results of the study revealed the behavioral-developmental approach is effective in improving both verbal and performance cognitive ability. this research are expected to become an alternative intervention to improve cognitive ability in children with autism spectrum disorders.

**INTRODUCTION**

Currently, there two mainstream approaches in the treatment of children with autism spectrum disorders, there are behavioral and developmental approaches (Prizant & Wetherby, 1998; Greenspan & Wieder, 2006; Siegel, 2010; Ross, 2012). Both approaches have two different viewpoints on philosophy, methods and targets of treatment.

According to pervasive disorders on children with autism spectrum disorders (ASD), there’s no single approach can deal with all the problems of children. To improve child development significantly and comprehensively, multiple approaches are required to deal with children in synergies because one approach can complement disadvantages of the other approach (Fey, 1986; Siegel, 2010, Nee, 2013).

Wide variety of problems that exist in children, differences in learning speed, potential differences and learning problems in each child is a challenge in providing treatment to children with ASD (Siegel, 2010). Using a strategy of intervention by combining a behavioral-development approach is an intervention that combines philosophy, methods and techniques that exist in behavioral approaches and developmental approaches.

Behavioral-development approach is done by combining the advantages of handling with existing methods on behavioral and developmental approaches. Techniques used in this strategy are techniques used in applied behavioral methods but the selection of materials appropriate to the stage of child development. This strategy involving educators, parents and peers as well as integrating a structural-artificial and natural handling environment. Behavioral-developmental approach’s target not only develop cognitive abilities and shape functional learning behaviors such as behavioral approaches, but also emphasize building interactions between children with parents, family and social (Leaf et al, 2008; Matson, 2009; Farrel, 2009; Greenspan & Wieder 2006, Ross, 2012).

**METHOD**

Experimental research design that used was the type Within Group/Individual Design in the form of Single-Subject Experiment with A/B Design. Design of this study was choosen because the study subjects had a very wide diversity of problems and found it difficult to find research subjects with similar profiles, requiring individual analysis and minimizing the threat of internal validity (Cooper, 2007).

The participants of this study were not taken randomly and use Quasi Experiment (Creswell, 2008). Research participants are two children (2) who had been diagnosed with ASD, had no physical problems and was less than four (4) years old in March 2016 (based on the consideration that children under four have transfer of learning ability better than children over the age of four (Lovaas, 1987)). Educator, who has over-three-month experienced in giving intervention and parents, who received 40 hours of training, conduct intervention twelve (12) months in autism service center in Bandung city-West Java, Indonesia and child's parent house.

The interventition activities occurred in a classroom at the autism service center and at home for 30 hours/ a week or 6 hours/a day in 4 sessions (each session was 90 minutes). The educator did his part at the autism service center, and parent did theirs at home.

To measure the cognitive ability, WPPSI (Wechsler Preschool and Primary Scale of Intelligence) test was used. The test was administered by administered by a professional psychologist. The WPPSI test was divided into two types of intelligence tests; one is to measure verbal comprehension (Verbal IQ), and the other to measure the spatial relational ability and non-verbal reasoning (Performance IQ) (Gregory, 2010). The results of the two aspect subtests, verbal IQ and performance IQ, were interpreted in the forms of full scale IQ scores.

The researcher would consider the intervention was adequately successful if after the intervention the child got a 10 point increase from baseline full scale IQ score of the result of WPPSI

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| --- | --- | --- | --- | --- |
| COGNITIVE ABILITY | Aspect | Sub Aspect | First Participant | Second Participant |
| Before | After | Increase | Before | After | Increase |
| VerbalIQ | Common Knowledge | 3 | 8 | 5 | 1 | 6 | 5 |
| Verbal Concept | 3 | 5 | 2 | 3 | 3 | - |
| Numeracy | 2 | 7 | 5 | 2 | 9 | 7 |
| Association | 6 | 5 | - | 4 | 4 | - |
| Practical Reasoning | 4 | 6 | 2 | 4 | 3 | - |
| Verbal IQ | 60 | 76 | **16\*** | 55 | 69 | **14\*** |
| Performance IQ | Memory | 2 | 4 | 2 | 2 | 4 | 2 |
| Problem solving | 4 | 7 | 3 | 4 | 10 | 6 |
| Visual motoric | 4 | 18 | 14 | 4 | 10 | 6 |
| Concentration | 9 | 19 | 10 | 4 | 11 | 7 |
| Visual Perception | 7 | 12 | 5 | 4 | 3 | - |
| Performance IQ | 67 | 114 | **47\*** | 55 | 97 | **42\*** |
| Overall IQ | 60 | 93 | **33\*** | 51 | 81 | **30\*** |

test before the intervention (Anastasi, 2002).

**RESULTS**

*First Participant*

There is an increase of 16 points on verbal intelligence’s first participant after receiving intervention. That means first participant’s verbal comprehension skills, including the ability to learn verbal materials and apply verbal skills to solve various problems increased significantly(> 10 points). However, point increase does not change verbal intelligence criteria, so first participat’s verbal intelligence norm remains at very low criteria compared to children of the same age.

Due to posttest, first participant get 47 points on performance intelligence. That means the ability and understanding of space, including non-verbal reasoning, image/space imagery, and the ability to process picture information significantly increased (> 10 points). Point increase also increases the criteria of first participant’s performance intelligence, from very low to above average than children with the same age.

 In overall intelligence, there’s a 33 point increase after being handled. That means the ability of first participant to facing the environment effectively increases significantly (> 10 points). In addition, first participant 's overall intelligence criteria rise, from very low criteria become average criteria than average child with the same age.

*Second Participant*

There’s an increase of 14 points on verbal intelligence after receiving treatment. That means first participant’s verbal comprehension skills, including the ability to learn verbal materials and apply verbal skills to solve various problems increased significantly(> 10 points). However, point increase does not change verbal intelligence criteria, so second participant’s verbal intelligence remains at very low criteria compared to children of the same age.

Due to posttest, second participants get 42 points on performance intelligence. That means the ability and understanding of space, including non-verbal reasoning, image/space imagery, and the ability to process picture information significantly increased (> 10 points). There’s increases criteria of second participant’ s performance intelligence, from very low to average than children with the same age.

 In overall intelligence, there’s a 30 point increase after being handled. That means the ability

of second participant to facing the environment effectively increases significantly (>10 points). In addition to the increase in numbers, second participant 's overall intelligence criteria are on the rise, from very low become low average criteria than average child with the same age.

**DISCUSSION AND COCLUSION**

Based on results, Intervention with behavioral-developmental approach can improve cognitive abilities significantly. Combination of a structural learning-artificial and a natural play setting can develop the child's cognitive abilities. Involving parents and educators can increase children's motivation to learn from the environment. Once the child has mastered the language skills, the child is included in the school activities and interacts with peers to maintain the behavior of the children who have been formed.

The child addressed in this study demonstrated similar cognitive abilities to the child's age and demonstrated his ability to manage himself well enough, showed interest in the environment, was able to establish attachment relationships with others, was able to convey his thoughts and feelings in simple form, was able to express ideas, and two-way communication.

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