

## CREATING ACTIVITIES USING PUPPETS TO PROMOTE LANGUAGE AND SOCIAL INTERACTIONS FOR CHILDREN OF 4-TO-5 YEARS OLD WITH AUTISM SPECTRUM DISORDERS

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**Abstract.** Puppets have been one of teaching resources to develop language and social interactions for children including children with special needs. This paper explores how puppets can be used in activities to promote language skills and social interactions for 4-to-5 years old children with autism spectrum disorders. The article provides the implementation process including how to design puppets based on recycled materials, how to design a lesson plan using puppets, and technical suggestions for using puppet theatre when teaching children with autism spectrum disorders. The article also presents the experimental results of applying these in a typical case study of children with autism spectrum disorders aged 4-5. The initial outcomes have proved both theoretical and practical effectiveness on these children, shown in the evaluation results in both quantitative and qualitative aspects. This is the basis for the researchers of this study to expand and transfer application results of applying puppet therapy to enhance language ability and social interaction for children with autism spectrum disorders in many other caring facilities for children at 4-5 years old with autism spectrum disorders.

**Keywords:** children with autism spectrum disorders (ASD), puppets, language skills, social interaction, puppet therapy.

### 1. Introduction

Puppet therapy has been useful for language development and social interaction in children because of its unique features. The Piaget's theory states that puppets can help young children develop creative and cognitive skills by motivating them to use their imagination [1]. Additionally, the puppetry therapist Kim Sam Sung (2000) affirms that using lively puppets combined with exciting scenarios will increase concentration for children, especially helping them to develop social communication skills and interaction better [15]. This teaching method is almost based on activities, so it is also suitable for children who have language and speech problems or those who need special education.

Around the world, the study of puppet therapy and the educational puppets were mentioned in some research papers such as puppets in therapy, the therapeutic significance of puppets in improving psychological function, playing skills that promoting creativity and imagination for autistic children by Bromfield and Lee [8]; how puppet making and play can help autistic children

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by the author Pamela Ullmann, MS, ATR-BC, ATCS, LCAT [22]. Among them, studies related to puppet therapy for autistic children have also mentioned that puppet therapy is essential to work together and encourage children to be creative and imaginative when moving playing with puppets [3]. The use of puppet therapy in therapy has a vital role in developing and stimulating children's interaction and communication skills. It increases the effectiveness of the child's interaction and communication process with the interaction/communication object. The puppets will help children express their emotions, thoughts,... [7-9]. Therefore, when using puppetry in education for children, specifically those with autism spectrum disorders, we need to pay attention to the following essential standards and factors: two *standards are* (1) The therapist needs to be thorough, knowledgeable about puppet therapy; (2) The focus of puppet therapy is focused on the purpose and course of treatment; five *factors are* (1) Puppet theater provides development opportunities for both therapists and young children; (2) Puppets can be controlled by multiple users; (3) Puppet theater applies to a wide range of children; (4) Puppet theater maintains a certain safe distance between children and those around them; (5) Therapists can use puppet theater to predict the child's cognitive, social, and emotional abilities [15].

According to the United Nations (2008), "Autism is a lifelong developmental disability that manifests itself during the first three years of life and results from a neurological disorder that affects the functioning of the brain, mostly affecting children in many countries irrespective of gender, race or socio-economic status, and characterized by impairments in social interaction, problems with verbal and non-verbal communication and restricted, repetitive behaviour, interests and activities" [29]. According to DSM -5 (2013), based on the support level criteria, ASD is divided into three levels [4]: (1) Level 1- *Requiring very substantial support*: Severe deficits in verbal and nonverbal social communication skills cause severe impairments in functioning, very limited initiation of social interactions, and minimal response to social overtures from others; (2) Level 2 - *Requiring substantial support*: Marked deficits in verbal and nonverbal social communication skills; social impairments apparent even with supports in place; limited initiation of social interactions; and reduced or abnormal responses to social overtures from others; and level 3 - *Requiring support*: Without supports in place, deficits in social communication cause noticeable impairments. Difficulty initiating social interactions, and clear examples of atypical or unsuccessful response to social overtures of others. May appear to have decreased interest in social interactions.

Children with autism spectrum disorder have core defects, especially defects related to language ability and extremely specific social interaction. Details are as of below:

*Cognitive development*: Autistic children often have difficulty in receiving and processing information through the sensory system, especially when organizational and purposeful feedback is needed. Children with autism perceptive in part and biased tendencies affect the perception and accuracy of the information that they receive. Their visual thinking often develops at a high level and becomes the core in contrast with their logical thinking.

*Behaviors*: Autistic children have many abnormal behaviors. Some common behaviors in children included: repetitive behaviors, self-stimulating, aggressive behaviors, hyperactivity,...

*Language and speech*: Children with ASD find it hard to understand what the others say. Spoken language is a typical defect of them. Autistic children also have many problems with verbal and nonverbal communication skills. The time autistic children takes to process information is often slow. They may also have difficulty when someone speaks too fast, too slow, or use many complicated words. Additionally, their vocabulary is often weak, and the grammatical structure is frequently wrong. Spoken language is a typical defect of children with ASD. Some of them can only imitate animal sounds or making insignificant sounds. The remaining autistic children can develop language but usually slower than usual. Others never

make it through the imitation stage or may begin to say some words and phrases that they think. Autistic children also have difficulty with words that do not create meaning by themselves. Moreover, children with ASD have many problems with communication skills. They do not understand what others say, have no conception of the purpose, principles, the rotation, and the “silent language” of communication.

*Social interaction:* The social interaction styles of autistic children in preschool-age are divided into three main groups: Aloof; Passive; Active – but – odd. *Aloof:* The child does not come close when called or react when someone speaks to them. He may not show his facial expression unless he experiences distinct emotions (anger, stress, happiness, etc); *Passive:* The child is not active in social interaction. Passiveness makes children a real “baby” in pretend play, role-playing games,... *Active-but-odd:* The child often interacts with the others inappropriately, such as staring at people for too long, hugging and shaking hands too tightly,...

The puppets stimulate autistic children to develop language, social interactivity, creativity, improve mind theory, increase attention ability, identify and manage behaviors, develop manual skills and control skills for them, and support in learning and problem-solving skills [15]. In order to ensure effectiveness in applying educational puppetry for children with autism spectrum disorder, some basic techniques need special attention, such as: *story content:* based on the child's development level (cognition, communication skills, etc.), personal characteristics (interests, behaviors, etc.); *Puppets:* suitable for children's sensory characteristics, durability, safety, easy to use, easy to make, cubism, and use with many roles; *Puppets organization:* puppets on the table, puppets performance, puppet making, organizing role-playing games use puppets, combining in school subjects, or using puppets at home to communicate and interact with children; and *Method to organize puppet activities in teaching autistic children:* using a coordinated and flexible manner and paying attention to techniques while using puppets, classifying methods of using puppet puppets in educating children with ASD based on the source of information for children.

In Vietnam, there have been a few studies on bringing puppets into education. For example, there is an article about how engaging when using puppets to teach preschool children by author Thu Trang, or bringing water puppets to education. However, puppet therapy is still entirely new in Vietnam. There are just a few studies on this method applied to children with disabilities in general or children with ASD in particular. For that reason, based on the theoretical study of children with ASD and puppet therapy, the article proposes creating puppets - used activities and making experiment followed therapeutic approach in educating autistic children aged 4-5 years to develop language and enhance social interaction skills.

## **2. Content**






### **2.1. Research methods**

The research team performs the following tasks: demographic information of the participants, procedure created puppets, making therapy plans and activities, experimental case study during 06 months, and measurements of the participants before experiment in language skills and social interactions. In the process of conducting the research, the group has implemented the following methods: investigating, summarizing of documents, interviewing, observing, consulting experts, experimenting, testing, processing data by mathematical statistics.

### **2.2. Research contents**

#### **2.2.1. Puppet design using recycled materials**

Designing the puppets using recycled materials, based on scripts and being tailored to adapt to sensory features of children with autism spectrum disorder, particularly the experimental.

Script	Content	Materials and guides to make puppets	Pictures of handmade - puppets products
1. Rooster, frog and puppy	<ul style="list-style-type: none"> <li>- Background</li> <li>- Participants</li> <li>- Story content</li> <li>- Script about controlling the puppets</li> </ul>	<ul style="list-style-type: none"> <li>- Rooster cup puppetry, puppy cup puppetry, frog recycled - puppet by toilet paper core.</li> <li>* <i>Note:</i> Put the little bells (or anything makes sounds) in the puppets to stimulate the child's hearing sensory</li> </ul>	 
2. Two goats crossing the bridge		<ul style="list-style-type: none"> <li>- White goat felt puppet, black goat felt puppet, turtle stick puppet</li> <li>* <i>Note:</i> Put rice (beans) in the puppet to stimulate the tactile sensory for the child when touching, holding, picking,... Some parts of the puppet, such as eyes, beard, mouth,... can be removed and stuck back freely.</li> </ul>	 
3. The clever rabbit		<ul style="list-style-type: none"> <li>- Alligator stock puppetry, rabbit stock puppetry.</li> </ul>	

### 2.2.2. Make therapy plans and activities

Prepare 03 scripts using the above designed puppet groups. Each scenario will clearly suggest the specific activities, the teacher's actions, the child's expected interaction, and the corresponding behaviors expected in the child. Below is an example of such one script.

\* *Script:* The clever rabbit

\* *Targets:*

- Expressive language: The child will say correct 5 words, the answer will be “rabbit” or “crocodile” when being asked “what is this?” He will repeat short sentences and limit the nonsense words.

- Receptive language: The child will understand short and clear sentences including 1 command.

- Social interaction: The child will wave back when the puppets greet them, actively interact with puppets while playing with puppets, focus on puppet performances for 2-3 minutes.

\* *Lesson design:* 02 lessons (90 minutes), individual intervention hours.

- Content of lesson plan:

<b>Activities</b>	<b>Activities of teacher</b>	<b>Expected performance of the child</b>	<b>Expected behaviors of the child</b>
<b>Get to know the puppets</b>	Teacher uses 2 puppets to get to know the child.	The child will greet the 2 puppets by waving and say "hello"	Although he does not focus on the teacher, he will look at the puppets and greet them when the teacher speaks.
<b>Puppets' performance</b>	Use puppets to tell the story "The clever rabbit."	Children look, concentrate, and imitate the movements and the lines of the characters.	Children sit obediently, less distracted while watching puppet theater.
<b>Roles playing to tell the story again</b>	The teacher instructs children to react the story according to her suggestions.	The child concentrates on listening and replaying puppet movements as the teacher gives instructions.	The child may not focus in the first time when hearing instruction, but having interaction and focusing actions for the second time.
<b>Talk with puppets</b>	Talking with the child about the stories and his feelings.	The child will answer all questions.	The child will concentrate and make eye contact with the teacher during conversation and puppetry-interaction time.
<b>Answer the question</b>	The teacher asks the child about the story and does not use puppets.	The child will listen to the teacher, answer questions, and look at the teacher in the process of answering.	The child will sit obediently and interact with the teacher, such as watching, listening, and answering questions.
<b>Game</b>	The teacher organizes games.	The child will mobilize and participate in the games.	The child will participate in games, and sometimes, when he loses concentration, the teacher will remind children to focus and support him.

### **2.2.3. The research experiment on one case study**

*General information of the child:* Child N.T.A, date of birth: September 28th, 2015. Medical history: A is a full-term baby; the mother gave birth by cesarean. Before that, the mother had cesarean twice. A weighs 3.2 kg at birth. His parents were 38 years old when getting pregnant with A.

Assessment results: Using the Kyoto Development Psychology Test (Japan) and interviewing parents to give the results, the real age of the child at the time of the test was 4 years 8 months, but the result at the test score shows that the overall development of the child is slower than the real age, only equivalent to the child's development at about 2 years 1 month (about 2 years 7 months slower than the real age). The Development Qualitative (DQ) shows that the child is in an area of moderate underdevelopment.

*The child's characteristics in areas of language and social interaction are shown as follows.* About the language area: (1) Expressive language: Children can speak some single

words, some 2-3 word sentences show their needs, repeat 3-4 words, limited vocabulary, less active, finds it hard to maintain communication, still lisp much; (2) Receptive language: Children can understand and do some simple commands, follow 1-2 simple steps instructions, and recognize familiar objects and animals. About the social interaction characteristics: Limiting eye interaction, less initiation of interaction, maintaining short 1-2 minutes concentration, difficulty changing activities, not understanding the rules of play.

### **b. Process and content implemented**

\* Process of experiment:

- *Experiment period:* 6 months (from October 30, 2019 to April 30, 2020).

- *Duration:* Individual intervention sessions using puppets are conducted twice a week for 1-2 hours/session.

\* Content implementation

The scenarios of using puppets are based on the child's characteristics and developmental level, which are implemented methodically. The lessons are divided into pieces and duration to suit the child's characteristics and the conditions for experimenting.

- *Activities performed:* Children get acquainted with the puppets - Watch puppet stories - Use puppets to re-act the story with the teacher - Participate in games included puppets and the teacher - Talk to the puppets and the teacher. (Implementation activities are integrated into children's intervention sessions).

- *Methods:* usage of verbal language, visual aids, illustration, work, games, practice, model, situational, evaluation.

### **c. Experimental results**

The below assessment results were produced by measuring children before and after the experimental process, using the quantitative standard tool scales and qualitative assessment by the comments of parents and teachers who directly teach these children.

The comparison before and after the experiment of A using the Kyoto Test Scale for Development Psychology (Japan) on three areas of development: Motor, Cognition, and Language - Social Interaction (see the table below):

Areas of development	Benchmark		DA (Developmental age)		DQ (Development qualitative) Average = 100	
	1st time	2nd time	1st time	2nd time	1st time	2nd time
Postion - Motor (P-M)	75	79	29 months (2 years 5 months)	37 months (3 years 1 month)	59.1	66.1
Cognition - Adaption (C-A)	189	197	26 months (2 years 2 month)	28 months (2 years 4 months)	53.0	50.0
Language - Social (L-S)	28	37	405 days (1 year 2 months)	594 days (1 year 7 months)	28.5	33.9
Total score	<b>292</b>	<b>313</b>	<b>697 days (1 year 2 months)</b>	<b>25 months (2 years 1 month)</b>	<b>46.9</b>	<b>44.6</b>

The Kyoto scale results showed that after 6 months of intervention, language, and social interaction, A had markedly improved, which also partly demonstrates the effectiveness of applying puppet therapy in experiment time in A.

Results on A's language and social interaction before and after the experiment:

<b>Content</b>	<b>Before experiment</b>	<b>After experiment</b>
Language	The child had limited vocabulary, 50-60 words. Most of the words were lisp. He did not know how to use words/model sentences in the right circumstances. He could repeat sentences that included 3-4 words but often lost words. Additionally, the child used words inflexibl in communication, and hardly used expressive language to show his needs,...	35-45 words increase in the child's vocabulary, can correct 60% of words, using correct words in some circumstances such as asking for clothes, greeting, asking for the toilet,... repeat question 4 - 6 words with little lack of words, using language to express needs such as "I itch", "I want",... actively.
Social interaction	The child rarely initiates interactions, only maintain interactions with activities they like, have little eye contact, short-time focus, does not understand the rules of play, have difficulty in changing activities,...	Initiate more interactions, especially when the child has needs and activities that they like, increase eye contact during interaction with the teacher, increase focus to 2 - 3 minutes, know how to play alternatively 1 - 1, accept when changing activities, and adapting quickly to new activities.

Qualitative comments about A's progress after the experiment time:

- *Family's comment:* Parents noticed that after using puppet therapy, A had these outstanding advancement:

Concentration: A can focus longer when eating, playing, participating in activities whether or not he likes it, having the right behaviors in some situations.

Language: A can speak more single words, express some needs with words instead of actions, limit his lisp, and actively greet everyone when greeted without his mother's prompting.

Memorization: A can remember the characters and simple details of the story after listening 2-3 times. When the mother talks to A 1-2 times, A can repeat her sentence following the context.

- *Comment of the A's special teacher:* After six months of experimenting with puppet therapy, he has outstanding advancement at language and social interaction as follows: about the expressive language, A can speak double words, actively speak in some of their own needs, repeat simple 4-6 words, answer some questions with sentences included 3-4 words; about the receptive language: A can understand and execute 2-command sentences, identify many objects in different topics, understand simple 3-5 step instructions.

*About the social interaction of A:* Maintain interaction with most activities, proactively initiate in some cases, understand the rules of rotation, increase eye contact, maintain concentration 4-5 minutes—less difficulty in changing operations.

Thus, the experiment results have reflected the effectiveness of puppetry therapy on A's language and social interaction.

### 3. Conclusions

The experiment was deployed on a collaboration between the research team and the child's parents. Experimental results have reflected the effectiveness of using a therapeutic approach puppetry in improving language development and social interaction of children with ASD, creating motivation for children to develop language and different social interaction skills.

Puppet therapy has many outstanding advantages suitable for the characteristics of autistic children aged 4-5 years old. In order to improve the effectiveness of the use of puppet therapy, it is necessary to follow certain principles and steps, and teachers need to use a combination of methods, forms, and other story contents together. Puppet therapy is a new method in Vietnam, the topic has only experimented on an autistic child with difficulties in communication and social interaction, so the method should be expanded and further deepened in other topics.

Besides, it is necessary to continue to develop the application of puppetry therapy in educational interventions for children with ASD in institutions, inclusive schools, intervention centers, specialized schools, as well as provide more materials, different application methods for teacher training institutions at all levels in general and special educator in particular, to promote the advantages of puppetry therapy in language development and social interaction skills for children with autistic children. At the same time, it is necessary to use the more popular and frequent puppet therapy methods to help children quickly get used to the puppet culture.

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