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Research Paper

A Study on Developing Communication Skill among Children with Autism Using Verbal Instruction

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ABSTRACT

Developing communication skill among autistic individuals is very essential as they get it difficult to communicate with others which affect their daily life. Majority of children with autism struggle with communicative behaviors, which are the essential factors for social interactions. In order to improve the communication skills for children with Autism Spectrum Disorder (ASD), many researchers have focused on developing effective interventions to treat these deficits. The aim of the study is to investigate the effectiveness of verbal instruction for children with autism to develop their communication skills. The intervention used for the study is to improve their social skill during an ongoing conversation. The study participants comprising of children with ASD were subjected to 'Behavioral Intervention' and interpreted using Statistical Package for Social Science (SPSS). Their response towards the intervention was analyzed and estimated using 'Whole Interval Recording'. From the implication of the test findings, the therapeutic efficacy of the behavioral interventions for children with ASD could serve as an effective approach in improving their communication skills.

Keywords: *Autism Specific Disorder (ASD), Communication skills, Behavior Therapy, Whole Interval Recording.*

The earliest descriptions of autism spectrum disorder (ASD) included impairments in communication skills [1, 2] and deficits in these skills remain central to the diagnostic definition of the disorder. With the advent of the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders, social and communication impairments were combined into one domain in recognition that socialization is inherently linked to the development of communication skills.

According to the diagnostic criteria, communication difficulties become apparent in early childhood and consist of deficits in social-emotional reciprocity, non-verbal communicative

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behaviors used for social interaction, and developing, maintaining, and understanding relationships [3]. Communication impairments can encompass a variety of skills. Deficits in communication skills may include failure of normal back-and-forth conversation; reduced sharing of interests, emotions, or affect; either failure to initiate or respond to social interactions [3]. Deficits in nonverbal communicative behaviors used for social interaction can include poorly integrated verbal and nonverbal communication, lack of eye contact and body language, insufficiencies in understanding and use of gestures, and a total lack of displaying facial expressions and nonverbal communication [3].

Intervening early to treat these impairments is vital. Communication skills are often cited as top treatment concerns for children with ASD [4, 5]. Successfully treating these impairments may lead to better short and long-term outcomes as well as contribute to an overall improved quality of life. Fortunately, many interventional therapies were subjected for children with ASD and were studied quite intensively, as the prevalence of ASD has increased substantially in recent years. Researchers are trying to find an effective interventional therapy for individuals with ASD [6].

REVIEW OF LITERATURE

Autism or Autism Specific Disorder (ASD) is a neuro-developmental condition contributed by some genetic and environmental factors. This condition can be observed in certain individuals, during their early childhood. Autism can be characterized by the individual's limited ability to interact socially as they express certain limitations in their verbal/nonverbal communication and are quite sensitive to certain changes and indulge in repetitive and stereotyped behavioural activities [7].

One of the root causes of the problem with autistic children is inadequate communication skills. However some autistic children tend to develop normal behavioral activity, but in most of the cases the children face difficulties to speak and communicate. There are several developmental delays identified in individuals with autism syndrome and it has no definite cure [8].

Poor communication serves as one of the primary factors for behavior related problems which may lead to commencement of negligence towards desirable activities and social attention. For gaining social attention the individuals must be subjected to objects/activities which could aid as communicative function [9].

The investigations involving autistic children has shown that, it is quite difficult to initiate behaviors which are concerned with engaging the children actively in social interactions which was comparatively analyzed with the typical developing children [10]. From the following study, it was determined that the use of individual's emotion and feelings could be effective in improving the child's behavior.

Globally, there has been a significant increase in the incorporation of psychosocial intervention to treat ASDs symptoms [11]. There are wide array of therapeutic interventions being put forward for ASDs treatment and from the investigations, it was concluded that intensive behavioral interventional helps in the ASDs treatment and was found that early treatment involving intensive behavioral interventions can help in improving the communicative and adaptive behavior of autistic children.

METHODOLOGY

Research Methodology

The aim of the study is to investigate the effectiveness of verbal instruction for children with autism to develop their communication skills. The following section describes the experimental procedures that were carried out in analysing the thorough interaction of the communicative behaviours of the children with ASD. The study methodology and results are represented in the below sections.

The study was conducted on children who were diagnosed with moderate ASD symptoms through condition based screening from a special school in Pune. In this study, five children with autism who are between 6-7 years of age were selected. The children intervened for the period of 10 weeks. Individuals were selected for the study on the basis of their vocalisation abilities and age. The data was taken pre and post intervention by using Whole Interval Recording Form (developed by by M.C Miller, Kreiners, J. Robinett, B.E. Freeman, R.L Smith, C.L. Baer, D. Palmer (2003) in order to determine the level of conversation abilities of each individual before and after the intervention. The children's communication skills were assessed on an ongoing basis during the intervention period of 10 weeks. The resulted findings based on children's communication skills were further subjected to statistical interpretation.

Ethical Validation

Prior intimation with written consent was obtained from each parent of the participants which details about the purpose of the study. Adequate care was taken in order to maintain confidentiality by avoiding disclosure of identical information regarding the participants.

Participants

The study involves children with ASD, who were selected based on the vocalization abilities, age and severity of disorder. The participants for the following study comprised of five children with autism who were selected based on the below mentioned criteria as follows.

- Vocalization abilities: The children must be able to perform vocalization techniques as a part of their repertoire. The children should not use sign languages, PECS, etc. for communications.
- Age: As the children gradually learn to socialize around the age of 6-7 years old. Therefore, this is the ideal age group for children to start learning about communication skills which is vital for social interactions.

- Severity of disorder: All the 5 children belong to mild to moderate level of autism according to Child Autism Rating Scale (CARS).

Intervention procedure

The intervention procedure that is carried out for the study involves verbal instructions. Verbal instructions are widely used by parents and therapist to teach communicative skill to children with autism. Verbal instruction does not require much training and is easy to deliver. In this study all the participants were subjected to follow the instructions delivered by the therapist to communicate with their fellow peers during an on-going conversation. The learners, (i.e.) the autistic children in this case, must listen to the instructions by the therapist. Their social interaction which involves in their participation to communicate with their peers was measured and recorded using Whole Interval Recording Form.

During the Pre-intervention study, the subjects were given the opportunity to show their communication skills, with each trial for 30 seconds. The data was recorded using whole interval recording. During interventional study, the therapist delivered the instructions. The therapist instructed the subjects on how to communicate with a peer. The instruction for each trial for the subject was for more than 30 seconds. The data was marked (X), if the subject was able to follow the instruction and communicate with his / her peers for at least 30 seconds, otherwise the data was marked as (O). The whole observation period for each session was for 5 minutes, and the intervention period comprised to a total of 20 sessions which were distributed on an even scale over the experimental period of 10 weeks. If the instruction was successful, then each session concluded with positive reinforcement such as verbal praise or giving the child access to his/her favourite pastime activities. If the instruction was unsuccessful, the session concluded with simplification of the instruction or adding more instructions by the therapist, which intends to induce the subject to perform the activity in the next session.

Statistical interpretation

The statistical interpretations were determined using, Two sample t-test. This procedure imparts several data/reports for the comparison of two distributions, which includes confidence intervals involving the differences between the means. The test for assumptions and plots are available for this test. The data required for the test can be contained within two variables or even in one variable which is indexed using second (grouping) variable. In this case the statistical interpretations were determined based on the outcomes that are evaluated during the pre-intervention period and during intervention period. For the following studies, there are two variables in a data set, which comprises a total of 5 data in each set. The first set of data represents the data recorded during the pre-intervention study and the second set of data represents, the data which was recorded during the intervention study and the outcomes of the findings were represented in Table 1 and 2. In order, not to disclose the name and identity of the study subjects, each individual were provided imaginative names (PB, BC, etc.).

Table 1. Statistical findings during the pre-intervention period

Groups	Mean	N	Std. Deviation	Median	Minimum	Maximum
PB	1.700	10	1.547	5.00	1	7
HS	2.364	11	1.167	2.00	0	4
BC	4.200	10	1.916	3.50	0	9
PC	1.778	9	0.632	6.00	1	5
SB	1.818	11	0.771	1.50	0	5

Table 2. Statistical intervention during the pre-intervention period

Descriptive statistics pre-intervention	
Mean	2.3719
Standard Error	0.4719
Median	1.8182
Mode	1.0551
Standard Deviation	1.1133
Sample Variance	3.6902
Kurtosis	1.9249
Skewness	2.5000
Range	1.7000
Minimum	4.2000
Maximum	11.8596
Sum	5
Count	1.3101
Confidence Level (95.0%)	2.3719

Table 3. Statistical findings after intervention period

Groups	Mean	N	Std. Deviation	Median	Minimum	Maximum
PB	4.400	10	1.337	1.50	0	4
HS	7.444	9	2.774	5.00	2	10
BC	9.800	10	2.214	6.00	3	10
PC	4.727	11	1.293	2.00	0	3
SB	7.571	7	2.532	4.50	2	10

Table 4. Statistical intervention during the pre-intervention period

Descriptive statistics during intervention	
Mean	6.7886
Standard Error	1.0016
Median	7.4444
Standard Deviation	2.2398
Sample Variance	5.0165

Descriptive statistics during intervention	
Kurtosis	-1.3736
Skewness	0.2107
Range	5.4000
Minimum	4.4000
Maximum	9.8000
Sum	33.9431
Count	5
Confidence Level (95.0%)	2.7810

RESULTS

Clinical Findings and outcomes

Results from the pre-intervention and intervention (which were measured using Whole Interval Recording) were analyzed using independent sample t-test in Table 5. In order to determine whether there is a significant difference in the mean test scores during the pre-intervention and intervention period, the independent sample-t test was calculated assuming equal variance.

Analysis and Interpretation

An independent sample-t test was run on a sample population of 5 children and the data was acquired from 'Whole Interval Recording' to determine whether there was statistically significant mean differences observed between periods excluding and including intervention. The therapeutic efficacy of the behavioral without intervention (24.2 ± 10.69) and during the intervention was (62.8 ± 21.35), t (8) = 0.0068, which was less than 0.05 ($p<0.05$). This indicates there is significant difference between the two means. Hence, from the statistical analysis, we can determine that the children with ASD performed better during the intervention sessions.

Table 5. Results of two sample t-test during pre-intervention and intervention

	Pre-intervention	*During intervention*
Mean	24.2000	62.8000
Variance	114.2000	455.7000
Standard Deviation	10.6864	21.3471
Observations	5	5
Pooled Variance	284.9500	
Hypothesized Mean Difference	0	
Df	8	
t Stat	-3.6155	
P(T<=t) one-tail	0.0034	
t Critical one-tail	1.8595	
P(T<=t) two-tail	0.0068	
t Critical two-tail	2.3060	

DISCUSSIONS

From the study, behaviour intervention showed significant improvement in communication skills of the subjects during the experimental period, as there were notable differences observed in each subjects in their response towards verbal instructions during the initial sessions and at the final session of the experimental period as they demonstrated the skills earlier than they had performed in the previous sessions. The current study intends to focus on behavioural interventions to improve their communications, the study showed significant differences in their mean values, thus it proved likely, to be an effective intervention treatment approach for treating children with ASD lacking in communication skills.

LIMITATIONS OF THE STUDY

Although the study has reached its aim, there were certain unavoidable limitations of the study. The Whole interval recording in the study for certain occasions may underestimate the social interactions of the study subjects and also the procedure is quite time consuming in nature.

Some participants may become prompt dependent if the prompt is not faded properly. This prompting might actually be followed in certain occasions or to a particular study subject(s). Most importantly, to those children with mild autism may show less difficulty and can learn the skills much faster than other children who has moderate level of autism. The familiarity of peers can affect the participation of the learners during conversation. The procedure can be time consuming.

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