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Language in India www.languageinindia.com **ISSN 1930-2940 Vol. 19:5 May 2019**
India's Higher Education Authority UGC Approved List of Journals Serial Number 49042
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Pragmatic Skills Usage by Autistic Children

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Introduction

A communication disorder can be a speech and language disorder which refers to problems in communication and in related areas such as oral motor function. The delays and disorders can range from simple sound substitution to the inability to understand or use one's native language.

A major cause of communication disorders is the condition of autism in children. The term autism typically conjures up images of children who are withdrawn into their own egocentric worlds, children who appear to have rejected reality in favour of a fantasy place that other people cannot reach, children who engage in a wide range of abnormal and socially unacceptable behaviour, children whose language is severely impaired (Hulit and Howard, 2006).

Autism is a name given to a set of neurodevelopmental disorders in which the communicative aspects and the interaction of a person with other people is impaired. Autism is a spectrum that encompasses a wide range of behaviour. The common features include impaired social interactions, impaired verbal and non-verbal communications, and restricted and repetitive patterns of behaviour. This aspect is reflected in the criteria given by the Diagnostic and Statistical Manual of Mental Disorders-IV (1994) and currently according to the DSM V (2013).

According to Verma and Krishnaswamy (1992) language is an arbitrary system of articulated sounds made use of by human beings for communication and expression. Language has sounds, words, sentences and meaning. Bloom and Lahey (1978) have stated that language is the code whereby ideas about the world are represented through a conventional system of arbitrary signals for communication. They have mentioned the 3 elements of language as being: form, content and use. They have explained these terms as below.

- Form is the surface structure of language which takes into account grammar and the ability to put together a sentence with the help of word order, word endings, verb tenses. Its divided into: phonology, morphology and syntax
- Content refers to the meaning: it involves the use of vocabulary and concepts. Its takes into consideration the semantic aspects of language development.
- Use refers to the way language functions as a social mediator- where language is used in a variety of different ways/social situations. It is categorized into pragmatics.

The deficits in pragmatics which refers to the conventions that governs language within social interactions is an important aspect in children with autism as seen across the entire autism spectrum. The problems with use of language in social situations, like inability to participate in social conversation are due to discrepancy between individuals and adaptive behaviour.

Deficits in non-verbal communication skills prominent in ASD include lack of eye contact and those in conversation skills like forms, initiation, frequent empty turns, inability to follow topic of control of conversation and associated non contextual or socially inappropriate comments. While presence of pragmatic language disorder in autism is proved (Bishop and Norbury, 2002), doubts about the relation between SLI, ASD and subgroup PLI namely pragmatic language impaired. Whereas the children of this group demonstrate expressive language skills with clean articulation but fail to use the language appropriately (Bishop 2000).

Though research and relationship between SLI, PLI and ASD is limited, studies on 12 language impaired children (age 8-9 years). Bishop and Norbury 2002 revealed some children met the criteria for PLI but did not meet the criteria for autism and so contradictions that PLI is a subgroup of autism. This probably suggests that PLI, SLI and ASD are one continuum with no clean boundaries. Now it is clear that evaluation of a child with ASD should involve the whole clinical picture not just the communication impairment alone. Though research and relationship between SLI, PLI and ASD is limited, studies on 12 language impaired children (age 8-9 years). Bishop and Norbury 2002 revealed some children met the criteria for PLI but did not meet the criteria for autism and so contradictions that PLI is a subgroup of autism. This probably suggests that PLI, SLI and ASD are one continuum with no clean boundaries. Now it is clear that evaluation

of a child with ASD should involve the whole clinical picture not just the communication impairment alone.

In the study conducted by Wetherby and Prutting (1984) analysed speech acts in the language of autistic children and found that children with autism protested more, requested for objects and used actions more than normal developing children. But the results also showed that there as a complete absence of speech acts used for requests for information, for acknowledgments of others, for showing off, and for commenting.

Loveland, Landry, Hughes, Hall, and McEvoy (1988**)** considered examining the pattern of speech acts (both verbal and nonverbal) used by autistic children while interacting with their mother. Two other groups were taken where the performance of autistic children were compared with mental age matched children with developmental language delay (DLD) and normally developing (ND) 2 year olds. The mothers were provided with toys, games and puzzles and 15 minutes of free-play during which mother - child interaction was video recorded. The results of the study showed that, the autistic group did not produce any response to most of the mother's initiation of speech act, but, used affirming and turn taking vocalizations less often than the other two groups. The DLD group used more of negation than the ND group, but the autistic group did not differ from the other two on this variable. The results of parent's speech act revealed that, parents of autistic children initiated greater percentage of their observed acts than parents of DLD and ND children.

Landry and Loveland (1989) considered the effect of three different interactive situations, which may vary with respect to a variety of social context factors. The three situations used were (a) an adult-directed situation, (b) a requesting situation, and (c) a spontaneous situation. Three groups were used in this study-autistic children, children with developmental language delay matched on mental age and mean length of utterance (MLU), and MLU matched young normal children. The three interactive situations were videotaped and assessed. The three context situations were compared throughout this play procedure. The results on comparing showed that the autistic children used attention-directing behaviours less frequently than the ND or DLD children, and their use of these behaviours varied less with communicative context than that of the other two groups.

Senju, Yaguchi, Tojo and Hasegawa (2003) studied mutual gaze (direct gaze and gaze-averted) behaviour in children with high functioning autism under experimental conditions using the visual paradigm. In this study 13 Japanese children with autism and 15 age-matched typically developing children were taken. All of the children were students or graduates of a primary school and they all had average scores on Japanese Raven's Colored Progressive Matrices (RCPMs) test. The results showed that the typically developing group of children detected direct gaze better than

the children with autism, but no difference was seen by both groups in detecting averted gaze. Thus, it was noted that children with autism have a problem with processing direct gaze which in turn talks about the failure in establishing normal course of eye contact which hampers subsequent development of social and communicative skills.

Dawson et al., (2004) considered social attention impairments in autism (social orienting, joint attention to other's distress) and their relations to language ability. In this study three groups of children took part: (a) 72 children with ASD comprising 50 children with autistic disorder and 22 children with pervasive developmental disorder not otherwise specified (PDD-NOS); (b) 34 children with developmental delay(DD) without autism comprising, 31 children with idiopathic developmental delay and 3 children with Down's syndrome and (c) 39 children with typical development. The groups were matched on mental age. The testing was done over time frame of three sessions and each participant was tested individually. The results showed that there was a significant impairment in the domains of social orienting, joint attention, and attention to distress in preschool-age children with ASD in relation to mental-age-matched children with developmental delay and typical development.

Volden (2004) in the study compared the performance of nine school-aged with high functioning children (ASD) on response to a stacked series of request for classification (RQCLs). The response type of each participant's conversation about topics of general interest (e.g hobbies, vacations, television shows, etc) was assessed. During conversation 10 episodes of a stacked series of three RQCLs ('What', 'I don't understand', 'Tell me another way') were used. Conversational interactions were videotaped and responses to each RQCL were coded the principal investigator. The verbal responses were then coded into one of the categories namely repetition, revision, cue, metacomments, inappropriate responses. The results showed that, children with ASD had recognized the need to repair communicative breakdown and used a range of strategies to attempt repairs. The number of inappropriate responses for the group with ASD was significantly greater than that of the control group. The analysis of non-verbal components of the responses to RQCLs revealed that, participants in both groups were more likely to add suprasegmental elements and gestural elements.

Chiang, Soong, Lin, and Rogers (2008) considered the nonverbal communication abilities in young children with autism. The subjects taken in this study were 28 children with autism, 24 with Developmental delay (DD). The DD group included speech and language delay, Down's syndrome, and unspecified mental retardation, 13-15-month old typically developing infants (TD1), and 18-20-month old typically developing children (TD2). The nonverbal communicative skills, other socio-cognitive abilities, child's MA and IQ were all measured. The Early social communication scales (ESCS) (Munday, Hogan, and Doehring, 1996) was used to measure the

nonverbal communicative skills. The results revealed that the duration of the ESCS testing did not differ across the four groups. There was a significant difference in the average number of nonverbal communicative acts in four group and children with autism had significantly fewer nonverbal communications than the children in other three groups. The results of frequency data revealed that, the young children with autism displayed deficits on low level initiating joint attention compared to DD and TD2 groups. In addition, TD2 group displayed significantly more High level initiating joint attention acts than the TD1 group. Social interaction data revealed that children with DD group displayed more initiating social interaction than children with autism and both of typically developing groups. The results of proportion data revealed that, young children with autism displayed proportionately fewer high level of initiating joint attention behaviours compared to DD and TD2 groups. TD2 group had higher proportion of high level of initiating joint attention skills than TD1 group. Requesting data revealed that young children with autism displayed significant higher proportion of low level requests than the DD group. Analysis of initiating social interaction revealed that, the children with autism, and other two typically developing groups. The results of the study highlight the need for both early diagnosis and early intervention.

Groen, Zwiers, van der Gaag and Buitelaar (2008) collected evidence to show that language impairments in autism are more extensive than commonly assumed and were described by formal diagnostic criteria and were apparent at various levels. Phenotypically, most people with autism have semantic, syntactic and pragmatic deficits, a smaller number are known to have phonological deficits. Neurophysiologically, abnormal processing of low-level linguistic information points to perceptual difficulties. And also since the abnormal high-level linguistic processing of the language association cortices (frontal and temporal) indicates a more self-reliant and less connected neural subsystem, the early sensory impairments and subsequent atypical neural connectivity are likely to play a part in abnormal language acquisition in autism.

Jones and Schwatz (2009) studied communication patterns between high functioning children with autism and their families within dinner time conversation. The participants were 30 families, 20 families with a child with autism, and 10 families with only typically developing children. The behaviours demonstrated by the children with autism differed from their typically developing peers in number rather than form.

Pijnacker, Hagoort, Buitelaar, Teunisse and Geurts (2009) examined pragmatic inferences in high functioning adults with autism and Asperger syndrome. A behavioural study was carried out on high-functioning adults with autistic disorder, Asperger syndrome and matched controls to observe whether they are capable of deriving scalar implicatures, which are generally considered to be pragmatic inferences. The reason for the study was because little was known about the pragmatic reasoning in ASD's. The subjects were presented with under informative sentences like "Some sparrows are birds". The findings suggest that the combined ASD group performed

similarly to the control group, although there was a difference between subjects with autistic disorder and Asperger syndrome which further on indicating potential differentiation between these disorders in pragmatic reasoning. Hence the results suggest that verbal intelligence is a constraint for task performance in autistic disorder but not in Asperger syndrome.

Novogrodsky (2013) in the study researched storytelling and story retelling by children with autism spectrum disorder (ASD). The analysis was to explore ambiguous third-person pronoun use in narratives. Twenty-three children diagnosed with ASD aged 6.1 to 14.3 and 17 typically-developing (TD) children aged 5.11 to 14.4 participated in the study. In the retelling task, no significant difference between the groups was found, suggesting that in less challenging tasks, children with ASD produce third-person subject pronouns appropriately. The findings suggest that children with ASD showed deficits in the pragmatic domain of producing narratives. Anjana (1999) compared pragmatic abilities of children with autism spectrum disorders (ASD's) with typically developing children matched for age range between 3-6 years. The results indicated that children with ASD used language predominantly for non-social or quasi social purpose in comparison to typically developing children who had utilized language for a social purpose. The children with ASD also exhibited higher turn-taking behaviours during the parent-child interaction when compared to clinician-child interactions. They had used more of off topic utterances, and the linguistic content of the repair attempts were found to be at a much lower level than typically developing children.

Chakravarthy (2002) constructed a diagnostic scale that could help us qualify the nature of ASD and to make an allowance for the profiling of symptoms. Elamon (2012) compared communication spontaneously between children with developmental and post seizures regression autism.

Biji (2003) examined the pragmatic skills in children with pervasive developmental disorders (PDD's). This test incorporated pragmatic skills namely greeting, labelling, requesting, negation, affirmation, repair, stylistic variation, referential communication, turn taking, closing conversation, eye gaze and proximity. The test took 24 children with PDD in the age range of 3.6-7.6 years, who enrolled for speech-language intervention program. A structured method with standard set of materials were used by the examiner to elicit different aspects of pragmatic skills. The responses obtained were audio recorded and scored by the examiner using four point rating scale;0-no response, 1-inappropriate response, 2-culturally and contextually appropriate nonverbal response,3-culturally and contextually appropriate verbal response. The results of the study were compared with the normative data given by Thankam (2002) with the following conclusions. It showed that children with PDD had performed poorly on the pragmatic skills compared to the normative data given and the performances on pragmatic skills namely greeting, eye gaze,

affirmation, negation, proximity, closing conversation, labelling was better compared to other skills due to the effect of intervention program during which these aspects received more attention.

Shilpashri (2010) observed pragmatic skills in children with autism spectrum disorders. The study showed that among the 14 pragmatic skills that were initiated by the caregiver, the response for labelling was mastered only in few children with ASD. It also showed that the percentage of response from the children with ASD to a caregiver's initiation of pragmatic skills and on self-initiation was not linear or constant for all the pragmatic skills with respect to age, as compared to the performance of typically developing children.

Focus of the Present Study

The present study attempts to report on the pragmatic aspects in a group of verbal autistic children.

Aims of This Study

This study aims at obtaining language data in autistic children with the objectives of

1. Describing the pragmatic skills provided by 4-5-year-old typically developing children based on caregiver –child interaction
2. Describing the performance on pragmatic skills by 4-5-year-old mental age children with autism.
3. Comparison of the performance of the above two groups

Method Used

The data was collected by using toys and pictures. Sample collection was done based on the study done by Shilpasree ,2010. In the present study all the subjects were engaged in play/ interactive contexts with the researcher. The 20-30 minutes of interaction was videotaped and later transcribed. Transcribed sample was subjected to analysis for scans in the areas of pragmatics.

Subjects

The subjects taken for the study were 10 normal subjects referred to as the reference group and 30 subjects with verbal autism referred to as the clinical group. All subjects selected were expressing at least occasionally in phrases and simple sentences according to records. The chronological age range was 8 to 14 years.

Ten typically developing (normal) school going children in the age range of 4-5 years were selected. The subjects were attending Kannada medium schools in and around Mangalore and Bangalore cities. They were 5 males and 5 female subjects. The mean age was 4.5 years.

Responses from the children for mother's initiation of pragmatic skills in the communicative context (Shilpashri, 2010) are:

1. RESPONSE FOR EYE COTACT: The child should maintain eye contact for at least 2 minutes in an activity with the communicative partner during play and/ or any activity introduced by the communicative partner.
2. SMILING: Child enjoys and responds by smiling to the approach/ greetings and / or joke introduced by the communicative partner during play and/ or conversational interaction.
3. RESPONSE FOR GAZE EXCHANGE: Child's act of looking at the communicative partner when attempting to communicate while engaged in play and/ or any other activity.
4. RESPONSE FOR JOINT ATTENTION: Child uses attention- following behaviour, such as head turn and eye gaze to follow the visual focus of the communicative partner.
5. RESPONSE FOR REQUEST OF OBJECT AND/OR ACTION: Child uses gestures and/ or utterances that acknowledge the communicative partner's request for an object and/ or action.
6. RESPONSE FOR LABELLING: child uses utterances that serve to label object, people, event and/ or location on request by the communicative partner.
7. ANSWERING QUESTIONS: The child uses utterances and/ or gestures that acknowledge the communicative partner wh-question forms that request different kinds of information like specification of objects (what), persons (who), locations (where), reasons and causes (why), instruments or manner of action (how), or times (when). It also elicits a more complex double wh-questions form ("who is eating what?") or ("who is eating which food").
8. RESPONSE FOR NEGATION: Child uses utterances and / or gestures that indicate absence of an object and / or person on request by the communicative partner.
9. RESPONSE FOR TURN -TAKING: Child's response behaviour (verbal and / or nonverbal) each following a verbal or play activity introduced by the communicative partner.
10. RESPONSE FOR CONVERSATIONAL REPAIR: Child uses utterances in the form of repetition, revision of the original form of utterance and / or addition that serve to clarify communicative partners doubt.
11. RESPONSE FOR TOPIC INITIATION: Child uses utterances that serve as response for conversational topic introduced by the communicative partner.
12. RESPONSE FOR TOPIC MAINTAINANCE: Child uses utterances and sustains discourse for at least 3 turns on the topic of conversation introduced by the communicative partner.
13. RESPONSE FOR COMMENT / FEEDBACK: Child uses utterances that state positive or negative remark, comments regarding particular activity, place, a person, and/ or event, judge utterances as appropriate for a particular listener or setting on request by the communicative partner.
14. RESPONSE FOR ADDING INFORMATION: Child uses utterances that add more information relevant to the topic of conversation introduced and requested by communicative partner.

Results

Table 1 shows the presence of 14 pragmatic skills recommended in a recent study on autistic subjects (Shilpashri, 2010). The typically developing reference group subjects provided a rich presence of a majority of pragmatic skills. For instance, all the subjects responded to eye contact, participated in gaze exchange, used smiling, responded to requests, labelling and demonstrating alertness in the conversation process. The typically expected joint attention skills, turn taking skills were also shown by all the subjects. Sixty percent (60%) or less responses were observed for repairs in conversation and topic initiation and topic maintenance. The skills of commenting on feedback and adding information were found to be absent. These observations are consistent with data reported by Shilpashri (2010) who reported on the development of pragmatic skills in Kannada speaking typically developing children. The subjects with verbal autism showed a different pattern compared to the reference group subjects. For example response to labelling, requests for objects were merely 80% present and were comparable to the reference group. However, less than 50% of the subjects participated in skills requiring responses to adult stimulus utterances. The smiling, gaze exchange and eye contact were expectedly low.

		Group-I (4-5 yrs)	**N=10 % age**	**Group-I (MA 4-5 yrs)**	**N=30 % age**
1	RESPONSE TO EYE CONTACT	9	90	14	46.00
2.	SMILING	10	100	6	20.00
3.	RESPONSE TO GAZE EXCHANGE	10	100	14	46.00
4.	RESPONSE FOR JOINT ATTENTION	10	100	20	60.00
5.	RESPONSE FOR REQUEST OF OBJECTS AND/OR ACTION	10	100	20	60.00
6.	RESPONSE FOR LABELLING	10	100	24	80.00
7.	ANSWERING QUESTIONS	10	100	15	50.00
8.	RESPONSE FOR NEGATION	10	100	18	55.00
9.	RESPONSE FOR TURN-TAKING	10	100	20	66.00
10.	RESPONSE FOR REPAIR	6	60	12	40.00
11.	RESPONSE FOR TOPIC INTIATION	5	50	9	30.00
12.	RESPONSE FOR TOPIC MAINTENANCE	6	60	11	36.00

13.	RESPONSE FOR COMMENT / FEEDBACK	0	0	0	0.00
14.	RESPONSE FOR ADDING INFORMATION	0	0	0	0.00

Table 1: Shows the presence of pragmatic skills in normal subjects and in verbal autistic children

In the present study subjects with autism spectrum disorder showed 80% responses for labelling and 60% responses for joint attention which are slightly higher compared to data presented by Shilpashri 2010. The reason could be due to the nature of the training provided in schools where each of the skills were repeatedly emphasized. So it appears that the nature of training in speech therapy and special education sessions may influence the development of pragmatic skills.

It is also possible that the pragmatic skill variations will influence the development of syntax and semantic components. However, this aspect has not been explored in the present study and remains a topic for the future.

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