



TEACHING GROSS MOTOR IMITATION SKILLS TO CHILDREN DIAGNOSED WITH AUTISM

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Abstract

Children diagnosed with autism spectrum disorder experience a difficulty in the ability to imitate spontaneous behavior and actions seen to others. This study reveals that children with autism can learn generalized imitation behavior with an intensive intervention, therefore the paper examines the effectiveness of motor imitation teaching by using gestures, games and songs with 10 children diagnosed with autism. The study demonstrates the fact that a child with autism can learn the imitation behavior when using other additional procedures during a certain period of time. The approach was general in order to find which method of prompt, games and songs were efficient in facilitating the generalization. Teaching motor imitation can be challenging because it needs a special attention to the process and is a very important step in the behavioral evolution of children with autism. The results showed an imitation behavior to certain actions that weren't present at the beginning in the experiment.

Keywords: *imitation, autism, behavior, applied behavior analysis*

1. INTRODUCTION

Children with autism spectrum disorder (ASD) experience difficulties with imitation from a very early age (Dawson and Adams, 1984; Groșanu, 2015). They don't have the natural skills for imitation, therefore this kind of behavior must be learned. One of the types is motor imitation, a very important step in learning behavior which has been related to language behavior, social development and communication (McDuffie, Yoder and Stone, 2005).

Previous research showed that in early intervention to a child with ASD it is

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very important to introduce motor imitation, because the skills learned by the child are related to improvement of other skills needed in the treatment of children with autism (Whalen, Schreibman, Ingersoll, 2006). The deficit in imitation can be observed in the first years of the child's life, if there is a close evaluation and can be seen also in adolescence (Laine, Rauzy, Gepner, Tardif, 2011). Imitation can lead to future social abilities and as well, can predict how communication skills can be developed to children with autism. The deficit of imitation to children diagnosed with autism was considered the result of the lack of a symbolic representation and later was discovered to be the first manifestation of a disorder in the self-other mapping, creating a cascading effect in subsequent social skills (Laine, Rauzy, Gepner, Tardif, 2011). Later studies showed that the deficit in imitation is related to a gap between perception-action coupling due to a disorder of the mirror neuron system which might lead to a self-other mapping deficit in autism (Oberman and Ramachandran, 2007). Some studies showed a comparison between a typical child and one with autism which revealed the fact that a child with autism is imitating facial expression if they were showed slowly and not at a normal speed, there had to be a delay in order to capture the gesture and imitate it (Garcia, Baer, Firestone, 1971). If we speak about the traditional method in teaching motor imitation to children with autism, then we can say there is a one to one session with the adult and the child, where the child is taught using the discrete trial teaching, where is used a very structured adult directed sessions. Motor imitation is considered the most important component of the profound social and intellectual development that occurs over the first several years of life. A child increases the capacity to imitate starting from the second year of life, when the need to meet the world is taking shape. To a child with autism, this need must be taking care of as he cannot learn by himself actions, sounds, gestures (Kleeberger, Pat, 2008). Giving this importance, I chose to teach motor imitation behavior to 10 children diagnosed with ASD, who were showing no signs of imitation. Previous research show that imitation is developing progressively, starting from the most simple self observing actions on object that produce a prominent effect, to more complex actions like complicated gestures. Studies also showed that early ruptures in the imitation process "could be partly responsible for shaping the early behavioral phenotype of autism" (Young, Gregory, Sally et. all, 2011).

2. OBJECTIVE AND HYPOTHESES

2.1. OBJECTIVE

The objective of this study is teaching functional gross motor imitation behavior to children diagnosed with autism, using a structured method of functional behaviour

analysis. The goal is to teach imitation behaviour to children with autism who don't have this ability, but need it for future interactions.

2.2. HYPOTHESES

The applied behaviour analysis method is showing results in teaching functional behaviour of gross motor skills to children diagnosed with ASD if there is applied daily and intensively.

3. METHOD

The participants in the study were 10 children, with masculine gender, who had a diagnosis of autism with a scoring of 11 points (the medium score was 11 points) at the psychological evaluation when applied the ADOS test (Lord, Rutter, Dilavore, Risi, 2008) and who didn't have the gross motor imitation behaviour. During the evaluation process they didn't respond to any of my verbal requests and made eye contact only twice or once each child, they didn't show any sign they can imitate naturally. All children received the same intervention in order to see how they react. Let's take one of them for example: I have chosen D. because he is at the beginning of the training, therefore it is the best moment to teach the imitation behaviour, given the early age of intervention (2-3 years old). In the evaluation session D. showed no sign of imitation behaviour. He also couldn't coordinate himself and was very oppositionist. Because he was for the first time in a one to one session I had to manage how to catch his attention in order to start the process of therapy.

1. Materials

For the study there were used songs for gross motor imitation, motor distractors and tokens. The materials were chosen so we can shape motor imitation behaviour and to help the participant during the intervention. The materials were used as support for the actions that were requested from the children and helped them to learn faster actions that they were taught. Also, some of the materials were used as reinforcement in order to reach the goal of teaching imitation. The materials found in the room of the study were: a table, two seats, a locker full of toys, musical instruments (eg. toy xylophone) and songs.

2. Procedure

Through all the baseline and the intervention phases probe sessions were held in a therapy room, in one-to-one sessions, every day, 5 days a week to assess the occurrence of the imitation behaviours. The children are receiving an immediate reward after a correct answer. The materials used were put somewhere near the therapist, so it can be easily reached. The gross motor songs, finger play, standing up and down requests were introduced in the baseline to see the level of imitation in children's behaviour. The toys, musical instruments and the activities were

available to children only during probe session.

The items used in the study were: clap the hands, tramp, stand up, stand down, hands on the head, stand up, hands on the belly, stand down, hands on the knees, spin and tap in the table. The gross motor examples were selected from the general case matrices because they were present in songs and other frequent actions, therefore, they had to imitate a set of actions. The songs used in the process were: “Today Grivei is happy”, “In the forest with peanuts”.

The actions hands on the head, hands on the belly and hands on the knees were used not only to see the imitative action that the children do, but their knowledge about body parts. Along with these actions they could also learn body parts and how to show it.

In the baseline there were introduced 2 items to see the level of imitation that the children have. There were 5 days of baseline with 3 trials for each session for 5 of the children and 2 days of baseline for the other 5 children. In order to do the request the therapist ensured that he had eye contact with the child, so there can be maintained the level of attention and the visual contact. The trial session had a duration of 3 minutes for each item. After catching the child’s attention, the therapist makes the request and does himself a gesture that is wanted to be imitated. The child has 5 seconds to imitate the therapist’s gesture and immediately receives a verbal upshot to show whether it was a positive or negative response. The next request comes in 5 seconds after the response. The table below shows that before intervention children were having no imitation skills for the items *Clap the hands, Tramp, Hands on the head, Stand up and Hands on the belly* shown in the middle column for five days of trial.

Table 1 – The generalization of motor imitation behavior through item

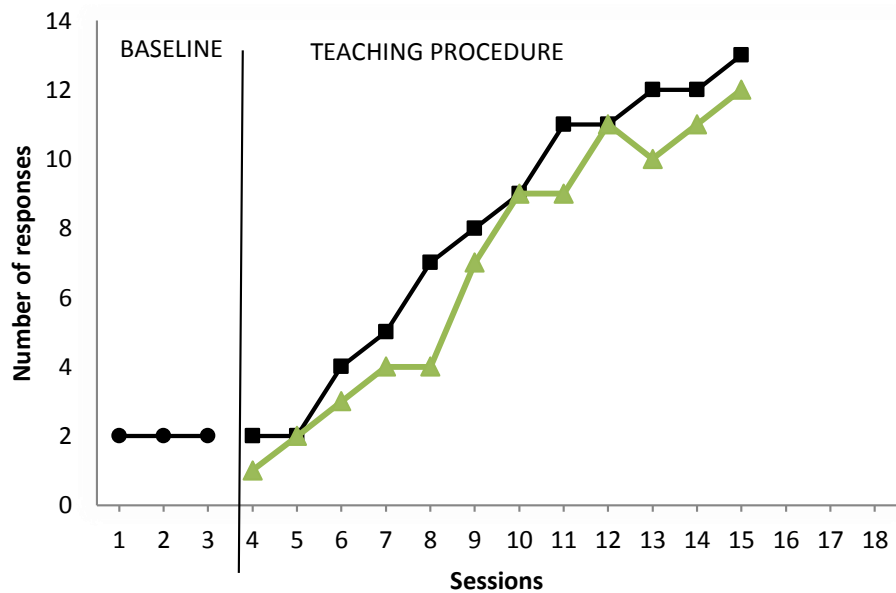
Day 1	Clap the hands	No imitation
Day 2	Tramp	No imitation
Day 3	Hands on the head	No imitation
Day 4	Stand up	No imitation
Day 5	Hands on the belly	No imitation

3. Intervention

The intervention consisted of giving children the same requests like in the pre-test sessions, but in a more structured way. In the first trial they didn’t manage to imitate “clap the hands!”, therefore the therapist helped them with physical guidance and prompt to complete the item. After this procedure, children received social and food rewards in order to reinforce them into correct answers. The tokens used while the intervention helped them to increase their level of attention and concentration, because after using the token they knew they had finished the session. We used pencils, toy circles as tokens, even little bagels used at the same

time as a reward and token, giving a faster growing in imitation behaviour in some cases. In the intervention sessions, when children showed no sign of imitation, they had been prompted, this way they were helped to learn the move they were requested to do. In the first sessions they needed the prompt at every request until they started to respond correctly. When that happened, we used fewer prompts and 5 of the children, the ones with intensive intervention slowly started to develop their imitation behaviour. The prompts were actually used until they reached 6 correct answers of 6 requests. During the intervention, for some of the items like clap the hands, tramp or tap the table, there has been used gross motor songs. When the therapist stopped the song the child must give a response to the request. After the first 3 sessions he had an average of response of 4 out of 6, knowing that the song will play again if they will give the correct response. When the children mastered the “clap the hands!” request the therapist moved to the next item working with the child in a structured way. In the next sessions the therapist introduced a new item, when the previous was mastered, but also kept the previous one learned so far. The other 5 children who had sessions only once a week could not learn imitation behaviour.

Graphic 1- Development of imitation skills



4. RESULTS

As the graphic above shows, the study had a very good result, all five children who had intensively and repetitive intervention were very receptive and learned the gross motor imitation behaviour during sessions of therapy. The results are discussed with regard to generalization. Like the studies conducted by Cooper in imitation behaviour showed, a structured procedure reveals good results in the progress of children with autism (Cooper, Heron, Heward, 2011). We can see the first sessions of baseline where the therapist observed no imitation behaviour. During intervention, we can observe the increase of correct answers that children gave during sessions shown with the black square line which means they mastered the items introduced for them to learn some of the skills of gross motor imitation. The green line shows that responses of children who mastered the imitation skills were a little different, but were developed well. At first they couldn't master the "clap the hands" request, but after prompting and playing songs to help them in mastering it, they were able to understand the imitation they needed to do.

This study also has limitations regarding to the other 5 children who didn't master the gross motor imitation skills, therefore, the result that came out was that they had less sessions of interventions, so less time to master it, therefore, it can be a beginning for future and more complex studies.

This study attempted to demonstrate that a child with autism can learn gross motor imitation using prompting and reinforcement procedures, if they are done correctly, intensively and repetitively. Another limitation of this study is that the generalization process should be investigated with a further study.

The applied behaviour analysis method is proven to have results in recovery for children with autism and in learning gross motor imitation skills, the basis for the future interaction with other children. The obtained results show us that through perseverance and repetition in a well-defined framework the children with autism have real chances to recover, especially if they start therapy at early age.

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