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A Study of Relationship between Autists' Conversational Abilities and GARS-3 Ratings

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Abstract

Autism is one of those very complex prevailing neurodevelopmental disorders which are very difficult to diagnose. Since the discovery of this disorder, researchers, working in the field of Autism, have been proposing different methodologies to diagnose Autism. These proposals have been coming from the multiple fields. The present study is an attempt to see how insights from the field of conversation analysis can help find a simpler and better method of diagnosing autism. The study contends that Autists'' ability to construct conversational loops reciprocates to their ratings on the GARS-3 Scale. Firstly, Conversations between eight autistic children and their speech therapists are recorded, transcribed and analyzed by following norms of conversation analysis. Then these results are compared with participants' ratings on GARS-3 scale. Findings of the study validate researcher's claim that there do exist a lucid link between conversational abilities of the autists and their scores on the GARS-3 Scale. Through these findings the researcher proposes conversation analysis as a methodology for diagnosing autism.

Keywords: *Neurodevelopmental Disorder, GARS-3, Conversation Analysis, Triangular Process, Atypical Children, Turn-Taking Strategy*

Introduction
Autism Spectrum Disorders (ASD) was firstly named Pervasive Developmental Disorder or PDDs (Rojahn, & Matson, 2010). PDDs is generally an umbrella term that comprises Autism, Asperger's Syndrome, childhood disintegration disorder, and Not Otherwise Specific disorders. ASD refers to the phrase which indicates it's a series of syndromes and inclusion of any autists in a particular category type reciprocates to their level of severity and therapeutically needs.

A Neurodevelopmental Disorder

Autism Spectrum disorder (ASD) is a neurodevelopmental disorder that impacts a variety of areas (i.e., socio-emotional, language, sensory-motor, executive functioning). These illnesses manifest very early in childhood, around the age of 18 months. In the spite of evidence of a substantial genetic relation with ASD, the genetic determinant remains unclear (Bonnet-Brilhault, 2017).

Conversational Analysis (CA)

CA comes up with its strategies and principles as a tool within sociology in the 1960s and 1970s (eg. Schegloff, Jefferson & Sacks,1977) and then taken up by linguists in the 1980s (eg. Levinson in 1983). This is the assumption that discourse is ordered and that the sequence of events preceding and following a person's turn is crucial. It also takes the "detail" into account. Other techniques, which involve pauses, repetitions, hesitations, re-starts, etc. that occur on daily basis interaction also part of conversation analysis. There could be a long pause that is not required in turn-taking strategy, and caused by lexical retrieval could irritate the listener and lead him to enter into a conversation to continue the talk. The speaker becomes frustrated, and there is a lack of initiation as a result (Whitworth, 2003)

Areas of Conversational Analysis include (1) Turn-Taking (2) Repair Sequence (3) Topic management (4) Overlapping (Whitworth,2003). The Researcher in present study uses only one strategy name as turn taking to discover the conversational skills among Autistic children. However previous studies did not show any relevancy between GARS-3 tool and conversational strategies while present need of awareness and more concern towards autism spectrum disorder convinces

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researcher to pursue this study in light of severity and conversational skills in any social context among participants.

This research aims to find out the facts, which will affect the conversational strategies in autistic children. This study attempts to fill this wide gap by exploring the 6 main areas present on GARS-3 and comparing them with conversational skills. Results of the present study show that by focusing marks on GARS-3 and conversational abilities of the children, Conversation analysis can be used as a method to correlate it with the support level of autism spectrum disorder projected on the Gilliam Autism Rating Scale Edition 3.

With the increase in the numbers of autistic patients, much research has been done concerning language and conversational skills in ASD. Huge methodologies are also present to diagnose the symptoms of autism spectrum disorder but still, there is a lack to structure a method that relates diagnosis with conversational abilities. For said purpose, this study proposes another methodology as a correlational study which may be helpful in future diagnoses. This study focuses on 6 subscales present on GARS-3 which relate the research with the loop sequence.

This study has undergone the following research questions:

1.   What is relationship between scores on GARS-3 and CA?
2.   How scores projected on GARS-3 is correlated to autists' creation of loops?

Limitations of the study

As per this study is concerned, there are a lot of limitations present, those should be addressed.

1.   The researcher collects data only from 2 centers located in Lahore.
2.   Due to COVID-19, many research centers don't allow to give entry. Online data collection is impossible.
3.   Furthermore, due to the unexpected behavior of the autistic children, there is no exact time settled before as it all depends on their mood.
4.   The researcher selects audio rather than video because of the comfort zone of autistic children.

Literature Review

The words autism spectrum disorder (ASD) and pervasive developmental disorder (PDD) are interchangeable terminologies that refers to a wide range of developmental disorders with three common characteristics: deficits in social interaction, restricted or repetitive patterns of behavior, as well as communication and language difficulties (American Psychiatric Association, 2000).

The symptoms of Autism Spectrum Disorder manifest very early in childhood around the age of 12-18 months of age. The exact age differs significantly from country to country or multiple studies. As Moore and Howlin (1997) discovered the age of diagnosis on large scale in the UK at 6 years of childhood. Unlike them, Latif and Williams (2007) evidenced the data as a decreased average age of diagnosis at .5 to .59 years, meanwhile Mansell (2007) et al. sketched out the data at the average diagnosis age of 3.1 years (Stampoltzis & Michailidi, 2016).

Gilliam Rating Scale 3rd Edition in DSM-5

GARS-3 is a tool used to identify the severity of Autism Spectrum disorder to assist teachers, parents, practitioners, and therapists to look at and estimate an individual's profile summary. All the 6 subscales mentioned in GARS-3 are designed according to criteria provided by Diagnostic Statistical Manual edition -5th developed in 2013. Reflection of DSM-5 criteria has been sketched out in form of forty-four new items which are marked as 1- 4 ratings according to child behavior. It also provides a diagnostic validation form supplied to ensure that test results satisfy DSM-5 criteria for Autism Spectrum Disorder (Gilliam, 1995). This type of scale is framed in quantitative data collection to explore the participants' observations and evaluate the accuracy of the scale regarding the interpretation Guide to help indicate the likelihood of autism, the severity level of Autism (Gilliam, 2014).

Conversational analysis

Conversational analysis (CA) was proposed within sociology by Schegloff, Jefferson, and Sacks in 1977 and then drawn up by Levinson in 1983 as linguists. CA is a method to relate interaction or communication specifically talk-in-interaction by using a natural or observational- based approach to analyze verbal or non-verbal behavior (Lock, Wilkinson & Bryan, 2001).

Application of CA on ASD children

CA is an effective approach for looking into the communicative implementations of people with ASD, their families' communication with them, professional discourse with individuals who have been diagnosed, and the language used in society when discussing ASD (Reilly, 2015).

Peters 2010, employed a conversational analysis as significant tool to study the ASD so it would raise voice of those groups who are vulnerable or those participants who are getting disadvantages (Reilly, 2016) Moreover, the researcher of presented study followed the conversational strategies and compared them with severity level in relevance to subscales present on GARS-3 which highlighted the lacking areas those could be noticed for improvement of Conversational breakdowns in Autistic children. A model of turn taking has been presented by Schegloff, Sacks and Jefferson (SSJ) in 1978, which has been designed in two main components:

1. A set of facts
2. A number of rules (Sacks, Schegloff & Jefferson, 1978).

Set of rules

1. The Turn constructional unit
2. The Turn allocation unit

Set of facts

Sacks, et al., (1978) in a paper presented specific facts in relevance to turn taking model. These facts should be taken as serious consideration and all participants should be motivated to accommodate these facts in their conversation. Following are the set facts modelled by SSJ.

1. Speaker change occurs
2. Overwhelmingly one party talks at a time
3. Occurrences of more than one time are common but brief
4. Transitions from one turn to the next with no gap and no overlap are common
5. Turn order is not fixed but varies
6. Turn size is not fixed but varies
7. Length of conversation is not specified in advance
8. What parties say is not specified in advance
9. Relative distribution of turns is not fixed, but varies
10. The number of parties to a conversation can change
11. Conversation can be continuous or discontinuous
12. Turn allocation techniques
13. Various turn-constructional units are employed for the production of the talk that occupies a turn.
14. Repair mechanisms for dealing with turn-taking errors and violations obviously are available for use.

These are some facts presented in turn taking model by Sacks, Schegloff, and Jefferson in 1978, those are followed by further researchers in conversational analysis. The present paper has also applied these turn-taking strategies in the analysis of autistic children's talk in interaction.

Conversation Loops Sequence

Abbas (2019), cited about loops sequence that conversation interaction always contain four main elements those are given below (Walla, 2018):

1- Listen
2- Understand
3- Process
4- Respond

Picture was taken from https://www.voxable.io/blog/2018/05/09/the-conversational-interaction-loop.html
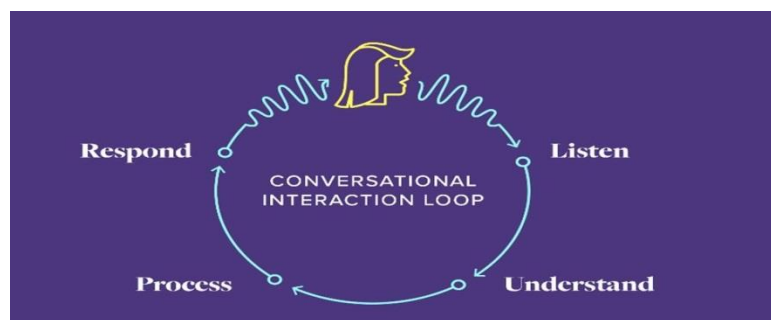
Walla (2018), stated that humans and machines have similar conversational interactive loops sequence. As machines first listen to the input then understand afterward process their understanding and end up responding. The same happens with human beings in conversation. This happens with autistic children as well. When he/ she doesn't reply on time or doesn't take his/her turn accordingly means they or lack understanding.

There is very limited research on the conversational analysis of ASD children and evaluating a support level they need through Gilliam rating scale edition 3rd (GARS-3). The present study is conducted to relate the diagnostic level of ASD with their interactive skills in any social context which affect their conversational skills.

A clear understanding of the research design is an important step toward the development and realization of any proposed research, as research design provides the theoretical and methodological foundations for the study (Labaree, 2009).

This study undergoes a design which is a mixed method approach to relate the Conversational Analysis with the different support levels of Autism through the rating secured by GARS 3, focusing on analyzing, and mixing both qualitative and quantitative data to provide a comprehensive analysis to implement the possible ways to diagnose Autism Spectrum Disorder.

This approach is considered as a triangulation study as well because it's a triangular process where the quantitative study is put equal to qualitative and qualitative study is equal to quantitative. The result interpretations are based on analysis of both qualitative and quantitative method. The researcher uses GARS-3 Scale as a quantitative tool and Conversational analysis (CA) as a qualitative tool, where the researcher conducts a conversational strategy to evaluate the performance of autistic children then the examiner contrasts this performance with the GARS-3 record. The researcher applies this approach because of authentic evidence which is predicted in the Mixed method approach. In Qualitative research, an important issue that arises is that of authenticity in which the researcher faces problems while interpreting data (Given, 2008).

While the quantitative studies in isolation, may have different disadvantages like there may be a false focus on numerical data, might be face difficulties in setting research models or can be misled by the researcher (Devault, 2019).

Population and sample

The population of the present study is 8 autistic children, 2 Autistic centers, Psychologists, parents, and autistic children. This study is done under the supervision of various psychologists where 8 ASD children are taken as samples. Current research is not restricted to gender differences, samples are taken from both 6 males and 2 females, and it's not gender specified. The age limit varies from 3 years to 12 years old.

Sampling Technique

As per the nature of the study, the researcher uses a convenience sampling technique because of present circumstances all around the world. Due to less awareness of autism spectrum disorder, this study faces a lot of difficulties in collecting data that's why the researcher molds the technique to a convenient way.

Data Analysis Procedure

Researcher uses data analysis procedure in which Examiner's manual contains administration procedures, scoring interpretations and technical information related to Gilliam autism rating scale edition 3rd (Karren, 2017).

Raw scores obtained on Likert type scales are interpreted through Examiner's manual present in GARS-3 complete booklet. Scores interpretation procedures are provided in manual and researcher uses these to analyze the percentile rank then the researcher yields the scaled scores through it. Moving ahead, after subscale performance, the present study attempts to look upon Composite Performance, in which the examiner analyzes sum of scaled scores by Examiner's Manual and yields the percentile rank again. These scores are then labeled as autism index according to ratio mentioned in interpretation guide. Lastly as per autism index, probability of ASD results and severity levels are identified

Turn taking Model given by Sacks, Scheglof and Jefferson (1978) is another qualitative procedure uses as data analysis procedure in present study.

Findings

Researcher presents accumulated results of the individual analysis of each participant of the study in order to investigate the correlation between scores gain on GARS-3 and Turn taking strategy of atypical children during conversational session with psychologist.
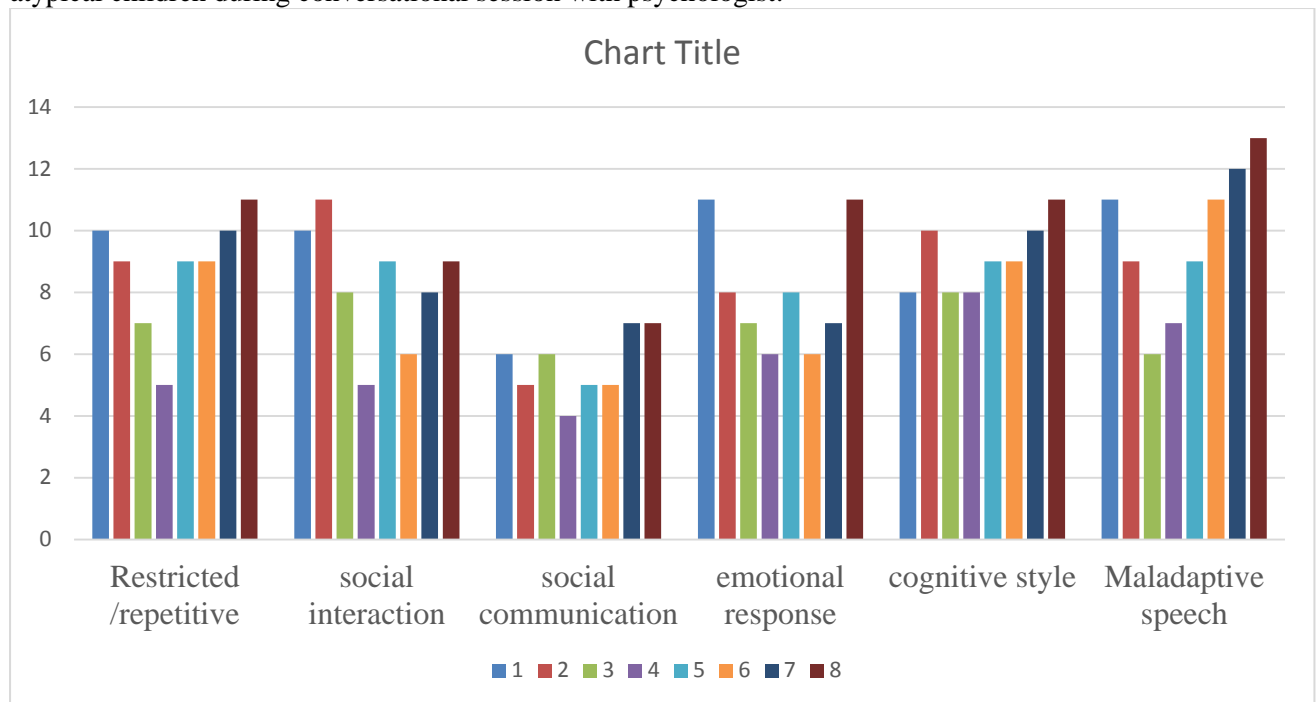

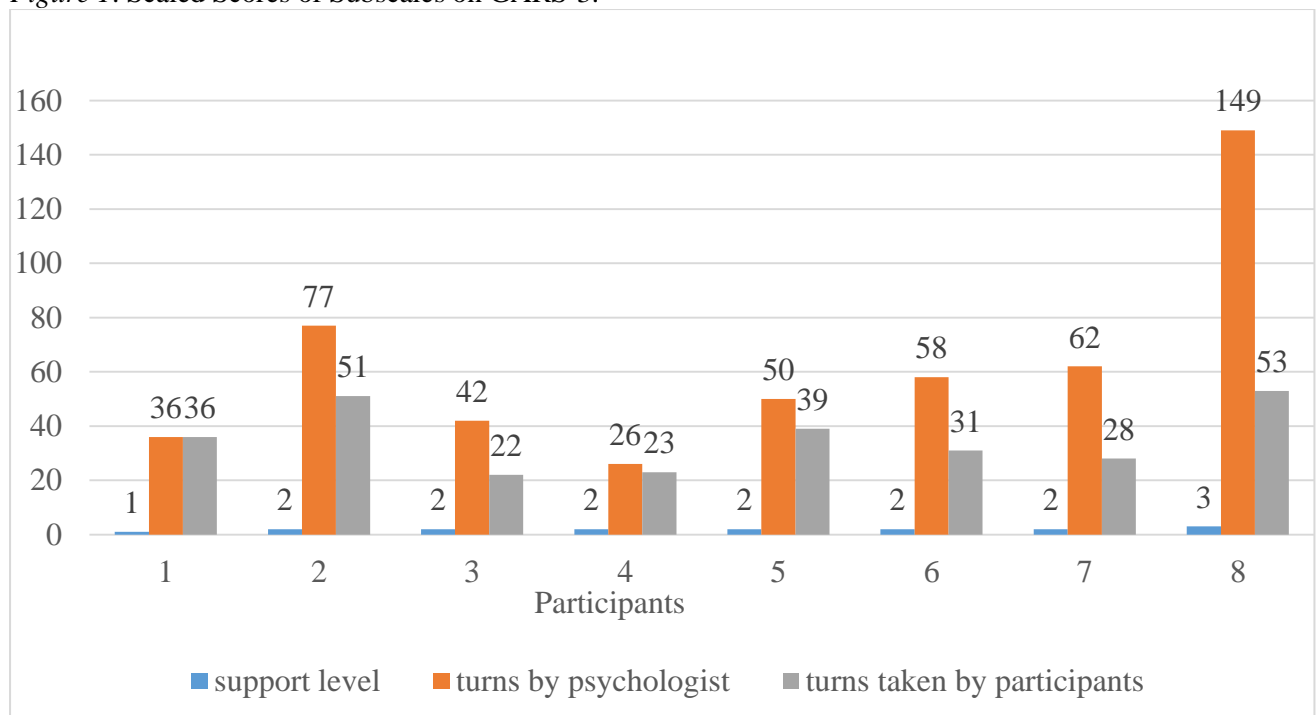*Figure 1*. Scaled Scores of Subscales on GARS-3.

Figure 2. Accumulated results of turns taken by 8 Autistic children.

According to Figure 1 and 2, the researcher examines the results and interpreted the data in relevance to turn taking strategy which shows autistic children are not totally interactive while conversing to psychologist. Due to their lack of interactions the numbers of loops are minimum as compare to psychologist hence, turns taken by them are also calculated in less ratio. These perspectives yield the scenario and form a sketch that atypical children with neurodevelopmental disorder have a bad impact on his social skills. This reason causes them not to participate as a turn initiator in one to one session. Another study, also emphasizes the same factor, "**Research on**

language and Social interaction" highlights the atypical interaction in light of Conversational analysis and communicative impairments which go in favor to this present study by discussing that social interaction now appear to be an establish area of study, which affects the conversational skills that's why it refers as atypical interaction (Wilkinson, 2019).

Similarly, Chiang, Soong, Lin and Rogers (2008), published his work in Journal of Autism and Developmental disorder, supports the results of the present research stating, the studies of infant development of autism that should help us clarify the developmental profile of the social and communicative impairments in autism during conversation. Moreover, there is one more study, promoting turn-taking skills in preschool children with disabilities: "**The effects of a peer-based social communication intervention**", showed agreement with this research by supporting the results that the social intervention offers a more systematic technique for teaching social communication and play skills than do informal strategies commonly used by teachers. Social validity assessments indicate that teachers find the intervention acceptable and produce important changes in behavior (Chapman & Snell, 2011).

Scores gain on Repetitive behavior and Cognitive skills subscale present on GARS-3 help in diagnosing the cause and improve the areas to communicate in social context as there are few items mention those are speculated in one to one session. these sessions are conducted between psychologist and Children during conversational analysis. Children with Autism spectrum disorder, in this study faces a lot of difficulties like special interest and some obsession seems to reflect a particular cognitive style, while some behaviors as pacing and repetitive questions indicated as core feature of autism. These facts, are also mentioned by Honey, McConachie, Randle, Shearer & Couteur (2008) in "**One-year change in repetitive behaviors in young children with communication disorders including autism**". Journal of autism and developmental disorders.

Examiner then observes another subscale of all participants and interprets the results, conversation skills those are core of turn taking strategy of any participant are disrupted in autistic children. One of the cause which is found in analysis of this study as per data collected, considered as Maladaptive speech. In which a child doesn't pronounce a word as it should be. The speech pronunciation is not clear and the tone of utterances are quite flat or abnormal. Likewise, Ando & Yoshimura (1979) emphasized on maladaptive behaviors found in autistic children don't change significantly with age and ultimately it leaves its impact on conversation.

Discussion and Conclusion

In a nutshell, the present study is conducted due to the spreading numbers of autism spectrum disorder in children which is highly ignored and affecting the social skills of a child. Numbers of works present on neuro-typical development but the main purpose of this research emphasizes on diagnosing the support level atypical child need and affecting his/her turn talking skills.

Researcher finds the GARS-3 as best qualitative tool to diagnose the severity as a questionnaire and audio-taping the whole one to one session through conversational analysis. Conversational analysis as qualitative and GARS-3 as quantitative sketches the present study in mixed method research. The use of both tools makes this study more authentic and different than previously performed.

To sum up the study, the data highlights the main purpose of present study which is analyzing them individually and then accumulated all the results, where all participants involved in unplanned interactive sessions. All the item present on 6 subscales of GARS-3 are compared to turn taking strategy of conversational analysis, which genuinely show the relation between them and show how social interactions, cognitive skills, maladaptive speech, emotional responses and repetitive behaviors affect the turns a participant takes in individual session.

Lastly, examiner interprets results that the process of interacting each other always starts with listening and then ends up with the response and if the participant composite performance is high functioning, the output would be appropriate then it can be said that the participant has a good command on conversational interaction loop. If the instructor examines the severity level 2 or 3 and believes that he/she doesn't get appropriate response, then instructor makes more tries mostly by modification in the input. For this reason, the study focuses on interaction loops rather than only turn taken and comparing with diagnostic tool GARS-3 which made this research a correlative study.

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