

**A DESCRIPTIVE STUDY OF INDIVIDUALS OF
THE AGE GROUPS (4-11; 12-16; 18+) WITH
AUTISM SPECTRUM DISORDER**

*Dissertation submitted in partial fulfillment of the requirements
for the award of the degree of Master of Philosophy of Jadavpur
University.*

By

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Declaration

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This thesis, titled **A DESCRIPTIVE STUDY OF INDIVIDUALS OF THE AGE GROUPS (4-11; 12-16; 18+) WITH AUTISM SPECTRUM DISORDER** submitted by me for the award of the degree of the Master of Philosophy, is an original work and has not been submitted so far in part or in full for any other degree or diploma of any University or Institute.

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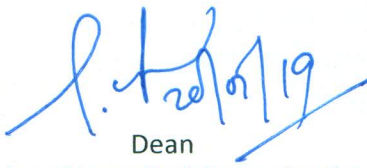
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This is to certify that the dissertation entitled **A DESCRIPTIVE STUDY OF INDIVIDUALS OF THE AGE GROUPS (4-11; 12-16; 18+) WITH AUTISM SPECTRUM DISORDER** being submitted by **PAMELA GHOSH** for Master of Philosophy degree in School of Languages and Linguistics, Jadavpur University has been written under my supervision during the session 2018-2019. This work has not been submitted elsewhere for degree.



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Contents

CHAPTER 1	3
INTRODUCTION	3
1.1 Characteristics	4
1.2 Social Development	4
1.3 Communication	5
1.4 Repetitive Behaviour	5
1.5 Causes	6
CHAPTER 2	7
LITERATURE REVIEW	7
2.1 Origin of the term Autism	7
2.2 Epidemiology	8
2.3 Levels of explanation	9
2.4 Leo Kanner's autism	11
2.5 Looking at the triad	11
2.6 Mild autism and autistic-like behaviour	12
2.7 Issues in Autism Spectrum Disorder	13
2.8 Domain specific sensory processing in ASD	13
2.9 Theories of ASD	14
2.9.1 Cognitive:	14
2.9.2 Neural:	15
2.10 Diagnostic criteria for ASD	16
2.11 The main problem areas of Autism	18
2.12 Clinical and Medical perspectives	20
2.13 Neuroanatomical Abnormalities in Autism	21
CHAPTER 3	25
DATA AND ANALYSIS	25
3.1 Early Days	26
3.2 Mimicking	27
3.3 Other important Subjects and factors	27
3.4 Stages of acquisition	29
3.4.1 Young Group	30
3.4.2 Adolescent Group	30
3.4.3 Adult Group	33
Chapter 4	39
Conclusion	39

Bibliography

43

Appendix

49

CHAPTER 1

INTRODUCTION

This dissertation focuses on autism, based on the data which is collected in the form of personal interviews of the autistic children, adolescents and adults in renowned schools named *Autism Society of West Bengal*, *Kalpana Integrated School* and *Ahead*.

The main issues discussed in this dissertation are the following:

1. The general definition, characteristics, symptoms, causes, levels of explanation, issues and other things in autism.
2. Objective and scope of levels of acquisition.
3. The Stages of psycho social behavior and the Stages of language acquisition.

Three different sets of questionnaires were asked to the parents and teachers including medical condition, linguistic and personal behaviour like as follows:

- Unusual conditions of birth and infancy
- Did the child react to bright lights, bright colours and unusual sounds
- Does he/she keeps a two way conversation going on
- Does he/she often do or say things that are socially inappropriate
- Does the child has any favorite toy or object
- Describe strengths of the child

In the next few paragraphs, I am going to discuss the definitions, characteristics and few developmental problems associated with autism.

Autism usually occurs when there are serious impairments in specific domains like social interaction and communication. Parents usually notice signs of autism in the first two or three years of their child's life. The signs develop gradually though some autistic children reach their developmental milestones at a normal pace and then worsen.

There are many factors involved like genetic and environmental factors. The risk factors are high during pregnancy as for example rubella (also known as German measles or three-day measles) as well as valproic acid (medications primarily used to treat epilepsy and bipolar disorder and to prevent migraine headaches). Autism affects information processing in the brain by altering connections and organizations of the

nerve cells and their synapses. These are the factors that are found everywhere around the world to detect autism.

Early speech or behavioural interventions can help autistic children to gain self-care, social and communication skills. Although there is no known cure and there have been many cases where children recovered from various treatments like skill development, speech therapy, etc. Children with autism may not live independently after reaching adulthood, though some are successful. A culture has been developed known as an autistic culture with some individuals seeking a cure and others believing autism should be accepted as a difference, not treated as a disorder.

1.1 Characteristics

Impairment in the growth and development of CNS usually noticed during early life or childhood, and generally follows a steady course without decreasing the effect. People might be normal in some cases. At the age of six months symptoms started showing clearly and become well-known by age two or three years, and continue throughout adulthood. There are many causes involved like difficulty in social interaction and communication and many others like few interests in any subject or repetitive behaviour.

1.2 Social Development

Social deficits distinguish autism and the related autism spectrum disorder (ASD) from other developmental disorders. People have social impairments with autism and oftentimes lack the intuition about others that many people have taken for granted. Abnormal social development becomes perceptible early in childhood. Infants with autism show less attention to social stimuli, smile and often less eye-contact, and respond less to their own names. Autistic adolescents differ more from social norms like they have less eye contact and turn-taking and do not have the ability to use simple movements to express them such as pointing at things. Three to five-years-old children with autism are less likely to display social understanding, approach others instinctively, replicate and respond to emotions, communicate non-verbally, and take turns with others. However, they do form attachments to their caretakers and parents lately. Most children with autism display reasonably less connection defense than neurotypical children, although this difference disappears in children with higher mental development or less severe autism spectrum disorder. Other children,

adolescents and adults with autism spectrum disorder perform worse on tests of face and emotion recognition although this may be partly due to a lower ability to define a person's own emotions.

Children with high implementation autism suffer more from severe and recurrent loneliness compared to non-autistic peers despite the common belief that children with autism prefer to be alone. Making and maintaining friendships often proves to be difficult for those with autism as for them the quality of friendship such as those resulting in calls may impinge on the quality of life more acutely.

1.3 Communication

About a third to a half of the individuals with autism does not develop enough expected speech to meet their daily communication requirements. Differences in communication may be present from the first year of life, and may include late inception of babbling, abnormal gestures, reduced awareness, and vocal patterns that are not matched with the caregiver. In the second and third years, children with autism have less frequent and less varied babbling, consonants, words, and word blends; their gestures are less often incorporated with words. Children with autism are less likely to make requests or share experiences, and are more likely to simply repeat others' words or reverse pronouns. Shared attention seems to be necessary for functional speech, and deficits in joint attention seem to distinguish infants with autism spectrum disorder. For example, they may look at a pointing hand instead of the pointed at an object, and they constantly fail to point at objects in order to comment on or share an experience. Children with autism may have difficulty with imaginative play and with developing symbols into language.

1.4 Repetitive Behaviour

Individuals with autism can display many forms or repetitive or restricted behaviours which are as follows:

- Compulsive behaviours: protracted behaviours planned to lessen nervousness that an individual feel bound to perform frequently or according to unbending rules, such as placing objects in a specific order, checking things, or hand washing.
- Stereotyped behaviours: repetitive movements, such as hand flapping, head rolling, or body rocking.

- Sameness: confrontation to change as for example adamant attitude that the furniture not to be moved or refusing to be interrupted.
- Ritualistic behaviours: standardized pattern of daily activities, such as a monotonous menu or a dressing ritual. This is closely associated with sameness.
- Restricted interests: interests or fixations that is atypical in theme or intensity of focus, such as preoccupation with a single television program, toy or game.
- Self-injury: behaviours such as eye-poking, skin-picking, hand-biting, self-slapping and head-banging.

1.5 Causes

Every doubt related to the original cause of autism has been increasing as one might think autism has some genetic level or some cognitive level impairment whose inner features still need to be investigated.

It sounds unclear whether autism spectrum disorder has any genetic legacy by transformations of symptoms with major effects or by rare multigene communications of common genetic alternations. Many genes have been associated with autism through ordering that affects individuals and parents. Interactions among multiple genes along with environment and marking of genetic factors that do not change the sequencing of DNA seem to be in complexity.

Synaptic dysfunction as a cause of autism is certain. Disconcerting synaptic pathways with the bonding of cells with some rare mutations may lead to autism. The risk of autism increases with exposure to environmental pollution during pregnancy.

This research aimed at the detailed study at the cognitive level of autistic children, adolescents and adults in renowned schools named *Autism Society of West Bengal*, *Kalpana Integrated School* and *Ahead* in the form of interviews. The primary objective is to study the language acquisition stage among autistic individuals through a linguistic based interview with parents and teachers. To understand more about autism the next chapter will help to attain knowledge regarding autism's epidemiology, its levels of explanation, autistic triads, social and linguistic behaviours and many more.

CHAPTER 2

LITERATURE REVIEW

This chapter focuses on the main aspects of autism, its epidemiological conditions that include conditions that are responsible for autism, and biological, cognitive and behavioural levels of explanation that broadens the scope by looking into the triad of autism and domain specific issues in autism or autism spectrum disorder. The chapter also focuses on the main problematic areas in autism, clinical and medical perspectives along with neuro-anatomical factors.

2.1 Origin of the term Autism

The New Latin word *autismus* with English translation autism was coined by the Swiss psychiatrist Eugene Bleuler in 1910 as he was defining symptoms of schizophrenia. The word is derived from the Greek word *autos*, meaning self, and mean morbid self-admiration, referring to “autistic withdrawal of the patient to his fantasies, against which any influence from outside becomes an intolerable disturbance”.

The word *autism* first took its modern sense in 1938 when Hans Asperger of the Vienna University Hospital adopted *Bleuler's* terminology autistic psychopaths in a lecture in German about child psychology. Asperger was examining an autism spectrum disorder (ASD) now known as *Asperger Syndrome*; although for various reasons it was not widely documented as a disconnected analysis until 1981. Leo Kanner in his report in the year 1943 first used the term autism in a modest way when he tried to mark *early infantile autism*. It is not known whether Kanner derived the term independently of Asperger.

Donald Triplett was the first person diagnosed with autism spectrum disorder. He was analyzed by Leo Kanner after being first scrutinized in 1938, and was tagged as “case 1”. Triplett was distinguished for his savant capabilities, mainly being able to name musical notes played on a piano and to spiritually reproduce numbers. His father, Oliver, portrayed him as a communally inhibited but attracted in number patterns, music tones, letters of the alphabet, and U.S. president pictures. By the age of two, he had the capability to recite the 23rd Psalm and memorized 25 questions and answers

from the Presbyterian catechism. He was also concerned in generating musical chords.

Kanner's reclaim of autism led to decades of confused expressions like *infantile schizophrenia*, and child psychiatry's focus on motherly scarcity led to delusions of autism as an infant's reply to "refrigerator mothers" (a discarded theory that autism is caused by a lack of maternal warmth). Preliminary in the late 1960s autism was recognized as a separate syndrome.

2.2 Epidemiology

Most current appraisals lean to estimate an occurrence of 1-2 per 1,000 for autism and close to 6 per 1,000 for autism spectrum disorder and 11 per 1,000 children in the United States for autism spectrum disorders of 2008 because of inadequate data, these numbers may underestimate autism spectrum disorder's true rate. Globally, autism influences a predictable 24.8 million people as of 2015, while Asperger syndrome influences a further 37.2 million people. In 2012, National Health Service (NHS) anticipated that on the whole occurrence of autism among adults aged 18 years and over in the UK was 1.1%.

The amount of detailed case of autism increased radically in the 1990s and early 2000s. This increase is principally attributable to changes in diagnostic practices, transfer patterns, accessibility of services, age at diagnosis, and public awareness, though anonymous environmental risk factors cannot be ruled out. The available evidence does not rule out the options that autism's true occurrence has increased; a real increase would suggest directing more concentration and backing towards changing environmental factors instead of ongoing to focus on genetics.

Boys are at higher risk for autism spectrum disorders than girls. The gender ratio averages 4.3:1 and is deeply customized by cognitive impairment: it may be close to 2:1 with rational disability and more than 5:1 without. Numerous theories about the higher occurrence in males have been investigated, but the causes of the difference are unverified; one theory is that females are not diagnosed properly. Although the evidence does not associate to any single pregnancy-related risk issue as a cause of autism, the risk of autism is connected with highly developed age in either parent, and with diabetes, bleeding, and use of psychiatric drugs in the mother during pregnancy. The risk is greater with older fathers than with older mothers; two possible explanations are the known enlargement in mutation burden in older sperm, and the

supposition that men marry later if they carry genetic accountability and show signs of autism. Most experts consider that race, civilization, and socioeconomic surroundings do not involve in the occurrence of autism.

Several other conditions are common in children with autism. They include:

- Genetic disorders: About 10-15% of autism cases have a particular single-gene state, chromosome abnormality, or another genetic syndrome, and autism spectrum disorder is connected with several genetic disorders.
- Intellectual disability: The percentage of autistic individuals who also meet the criterion for intellectual disability has been reported as somewhere from 25% to 70%, a wide difference illustrating the difficulty of reviewing intellect of individuals on the autism spectrum.
- Anxiety disorders: These are common amongst children with autism spectrum disorder; there are no rigid data, but studies have reported prevalence ranging from 11% to 84%. Many anxiety disorders have symptoms that are improved explained by autism spectrum disorder itself; or are hard to differentiate from the said symptoms.
- Epilepsy: This with variations in risk of epilepsy due to age, cognitive level, and type of language disorder.
- Several metabolic disorders such as phenylketonuria are associated with autistic symptoms.
- Sleep problems affect about two-thirds of folks with autism spectrum disorders at some point in childhood. The most frequently include symptoms of sleeplessness such as difficulty in falling slumbering, frequent night-time awakenings, and early morning awakenings. Sleep problems are associated with complex behaviors and family stress, and often a meeting point of clinical concentration over and above the chief autism spectrum disorder analysis.

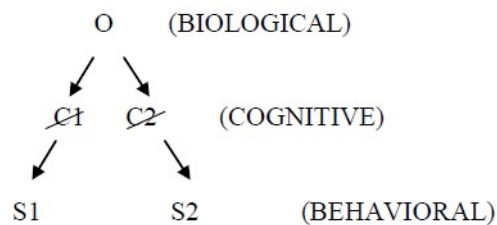
2.3 Levels of explanation

Let us take a theoretical circumstance- if an alien asked us what an orange is, one might respond that it is a fruit or one might answer in terms of its components like vitamins, water, sugar, etc. The way one answers a question depends on the need of the question asked by the alien, that is, is he hungry, does he able to be acquainted with an orange or is it simply inquisitiveness?

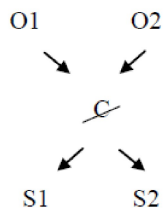
Similarly, different types of answers can be given to the question “what is autism?” None of the answers are the *answers* and in order to answer the right one, one needs to think about in terms of “levels of explanation”.

There are three levels and each level, in particular, is useful: the biological, the cognitive and the behavioural. Each of these levels helps in the understanding of autism.

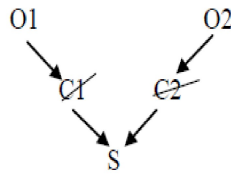
Morton & Frith (1994) have introduced a diagrammatic tool for these levels of explanation:



This prototype is a type of disorder where Francesca Happe in the year 1994 pointed out that the biological source has miscellaneous effects at cognitive as well as behavioral levels. For example: - Fragile X Syndrome where individuals have such disorders on the basis of a chromosomal examination or behavioural abnormalities: many show knowledge difficulties and others might have normal astuteness and well-adjusted social behavior.



This prototype shows a disorder with multiple biological causes and different behavioural demonstrations with the single cognitive discrepancy. Autism is one such disorder, where a number of biological causes may cause a single cognitive discrepancy in the phonological organization and results in numerous behavioural demonstrations like slow reading, poor spelling, etc.



This prototype is defined by its behavioural features as for example attention discrepancy disorder.

2.4 Leo Kanner's autism

He included a set of features for autistic children:

- a) Extreme aloneness- here children failed to relate to anyone normally; lack of social responsiveness.
- b) Anxiously compulsive desire for the conservation of likeness- here children get upset by the change of routine or environment.
- c) Excellent rote memory- here children tend to memorize a large amount of meaningless material like contents of any book.
- d) Delayed echolalia- the children repeated language they heard but failed to communicate using words beyond their immediate needs.
- e) Oversensitive to stimuli- the children reacted strongly to certain noises and objects like elevators, vacuum cleaners, etc.
- f) Limitations in the variety of impulsive activity- repetitive movements, verbal repetitions, etc.

2.5 Looking at the triad

Problems in socialization, communication, and imagination (the triad) lead to the characteristics of autism. The differences in prototype and conserved abilities are explained by the cognitive theories of autism. Social functioning like normal attachment behaviours with other normal children is not impaired worldwide. Similarly, they know about their physical individuality like they can recognize themselves in front of a mirror at normal mental age as well as they can recognize other faces and have some good verbal ability. They are also able to respond to different people. Many children do show proximity-seeking behaviours and vocalizations for social attention.

Some of the specific language problems in autism are pointed out by Francesca Happe are as follows-

- Lack of gesture activity with delayed speech;
- Social responses are a great failure;
- Stereotyped and repetitive usage of languages;
- Reversing of pronouns (“you” for “I”);
- distinctive usage of words and appearances of new words;
- Failure of normal conversation;
- Prosodic abnormalities like pitch, stress, intonation, etc;
- Difficulties with concepts;
- Facial expressions, gestures, and other non-verbal communications are frequent.

As in the case of socialization, not all areas of languages are uniformly affected in an autistic child as for example, those children who speak habitually show normal phonology and grammar. What is not unexpected in the autistic child is the use of language that is the pragmatic competence. Autistic children show the striking absence of “symbolic play” like a normal two-year-old child would imagine that a toy brick is either a car or any object but an autistic child would simply mouth, throw or spin the block. Symbolic play seems to be replaced by recurring activities in autism which may become obsession where the child may line up objects in a certain arrangement that must not be interfered with or may spin all objects which he can get his hands on.

2.6 Mild autism and autistic-like behaviour

The triad that describes autism is not merely a co-occurrence of behaviour; instead, the three impairments co-occur and join together to form a true syndrome.

People who call a child “autistic-like” are expressing a number of concerns-

- a) The child may have a lot of verbal communication, though deprived communication or may be socially concerned, but odd communication. In this case, the term “autistic-like” is used to avoid the stereotype of the soundless and detached autistic child.

- b) The child may be more competent than most autistic children. In this case, there may be grounds for talking about “mild autism” but “autistic-like” implies primary handicap other than autism.
- c) The “autistic-like” term disregards the concept of autism as a true syndrome that is, caused by an elementary cognitive impairment that is marked in the triad of impairments.

2.7 Issues in Autism Spectrum Disorder

Ashley pointed out clearly that autism and autism spectrum disorder is the same thing clinically and theoretically and is characterized by impairments in social interaction and communication. The triads of impairments have been discussed earlier by many. “Behaviour” is the main criteria to diagnose autism and that consists of a parent or supervisor interview with observation techniques which means diagnosis is open to understanding and dependent upon the skill and understanding of clinicians. Monozygotic twins show a greater rate than dizygotic twins when genes are considered. However, uncertainty is there for multiple genes and environmental factors.

Not so familiar responses are noticed in individuals with autism spectrum disorder. There are two sensory turmoils that are identified and are as follows: over or hyper sensitivity and under or hypo sensitivity. Hyper sensitivity occurs when the stimulus feels too powerful like lights seem overly bright and sounds are too loud. On the other hand, hypo sensitivity occurs when the individual is under receptive to a stimulus. Parent report data or any supervisor report data are considered as one of the most striking methods of evaluating sensory issues in autism spectrum disorder in individuals the report provides major approach into the behaviors of children/adolescent with autism that would be difficult to access using other methods. Ashley also marked out that there are many limitations of this report that includes methodological short comings influencing the degree to which results can be comprehensive. Again, second- hand data from parents can be less useful than data obtaining directly from the applicant itself.

2.8 Domain specific sensory processing in ASD

- Spatial vision- The ability to distinguish between the characteristics that are defined spatially. There are two principal measures noted here- acuity

and contrast-sensitivity. The acuteness or unambiguousness of vision is acuity. Ashley has compared the acuity of autism spectrum disorder individuals with normal group and found that the former had greater levels to the latter and it was also found that spatial declaration of the screen was not to carry the acuity measurement based on performance distance used. On the other hand, static contrast sensitivity is the ability to distinguish different levels of luminance in a static image.

- Color vision- Autism group show impairments in color tasks.
- Motion perception- Motion consistency and biological motion is the key focus. Normally, a sound motion task consists of a number of dots moving randomly on a screen, with a subset of the dots being programmed to move comprehensibly in a certain direction. The participants were then asked to designate the overall direction of the stimuli and found that autism spectrum disorder group had certainly higher motion coherence thresholds. The Biological motion refers to the ability to recognize object information from inadequate input and depicted using point-light-displays. Moore, Hobson & Lee (1997) were the first group to investigate biological motion processing in autism spectrum disorder. They presented point-light-displays of human walkers and the movement of various household objects like scissors opening and closing and asked participants to verbally name the object they depicted.

2.9 Theories of ASD

Ashley jotted down two main theories of autism and they are cognitive and neural theories of autism:

2.9.1 Cognitive:

The Theory of Mind Hypothesis has been the most significant theories of autism which state that individual with autism has difficulty in reducing the psychological states of others and The False Belief Task is used for this theory.

The Theory of Mind Hypothesis has been recently transformed into the Extreme Male Brain Theory of autism, and argues that patients with autism are excellent “systemizers” and poor “empathizers”. The concept of this

theory usually came from the finding that males are generally better systemizers than females and women show superiority for empathizing. Empathizing is generally related to the Theory of Mind Hypothesis as it involves being able to understand the emotions of others. Whereas systemizing involves the analysis, exploration, and construction of rule-based system and are usually associated with technical professions like mathematics, engineering, etc.

2.9.1.1 Central Coherence Theory:

Weak Central Coherence Theory is the original version of central coherence theory because it suggests that autism spectrum disorder patients have a specific cognitive style like they think about the smallest potential parts rather than seeing the big picture which provides an elaboration for the non-social aspects of autism where individuals display superior performance in embedded figures tasks and other visual tasks. The original theory suggested that impairment in global processing caused the superior local processing.

2.9.1.2 Executive Dysfunction:

This theory states that the core cognitive symptoms observed in autism spectrum disorder are the result of improper performance by the executive function system like working memory, planning and attention. It has one strength that it explains some of the non-social symptoms that are not covered by Theory of Mind and Weak Central Coherence Theory.

2.9.2 Neural:

2.9.2.1 Enhanced Perceptual Functioning Theory:

This theory is based on the principle that individuals with autism spectrum disorder reveal superior local processing abilities.

2.9.2.2 Neural Noise Hypothesis:

One of the strengths of the neural noise theory is its capability to explain both the over and under sensitivities reported and established by individuals in the autistic spectrum.

2.10 Diagnostic criteria for ASD

Autistic Disorder

- A. Qualitative impairment in social communication as marked by at least two of the followings:
 - 1) Noticeable impairment in the use of numerous non-verbal behaviors such as eye-to-eye gaze, facial expressions, body postures and gestures to normalize social communication.
 - 2) Malfunction to expand peer associations suitable to developmental level.
 - 3) A lack of impulsive seeking to share enjoyment, interests, or achievements with other people as for example lack of showing, bringing or pointing out objects of attention.
 - 4) Lack of social or emotional reciprocity.
- B. Qualitative impairments in communication as manifested by at least one of the followings:
 - 1) Delay in or total lack of the development of spoken language which is not escorted by an effort to reimburse through substitute modes of communication such as gestures or imitation.
 - 2) In individuals with sufficient speech, noticeable impairment in the ability to begin or maintain a conversation with others.
 - 3) Typecast and recurring use of language or characteristic language.
 - 4) Lack of diverse, impulsive make-belief play or social derivative play suitable to developmental level.
- C. Restrictive recurring and stereotyped patterns of behavior, interests, and activities as manifested by at least one of the followings:
 - 1) Surrounding obsession with one or more stereotyped and restricted patterns of attention that is abnormal either in intensity or focus.
 - 2) In fact, rigid devotion to specific, non-functional routines or rituals.

- 3) Stereotyped and repetitive motor mannerisms, for example, hand or finger flapping or parody, or complex whole-body movements.
 - 4) Constant obsession with parts of objects.
- D. Delays or abnormal implementation in at least one of the following areas, with onset preceding to age three years:
- 1) Social interaction.
 - 2) Language as used in social communication.
 - 3) Representative or inventive play.

Asperger's Disorder

- A. Qualitative impairment in social communication as manifested by at least two of the followings:
- 1) Noticeable impairment in the use of numerous non-verbal behaviors such as eye-to-eye gaze, facial expressions, and gestures to regulate social communication.
 - 2) Breakdown to expand peer relationships suitable to developmental level.
 - 3) A lack of impulsive seeking to share enjoyment, interests, or achievements with other people for example by a lack of showing, bringing or pointing out objects of interest to other people.
 - 4) Lack of social or emotional reciprocity.
- B. Limited recurring and stereotyped patterns of behaviour, interests, and activities as manifested by at least one of the followings:
- 1) Surrounding obsession with one or more stereotyped and restricted patterns of interest that is irregular either in intensity or focus.
 - 2) Apparently rigid devotion to specific, non-functional routines or rituals.
 - 3) Stereotyped and recurring motor mannerisms like hand or finger flapping or parody or complex whole-body movements.
 - 4) Persistent obsession with parts of objects.
- C. The disturbance causes clinically important impairment in social, professional, or other important areas of implementation.

- D. There is no clinically important general delay in a language like single words used by age two years, outgoing phrases used by age three years.
- E. There is no clinically important delay in cognitive development or in the development of age-appropriate self-help, skills, adaptive behaviours other than social communication and inquisitiveness about the environment in children.

2.11 The main problem areas of Autism

2.11.1.1 Social impairment:

This class includes several issues; one of the main potential impairments is one of the traditionally noteworthy traits of autism, that is, lack of appropriate eye contact. Both professionals and lay people tend to have a predetermined notion that all individuals with autism have poor eye contact and that if an individual's eye contact with other is poor, they must be autistic. Another quite complex factor of non-verbal behaviour is the child's ability to comprehend non-verbal cues and body language. This ability develops with time and knowledge. Personal liberty can also be an issue with children on the spectrum, as they often do not have a good intelligence of what constitutes suitable personal liberty. Children who are sensory seeking may also engage in certain types of unsuitable behaviors. The ability to read body language and non-verbal cues also play an important task in the upcoming section concerning having a concentrated obsession with something.

It is important to distinguish between a typical "slow-to-warm" child and a child on the spectrum. Let us say that a typically shy three-year-old child who does not have any siblings and if were taken to any playgroup or daycare, it could be normal for the child to be somewhat shy at first and not to seek out other children to play with. Possibly the child will engage in developmentally estimated parallel play in which they do the same general environs as the other child is doing, but not with them. Oftentimes, problems marked themselves as the mother brings the child to daycare or playgroup, and instead of being "slow-to-warm", they never warm up. The child does not search for others to ask them to play, is not interested in other children, does not counter well to

peers who approach him. This second example could be fairly more evocative of having an autism spectrum disorder than the first example.

The term “reciprocity” comes from the Latin *reciprocus* meaning “returning the same way” or “alternating”. In 1985 Simon Baron-Cohen, Alan Leslie, and Uta Frith published an article titled “Does the Autistic child have a Theory of Mind?” in which it was suggested that children with autism have fussy difficulties with tasks requiring the child to appreciate another person’s attitude. These difficulties persist when children are coordinated for verbal skills and have been seen as a key trait of autism. Asking about Theory of Mind is pretty important in an autism assessment because it relates directly to several problem areas commonly found among children on the spectrum.

It is important to discriminate between a “typical” child wanting to do something for someone such as buying them something that the other person would like and a very finely indirect attempt of a child who may be on the spectrum and wants to get something for themselves such as a five-year-old boy wanting to buy a Transformer Toy for Grandma or a bag of chocolate chip cookies for dad. Nevertheless, it should also be kept in mind that it is not something extraordinary for the typical children to employ in this behaviour as well.

2.11.1.2 Language impairment:

It is tremendously significant to keep in mind from the beginning of the assessment that the main distinction between Asperger’s disorder and autism is that for a child to have Asperger’s disorder, they cannot have a clinically noteworthy general delay in their language expansion. It has been said that “clinically significant general delay in language” use the single words by the age of two and outgoing phrases by the age of three. A child with a language delay cannot have Asperger’s disorder. However, a child with no language delay could have Asperger’s autism.

It is significant to point out that delays in the expansion of spoken languages are not escorted by an attempt to pay off through substitute modes of communication such as gesture or imitation. Another noteworthy feature that needs to be considered in the child’s language development is the possible weakening of their language skills. Except if caused by any medical or

neurological problem such as brain injury or a concussion, a child's language regressing can be a noteworthy sign of autism. It is very important to note that a weakening in the individual's language development when they were very young is not one of the analytic criteria for autism. This means a judgment of an autism spectrum disorder would not unavoidably be ruled out if there were no language regression.

The American Heritage Dictionary of the English language defines "stereotyped" as "lacking originality, creativity, or individuality" and "idiosyncratic" as "a structural or behavioral characteristic" abnormal to an individual or group. Keeping in mind that no two individuals on the autism spectrum are comparable, the majority of them have a very tangible and literal interpretation of language.

2.11.1.3 Behavioural concerns:

Behaviours such as a finger or hand flapping or parody, rocking, and head banging are "classic" signs of autism. With all of the diagnostic criteria, it needs to be kept in mind that the child or the individual does not need to exhibit every sign and indication with great harshness in order to meet the criteria for an analysis. These types of motor mannerisms are considered "self-statism". Sometimes an autistic child's intense nervousness will apparent itself through what could appear to be obsessive behaviors. Another of the "classic" signs of autism are found in this category- a fascination with a spinning substance such as wheels on cars, plates, and fans.

2.12 Clinical and Medical perspectives

Autism was first described by Kanner in 1943. The following year, Hans Asperger published a report of four children with "autistic psychopathy". Since that time, autism classification has emerged from the "early infantile autism" that has to turn into detection that autism involves a continuum of strictness and symptoms and as a result, the term "autism spectrum disorder" (ASD) has come into common usage. Autism is now considered one of the most common neurodevelopmental disorders worldwide. Blatt pointed out that Studies performed by the United States Centers for Disease Control (CDC) in selected communities in 2002 suggests the current occurrence rates for ASD as 1 in 150 children.

Beginning with the decisive twin study of Folstein and Rutter (1977), the concept of ASD as a largely genetic disorder has remained in the front position of autism research. Autism is four times more common in males than in females with a higher ratio in milder forms of the disorder. Further, ASD is connected with a significant inherited tendency that is much higher than that seen in the general population. Despite many modern technologies and advanced research, only approximately 6-15% of individuals with autism will be found to have been associated with autism spectrum disorder including Fragile X Syndrome, Tuberous Sclerosis, Smith-Lemli-Opitz Syndrome and Rett Syndrome. Current studies of autism spectrum strongly suggest multifactorial legacy, including genetic heterogeneity with multiple major gene possessions, possibly contributing environmental factors and effects and physiologically associated processes with multiple genes that one can assume that autism is a clinically and biologically heterogeneous disorder. Symptoms can range from comparatively subtle and mild to very severe. Social behaviours can range from a total lack of awareness of others to inappropriate eye-contact and atypical social responsiveness. Communication skills can extend from a total lack of verbal speech and deliberate use of gesture to the presence of speech that is associated with atypical intonation, prosody, syntax, and grammar. Children with autism often show delays in learning novel complex, motor skills such as peddling a tricycle or pumping on a String with their legs.

2.13 Neuroanatomical Abnormalities in Autism

Early attempts to connect neuropathological results to autism are confused by comorbid neuropathology. Bauman and Kemper (1985) reported a systematic neuropathological postmortem study using whole brain serial sections. The results with no gross abnormalities but microscopic assessment revealed mild cytoarchitectonic abnormalities in autistic brains compared to controls. The abnormal areas enclose a major portion of the limbic system of the forebrain which is abnormal in autistic individuals that are important for memory, learning, emotional and behaviour. The only other abnormal area apart from the forebrain limbic system, reported by Bauman and Kemper was in the cerebellum hemispheres. Autistic infants fail to accomplish the progressive level of human affection, manifested by practical lack of view for the caretaker's company, decreased or absent social smiling, noticeable lack of desire to be held, and lack of separation nervousness and fear of

strangers. Behaviours at the basic core of autistic symptomatology- the expression of affection, social-emotional reciprocity, attachment behaviors, and the capacity to play- are impaired in individuals with autism represent behaviours that evolved during the evolution from reptiles to mammals.

In an exclusive case, Rodier et al. (1996) reported the absolute absence of the superior olive and facial nerve nucleus with the limitation of the brain stem between facial nerve nucleus and the trapezoid body. They concluded that injury in the autistic brain occurred around the time of neural tube conclusion, which occurs at about four weeks of fetal development. Bailey et al. (1998) noted supplementary abnormalities in the brain stem which included a large arcuate nucleus in one brain and ectopic neurons on the lateral surface of the medulla. In the cerebral cortex of autistic individuals, the pathology with the initial time of onset is the proof for an increased number of extraordinarily small neuronal minicolumns in numerous cortical areas. These minicolumns are the initial building blocks of the cerebral cortex. Distortion of the cerebral cortex has been habitually noted in the brains of autistic individuals. Rakic (1998) has divided abnormalities in the immigration of the neurons into three broad categories: the complete failure of migration, confinement of drifting neurons along their migrant pathway, and aberrant placement of post mitotic neurons within their target structures.

In the autistic brains, the messy lamination and abnormal division of neurons within the cerebral cortex are the examples of the latter category. Another neuropathology noted in the autistic brain by Blatt is abnormalities in neuronal size and substantiation of post natal neuronal loss which has been found in the deep cerebellar nuclei and in the inferior olive. In all of the childhood ASD brains (5-13 years of age), these neurons were consistently engorged and appeared to be present in sufficient numbers. In contrast, in the older brains, the neurons in the fastigial, globose and emboliform nuclei of the deep cerebellar nuclei and in the Broca were observed to be small and pale and condensed in number. Neuronal swelling followed by weakens and cell loss is an unusual neuropathology. Enlarged neurons similar to the autistic brains have been reported in a variety of situations associated with distorted connectivity in nuclei that are directly related to the cerebellar cortex. A new era of pharmacological interventions in autism is probably due to increased understanding of molecular actions amenable to critical periods of brain development.

In the next chapter I am going to talk about the methodologies and the cognitive level of acquisition into three stages of crying, cooing and babbling and if there is any holophrastic or grammatical stage of acquisition for further study.

CHAPTER 3

DATA AND ANALYSIS

From the methodological perspective primarily, I have consulted the questionnaires given by Autistic Research Institute and Autistic Research Center (2006 and 2012) into three sections which are as follows:

1. A Diagnostic checklist for eight autistic children (4-11 years old) which include clinical/medical based questionnaires that were completed by the parents;
2. Linguistic questionnaires like social interaction, behavioural properties, etc. For the autistic children, adolescents and adults including both male and female (including 4-11 age group and 12-16 age group) that was filled by the coordinators or teachers, parents or caretakers of the children and adolescents; and
3. A Personal questionnaire for the autistic adults who did not have any learning and reading disabilities and was filled by the adults as helping hands.

The above questionnaires were asked in the form of interviews from parents, supervisors, teachers and coordinators in renowned schools named *Autism Society of West Bengal, Kalpana Integrated School* and *AHEAD*.

The following section focuses on the observations made during the interviews with the mothers, supervisors, coordinators and teachers of the children, adolescents and adults belonging to different age groups. In total eight children and three adults were studied through various interviews.

For the age group 4-11: Subject 1 (10+), Subject 2 (4+), Subject 3 and 4 (9+) are identical twins.

For the age group 12-16: Subject 1 (12), Subject 2 (13), Subject 3 (15+) and Subject 4 (14).

For adult group 18-20: Subject 1 (19), Subject 2 (20) and Subject 3 and 4 (20+) are non-identical twins.

First and foremost, the medical or clinical based observations are noted by the parents and teachers of the respective autistic children.

3.1 Early Days

Under the current study, four children of the age group between 4-11 years old were considered. They are categorized as Subject 1, 2, 3 and 4. The mothers of the entire children group informed that they had normal pregnancy period but deliveries were cesarian along with one month pre-mature deliveries in all the cases. The mother of Subject 1 and 2 who are 10 years and 4 years old and are brothers, informed that the appearances of her children for the first few weeks after birth were quite normal physically along with no such health issues in first three months. Whereas the mother of Subject 3 and 4 who are identical twins in this case study informed that the babies were born with Jaundice and High fever. The health issue was the main factor for these identical twins.

For the adolescent age group study, there was no such health issues found for any of the subjects as here also four teenage girls and boys data were taken. Their birth factors were again of pre-mature deliveries and informed by the coordinators. The same case study was found for the adult group individuals.

The crawling to walking stage included an exception for Subject 1 of 4-11 age group, who is the elder child, used one knee for few months in spite of gradual walking whereas his younger brother, i.e., Subject 2 had acquired a normal walking stage. For the Identical twins, the crawling stage was almost not there as the Subjects have suffered medical issues since birth. The crawling to walking stage is normal for the rest adolescent and adult group.

When questions were asked from the diagnostic perspective and linguistic, social and behavioural set, some of the observations were jotted down for the children and adolescents group and they are as follows:

- a) Subject 1 from the children group is sensitive to bright lights and reacts to it whereas other Subjects have no such impairment,

- b) Subject 1 and Subject 3 sometimes reach out to their mothers to pick them up whereas the other Subjects of both children and adolescent groups are quite normal,
- c) Walking stage for all the Subjects including children and teenage started after 10 months old,
- d) The teachers informed that none of the age group have any unusually good memory,
- e) None of the age group Subjects showed any sign of deafness,
- f) Subject 3 of children group and Subject 2 of teenage group sometimes hold hands in strange postures,
- g) For the 4-11 years old group, Subject 1 engages himself with sideways rocking apart from rocking chair, rocking horse, etc. Subject 3 and 4 love any type of rhythmic activities,
- h) Subject 1, 3 and 4 look through people as they were not there,
- i) Sometimes both the children group and adolescent group show introvert nature.

3.2 Mimicking

Few autistic children are very imitating like in this case the younger kid (Subject 2) is a complete copy-cat whereas his brother (Subject 1) does not show any signs of imitation at early stage but gradually with the treatment he can imitate now as for example he repeats few food items and demands when not fulfilled.

The mimicking part is completely absent for the identical twins Subject as they do not show any kind of imitation anywhere according to their mother.

Throughout the interviews with the mothers, teachers and coordinators they reported that Subject 1 and 2 children have good physical coordination and the identical twins need support for any physical activity.

3.3 Other important Subjects and factors

All the age groups show sensitivity as we know from the autism spectrum and they get upset when their demands are not fulfilled or when interrupted at what

they are doing. This behaviour is also quite normal for any other non-autistic children and especially in the crying stage of language acquisition.

Another interesting point noted down when asked to the parents and coordinators was that the children and the adolescents don't spin things like jar lids, coins, etc usually, though Subject 4 of the identical twins has a habit of spitting everywhere repeatedly and spinning bottles sometimes and among all the autistic child only the younger child (Subject 2) has the habit of lining up things in precise evenly rows, especially cars as his mother told during the interview that he is obsessed with hot wheel cars and insists that he should not be disturbed while playing or lining them up. The first two subjects of the children group are very good at doing fine works but Subject 2 faces pencil gripping issues as of now.

In terms of behavioural aspect, the previously discussed children differ from my other subjects, as I am going to discuss. In respect to body postures, the child/adolescent holds hands in strange postures and manners which are different. The children showed no strange body postures whereas the male adolescents showed strange postures during teaching period or when they felt someone forcing them to do so. This is not the case for the female adolescent Subject.

Normally the autistic children shows unusual cravings for things and the interviewed children showed exactly the same like in terms of eating plain rice, chips, parathas by shouting and asking for just like any other normal child does in crying stage to gain attention from parents or peers and among them only the Identical twins have only one eating oddity that is pushing away bottle of milk and other food items sometimes except breast feeding at the initial stage.

Subject 1's mother also described her child as "in a shell" and "lost in thought" that she couldn't reach him. The same has been noted down for the Identical twins Subjects. Subject 1 and 4 of 4-11 age groups and Subject 1 and 3 of 12-16 age groups showed self-injurious behaviour like head banging and self-slapping, self-biting and sometimes throwing objects which are available nearby. The adolescent groups sometime show friendly nature towards anyone approachable.

3.4 Stages of acquisition

All the age groups of autistic individuals including adults showed clear signs of the first stage of acquisition. For the vocabulary part, the elder child (Subject 1) and the male adolescents (Subject 3 and 4) showed too little lexemes whereas they pointed to many objects but didn't speak or communicate and they understood a lot whereas the younger child (Subject 2) and the female adolescent (Subject 2) show fluent speeches as they introduced themselves. The younger child and the female adolescent communicated when asked simple questions but the elder child and the male adolescents were mostly non-verbal, they communicated by saying either yes or no.

As Tennyson puts in, our first effort at speech is not words but cries. It is not only communicative but it is also a direct pioneer to both language and speech. Crying in the first few months (0-6 months) is a kind of language without speech, because the child communicates different types of comforts and discomforts without using normal speech sounds. During the first few weeks of a child's life, crying is largely an autonomic response to harmful stimuli. In brief, crying is hard-wired into the child, and is initially an impulsive reaction. Crying is a direct preparation for a lifetime of vocal communication. Crying initially is completely iconic that is there is a direct and clear link between the physical sound and its communicative objective. But in the first month or two of the child's development, crying becomes more differentiated and more symbolic.

After several weeks of extensive communication with its care-taker or other peers, the child starts to coo, making soft gurgling sounds to express satisfaction. Crying and cooing effect, and are affected by care-taker or peer's behaviour. The cooing stage emerges at about two-months of age but is succeeded when the child is about six-months old, by a babbling stage. Babbling refers to the natural tendency of children to burst out strings of consonants. This is also called explosive sounds. Babbling is further distinguished into marginal babbling, an early stage similar to cooing where infants produce a few, and somewhat random consonants, and canonical babbling, which usually emerges at around eight-months, when the child's vocalizations narrow down to syllables.

After crying and cooing and babbling, there is the stage of a child's early language development - the first word. A child crosses this linguistic stage at about one-year old. The use of single words as main sentences is referred to as the holophrastic stage.

Autistic children showed marked impairment in the use of multiple non-verbal behaviors like eye-to-eye gaze, facial expressions, body postures and certain language issues where individuals showed no interest in pleasing others except mothers and not even to their care takers or teachers or coordinators. They showed a lack of spontaneous seeking to share enjoyment, interests or achievements with other people along with pointing out objects of interest. All autistic individuals were very responsive and understood things but they lack social or emotional reciprocity. There were marked impairment in the ability to sustain a conversation with anyone and were more interested in what they knew. They showed a tendency to say things without considering emotional impact of the listener as they say things without any intention. Their stage of speaking was very precise.

Below are the charts representing a guide for parents or relatives or scholar for the 4-11 years age group and 12-16 years age group with autism who do not show any learning disability and the questions are mainly linguistics based to understand the stages of language acquisition.

3.4.1 Young Group

For the age group 4-11: Subject 1 is 10 years old, Subject 2 is 4 years old, Subject 3 and 4 are 9 years old and Identical twins in this case study.

3.4.2 Adolescent Group

For the age group 12-16: Subject 1 is 12 years old, Subject 2 is 13 years old, Subject 3 is 15 years old and Subject 4 is 14 years old.

The subjects are hard to merge in a single chart as they have been marked as Subject 1, 2 and so on in all the age groups so what I have done below to understand broadly is notifying two charts separately- the first chart is for the Young group and the second chart is for the Adolescent group:

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
1	She/he often notices small sounds when others do not	✓ Subject 1 and 2	✓ Subject 3 and 4		
2	She/he usually concentrates more on the whole picture rather than small details	✓ Subject 1, 3 and 4			✓ Subject 2 is very detailed
3	She/he finds it easy to go back and forth between different activities	✓ Subject 1 and 2	✓ Subject 3 and 4		
4	She/he doesn't know how to keep a conversation with her/his peers	✓ All			
5	She/he is good at social chit-chat	✓ Subject 2			✓ Subject 1, 3 and 4
6	When she/he reads a story, she/he finds it difficult to work out the character's intention	✓ All			

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
1	She/he notices patterns in things all the time	✓ Subject 2	✓ Subject 1		✓ Subject 3 and 4

2	She/he usually concentrates more on the whole picture rather than small details	✓ Subject 2 on whole picture	✓ Subject 3		✓ Subject 4
3	If there is an interruption, she/he can switch back to what she/he was doing	✓ Subject 1 and 2			✓ Subject 3 and 4
4	She/he frequently finds it difficult to keep a conversation going on	✓ Subject 1 and 2			
5	She/he is good at social chit-chat	✓ All			
6	She/he finds social situations easy	✓ Subject 1 and 2	✓ Subject 3	✓ Subject 4	

If we look at the table above, we see that in both the age groups, Subject 1 and 2 notice small sounds or patterns in things all the time whereas Subject 1 of the teenage group responds according to his mood as he sometimes notices things all the time and sometimes not. For the concentration part like on some picture or any sound or any detail observation, Subject 1, 3 and 4 show strong responses for the entire picture or sound whereas Subject 2 of teenage group shows detail observations on any object. If there is an interruption, Subject 1 and 2 of both the age groups can easily go back and forth in between any conversation or what they are doing. All the teenage group and Subject 2 of 4-11 years old group, they do not show any impairment in social conversation or chit chat with anyone. For working on the character's intention like any cartoon character or any movie character it becomes hard for the children group to comprehend the intentions clearly whereas no such impairment is found in the adolescent group.

As a whole we can conclude that Subject 1, 3 and 4 of the children group are in the crying, cooing and babbling stage of development where they use hand gestures; Subject 2 (child), Subject 2, 3 and 4 of 12-16 years age group are in the holophrastic stage with few grammatical lexemes like the second subject of the children group repetitively used ‘over-over’ for any meaningful demand otherwise no such words or phrases were jotted down or informed by the mother and the second Subject of the teenage group produces a shrill ‘no’ word for happy mood; Subject 1 in 12-16 years group is in the marginal babbling stage where he uses random consonants which is similar to early cooing stage by using the Bengali word ‘na’ for any matter and the fourth adolescent Subject sometimes utters ‘baba’ without conveying any meaning.

3.4.3 Adult Group

Below is the merged personal, social and behavioural questionnaire and observations for the adult group who did not show any learning disability: Subject is 19 years old, Subject 2 is 20 years old, Subject 3 and 4 are 20 years old and non-identical twins.

Sl no.	Questions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
1	I would be very upset if I couldn't do my regular work	Subject 1 and 3		Subject 1 and 2	
2	I prefer to speak to my friends on phone rather than writing letters	All			
3	I have no desire to travel to different parts		Subject 2, 3 and 4		Subject 1

4	I prefer to read	Subject 1 and 2			Subject 3 and 4
5	I can easily tell if someone else wants to enter a conversation	Subject 1	Subject 2		Subject 3 and 4
6	I find it difficult to explain to other things that I understand easily when they don't understand it first time	Subject 1	Subject 3 and 4	Subject 2	
7	I find it hard to know what to do in a social situation		Subject 3 and 4		Subject 1 and 2
8	Friendships and relationships are too difficult			Subject 3 and 4	Subject 1 and 2
9	I often find it difficult to judge if something is rude or polite				All
10	In a conversation, I tend to focus on my own thoughts		Subject 3 and 4	Subject 2	Subject 1
11	I can pick up quickly if someone says one thing but means another				All

12	It is hard for me to see why some things upset people so much	All			
13	I find it easy to put myself into someone else's shoes				All
14	I like to say truth all the time	All			
15	Seeing people crying really upset me	Subject 1		Subject 2	Subject 3 and 4
16	I don't tend to find social situations confusing	Subject 1 and 2	Subject 3 and 4		
17	It upsets me to see someone in pain	All			
18	I can make decisions of my own				All
19	I usually stay emotionally detached when watching a film				All

20	I don't consciously work out the rules of social situations	All			
21	I tend to get emotionally involved	Subject 1 and 2	Subject 3 and 4		

Now if we look at the data provided by the adults under guidance of their coordinators, we can easily say that both Subject 1 and 3 would be very upset if they couldn't do their regular work and Subject 2 sometimes. Subject 3 and 4 i.e., the twins have impairment in understanding if someone else wants to enter a conversation whereas Subject 1 can easily understand. The understanding part is impaired for the non-identical twins and this is the reason that they fail to understand peer relationships. As all the individuals have been under treatment since childhood, their responses were more like normal non-autistic adults but there were certain situations where they found a little difficulty in doing more than one thing at a time.

Subject 1 is very sensitive and easily catches someone if he/she gets bored while listening to him whereas the other Subjects are impaired in this area sometimes. The third and fourth subjects are more in themselves no matter what is going on around them. For example, while reading a story book by their parents or teachers, the twin subjects are impaired in understanding negative characters or watching any movie which show the in capabilities to grasp any character's intention. Subject 1 can easily work out what someone is thinking or feeling as he asked me during the interview whether I was observing autistic individuals or not and found it a bit odd whereas the other subjects of my case study were bothered about their own thoughts and feelings. Sometimes they found it difficult with people's intention too.

Overall we can say that there is a fine line of observation between autistic adults and non-autistic adults which is not under the three stages of language acquisition cognitively.

Moreover the observations are very interesting and can be studied in more details in further study.

Chapter 4

Conclusion

This chapter summarizes the observations made during the interviews with the mothers, supervisors, coordinators and teachers of the children, adolescents and adults belonging to different age groups. In total eight children and three adults were studied through various interviews.

The crawling to the walking stage included an exception for Subject 1 of 4-11 age group, who is the elder child, used one knee for few months in spite of gradual walking whereas his younger brother, i.e., Subject 2 had acquired a normal walking stage. For the Identical twins, the crawling stage was almost not there as the Subjects have suffered medical issues since birth. The crawling to the walking stage is normal for the rest adolescent and adult group.

Apart from the above mentioned observations I would like to make a few additional observations as the following.

- a) Subject 1 from the children group was sensitive to bright lights and reacted to it,
- b) The teachers informed that none of the age groups did not show the usual good memory,
- c) None of the age group Subjects showed any sign of deafness,
- d) Subject 3 of children group and Subject 2 of teenage group sometimes hold hands in strange postures,
- e) The first child engaged himself with sideways rocking apart from rocking chair, rocking horse, etc. and Subject 3 and 4 loved any type of rhythmic activities,
- f) Subject 1, 3 and 4 looked through people as they were not there,
- g) Sometimes both the children group and adolescent group showed introvert nature,

- h) Hand gestures and facial expressions are used being for refusing something. This is done by Subject 1, 3 and 4 of 4-11 years age group.,

The qualitative observations are penned down to check the impairments in social interaction and are as follows.

- a) The first, third and fourth autistic child showed impairments like eye-to-eye gazing, facial expressions, body postures and gestures. The second, third and fourth autistic child exhibited language issues,
- b) An exception is found for the first child that he lacked interest in developing social bonding,
- c) All the age group except the second autistic child who was very responsive, showed no social and emotional attachments.
- d) Second, third and fourth autistic child and the second, third and fourth adolescent group could not sustain a conversation with others and are more much interested in what they know.

Talking about the other important subjects and factors, all the age groups showed sensitivity. They got upset when their demands are not fulfilled or when interrupted at what they are doing. Subject 4 of the identical twins displayed a habit of spitting everywhere repeatedly and spinning bottles sometimes. Among all the autistic child only the younger child (Subject 2) showed the habit of lining up things in precise evenly rows, especially cars. Subject 1's mother also described her child as "in a shell" and "lost in thought" that she couldn't reach him. The first and fourth child and Subject 1 and 3 of 12-16 age groups showed self-injurious behaviour like head banging and self-slapping, self-biting and sometimes throwing objects which are available nearby.

Below are the responses jotted down for the children group:

- a) Subject 1 and 2 often responded to small sounds with an exception of Subject 3 and 4 sometimes skipped the low noise sounds,
- b) Subject 1, 3 and 4 usually concentrated more on the whole picture with an exception of the second child who is very detailed,

- c) The two autistic brothers found it easy to go back and forth between different activities and the identical twins sometimes went back and forth,
- d) All the autistic children when reading a story found it difficult to work out with character's intention like 'motu-patlu, chota bheem', etc,

Below are the responses jotted down for the teenage group:

- a) The teenage girl usually noticed patterns in things all the time whereas Subject 3 and 4 never notice any patterns,
- b) The girl usually noticed on the whole picture and the fourth autistic boy notices detail structures,
- c) The third and fourth teenage boys found it difficult to switch back to normalcy when interrupted whereas Subject 1 and 2 could easily switch back,
- d) Subject 1 and 2 frequently found it difficult to keep a conversation going on.

As a whole we can conclude that Subject 1, 3 and 4 of the children group can be classified as the crying, cooing and babbling stage of development where they used hand gestures; Subject 2 (child), Subject 2, 3 and 4 of 12-16 years age group were in the holophrastic stage with few grammatical lexemes like the second subject of the children group repetitively used 'over-over' for any meaningful demand; The first teenage boy showed the marginal babbling stage where he used random consonants which is similar to early cooing stage by using the Bengali word 'na' for any matter. The fourth adolescent Subject sometimes uttered 'baba' without conveying any meaning.

The claims made in this thesis are on the basis of the data collected on the two age groups (children and adolescent) and their linguistic behaviour as mentioned above. A large scale sampling of all the age groups along with their linguistic milestones is beyond the scope of this thesis. Further research is required to explicate the nature of autism with respect to language acquisition in the Indian context.

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Appendix

Diagnostic checklist and linguistic questionnaire for Autistic child, adolescent and adult

The diagnostic checklist below, as well as the linguistic questionnaire, has been taken and edited from the questionnaires given by the Autistic Research Institute and Autistic Research Centre.

There are three sections in this document:

1. Diagnostic checklist for an autistic child (including 4-11 years old) which includes a clinical/medical based questionnaire that has to be fulfilled either by the parent or the supervisor of the child;
2. A Linguistic questionnaire like social interaction, behavioural properties, etc for an autistic child, adolescent and adult (including 4-11 age group and 12-16 age group) that has to be fulfilled by the coordinator or parent or caretaker of the child and adolescent; and
3. Personal questionnaire for an autistic child, adolescent and adults who do not have any learning and reading disabilities and has to be filled by the child and adolescent along with the help from the scholar who is asking above questions(helping hand).

Diagnostic checklist for autistic children

(to be filled/answered by the parent/relative or supervisor)

Name of child- Darsh Sharma (Subject 1) and Reyansh Sharma (Subject 2), Aloka and Bitan Bhattacharya (Subject 3 and 4) (identical twins)

DOB- 15th August 2008; 26th November 2013; 10th July 2009

The Person completing the form-

Mothers- ✓

Fathers-

Others-

- The Present age of children- 4+; 9+ and 10+
- Gender of children- Male and female
- Birth order and number of mother's other children- Two and none

- Were pregnancies and deliveries normal- Pregnancies were normal but deliveries were CEsarian

- Were the births premature- all the babies One-month premature births

- The appearance of children during the first few weeks after births- Quite normal physically although the identical twins had jaundice and high fever.

- Unusual conditions of births and infancies-
 - a) Blindness
 - b) Cerebral palsy
 - c) Birth injury
 - d) Blue baby
 - e) Very high fever ✓ (Bitan)
 - f) Jaundice ✓ (Aloka)
 - g) Other
 - None ✓ (Darsh and Reyansh)

- Which describes the changes from crawling to walking-
 - a) Normal change ✓ (Aloka and Bitan)

- b) Gradual start of walking ✓ (Reyansh normally walked but Darsh used one knee for first few months)
- c) Sudden start of walking

- Health in the first 3 months-

- a) Excellent, no problem ✓ (Darsh and Reyansh)
- b) Respiration (frequent infections, other)
- c) Skin (rashes, allergy, other)
- d) Elimination (diarrhoea, constipation, other)
- e) Others ✓ (Aloka and Bitan)

- Did the children react to bright lights, bright colours, unusual sounds, etc-

Darsh reacts to bright lights and Reyansh, Aloka and Bitan are normal to bright lights, bright colours, unusual sounds etc.

- Did the children reach out or prepare to be picked up when the mother approached-

Darsh and Aloka sometimes reach out to his mother for picking and Reyansh and Bitan are quite normal.

- At what age did the children learn to walk alone-

Darsh at the age of 13-15 months

Reyansh at the age of 11 months

Aloka and Bitan at the age of approximately 12months

- Did the children ever imitate another person-
 - a) Waved bye-bye ✓ (Aloka and Bitan when forced by anyone)
 - b) Played any game
 - c) Other ✓ (Reyansh is a copy cat and Darsh showed no imitation at the early stage but gradually can imitate now)

- Did the children have an unusually good memory-
No such good memory.

- Did the children ever suspected with near deafness-
No.

- Are the children deaf to some sounds but hears others-
No.

- Do the children hold hands in strange postures-
Aloka sometimes.

- Do the children engage in any rhythmic or rocking activity for a very long period like rocking horse, rocking chair, jump chair, swing, etc-
Darsh engages himself mostly with side-ways rocking apart from rocking horse, rocking chair, and jump chair, swing for a long period whereas Reyansh does not engage himself in such

activities and Aloka and Bitan both love any type of rhythmic activities.

- Do the children ever “look through” or “ walk through” people as though they weren’t there-

Darsh, Aloka and Bitan walk through people as they weren’t there.

- Do the children have any unusual cravings for things to eat or chew on-

Darsh is very picky about food and he loves rice, chips, paratha

- Do the children have any eating oddities like refusing to drink from a transparent container, eating only hot or cold food, eating only one or two foods, etc-

Darsh pushes away milk bottle but Reyansh does not show any eating oddities. Aloka and Bitan continuously ask for a bottle of water

- Would the children be described as “ in a shell” and “ lost in thought” that you couldn’t reach him/her-

Reyansh is talkative whereas Darsh, aloka and Bitan are described as lost in thought and introvert.

- Do the children deliberately hit his/her own head-

Darsh hits his own head and bangs his head along with self slapping behaviour.

- How well physically coordinated are the children like walking, running balancing, climbing, etc-
Darsh and Reyansh have good physical coordination and Darsh is good at skating whereas Aloka and Bitan do need support for walking
- Do the children sometimes whirl himself/herself like a top-
Darsh when becomes happy whirl himself like a top.
- How skillful are the children in doing fine work with his/her fingers or playing with small objects-
Darsh and Reyansh are very good at doing fine works but Reyansh faces pencil gripping issues as of now. Aloka and Bitan can write now after treatment
- Do the children like to spin things like jar lids, coins, etc-
No.
- Do the children jump sometimes up and down gleefully when pleased-
Darsh and Reyansh jump up and down most of the time gleefully when pleased. Aloka and Bitan shows upward hand gestures

- Do the children sometimes line things up in precise evenly spaced rows and insist they not be disturbed-
Reyansh does line up things especially cars as he is obsessed with cars.
- How do the children react when interrupted at what he/she doing-
All the children become irritated when interrupted for tearing papers and sometimes don't react at all when interrupted.
- What makes the children more upset-
Darsh becomes more upset when his demands are not fulfilled or his mother gives more attention to his younger brother Reyansh. While Aloka and Bitan are not on a stage to understand any emotions
- Are the children sensitive-
All the children are very sensitive.
- What the children are extremely fearful of-
No such thing.

- Do the children hit, pinch, bite or injure himself/herself or others-
Darsh usually has the intensity of self-injury mostly along with head banging and self slapping.
- How well the children pronounce words when learning to speak-
 - a) Too little speech: Darsh
 - b) Average: Aloka and Bitan
 - c) Usually good: Reyansh
 - d) Others
- Is the vocabulary greatly out of proportion to his/her ability to communicate-
 - a) He/she can point to many objects but doesn't speak or communicate: Darsh, Aloka and Bitan
 - b) He/she can correctly name objects
 - c) Communication is pretty good: Reyansh
 - d) Doesn't use or understand words
- How the children refer to himself/herself-
Reyansh introduces himself very well and Darsh understands a lot. Aloka and Bitan couldn't refer to themselves.

- Can the children be able to answer simple questions-
Darsh and Reyansh are able to answer simple questions.
- Can the children understand what you say to communicate-
Darsh and Reyansh can understand other's communications.
- Have the children use the word " yes" frequently-
Darsh non-verbally does like using gestures whereas Reyansh frequently uses the word yes.
- How do the children usually refuse something-
Darsh refuses by using gestures and a few speeches.
Reyansh refuses normally. Aloka and Bitan refuse things using facial expressions and gestures.

Linguistic Questionnaire for the autistic children, adolescents and adults of different age group:

Age group:

- a) 4-11 years children: Darsh Sharma(10+); Reyansh Sharma (4+); Aloka and Bitan Bhattacharya (9+) (identical twins)
- b) 12-16 years old adolescents: Rick (12); Joyee (13); Ronit Thakkar (15+) and Ayush Banerjee (14)
- c) Adults: Bijon (19); Shreya (20); Sumana and Sukanya (20+) (non-identical twins)

Qualitative impairment in social interaction:

Marked impairment in the use of multiple non-verbal behaviours such as eye-to-eye gaze, facial expression, body postures and gestures to regulate social interactions.

Darsh, Ronit, Aloka and Bitan have impairments like eye-to-eye gazing, facial expressions, body postures and gestures;
Reyansh, Ayush, Aloka and Bitan have language issues.
The adult group shows no such impairments.

Failure to develop peer relationships appropriate to developmental level.

Reyansh, Rick and Joyee can communicate easily with his surroundings with few speech problems;
Darsh has no interest in peer relationships especially has no interest in children.
The adult group loves to talk with anyone.

No interest in pleasing others; no interest in communicating his/her experience to others, including: - lack of spontaneous seeking to share enjoyment, interests or achievements with other people; lack of showing, bringing or pointing out objects of interest.

The children and adolescent group have no such interest in others life and surroundings.
The adult group loves to share minute details with anyone.

Lack of social or emotional reciprocity (not knowing how to comfort someone or lack of empathy).

All the age group except Reyansh who is very responsive, show no social and emotional attachments.

Qualitative impairments in verbal and non verbal communication:

The tendency to turn any conversation back on to self or own topic of

Almost all the age group have tendency to turn back onto self topic when they are in mood.

Marked impairment in the ability to initiate or sustain a conversation with others. Cannot see the point of superficial social contact, passing time with others unless there is a clear discussion point or activity.

Reyansh, Aloka, Bitan, Joyee, Ronit, Ayush cannot sustain a conversation with others and are much interested in what they know.

The adult group can sustain a conversation with anyone.

Pedantic style of speaking or inclusion of too little or too much detail.

Reyansh and Darsh are very precise.

Frequent tendency to say things without considering the emotional impact of the listener.

Reyansh and Darsh say things without any intention as they not fully matured.

The adolescents group tends to say things with emotional impact sometimes.

A guide for adults with autism who do not show any learning disability:

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
1	I often notice small sounds when others do not	✓ Bijon and Shreya	✓ Sumana and Sukanya		
2	I usually concentrate more on the whole picture rather than small details				✓ All
3	I find it easy to do more than one thing at once			✓ Bijon and Shreya	✓ Sumana and Sukanya

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
4	If there is an interruption, I can switch back to what I was doing very quickly		✓ Sumana and Sukanya		✓ Bijon and Shreya
5	I find it easy to 'read between lines' when someone is talking to me				✓ All
6	I know how to tell if someone listening to me is getting bored		✓ Bijon	✓ Shreya	✓ Sumana and Sukanya

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
7	When I am reading a story I find it difficult to work out with the character's intentions	✓ All			
8	I like to collect information about categories of thing		✓ Sumana and Sukanya		✓ Bijon and Shreya
9	I find it easy to work out what someone is thinking or feeling	✓ Bijon	✓ Sumana and Sukanya	✓ Shreya	

10	I find it difficult to work out people's intentions	✓ Sumana and Sukanya	✓ Bijon and Shreya sometimes		
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A guide for parents or relatives or scholar to complete about a teenage aged 12-15 years old with autism:

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
1	She/he notices patterns in things all the time	✓ Joyee	✓ Rick		✓ Ronit and Ayush
2	She/he usually concentrates more on the whole picture rather than small details	✓ Joyee on whole picture	✓ Ronit		✓ Ayush
3	If there is an interruption, she/he can switch back to what she/he was doing	✓ Joyee and Rick			✓ Ronit and Ayush
4	She/he frequently finds it difficult to keep a conversation going on	✓ Joyee and Rick			

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
5	She/he is good at social chit-chat	✓ All			
6	She/he finds social situations easy	✓ Joyee and Rick	✓ Ronit	✓ Ayush	

A guide for parents or relatives or scholar to complete about a child aged 4-11 years old with autism who do not show any learning disability:

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
1	She/he often notices small sounds when others do not	✓ Darsh and Reyansh	✓ Aloka and Bitan		

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
2	She/he usually concentrates more on the whole picture rather than small details	✓ Darsh, Aloka and Bitan			✓ Reyansh are very detailed
3	She/he finds it easy to go back and forth between different activities	✓ Darsh and Reyansh	✓ Aloka and Bitan		
4	She/he doesn't know how to keep a conversation with her/his peers	✓ All			

Sl no.	Questions	Definitely agree	Slightly agree	Slightly disagree	Definitely disagree
5	She/he is good at social chit-chat	✓ Reyansh			✓ Darsh, Aloka and Bitan
6	When she/he reads a story, she/he finds it difficult to work out the character's intention	✓ All			

Social and communication development questionnaire for the children and adolescent group (require helping hand to fill up the following):

Sl no.	Questions	Yes	No
1	Does he/she join in playing games with other children easily	Reyansh	
2	Does he/she came up to you spontaneously for a chat	Reyansh	
3	Was he/she speaking by 2 years old	All	
4	Does he/she appear to notice unusual details that others miss	Darsh is more prone	
5	Does he/she find it easy to interact with other children	Reyansh	

Sl no.	Questions	Yes	No
6	Can he/she keep a two-way conversation going	Reyansh	
7	Can he/she read appropriately of his/her age	The adolescent group	
8	Does he/she have the same interests as his/her peers	Reyansh, Aloka and Bitan	
9	Does he/she difficulty understanding rules for polite behaviour	All the children and adolescent group	
10	Is he/she good at turn-taking in conversation	Reyansh, Darsh and Ronit	
11	Does he/she often do or say things that are socially inappropriate		All the children and adolescent group

Sl no.	Questions	Yes	No
12	Can he/she count to 50 without leaving out any numbers		All the children and adolescent group
13	Does he/she use any particular repetitive word or phrase	Reyansh, Darsh and Joyee	
14	Is his/her social behaviour very one-sided and always on his/her own terms	Reyansh is more prone	
15	Does he/she sometimes say “you” or “he/she” when he/she means “I”	Reyansh and Joyee	
16	Does he/she often turn conversations to his/her favourite subject	Reyansh	

Sl no.	Questions	Yes	No
17	Does he/she have any unusual word or phrases		None

The behaviour scale questionnaire for adult group
(require helping hand to fill up the following):

Sl no.	Questions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
1	I would be very upset if I couldn't do my regular work	Sumana and Bijon		Bijon and Shreya	
2	I prefer to speak to my friends on the phone rather than writing letters	All			

Sl no.	Questions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
3	I have no desire to travel to different parts		Shreya, Sumana and Sukanya		Bijon
4	I prefer to read	Bijon and Shreya			Sumana and Sukanya
5	I can easily tell if someone else wants to enter a conversation	Bijon	Shreya		Sumana and Sukanya
6	I find it difficult to explain to other things that I understand easily when they don't understand it first time	Bijon	Sumana and Sukanya	Shreya	

Sl no.	Questions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
7	I find it hard to know what to do in a social situation		Sumana and Sukanya		Bijon and Shreya
8	Friendships and relationships are too difficult			Sumana and Sukanya	Bijon and Shreya
9	I often find it difficult to judge if something is rude or polite				All
10	In a conversation, I tend to focus on my own thoughts		Sumana and Sukanya	Shreya	Bijon
11	I can pick up quickly if someone says one thing but means another				All

Sl no.	Questions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
12	It is hard for me to see why some things upset people so much	All			
13	I find it easy to put myself into someone else's shoes				All
14	I like to say truth all the time	All			
15	Seeing people crying really upset me	Bijon		Shreya	Sumana and Sukanya
16	I don't tend to find social situations confusing	Bijon and Shreya	Sumana and Sukanya		

Sl no.	Questions	Strongly agree	Slightly agree	Slightly disagree	Strongly disagree
17	It upsets me to see someone in pain	All			
18	I can make decisions of my own				All
19	I usually stay emotionally detached when watching a film				All
20	I don't consciously work out the rules of social situations	All			
21	I tend to get emotionally involved	Bijon and Shreya	Sumana and Sukanya		

Personal description

(to be filled by the scholar)

Bijon Bhattacharya, Sumana and Sukanya

- Where do you live?
Jadavpur ; tollygunge
- With whom you live with?
Parents
- What do they do?
Mother is a housewife and Father goes to the office
- Who cares for you the most?
Both mother and father and teachers also
- Did you ever visit any other place than Kolkata?
Yes, Mumbai; no for Sumana and Sukanya
- Do you have any favourite person?
Yes, everyone
- Do you have any pet indoor/outdoor?
No
- Do you have any favourite toy or object?
Yes, a car, Doll for Sumana and Sukanya

- Please describe your strengths.

I love talking with anyone I find first, love eating, reading with the help of teachers

- Is there anything you want to share?

Yes, I find people stare at me oddly because for them I am not normal due to my body shape but I can easily converse with anyone in both Bengali and English. I don't like people faking about sympathy. They should be more sensitive towards us and consider us normal.