

A comparative study on parental language used by parents of children with Autism Spectrum Disorder and typically developing children

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Purpose: Current study is designed to analyze the quantity and quality of parental language during parent-child interaction in the natural environment in both typically developing and in children with autism spectrum disorder.

Methods: A total of 10 primary caregivers mainly parents in which 5 participants were parents of children with autism spectrum disorder and 5 participants were parents of typically developing children. A 10-15 minutes video recording of parent-child interaction was analyzed and drawn into conclusion about the quantity and quality of language used in terms of grammatical language measures, discourse function and pragmatic function.

Results: Parents of children with ASD and parents of TD children who were developing normally produced similar amounts of linguistic input, but they differed on certain quality parameters. Parents of TD children use more Mean Length of Utterance. Significant differences were found between the two groups in terms of Discourse function and pragmatic functions. The parents of children with ASD used a comparatively lower number of nouns, verbs, conjunctions and case markers. In Discourse function analysis, significant differences were found in parental responses, number of conversational turns and number of parental responses to child's initiations. While considering pragmatic/behavioral functions, significant differences were only in questions and expansions.

Conclusions: The current study emphasizes the importance of parental language during parent-child interactions, as well as the need to profile the same which would provide precise information on the level of stimulation delivered.

Keywords: Autism, Parents, Language stimulation, Parent child interaction



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INTRODUCTION

Early language development in a child largely depends on the stimulation provided by the environment through interaction. Child's immediate environment is enriched with the interaction by the primary caregiver who is often the parents or grandparents. The stimulation from parents is an important variable in the development of a child's language. This parental input acts as a foundation stone for further language development especially for children with disabilities. The parent-child interaction can be interactional and directed with a specific purpose through gestures, vocalization or verbalization [1]. A healthy caregiver-child contact is facilitated by the desire between commu-

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nication partners to communicate and respond appropriately. Such interactions pave the way for the partners to typically engage in recognising and interpreting each other's verbal and non-verbal cues to reciprocate and respond appropriately [2,3]. This synchrony between reciprocation and responses will influence and coordinate joint attention and language development to a great extent [4-6]. According to Bretherton (1994) parent-child interactions are not static, but rather mutually regulated, dynamic, and flexible [7]. During these parent-child interactions, parents regulate their social behavior according to their child's communication profile. They interact by providing linguistic and situational cues through scaffolding. The communication behaviors and activities during these interactions are not only crucial for the development of language, but also for early cognitive growth and overall development of the child [8]. Parents who contingently respond to their children's verbal initiatives tend to have children with advanced phonological awareness and story comprehension skills [9]. The quantity and quality of the language used in these parent child interactions is crucial in his/her development [10].

Parent-child interactions during reading and play-time stimulates not only a child's language development, but also improves his/her vocabulary skills and reading comprehension, and increases his/her school readiness. Positive quality of parent-child interactions like imitations, interpretations, expansions and increased verbal responsiveness are essential in shaping a child's literacy environment and language development. Adequate and contingent parental responses are behaviors that promote advances in the development of children's language. Caregivers' language is frequently linked to specific events and things in the child's visual field, fostering word learning [11]. Generational, social, and cultural images of caregiving, children, and family life shape the input language [12]. The first 3 years are the most intensive for language development, as this is when the brain rapidly develops and is able to learn new information. If this critical period passes without adequate interaction and opportunity for language development, it will become more challenging to accomplish the milestones as the child develops.

One of the most common communication impairments which prevail in our society which needs immediate intervention is Autism Spectrum Disorder (ASD). Shorter joint engagement, insufficient communication intent, constrained gestures, and consonant production are all known characteristics of children with ASD [13]. The quantity and quality of

verbal input provided by caregivers has a significant impact on the linguistic development of young children [14]. From a young age, children with ASD exhibit less frequent eye contact, turn-taking abilities, and referential gazing, according to research [15].

Studies indicate that some parents have negative behaviors like controlling or commanding during play and some parents have positive adaptability in light of their child's ASD diagnosis which includes more symbol highlighting, more social initiations, stimulating higher levels of play, and high levels of sensitivity. Initiations and responses by these children are also unpredictable and inconsistent [16]. When compared to their TD peers and mothers, children with ASD and their mothers smile at one another less frequently during interaction [17]. In these parents, there was a common propensity to show low levels of synchrony when performing or talking about the same activity/object/person, as well as high levels of demanding behaviours [18]. Parents of children with ASD make more physical touch with their children and utilise fewer social verbal techniques. When communicating with their ASD children, these parents/caregivers exhibited more initiative than when communicating with their TD children [19,20]. The social initiatives and directives utilized by parents of children with ASD were not significantly different from those employed by parents of children with TD [20]. Some parents play with their children and perceive them as interactive partners based on cultural conventions and family beliefs, while others do not consider playing with young children to be an adult's responsibility [21].

Evidence based practices indicate that caregiver-implemented intervention produces positive results in children with ASD [18,22,23]. Therefore, In order to equip caregivers to be effective communicators, a thorough grasp of their communication styles is required. Also, parent child interactions should be considered when evaluating the Language development of children with ASD, and to know how it is different from the parent child interaction of a typically developing child. We will be able to consider the language feedback during parent-child interactions as a result of the findings, and we will be able to make appropriate improvements in parent-child interactions for the development of speech and language skills in children with ASD. Lack of extensive published literature on communication behaviors in Indian children, especially from Native malayalam speaking families is unavailable. Hence, the current study explored the comparison of parent-child interaction in ASD with that of the TD chil-

dren. The study hypothesized that communication behaviors and language input of parents of children with ASD and TD children may be different in most aspects.

Review of Literature

The interactions between parents and their children are thought to be the most essential process since they have a significant impact on the children's later development (i.e., social development, language etc.) [24,34]. Parent-child interactions are a broad term that refers to the patterns of interaction between parents and children that indicate the quality of their connection. Through scaffolding, responsiveness, and collaborative attention, parents' behaviours impact children's social traits [25]. Adequate and contingent parental responses are behaviors that promote advances in the development of children's language [26]. Maternal interactions with children which are supportive and nurturing may lead to positive socio-emotional and language outcomes, while controlling and intrusive interactions may lead to negative outcomes [27] including language acquisition. The role of maternal interaction with their child was emphasized by several studies [28]. They recommended frequent maternal labeling, expansion of child's utterances, speaking to the child in a grammatically correct fashion, and interactive storytelling. Characteristics of the parent-child interaction that were related to positive child functioning include lower levels of controlling and intrusive responses, higher levels of joining the child, enjoyment of the child and support of reciprocity, higher levels of parental responsiveness, and higher parental synchrony.

Tannock and Giralametto [29] suggest that there is an 'idiosyncratic feedback cycle' in which the toddler's language delay influences the parents and vice versa. It is considered that the toddler's language delay influences the parent to deliver less-than-ideal input as a direct result of the parent striving to compensate for the child's inadequacies as part of this feedback loop. Tannock and Girolametto [29] describe the interaction styles of caretakers of children with language delay as: a continual cycle of inadequate feedback loops (that occur) between child and caregiver. The difficulties these children have in structuring and organizing their environment due to intrinsic factors, such as attentional, memory or other processing deficits, lead them to provide inadequate feedback to their caregivers. In turn, these ambiguous cues prompt adults to use a pattern of interactive techniques that may compound the child's difficulties and be less than optimal for language acquisition [29].

Children with autism demonstrate delays in "social-emotional reciprocity, nonverbal communicative behaviors, and challenges with developing, maintaining, and understanding relationships" [30]. These deficits manifest themselves in the following ways: abnormal social approach, failure to hold back-and-forth conversations, failure to initiate or respond to social interactions, poorly integrated verbal and nonverbal communication, abnormalities in eye contact and body language, misunderstanding nonverbal gestures, difficulty adjusting behaviors to suit various social contexts, and reduced sharing of interests, emotions, or affect [30]. Younger children with autism have impairments in the frequency and intensity of eye contact, turn-taking, and referential looking which are necessary to engage in joint attention and social engagement with others [36]. Previous research has shown children with autism have lower levels of joint attention, initiation of social tasks, and social engagement during parent-child interactions [24,25].

In children with autism, parent-child interactions are impacted by the delays that characterize ASD [25]. Children with autism experience significant challenges when engaging with others compared to children with other developmental disabilities [22]. Children with autism exhibit specific behaviors such as limited eye contact, and have difficulty understanding other perspectives, interpreting social cues, and responding appropriately [30]. These characteristics significantly hinder their ability to socially engage with others [24]. These delays also have implications on how parents attempt to engage with their children. To compensate for these children's communication challenges, caregivers use a variety of strategies throughout interactions [31]. Unlike caregivers of typically developing (TD) children, these caregivers frequently use interfering and intruding strategies to regulate their children [32]. They also keep a closer physical distance from their children and tend to physically hold them during any activity [33]. When engaging with parents during play observations, children with autism were less likely to initiate and respond to communication, and had lower quality of behavior patterns, sustainability of shared topics and conversation fluency than typically developing children [24].

Meindl and Cannella-Malone [26] found that the quality of the attention bids in children with autism were different from children with typical development. Positive changes in parent-child interaction and communication resulted in positive long-term outcomes in children with ASD in terms of social-communicative and language skills, and ASD core symptoms

(e.g., reciprocity) [22].

Intervention that focuses on fostering children with autism's interactions with individuals in their immediate environment (i.e., parents) has been shown to have positive implications on their social abilities [35]. Because parents are usually the first to engage with their children and spend the most time with them, interventions and parent training programs have been developed to teach parents of children with autism how to engage with them [36]. Similar to parents of typically developing children, parents of children with autism who respond positively to their children have been shown to greatly affect children's social engagement [18,36].

Aim

The aim of the present study was to assess whether the quantity and quality of parent-child interactions differ between ASD and typically developing children.

Objectives

1. To profile and compare the quantity of language used by parents during parent child interaction in ASD and typically developing children in terms of Grammatical language measures such as Total number of words, Total number of utterances, types of words and MLU.
2. To profile and compare the quality of language used by parents during parent child interaction in ASD and typically developing children, under the categories of discourse function (Initiations, No. of response, No. of turns in the conversations, proportion of parental responses to child's initiations) and pragmatic function (Questions, gestures, Labelling, Descriptives, Behavioral directives, Interpretations, Expansions, imitations).

METHODS

Participant

The participants of study include parents of children whose CA range between 2-4 years ($n=5$) with ASD and parents of children with typically developing ($n=5$). Parents selected were native malayalam speakers. 90% of the parental participants were mothers and belong to an upper middle socioeconomic status according to Modified kuppaswamy socioeconomic status scale 2020. The parent child dyad for ASD children were recruited from NDS department NISH. They were matched for language age.

Inclusion criteria

In addition to the aforementioned criteria, the following inclusion criteria were taken into account when recruiting children for the ASD group: The children in the age range of 2 to 4 years and children who attended less than 5 sessions of intervention were included. In the matter of typically developing those with typical motor, cognitive and sensory development with no specific parental concerns and age adequate language levels assessed using ALD. The parents were included on the basis of criteria like they should be the primary caregiver of the children and no significant concerns related to hearing, vision, motor and cognition.

Exclusion criteria

Children with seizures and/or syndromic illnesses, as well as children with relatives who have developmental abnormalities, are excluded. Parents with psychiatric illnesses, seizures, or other serious health problems, as well as parents who have studied or worked in the fields of behavioral sciences, psychology, or rehabilitation, are also excluded.

Materials and Procedure

Ethical approval obtained for the conduct of the study from the RESEARCH REVIEW AUTHORITY Committee from the organization. A consent form (Appendix A) was provided to each participant prior to the study. A demographic questionnaire (Appendix B) was used to collect demographic details of the participants. All subjects with ASD met the DSM 5 diagnostic criteria and Subsequently they were subjected to childhood autism rating scale 2 ST, a globally accepted diagnostic tool for autism spectrum disorders. CARS 2 score for children in the study range between 30-36.5 which indicate mild-moderate symptoms of ASD. language proficiency of all participants were assessed using Assessment of language development, (ALD; Lakkanna, Venkatesh, & Bhat, 2008). Language ages of the 5 children in the ASD group were evaluated using Assessment of Language Development and were observed to range between 12-30 months with scattered scores. And there were no parental concerns regarding vision, hearing, motor and cognitive skills. Among the 10 mother-child dyads, the children were first born (8) and the family structure was predominantly joint/nuclear family (8-nuclear and 2 Joint families). Malayalam is the primary language of communication for both children and parents and all of them belong to middle socio-economic status. The appendix (c) described the set of toys used for parent child interaction. The toys were se-

lected as per the toy manual by Dr. Venkatesan S [37] and included a vehicle car, bell, blocks, puzzles, doll, drum, book, rattle, bat, flute/sound emitting toys, kitchen set etc. The consent from parents or caregivers was taken prior to the investigation and the demographic data of the toddlers were collected. Parents or caregivers were supposed to interact with their child as they would normally do in the home using the toys mentioned in the study. The parents or caregivers were asked to record the parent child interactions using the given set of toys and send video recordings of at least 30 minutes so that the best 10-15 minutes can be selected for analysis.

Data analysis

The verbatim was transcribed and the amount of child-directed speech was analyzed by taking the number of statements, the number of words, word types and MLU of mothers/caregivers into account. The diversity of language was measured by taking the number of verbs, names and conjunctions, and the type of sentences used into account. The parents' speech was transcribed for both grammatical and pragmatic measures [38].

Parent utterances were coded in three broad categories:

- 1) Grammatical language measures included:
 - Mean Length of Utterance (MLU) in words
 - total number of utterances
 - total number of words and
 - word types
- 2) Discourse function measured the purpose the utterance served in the conversation.
 - a) Initiations-any utterance, action, or gesture that is used to start a game, activity, or a new topic of conversation.
 - b) Responses-an utterance, action or gesture that relates to the same topic as that of the preceding utterance of the conversational partner.
 - d) Number of turns in the conversation-the parent should wait for the child to respond and then take a turn.
 - e) Number of responses to child's initiations: the parents are directed to wait for the child to initiate verbally as well as nonverbally, then the parents can respond to that initiation.
- 3) Behavioral or pragmatic functions:
 - a) Questions-The existence of interrogative syntax and/or intonation indicators like rising intonation are required.
 - b) Gestures-Include physical actions where visible body action has been organized in such a way as to be taken

as communicatively intentional.

- c) Labelling-Refers to an utterance that fulfills the sole purpose of identifying the object.
- d) Descriptives-Any utterance that is sentence-like in structure and serves the purpose of commenting on the object.
- e) Behavioral Directives-Utterances that direct behavior, for example, verbalizations that elicit or constrain the physical behavior of the infant by commanding, requesting or encouraging the infant to do or resist from doing something.
- f) Interpretations-parents interpret the child's intended message using the context as a clue in which a single word or several words are produced based on contextual cues.
- g) Expansions-repetition of the child's preceding word approximation or verbalization and completes the utterance by adding one or more morphemes or words.
- h) Imitations-a repetition of partial or exact imitation of preceding utterance.

RESULTS

Sample size

The mean number of utterances used in this analysis was 137 (SD 71.50174823) for the parents of children with ASD and a mean of 128 (SD 26.44806231) for the parents of typically developing children.

Mean age of sample

Table 1 indicates the description of parent child dyad with respect to their mean age. The mean age of children in the ASD group is 3.04 years and for typically developing children it is 2.64 years, and the mean age of parents of ASD is 29.6 years and for parents of typically developing children it is 30 years.

Group comparison of parental language measures

Mann-Whitney U Test was used to compare differences in parental language behaviors among ASD children and TD children.

Table 1. Description of age of parent child dyad

Age	Child		Parent	
	ASD	TD	ASD	TD
Mean	3.04	2.64	29.6	30

Grammatical Language Measures

Table 2 shows the quantity of language used by parents during parent child interaction in TD and ASD kids in terms of grammatical language measures. Results indicated that parents in the ASD (median= 153, IQR= 137) and TD (median= 133, IQR= 51.5) had similar no.of utterances. Though the total number of verbal utterances, total number and types of words used were similar, the MLU of parents observed among the two groups varied distinctly. The parents of the typically developing children used large MLUs when compared to the parents in the ASD groups. There is a significant difference in mean and median values across the two groups, as (TD mean: 2.75, median: 2.42), (ASD mean: 1.98, median: 1.98).

Discourse Function Analysis

Table 3 represents the quality of language used by parents during parent-child interaction in TD and ASD kids by means of Discourse function. It was found that parental responses to child's initiations, no.of turns in the conversation and parental responses during the parent-child interactions were significantly different. However, the results of the discourse analysis show that there was no significant difference in the number of Initiations produced by parents of children with ASD (median=8, IQR=8) and parents of TD children (median=11, IQR=13.5). The parents of TD children responded more to the child's

communicative behaviors than the parents of ASD children and had a greater proportion of responses to initiations. There was a significant difference in the number of turns taken by the parents of TD children compared with the parents of ASD children ($p=0.012$).

Pragmatic Function Analysis

Table 4 indicates the results of pragmatic function analysis in the child parent dyad in ASD and typically developing child. There were no significant differences between the parents of ASD children and parents of TD children in the use of labeling, descriptives, gestures, behavioral directives, interpretations and imitation. There exist significant differences ($p<0.05$) in usage of questions and Expansions during parent-child interactions in the two groups. Questions ($p=0.016$) were observed more frequently in parents of TD kids than ASD kids. Parents of TD children produced more Expansions ($p=0.012$) than the parents of ASD children. Other selected variables were not shown any significant differences due to the Type 2 error because of the reduced sample size.

DISCUSSION

Language development does not happen in a vacuum, the environment and social engagement in which a kid engages

Table 2. Quantitative language measures for parents in present sample

	TD				ASD				p value	U value	Z value
	Mean	SD	Median	Interquartile range	Mean	SD	Median	Interquartile range			
MLU in words	2.75	0.5663920903	2.42	0.995	1.98	0.2541653005	1.98	0.42	0.02144 (*)	1	2.29783
Total utterances	128	26.44806231	133	51.5	137	71.50174823	153	137	0.83366 (ns)	11	-0.20889
Number of words	350.8	93.14343777	352	149	269	142.795308	253	268	0.29834 (ns)	7	1.04447
No.of word types	4.8	0.4472135955	5	0.5	3.2	1.095445115	3	1.5	0.0601 (ns)	3	1.88004

Table 3. Qualitative language measure: discourse analysis of parent language

	TD				ASD				p value	U value	Z value
	Mean	SD	Median	Interquartile range	Mean	SD	Median	Interquartile range			
Initiations	13.75	7.694153625	11	13.5	10	4.301162634	8	8	0.60306 (ns)	9.5	0.52223
Responses	85.5	24.96597685	83	39.5	25.4	10.47854952	23	20	0.01208 (*)	0	2.50672
Number of Turns	65.8	25.80116276	67	44	20	15.3622915	26	29	0.01208 (*)	0	2.50672
Proportion of parental responses-to child's initiations	31.8	8.927485648	31	14	4	0.7071067812	4	1	0.01208 (*)	0	2.50672

Table 4. Qualitative language measure: pragmatic analysis of parent language

	TD				ASD				p value	U value	Z value
	Mean	SD	Median	Interquartile range	Mean	SD	Median	Interquartile range			
Questions	56	20.26079959	67	38.5	21.4	8.142481194	23	15	0.0164 (*)	0.5	2.40227
Gestures	32.6	24.28579832	40	46.5	8.2	4.266145802	8	6.5	0.29834 (ns)	7	1.04447
Labelling	4.4	3.847076812	3	7.5	11	10.07472084	9	19	0.34722 (ns)	7.5	-0.94002
Descriptives	13.6	11.48041811	8	18	4	2.915475947	5	5.5	0.0601 (ns)	3	1.88004
Behavioural directives	13	9.746794345	12	17.5	14	7.516648189	15	13.5	1 (ns)	12	0
Interpretations	5.2	6.300793601	3	9.5	1	1.224744871	1	2	0.17384 (ns)	5.5	1.35781
Expansions	5.6	1.949358869	5	3.5	0	0	0	0	0.01208 (*)	0	2.50672
Imitations	21.8	16.64932431	11	31	6.2	9.284395511	2	14.5	0.0601 (ns)	3	1.88004

can have an impact on their language development. The current study looked at the different types and functions of verbal utterances, as well as pragmatic acts, used by 5 mothers of 2-4 years old ASD children, and compared them to mothers of language level (n=5) matched TD children. The parents of typically developing children and parents of children with ASD differ significantly in the quantitative and Qualitative language measures. The investigation yielded a number of conclusions.

Quantitative measures

Quantitatively in terms of grammatical language measures the total number of words and number of utterances used by parents in both ASD and TD groups were relatively similar while significant differences in Mean Length of Utterances were found between two groups. This finding indicates that the amount of stimulation received by both the groups for vocabulary development were the same. The parents of children with Autism used fewer words in their utterances, thinking that their children can't comprehend complex utterances. Literature review reveals hearing more complex sentences has been shown to facilitate children's production and comprehension of long and complex sentences. Thus, a plethora of evidence demonstrates that TD children use their input to learn specific facts about their language, and that semantically richer and syntactically more complex input facilitates acquisition. Longer MLU in mothers' speech is associated with faster linguistic growth [39]. The word types which indicate the lexical diversity were also found to have no significant differences between the group but more lexical diversity was observed in typically developing children's parental language as

compared to ASD samples. Both the groups used nouns, verbs, conjunctions, casemakers and pronouns but there exists a difference in the quantity of each word used. The parents of children with ASD used a comparatively lower number of nouns, verbs, conjunctions and case makers. The parents of both target groups used a similar amount of pronouns during interaction. Children who hear a large amount of lexically diverse child-directed speech learn language more quickly and have larger vocabularies than children who do not [10].

The "quality" of language input should be defined not just by diversity of words, but also by the variability of sentence structures in which they occur. However, some differences were found in discourse and pragmatic functions. Among the qualitative measures, no significant difference was found in terms of Parental initiations of topics during parent-child interactions between two groups. Both the groups were able to open the communication circle but the parents of ASD children were not able to complete the circle of communication. Parents of TD children responded more to their children and took more conversational turns than parents of children with ASD. It does not come as a surprise that parents of children with ASD will respond less often to their children than parents of TD children. The more the child talks or expresses a communication intent, the more utterances there are to which the parent can respond. The children with ASD in this study were found to produce half as many utterances than the typically developing children. The most favourable to language [14] and literacy development are parenting strategies that are responsive and contingent on children's utterances [40].

The findings in the present study concluded that parents of children with ASD responded significantly less than the par-

ents of TD children to the child's intended message and as seen by the proportion of initiations to responses. The parents of children with ASD responded less overall and, even more importantly, responded proportionately less than the parents of TD children. Mothers' verbal responses to their children's vocalizations have an impact on vocabulary development and emerging communication abilities [11,41,42]. Siller and Sigman [18] found a link between mothers' use of responsive verbal strategies and their children's joint attention and language skills in children with ASD. In the pragmatic function analysis it was found that the parents of TD children also expanded a greater number of their children's utterances than parents of children with ASD, providing linguistic scaffolding for subsequent language development. The parents of ASD children who use frequent commands, indirect requests and test questions may not be following a child's lead and extending their own play using the child's own topic. They are therefore not expanding on the child's utterance. It would then appear that

parents of children with ASD are generally less responsive to those utterances that the child is producing, in that they are not responding to the child by expanding upon what the child is actually talking about.

This would then indicate, as shown by the results, that parents of ASD children tend not to follow the child's topic during the course of an interaction as often as parents of TD children do. The richness of mothers' speech as well as expansions have been shown to have an effect on children's language development [39,43-45]. Maternal expansions of child utterances have been found to be associated with more rapid acquisition of auxiliaries and inflectional morphology [43-45]. The effect of expansions is particularly evident when one can show that specific grammatical structures which are expanded are subsequently used more correctly by children. The questions were used more by parents of TD kids which will be helpful to improve the cognitive aspects of the child. The parents of ASD children were using the same questions repeatedly, but the parents of TD kids were asking a variety of questions which helped the kids to think more and perform better. When speaking with their TD children, mothers tend to produce the type of utterances (i.e., questions) that encourage conversational turns. The use of fewer questions and more commands has been associated in the literature with slower language development in TD children. Other selected variables such as descriptors, behavioral directives, interpretations, and imitations did not differ significantly between groups. Despite the fact that there were no significant variations in other metrics, ASD's

parental language was densely labeled. They have a tendency to name lexical things, which are the immediate surroundings.

CONCLUSION

The current study reported quantitative and qualitative differences in the mother-child interaction between children with ASD and TD children. The number of utterances, word types and number of words used by mothers in the two groups were similar, however, MLU was different in both groups. However, some differences were found on a number of discourse and pragmatic functions. Frequency of initiations by mothers in ASD group were similar to mothers in TD groups. TD children acquire language via situations in which parents follow in on and talk about their focus of attention, as well as when the children are more active participants in joint attention episodes. Moreover, TD children acquire language from the actual content and structure of parent speech, showing facilitative effects of word frequency, diversity of word use, and complexity of sentence structures. Studies demonstrating effects of structural complexity have primarily involved children who are already verbal. Research on the roles of input and interaction in the language acquisition of children with ASD is still in its infancy.

From a clinical perspective, the findings reviewed here suggest that advising parents about verbal responsivity during their interactions with their children could help promote those children's language development. Moreover, parents could be advised to pay more attention to the formats of the questions they ask their children. Rather than asking only "What's this?" types of questions, parents could be encouraged to diversify their question formats, using a wider range of verbs and providing multiple models of both subject and object wh- questions. Including complex sentences in the input of children with ASD appears to be beneficial for their language development.

(1) Parent-child interaction is an important variable in language development of a child.

(2) Future research should focus on increasing the quality of these interactions; this would involve.

providing parents with education aimed at increasing the sophistication of their language skills.

(3) Our study highlights the need to understand the constituents of an appropriate environment for a child.

Implications of the study

One of the prerequisites for communication development in

young children with ASD is parental verbal responsiveness [46]. Profiling quantity and quality of parent child communication in respective caregiver will provide precise information on the extent of stimulation delivered, in addition to profiling children's communication skills. The use of this specific knowledge in clinical practise is expected to complement a child-centered approach to assessment, management, and proper guidance for families of children with ASD and will help us to empower parents by making them co therapists in the intervention process. Furthermore, the outcomes of this study provide culture-specific recommendations for counseling of native malayalam speaking parents of children with ASD.

Future Directions

Further studies will be conducted with a large number of samples to understand the differences in other variables too.

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APPENDIX A

Informed Consent form

(വീഡിയ ഓ റെ ക്ക് ഓർഡിനേറ്റിംഗ്, ഗവേഷണത്തിൽ ചേരുന്നതിനുള്ള സമ്മതപത്രം)

Topic : A comparative study on Language use of parents/caregiver while interacting with typically developing children and children with autism.

വിഷയം : ഓട്ടിസം ബാധിച്ച കുട്ടികളുമായും സാധാരണ കുട്ടികളുമായും സംവദിക്കുമ്പോൾ മാതാപിതാക്കളുടെ ഭാഷാ ഉപയോഗത്തെ കുറിച്ചുള്ള താരതമ്യപഠനം.

NAME OF THE CHILD /കുട്ടിയുടെ പേര് :

AGE OF THE CHILD/കുട്ടിയുടെ വയസ്സ് :

Information to the participants

You are requested to participate in the research study entitled ' A comparative study on Language use of parents while interacting with typically developing children and children with autism ' by Marjana Mahasoomi H and Divya Anna Davis under the guidance of Ms.Veena Mohan P (ASLP).

If you choose to participate you may subsequently withdraw from the study at any time without penalty or consequences of any kind. Information will be collected through (method of collection data and amount of time that it will take). This study has no medication involved and is non- invasive. The information collected will be kept confidential. The information will be provided in the language understandable to you.

Undertaking by the investigator

Your consent to participate in this study is sought. You have the right to refuse consent or withdraw the same during any part of the study without any reason. If you have any doubts about the study please feel free to clarify the same.

Consent

I have been informed about the procedure of the study. I have understood that I have the right to refuse my consent or withdraw it any time during the study. I am aware that by subjecting this investigation I will have to give more time for assessments by the investigator and that these assessments do not interfere with the benefits (if any) . All the information has been provided in the language understandable to me.

I..... have no objection to participate in the program, and thus hereby give consent to participate in the study. After understanding all these facts, I volunteer to enrol myself in this study.

Place :

Date :

Signature of the participant :

(Name and address)

ഈ വീഡിയ ോ കുട്ടിയുടെ ആശയ വിനിമയ സ്വഭാവം മനസ്സിലാക്കുന്നതിനായി ഉപയ ോഗപ്പെടുത്തുന്നതായിരിക്കും. ക്ലിനിക്കൽ /വിദ്യാഭ്യാസ/ഗവേഷണആവശ്യങ്ങൾക്കായി ഉപയ ോഗപ്പെടുത്തുന്നതായിരിക്കും.

കുട്ടിയുടെ വീഡിയ റേക്കർഡിങ് അയച്ചു തരാൻ താല്പര്യം കാണിച്ചതിൽ ഞങ്ങൾ നിങ്ങളെ അഭിനന്ദിക്കുന്നു. താഴെ തന്നിരിക്കുന്നവ ശ്രദ്ധിച്ചു വായിക്കുക. സമ്മതമെങ്കിൽ നിർദ്ദേശിച്ചിരിക്കുന്നസ്ഥലത്ത് ഒപ്പ് രേഖപ്പെടുത്തുക.

Consent

കുട്ടിയുടെ വീഡിയ റേക്കർഡിങ് അയച്ചുകൊടുക്കുന്നത് എന്റെ പൂർണ്ണ സമ്മതത്തോടെ ആണെന്ന് ഞാൻ അറിയിക്കുന്നു. ഈ റേക്കർഡിങ്ങിലെ പ്രസക്തഭാഗങ്ങൾ അല്ലെങ്കിൽ അവയെ കുറിച്ചുള്ള വിവരങ്ങൾ നിഷ് സ്റ്റാഫ് ഗവേഷണത്തിന്മേലോ അധ്യാപനത്തിന്മേലോ ഉപയോഗിക്കുന്നതിനു എനിക്ക് പൂർണ്ണ സമ്മതം ആണ്.

ഈ റേക്കർഡിങ്ങിൽ ഉൾപ്പെട്ടവരുടെ വിവരങ്ങൾക്കു രഹസ്യത്വകത ഉണ്ടായിരിക്കുമെന്നും ഉറപ്പ് വരുത്തിയിട്ടുണ്ട്.

സ്ഥലം :

തീയതി :

ഒപ്പ് :

രക്ഷകർത്താവ് :

Appendix B

Demographic Questionnaire

Sl No. :

Name :

Age : Date Of Birth: Gender:

Address :

Phone No. :

Occupation:

Education :

Annual Income:

No. Of Persons At Home:

No. Of Children:

Age of Child/Children:

No. Of Working Members:

For clinician:-

Name of the clinician:

Diagnosis of the child:

Details of intervention:

Remarks: