

# Differences in Effectiveness of Applied Behavior Analysis Therapy Technique Extinction with and without Video Modelling Media to Reduce Restricted Behavior for Children with ASD

Evi Berlian, Irmawati, Elvi Andriani Yusuf

Faculty of Psychology, University of Sumatera Utara, Medan, Indonesia

**Abstract**— This study aims to look at the differences in the effectiveness of therapy Applied Behavior Analysis (ABA) using the technique of extinction through the medium of video modelling to reduce the restricted behavior in children with Autism Spectrum Disorder (ASD). This research uses experimental research with A-B-A-B design involving two children who have behavioral restricted ASD clapped his hands. The results showed the intensity of behavior clapped his hand on the two subjects to be reduced, but on the subject by the behavior of ABA with video modeling the behavior of subjects reduced clapped his hand and on some behavioral conditions patted the child's hand was not seen again. Meanwhile, on the subject by ABA behavioral therapy clapped his hands still appear every day and every activity by its intensity despite dwindling.

**Keywords**— Applied behavior analysis, extinction, video modelling, autism spectrum disorder.

## I. INTRODUCTION

Autism Spectrum Disorder (ASD) has become a concern of many people, because the number of ASD increased every year (Publichealth, 2010). This was seen based on data from the Autism Research Institute in 1987 which estimated that 1:5000 children have ASD and in the year the number increased rapidly to 1:160 children. The number of ASD children in Indonesia handled by the Yayasan Autism Indonesia in 2008 also increased from 3 patients to 5 new patients each year, and there was an increase of 3 new patients every day. However, this figure was still an estimate, because it was difficult to get information about ASD children in Indonesia. This is due to the absence of an official census, the prevalence of diagnosis for ASD children and parents who do not want to admit that their children suffer from ASD (Yayasan Autism Indonesia, 2013).

Leo Kanner (Davison, 2006) identified ASD disorders by observing that ASD children have characteristics by ignoring and closing themselves from everything that comes from outside themselves. He found that early in life, children are not able to relate to others appropriately. They also have limitations in terms of language and have a strong obsessive desire that everything associated with the do remain exactly the same.

There are several criteria for ASD according to DSM 5, including there is disruption in social communication and the presence of repeated and repetitive behaviour (APA, 2013).

The severity of ASD children was divided into 3 groups, namely level 1, level 2, and level 3.

Boyd, McDonough and Boldfish (2011) said that restricted behavior was the main symptom in ASD children. Restricted behavior is a behavior of interest in one or several things continuously, so that this is related to the need to keep doing it continuously and repeatedly (Haugard, 2008). These symptoms appear in early childhood and affect the child's daily functioning.

Williams & Wright (2007) also said that the interest possessed by ASD children is not only on certain objects, but also on certain activities, information and environment. ASD children usually try to maintain one or more interests in a very distinctive and excessive manner and show tantrum behavior if they don't get the object or activity they want (Handoyo, 2009). There are several therapies that can be given to ASD children according to Danuatmaja (2003), namely: behavioural therapy, medical therapy, biomedical therapy, speech therapy and occupational therapy.

One behavioral therapy that can be applied to the ASD child by Mickey Keenan, et al (2000) was Applied Behavior Analysis (ABA). ABA is an application of behavior theory by B. F Skinner (Wenar & Kerig, 2008) and first used intensively by a behavioral therapist named Ivan Lovaas in 1960 (Smith & Eikeseth, 2010). ASD child in therapy with ABA methods for 40 hours in a week, then in 2 – 2.5 years, they've been able to follow the regular school according to age (Handoyo, 2003). Rapmauli & Matulesy (2015) research using the ABA method through flash card media to 6 ASD children for 2 weeks. The results showed that this therapy was effective in increasing social interaction, increasing eye contact skills and improving expressive language skills in ASD children.

ABA has several techniques, one of which is the extinction technique, meaning the consequences of a behavior that gets positive reinforcement, the child will repeat the behavior (Keenan Mickey, 2000). But, if the behavioral consequences of getting negative reinforcement, the child tends not to repeat the behavior. Extinction will be effective if the implementation was combined with positive reinforcement and alternative behavior. Alternative behavior is behavior that was given to replace previous behavior, where the behavior is reasonable and acceptable to the environment.

Grasping hand is a simple movement in yoga that can be given as an alternative behavior because this movement can calm focus the mind. When the mind was calm, the body will open to release tension and emotion. In addition, the fingers have electromagnetic waves and by holding hands affect emotions (Ramaiyah, 2009). Holding hands in the brain gym was also a simple movement that can be given as an alternative behavior, because it can provide a calming effect so that when someone holds hands can reduce the level of anxiety (Ayinosa, 2009).

In addition to using ABA therapy, several other researchers examined ASD children using video modelling. Based on the results of Monica (2007) research, most research subjects (ASD children) showed better behavioral changes and were able to meet some expected behavioral targets. Research also shows that it was more effective to use subject as a model compared to using adults or peers. Dettmet (Nirahma & Yuniar, 2012) mention that ASD children are easier to obtain visual information two or three dimensions that auditory stimuli.

Schoen (Callahan, Mehta, Magee & Wie, 2009) mentions the extent of the ASD spectrum makes no single therapy work alone to deal with the complex challenges of the spectrum in ASD children. Some experts agree that dealing with the spectrum of ASD children will be more effective when using a combination of two therapies rather than just using one type of therapy.

Based on this, the researchers assumed that there were differences in the effectiveness of the combined 2 therapies in reducing restricted behavior in ASD children. Therefore, researchers want to look the difference in the effectiveness of ABA therapy extinction techniques with and without video modelling media in reducing restricted behavior in ASD children. Using ABA with video modelling is based on the opinion of Tilander (2008) who said that ASD children have visual memory abilities was better than auditory abilities.

## II. OBJECTIVE AND METHODS

This study aims to examine the differences in the effectiveness of the Applied Behavior Analysis (ABA) therapy of extinction techniques with and without video modelling media in reducing restricted behavior in ASD children. The subjects in this study were level 2 children with ASD (clinician diagnosis) in DSM 5 (APA, 2013), with criteria: (1) having continuous clapping hands; (2) difficult to see changes that occur in activities so the patterns carried out every day are the same; (3) inability to express the desired things and have difficulty understanding the body language of the people; (4) difficult to start talking/interacting with people around them dan have little response when speak; (5) children are able to respond when called and make eye contact; (6) able to sit quietly and understand simple instructions.

This study uses an experimental research design with the A-B-A-B design, which consists of four stages, including: A1 (baseline 1), B1 (first intervention phase), A2 (baseline 2) and B2 (second intervention). The researcher then divided 2 groups of subjects: groups of children who were given ABA therapy with extinction techniques though video modelling

media and groups of children treated with ABA therapy with extinction techniques.

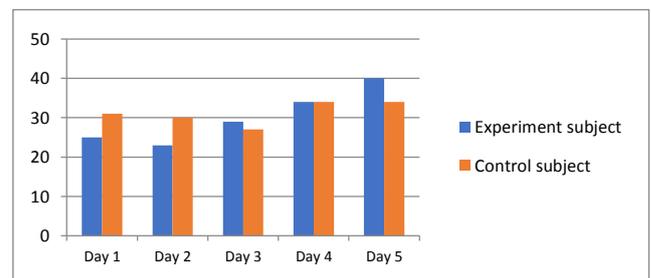
ABA stages with extinction techniques using video modelling media are: (1) measuring behavior; (2) keeping data; (3) ABC's learning; (4) selecting and finding reinforcers; (5) planning intervention; (6) starting work; (7) preparation; (8) recording of the video model; (9) implementation of the video model intervention; (10) monitoring of students' response to the video model intervention.

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## III. RESULTS AND DISCUSSIONS

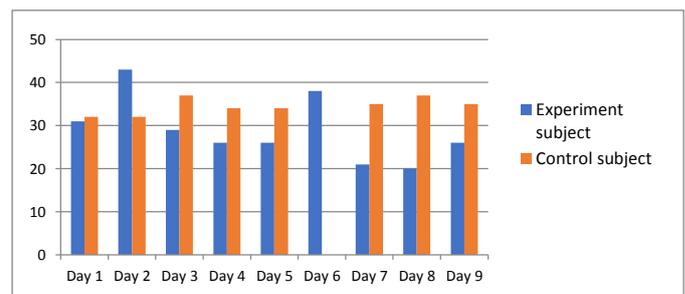
There were 2 ASD child as subject who involved in this study. The first subject (IP) was treated with ABA therapy using video modelling media, and the other subject (CA) was given ABA therapy without video modelling. The design in this study used A-B-A-B design

The results of the frequency of clapping hands on the subject of IP dan CA at baseline 1 (A1):



Based on the graph, there were differences in the behavior of clapping hands on experimental subjects (IP) and control subjects (CA) at the time of the implementation of the first baseline (A1). On the first day, there was more clapping on the CA subject (31 times) compared to IP (25 times). On the second day CA's clapping behavior was also higher (30 times) than IP (23 times). On the fourth day the IP and CA clapping behavior was the same 34 times, and on the fifth day the IP clapping behavior appeared more (40 times) than CA (34 times).

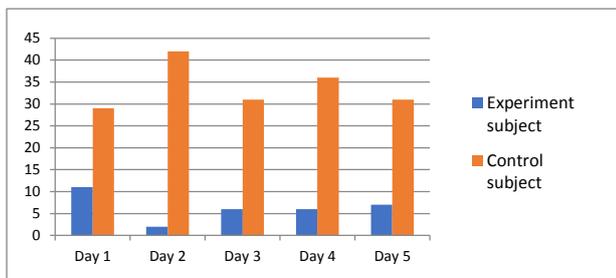
The results of the implementation of the first therapy (B1) on IP and CA:



Based on the graph, there were differences in the frequency of IP and CA clapping behavior during the implementation of the first therapy (B1). At the first day, the

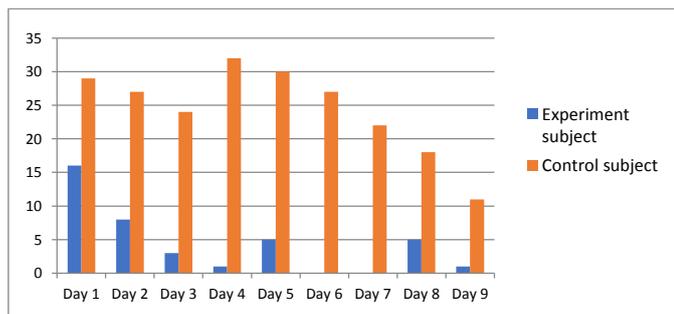
clapping behavior by IP and CA was not much different, namely 31 and 32 times. But on the second day IP clapping behavior was seen more (43 times) than CA (32 times). On the third, fourth and fifth day a graph of clapping behavior on CA's was higher than IP. However, on the sixth day there was only a graph of IP behavior whereas in CA there was no amount of clapping behavior so the therapy was stopped. When the seventh and eighth days were seen the graph of the clapping behavior on IP decreases. While the CA chart on the seventh, eighth and ninth day did not appear to have decreased.

The result of the second baseline (A2) on the behavior of clapping the subject of IP and CA were.



Based on the graph, there were differences in the frequency of clapping behavior on IP and CA during the second baseline (A2). The frequency of clapping on CA subjects appears to appear more than IP.

The following are the results of the implementation of the second therapy (B2) on the behavior of clapping the subject of IP and CA.



Based on the graph, there were differences in the frequency of clapping hands IP and CA when the second therapy was performed (B2). Clapping behavior on CA's looks more often than IP. The frequency of CA's clapping behavior from the first day to the fourth day shows a graphical up and down pattern, but on the fifth day to the ninth day a chart pattern continued to decline. This means that the frequency of clapping hands on CA's continues to decrease. While the IP shows a graphical pattern that rises up and down from the first day to the ninth day, and on the sixth and seventh days the graph is at the lowest (zero). This means that on the sixth day and seventh of the IP does not display clapping behavior.

*Discussion.* This study shows that ABA therapy with extinction techniques with video modelling media was more

effective to reduce restricted clapping behavior in ASD children, compared with ABA therapy with modelling extinction without video. It can be seen from the frequency of IP behavior that received ABA therapy with video modelling. The total amount of clapping behavior continues to decrease starting from the first baseline (A1), the first therapy (B1), the second baseline (A2), until the second therapy (B2). After receiving ABA therapy with video modelling media, the total number of restricted behavioral frequencies of clapping hands on IP was reduced, compared to before being given ABA therapy with video modelling. In fact, restricted behavior in some therapy session did not appear. Tilander (2008) said that ASD children have better visual memory abilities than auditory abilities. Wolfinger (Suyanto, 2005) also said, in cognitive development, ASD children are in the preoperational phase, so the children have a concrete way of thinking that was based on experiences of concrete objects, not on abstract knowledge or abstract concepts.

The treatment of ABA therapy with extinction techniques through video modelling on IP also gives better behavioral outcomes than only providing ABA therapy without video modelling. Based on observations, before IP was given ABA therapy with video modelling, IP's clapping behavior was so fast that it was done repeatedly. After IP was given ABA therapy with video modelling, the child can hold back the movement of his hand when he wants to clap his hands so that the child's behavior when he claps his hands can be stopped by IP and replace it with a hand-holding behavior. The child changes his clapping behavior when there is an instruction "hand held" from the therapist.

The reason for hand-holding behavior was chosen as an alternative behavior because this behavior can provide a calming effect. Hands and fingers are believed to be able to produce a type of energy or electromagnetic wave that can affect emotions and related organs (Ramaiyah, 2009). In this study, IP and CA showed clapping behavior when the child felt anger or happy. So, when the hand clapping behavior was changed into a hand-holding behavior, the condition of the child who used to look angry slowly becomes calmer.

#### IV. CONCLUSION

Based on the results of the analysis and discussion, it can be concluded that (1) there was a change in the behavior frequency of ABA therapy by using video modelling media to reduce the restricted behavior of clapping hands on Autism Spectrum Disorder (ASD) children compared to ABA therapy without using video modelling; (2) ABA intervention with video modelling was more effective in reducing restricted behavior in autistic children compared to ABA intervention without video modelling; (3) ABA intervention with video modelling can reduce the occurrence of extinction burst such as tantrum behavior in ASD children during the therapy process; (4) choosing the right alternative behavior as another factor that supports the success of therapy. This study uses hand-held behavior as an alternative behavior to replace the restricted behavior of clapping hands.

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