



Research Article

TEACHING STORY TO CHILDREN WITH HIGH FUNCTIONING AUTISM: EFFECT ON THE DEVELOPMENT OF A THEORY OF MIND

Akila Palani^{1*} and Kala Samayan²

¹Director, The bright the learning centre, Mogappaire west, Chennai, India

²Senior Audiologist & Speech Language Pathologist, National Institute for Empowerment of Persons with Multiple Disabilities (NIEPMD) ECR, Muttukadu, Kovalam, Chennai, India

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ABSTRACT

This research examined whether children with autism could be trained to improve in understanding of emotions, understanding of beliefs and changes in their verbal communication. Three high functioning autism children in the age group of 4 to 5 years participated in the present study. Two Indian stories were taught to these children. The result indicates that all the 3 children showed a significant improvement in terms of comprehending and expressing the story with visuals and without visuals. This indicates, that we can teach emotions, and also beliefs to children with autism at an early stage as they start comprehending with visual feedbacks and generalize the concept and their by erasing their core area deficit theory of mind at least to some extent.

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INTRODUCTION

Often, children with autism use limited range of language to serve a communicative function, such as to get a desired object. Rarely these children use language for a social function, like gaining attention, commenting and questioning others. Children with autism have problems with turn-taking and with the interpretation and expression of stories with emotions in the communicative competence.

Theory of mind (ToM) is awareness of own and other people's mental states, such as beliefs, desires, intentions, and emotions. These mental states are revealed largely through conversation and are the foundation of social understanding. ToM is also part of metacognition (Kuhn, 2000) and can be considered more broadly, with a developmental progression that eventuates in more complex meta-cognitive abilities, such as advanced knowledge about thinking.

Children with autism are impaired in their acquisition of a "theory of mind" (Baron-Cohen, Leslie, & Frith, 1985; Frith, 1989). By theory of mind we mean being able to infer the full range of mental states (beliefs, desires, intentions, imagination, emotions, etc.) that cause action. In brief, having a theory of mind is to be able to reflect on the contents of one's own and other's minds. Difficulty in understanding other minds is a core cognitive feature of autism spectrum conditions. The theory of mind difficulties seems to be universal among such individuals.

Hadwin *et al.*, (1997) looked specifically at communication skills that required a theory of mind. Their study examined whether teaching children with autism to pass theory of mind

tests had any effects on conversational skills. Specifically, the study focused on the ability to initiate and maintain topics in conversations. In addition, the study also investigated the use of mental state terms in the speech of children with autism before and after mental state teaching. The training package included three areas: understanding emotions, understanding belief, and pretend play. The results showed that through teaching, the children did learn to pass tests regarding emotion and belief understanding. However, they did not show any significant improvement in social communication skills. In particular, there was no improvement in the ability to maintain a conversation topic and no increase in the use of mental state terms in speech.

A large number of studies have demonstrated that children with autism have difficulties in shifting their perspective to judge what someone else might think, instead simply reporting what they themselves know (Baron-Cohen, Leslie & Frith, 1985; Perner, Frith, Leslie & Leekam, 1989).

In Ozonoff and Miller's (1995) study, five normal- IQ adolescents with autism participated in a 4-monthlong social skills training program. The participants were taught specific interaction and conversational skills. In addition, the program provided explicit systematic instructions underlying social-cognitive principles necessary in theory of mind. Pre- and post intervention assessments showed a meaningful improvement in their performance on standard theory of mind tasks.

Normal 4 year olds can keep track of how different people might think different things about the world (Wimmer & Perner, 1983). We have similarly found that, when

interpreting well-known stories such as the fox and the grapes or The Hare and the tortoise, even 4 Year olds will say things like “fox is hungry” and since the fox couldn’t reach the grapes; it’s says to himself that it is sour” but really it couldn’t reach. Similarly in Hare and the tortoise that the “Hare can really run very fast than the tortoise” and the hare is watedly inviting just to show that it’s going to win the race”.

By 4 years old, normally developing children can also pick out words from a word list that refer to what goes on in the mind, or what the mind can do. These words include "think", "know", “dream”, “pretend”, “hope”, “wish”, and "imagine". These are easily distinguished from other kinds of (non-mental) verbs like “jump”, “eat”, or “move”. Children with autism have much more difficulty in making this judgment (Baron-Cohen et al., 1994).

Need for the Study

Over the past many research has shown that children with Autism have difficulty in the area of theory of mind. Baron et al (1989), have found that children with autism have difficulties in shifting their perspective to judge what someone else might think. Whereas few other researchers like Bowler etal (1993) and Hadwin et al (1997), states that through repeated teaching and with visual feedbacks children with Autism learn theory of mind.

There is always a discrepancy about theory of mind and Autism. Since there is no much study about theory of mind in the Indian context, especially with respect to learning the regular stories hence the need. Also this study will explore the possibilities of teaching theory of mind using our regular short stories with emotions and underlying beliefs for children with high functioning Autism.

Aim of the study

The aim of the present study is to examine whether teaching stories will direct to a quantitative improvement in children’s understanding of emotions, and understanding of beliefs and also verbal communication with high functioning children with autism spectrum disorders.

METHOD

Participants

Three high functioning autism children in the age group of 4 to 5 years participated in the present study. Children were selected from a special school for autism at Chennai. Children were selected with purposive sampling method. They were diagnosed as autistic according to the MCHAT, CARS and DSM IV criteria. Consent was taken from parents prior to data collection.

Table 1 Name and Age of the Children

S.No	Name/Gender	Age	Receptive Age	Expressive Age	Social Age
1	X/ Male	5years	4.5years	4years	3.8years
2	Y/Female	5years	4.6years	4.2years	4years
3	Z/Male	4.7years	4.3years	3.10years	3.8years

Table 2 Baseline of the children

Name	Baseline
X	Able to comprehend and identify the picture of the stories.
Y	Able to comprehend and identify the picture of the stories.
Z	Able to comprehend and identify the picture of the stories.

Goal

The Goal is to make the child express the stories using complete sentence structure along with emotion and also make them able to answer “wh” questions related to the stories like “why did the fox say the grapes are sour?”; “Where did the fox go in search of food?”; “who won the Race?”; “Why did the hare invited the tortoise for the race?”.Etc.,

Materials

Two Indian stories, Fox and the grapes, Hare and the tortoise were taken for teaching with visual picture cards. Each story had six picture cards.

Procedure

The teaching procedures included were same therapy setting, same visual cards and some of the techniques used were making the child sit Face-to-Face, teaching the details of the story, picture by picture concept, pointing to the story line, making them to sequence the story using picture cards. Sessions were conducted thrice a week. Ten therapy sessions of Intensive stimulation was given to all the three children on both the stories. Each therapy session was lasted around to 30 minutes to 40 minutes. Reinforcements were given for every correct response in a session. Pre therapy and post therapy video recording was done. Recording were subjected to descriptive analysis.

The recordings were subjected to analysis by two speech and language pathologist for validation on a 0-3 point rating scale, where 0=is considered to be poor; 1=Average performance of the child on the given task; 2=Good and 3=Very Good performance on the basis of Expression of the stories using complete sentence structure, emotional content of the story, answering “wh” questions.

The validated results were tabulated.

RESULTS AND DISCUSSION

The objective of this present study was to examine whether teaching stories to children with autism would result in a quantitative improvement in understanding of emotions, understanding of beliefs and changes in their verbal communication. The recordings were then subjected to analysis. The recordings were given to 2 speech language pathologist to rate it on a 0-3 point rating scale (where 0=is considered to be poor; 1=Average performance of the child on the given task; 2=Good and 3=Very Good performance) and the criteria for validation was set on the following task.

- Expression of the stories using complete sentence structure.
- Emotional content of the story.
- Answering “wh” questions.

The Validated result indicates that out of three children, both X and y got highest score with respect to the story “**Fox and the Grapes**” thereby shows significant improvement in terms of comprehending and expressing the story with visuals and without visuals. They could also express with the emotional content of the storyline. Thus the present findings correlates with the study by Hadwin *et al.*, (1997) which states that through teaching children learn emotions and beliefs.

Table 3 Children performance Score of the story 1:”Fox and the Grapes”.

Name	Validation Score SLP 1	Validation Score SLP2
X	3	3
Y	3	3
Z	2	2

Table 4 Children performance score of the story 2.”Hare and the Tortoise”

Name	Validation score SLP 1	Validation score SLP2
X	3	3
Y	2	2
Z	2	2

However, child “Z” though did not get score of very good but still he was scored Good by both the evaluators, that could be attributed to inadequate joint attention and answering to the “why” questions.

The Result for the story “**Hare and the Tortoise**” child “x” scored highest when compared with the other two children. But however, other two children were scored “good” by the evaluators, thereby shows that all the children performed and showed significant improvement in expressing the taught story, which correlates with a study by Bowler et al 1993, that repetition of the task with visual feedbacks showed consistent performance in learning emotional cues and understanding false beliefs.

The present study also shows that children, through teaching, did answer on all “wh” questions with respect to the stories taught. In particular, the amount of “answer” utterances generally increased after training occurred. This result confirms previous findings that high functioning children with autism are proficient at giving a direct answer to a direct question (Trager-Flusberg & Anderson, 1991). The most prevalent response to a question was a one phrase or one sentence answer.

DISCUSSION

This current study shows a notable change in all the three children in terms of learning the story with emotions like hunger, slow, fast, and in understanding beliefs such as the fox couldn’t reach the grapes etc., and with consistent visual feedbacks they could relate and learn the emotion of the stories, and also they could show 80% of consistency, thereby supports with the study by Bowler et al 1993.

To discuss when compared with the three children “X, Y, Z” Child “X” scored the highest score in both the stories. That could be attributed to his enhanced language and verbal abilities, which is supported by Kimhi et al 2014, states that enhanced language and verbal abilities facilitate better Theory of Mind understanding.

We would like to add video recordings for our study.

CONCLUSION

The validated result indicates that all the three children showed a significant improvement in expressing both the stories with emotions and underlying beliefs.

Hence to conclude, this study implies, that we can teach emotions, and also beliefs to children with high functioning autism. We should also make sure that teaching theory of mind should start during the early intervention period itself. Then only, as the child starts comprehending with visual feedbacks and over a period of time as they learn, we can generalize the concept and their by erasing their core area deficit theory of mind at least to some extent.

Implications

This present study also implies that, generalization may occur when Theory of Mind (TOM) is targeted as part of broader socio cognitive intervention rather than as an isolated skill.

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