

## **A Study of the Pragmatic Language Impairments of Children with Attention Deficit Hyperactivity Disorder (ADHD)**

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**A Study of the Pragmatic Language Impairments of Children with  
Attention Deficit Hyperactivity Disorder (ADHD)**

**A Thesis**

**Submitted to the Department of English and Humanities**

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## Declaration

I hereby declare that this dissertation is the presentation of my original research work. Wherever contributions of others are involved, every effort is made to indicate this clearly with proper and due references and acknowledgement. This thesis paper has not been submitted anywhere, either in a part or a whole, for a degree or an award, in this or any other university.

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## **Dedication**

This paper is dedicated to my parents who have always supported and encouraged me through thick and thin in every possible way. I am always grateful to them for their support, cooperation, and affection. Thank you for your immense patience, precious advice, and kind consideration. I will always be indebted to you.

## **Acknowledgement**

From my experience, I can say that it is almost impossible for anyone not to feel miserable or frustrated at one point or another while writing a thesis. Thesis is certainly an endeavor which cannot take place on its own. It is an amalgamation of hard work, critical thinking, and sleepless nights which can yield the desired outcome only with the assistance and encouragement of different people to facilitate the successful completion of the thesis.

My first and foremost worship and prayer go to the Almighty who enabled me to complete this research.

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## Abstract

This study attempts to find out the pragmatic language impairments experienced by the Bengali speaking children in with Attention Deficit Hyperactivity Disorder (ADHD) in Bangladesh. The triads of symptoms-inattention, hyperactivity, and impulsivity hamper their practical use of language in social interaction. Different components of discourse analysis and pragmatics have been used to identify and explore the impairments, and how they affect these children's social functioning. Moreover, the idea of theory of mind and executive functions have been applied to find the connection between their pragmatic language impairments and social cognition deficiencies. For the empirical data, a survey was conducted with the use of both qualitative and quantitative approaches. This paper concluded with some recommendations on what steps should be taken to overcome the limitations which were found during the research.

**Key words and abbreviations:** Bengali speaking children, Pragmatic Language Impairments (PLI), Attention Deficit Hyperactivity Disorder (ADHD), Theory of Mind (ToM), Executive Functions (EF), Diagnostic and Statistical Manual (DSM), American Psychiatric Association (APA), Social cognition, Social functions.

## Chapter 1: Introduction

### 1.1 Introduction

Along with the subsequent development in the field of education and language, linguists and researchers are now more concerned than ever before about the linguistic and academic needs of the special children. As the name suggests, these special children need special care which is different from the mainstream children. To become aware of their needs, we first need to explore the spheres where they face problems and complications. As for children with Attention Deficit Hyperactivity Disorder (ADHD), their principal impairment lies in the social use of language. Social use of language refers to the domain of language which deals with pragmatics or pragmatic use of language. Pragmatics is the social use of language and explains how the other aspects of language; e.g. phonology, semantic, morphology, and syntax are used in different conversational contexts (Camarata & Gibson, 1999, p.208). The nature of ADHD as described in the Fourth Edition of the Diagnostic and Statistical Manual of American Psychiatric Association indicates a potential association with language impairment and particularly with pragmatic language deficits (p.83). There are predominantly three types of ADHD children: inattentive, hyperactive-impulsive, and combined type (Holland & Higuera, 2015, n.p; Lange et al., 2010, p.253).

As a result of their pragmatic language impairments (PLI), they face great difficulties in following and maintaining everyday conversational conventions and discourse etiquettes (Rich, Loo, Yang, Dang & Smalley, 2009, p.2). The lack of social cognition, theory of mind (ToM), and executive functions (EF) are largely responsible for their pragmatic language difficulties. These three ideas are interconnected and influence one another. Social cognition refers to the

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idea of perceiving, encoding, processing, and using information according to the contextual needs (Crisp & Turner, 2007, p.39; Uekerman, 2010, p.734-735). At the same time, this situational demands also incorporate interlocutors' requirements during a conversation which can be met by integrating both the linguistic and metalinguistic features of language (e.g. tone, gesture, facial expression). To comprehend these demands, people need to be focused and attentive during a conversation which helps them comprehending others' perceptions, thought, and point of views and theory of mind helps people materialize it (Green, Johnson & Bretherton, 2014, p.22-24). On the other hand, Stevenson, Williams, and Baird (2000) opined that executive functions enable people to focus and use their working memory to organize and deliver a cohesive response in order to meet the needs of listeners' queries. Therefore, it can be said that theory of mind and executive functions ensure effective social cognition which in turn guarantee the appropriate use of language in various social settings (p. 21-22). However, as the ADHD children lack all these components, it hampers their social functioning which also indicates their deficits in social use of language.

In this paper, the author discusses different types of pragmatic language difficulties of children with ADHD in Bangladesh and how their impaired social use of language is influenced by the deficit in social cognition, the absence of theory of mind, and the lack of executive functions.

## **1.2 Research Questions**

- a) What are the pragmatic language impairments (PLI) that are experienced by children with Attention Deficit Hyperactivity Disorder (ADHD)?

- b) How is their pragmatic language use affected by the i) impaired social cognition, ii) absence of theory of mind, and iii) lack of executive functions?
- c) How is/are their social functioning/social skills influenced by the pragmatic language impairments?

### **1.3 Objective of the Study**

This study aims at finding the pragmatic language impairments experienced by the children with ADHD. At the same time, this study also tries to explore the reasons and consequences of these pragmatic language difficulties.

### **1.4 Significance of the Study**

In Bangladesh, there have not been many studies on children with special needs and how their needs can be met. Though there are some researches and studies on Autism Spectrum Disorder, there is hardly any study which includes Attention Deficit Hyperactivity Disorder, Down's syndrome, and so on. That is why this study has been designed for the children those who suffer from ADHD and experience diverse communicative disabilities. This study creates the ground which will assist the educators and academicians in conducting needs analysis and target situation analysis to design appropriate materials and curriculum for the ADHD children by keeping their psychological and communicative impairments in mind. Moreover, it will also raise awareness among the general mass that they should facilitate every possibility to create an environment which will render support to the ADHD children.

## Chapter 2: Literature Review

### 2.1 History of ADHD

#### a) The incapacity of providing a necessary degree of constant attention

The very first example of a disorder that appears to be similar to ADHD was given by Sir Alexander Crichton in 1798. Crichton was a Scottish physician who was born in Edinburgh in 1763. Crichton defines inattention by explaining it from two perspectives. According to him, “First, The incapacity of attending with a necessary degree of constancy to any one object. Second. A total suspension of its effects on the brain.” (Lange, Reichl, Lange, L. Tucha & O. Tucha, 2010, p.242)

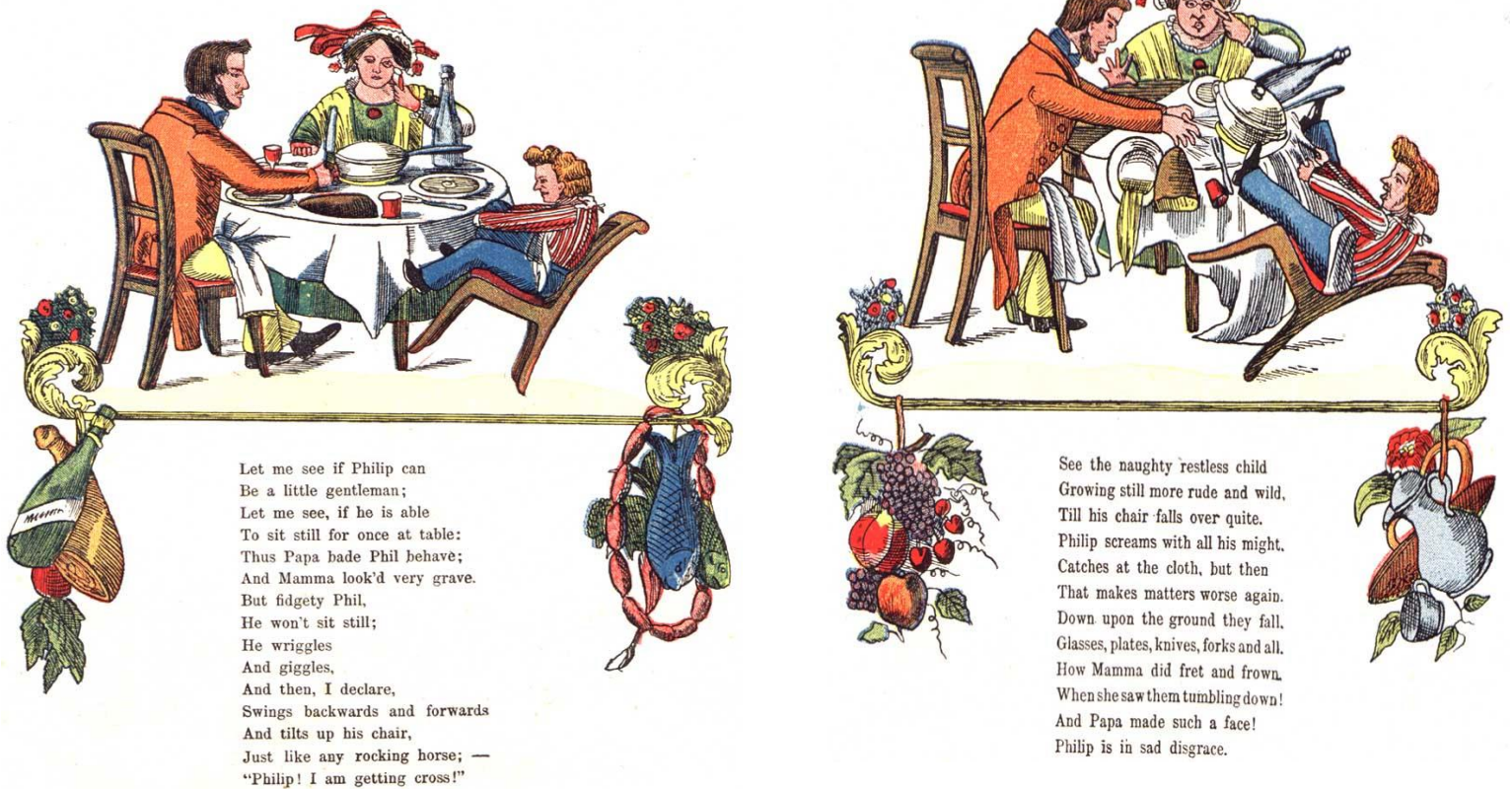
His characterization of the disorder as the “incapacity of attending with a necessary degree of constancy to any one object” is consistent with the symptom of inattention which is the difficulty they experience in sustaining attention while completing tasks or playing activities (American Psychiatric Association, 1994, p.83).

#### b) Fidgety Phil

The German physician Heinrich Hoffmann created some illustrated children’s stories including a character named ‘Fidgety Phil’ (“Zappelphilipp” in German) in 1844, who in nowadays a popular allegory for children with ADHD. In the story of Fidgety Phil, Hoffmann illustrates a family conflict at dinner caused by the fidgety behavior of the son and culminating in his falling over together with the food on the table which can be interpreted as an early case of ADHD. At the beginning of the story, the father asks in earnest tone: ‘Let me see if Philip can be

a little gentleman; Let me see if he is able to sit still for once at table” (Lange et al., 2010, p.243).

#### 8. THE STORY OF FIDGETY PHILIP.



**Figure 1 & 2: Extracts from the “Fidgety Philip” (Source: Google image)**

The statement suggests that the father had anticipated some misbehavior of his son at the table and he was also aware of his son’s impulsive behavior from his early actions. It is a first hint at the presence of an underlying persistent disorder of ADHD of the symptom which refers to the existence of the sign to be present for at least 6 months (American Psychiatric Association, 1994, p.82). Subsequently, Hoffmann describes symptoms of inattention and hyperactivity in Philipp. The boy’s reaction to his father’s cautions: “but Philipp did not listen to what the father

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was saying to him” (Lange et al., 2010, p.243). This behavior represents explicit symptoms of inattention. The DSM-IV describes that the patient “often does not seem to listen when spoken to directly” and “often does not follow through on instructions” (American Psychiatric Association, 1994, p.83). Philip screams with all his might, catches at the cloth, but then that makes matters worse again: “Down upon the ground they fall, glasses, bread, knives forks and all”. The fact that Philipp’s parents become very angry in the story may hint at another criterion which is the behavior of children suffering from ADHD often causes conflict and they also have significant impairment in social functioning (Hoza, 2007, p.101-102).

### **c) Defects of Moral Control**

The Goulstonian Lectures of Sir George Frederic Still in 1902 are by many authors considered to be the scientific starting point of the history of ADHD. British pediatrician Sir George Still found that some affected children could not control their behavior the way a typical child would. Most children for whom the first manifestation of the defect was determined before the age of 7 which currently is a diagnostic criterion of ADHD (U.S. Department of Education, 2003, p.3). Still furthermore recognized that a child’s moral control can be considered morbid only when the child does not meet the conventional standard of moral conduct which is considered and recognized as normal at a certain age within a range of variation (Lange et al., 2010, p.245). The American Psychiatric Association (1994) also states that for a diagnosis of ADHD, symptoms have to be present “to a degree that is maladaptive and inconsistent with developmental level” (p.83). The keynote identified by Still fits an important finding of modern ADHD research which is inattention. Attention deficit is a main symptom of ADHD and,

according to the current DSM-IV-TR criteria, a child with ADHD experience difficulties in sustaining attention in tasks or play activities (American Psychiatric Association, 1994, p.83).

#### **d) Transitions in the Definition of ADHD in APA and DSM**

The APA issued the first “Diagnostic and Statistical Manual of Mental Disorders” (DSM) in 1952. This manual listed all of the recognized mental disorders but this APA did not recognize ADHD in the first edition (Holland & Higuera, 2015, n.p). A second DSM was published in 1968. This edition included and termed the hyperkinetic reaction of childhood as Hyperkinetic Impulse Disorder and was defined with the features of overactivity, restlessness, distractibility, and short attention span. (Lange et al., 2010, p.251).

In the 1970s, the predominant focus on hyperactivity was shifted toward an emphasis on the attention deficit in affected children. The APA released a third edition of the DSM (DSM-III) in 1980. They changed the name of the disorder from Hyperkinetic Impulse Disorder to Attention Deficit Disorder (ADD). Scientists believed hyperactivity was not a common symptom of the disorder. This listing created two subtypes of ADD: i) ADD with hyperactivity, and ii) ADD without hyperactivity (Holland & Higuera, 2015, n.p). In order to further improve the criteria, the revision of the third edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-III-R) in 1987 removed the concept of two subtypes and renamed the disorder Attention Deficit Hyperactivity Disorder (ADHD). The symptoms of inattention, impulsivity, and hyperactivity were combined into a single list of symptoms (Holland & Higuera, 2015, n.p; Lange et al., 2010, p.252).



The APA released the fourth edition of the DSM in 2000. The fourth edition established the three subtypes used by healthcare professionals today: i) Predominantly inattentive type ADHD, ii) Predominantly hyperactive-impulsive type ADHD, and iii) combined type ADHD (Holland & Higuera, 2015, n.p; Lange et al., 2010, p.253).

## **2.2 General Background of ADHD**

ADHD is one of the most frequently recognized psychiatric conditions in children. It includes behaviors that seem to have impairments in the performance of social skills and their regular life which are resulted from their limited attention span, hyperactive, and impulsive behavior. ADHD is also responsible for children's communicative impairments or for their pragmatic language deficiencies (Kim & Kaiser, 2000, p. 155; Redmond, 2004, p.108-109; Stevenson et al., 2000, p.18). Tannock (n.d) opined that the diagnosis is normally based on the definition in the diagnostic statistical manual of mental disorders (DSM). This manual is used by clinicians and psychiatrists. An overview of all ADHD symptoms is presented below (American Psychiatric Association, 1994, p. 83-84; Parigger, 2012, p.16-17):

### **2.2.1 Symptoms of ADHD**

#### **Inattention**

1. Often does not give close attention to details or makes careless mistakes in schoolwork, work, or other activities.
2. Often has trouble keeping attention on tasks or play activities.
3. Often does not seem to listen when spoken to directly.

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4. Often does not follow instructions and fails to finish schoolwork, chores, or duties in the workplace.
5. Often has trouble organizing activities.
6. Often avoids, dislikes, or doesn't want to do things that take a lot of mental effort for a long period of time (such as schoolwork or homework).
7. Often loses things needed for tasks and activities (e.g. toys, school assignments, pencils, books, or tools).
8. Is often easily distracted.
9. Is often forgetful in daily activities.

### **Hyperactivity**

1. Often fidgets with hands or feet or squirms in seat.
2. Often gets up from the seat when remaining in seat is expected.
3. Often runs about or climbs when and where it is not appropriate (adolescents or adults may feel very restless).
4. Often has trouble playing or enjoying leisure activities quietly.
5. Is often "on the go" or often acts as if "driven by a motor".
6. Often talks excessively.

### **Impulsivity**

7. Often blurts out answers before questions have been finished.

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8. Often has trouble waiting for one's turn.

9. Often interrupts or intrudes on others (e.g., butts into conversations or games).

### **2.2.2 Evaluation of ADHD**

#### **Evaluation of Children with ADHD**

Interviewing parents, teachers, and health care professionals can yield important findings regarding the children's evaluation of behavioral, educational, linguistic, and communicative impairments.

##### **a) Behavioral Evaluation**

Behavioral analysis can be considered as a pre-requisite to evaluate the behavioral patterns of the ADHD children. They can fall into any three categories of hyperactive-impulsive, inattentive, or combined type. That is why collecting information about the child's ADHD symptoms from several different sources helps ensure that the information is accurate. Appropriate sources of information include the child's parents, teachers, other diagnosticians such as clinical psychologists, educational psychologists, occupational therapists, speech therapists, and physicians (American Psychiatric Association, 1994, p.80-81) Interviewing these individuals determines the child's specific behavior characteristics, when the behavior began, duration of symptoms, whether the child displays the behavior in various settings, and coexisting conditions. Behavioral evaluation can help the trainers/teachers or therapists decide and design appropriate behavioral techniques that can be applied in a variety of settings including school, home, and the community (U.S Department of Education, 2003, p.6-10).

##### **b) Educational Evaluation**

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An educational evaluation assesses the extent to which a child's symptoms of ADHD impair his or her academic performance at school. The evaluation involves direct observations of the child in the classroom as well as a review of his or her academic productivity which also teaches them to get accustomed to social settings. A child must be evaluated to determine (1) whether he or she has a disability and (2) whether he or she, because of the disability, needs special education and related services. An educational evaluation also includes an assessment of the child's productivity in completing classwork and other academic assignments. A full and individual evaluation is conducted for each child being considered for special education and related services. The child's individualized education program (IEP) team uses the results of the evaluation to determine the educational needs of the child (U.S Department of Education, 2003, p.7-8).

A person must exhibit several characteristics to be clinically diagnosed and evaluated as having ADHD (U.S Department of Education, 2003, p.3):

- i) **Severity:** The behavior in question must occur more frequently in the child than in other children those who belong to the same developmental stage.
- ii) **Early onset:** At least some of the symptoms must have been present prior to age 7.
- iii) **Duration:** The symptoms must have been present for at least 6 months prior to the evaluation.
- iv) **Impact:** The symptoms must have a negative impact on the child's social or academic life.
- v) **Settings:** The symptoms must be present in multiple settings.

### 2.3 What is Pragmatics?

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Pragmatics refers to the social language skills we use in our daily interactions with others. They include what we say, how we say it, our body language and whether it is appropriate according to the given situation. Pragmatic skills are vital for communicating our personal thoughts, ideas, and feelings (Camarata & Gibson, 1999, p.208). All through childhood and adolescence people gain more insight into the realm of language use: they start to understand different functional use of language, the difference between the forms and functions, they more readily apply the use of gestures to enhance understanding, and also start to grasp messages that are implicit and non-literal (e.g. jokes, sarcasm, metaphors, inferences). Moreover, they learn that different conversational partners and different conversational contexts require different forms of language. Pragmatic competence is known by many different names: communicative competence, social language use, socio-linguistic competence, conversational skills (Belinda Hill and Associates Speech Pathologists, 2008, n.p).

Initially, pragmatic competence has been a topic in the anthropology and linguistics research area. Gradually, the topic has also been picked up by philosophers, sociolinguists, and psychologists who used it to describe pragmatic competence as a function of culture and age and in the case of psychology as a function of a developmental disorder. Skills related to pragmatic competence are turn taking skills, nonverbal behaviors, topic-theme management. The use of cohesive ties, inference, and presuppositions are also connected to pragmatic competence (Spekman & Roth, 1982, p.251-252).

Although in clinical practice the term pragmatic competence is well established, it has suffered from a lack of a theoretical framework which makes it hard to provide a consistent definition of pragmatic competence. In an attempt to provide such a theoretical framework,

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Spekman and Roth (1982) identified three broad areas into which individual pragmatic skills can be categorized: communicative intentions, presuppositions, and the social organization of discourse (p.249-250).

- i) Communicative intention skills concern the range of intentions that a person can convey and comprehend as well as the forms that an individual can use to express those intentions.
- ii) Presupposition skills include the ability to assess the listener's informational and social needs and to adapt one's message content and form accordingly. Presupposition skills also include the appropriate use of cohesive devices such as references.
- iii) Social organization of discourse consists of abilities to maintain an effective conversation by turn taking, topic management, and conversational repairs.

## **2.4 Pragmatic Language Difficulties and ADHD**

Children with poor pragmatic skills often misinterpret other's communicative intent and face difficulties in responding appropriately either verbally or non-verbally. Children with ADHD mostly experience impairments in following conversational rules (often 'off topic' or 'one-sided'). They also face difficulties while adapting their communication strategies according to the needs of the listener or situation and that is why, they either provide too little or too much background information and they also fail to adjust the formality level of language according to the person they interact with (e.g. friends, familiar adults, and teachers). They cannot extract salient points from a conversation, story, or information. They cannot even understand non-literal or indirect speech act and they also have difficulties in understanding jokes, idioms,

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metaphors, and sarcasm (resulting in overliteral comprehension). Furthermore, they also have impairments in understanding and using non-verbal communication and also in making and maintaining friendships. They lack variation in intonation and pitch (Belinda Hill and Associates of Speech Therapists, 2008, n.p; The Communication Trust, 2012, p. 60).

Ketelarrs (2010) argued that children with pragmatic language impairment often have difficulties in getting habituated to new situations or activities. These difficulties may occur due to raised anxiety because of poor situational understanding. They have a concrete understanding and struggle to understand higher level aspects of language like inference and they may easily be distracted (p.42-45). Moreover, some children with pragmatic language impairment have good decoding skills and will expect words to be meaningful; therefore they may under perform on the pseudo-words because they are trying to make them into real words (The Communication Trust, 2012, p. 61).

Hence, it can be said that the most problematic language domain for children with ADHD is pragmatics. ADHD children consistently perform less well than typically developing children on pragmatic language uses. They are severely impaired within the domain of social relationships and inappropriate initiations. It is because pragmatic impairments are not restricted to spoken language. A broader definition of pragmatics incorporates behaviors that encompass social, emotional, and communicative aspects of social interaction and impairments include socially impaired behaviors, such as screaming, crying, or throwing tantrums in a social setting (Leonard, Milich & Loch, 2011, n.p). Other symptoms include the inability to listen when spoken to, excessive talking, and frequent interruptions in conversation. The pragmatic difficulties of children with ADHD are also evident in analyses of conversations and narratives

(Rich et al., 2009, p.2-3; Staikova, Gomes, Tartter, McCabe & Halperin, 2013, p.3-4). Kim and Kaiser (2000) found that children with ADHD (6-8 years of age) produced more pragmatically incorrect utterances than control children (p.154).

Parigger (2012) talks about the five most common pragmatic errors and they are:

- i) not answering questions or requests,
- ii) interrupting others,
- iii) failing to give feedback to the conversation partner,
- iv) making use of non-specific vocabulary (i.e. overuse of unspecified referents that results in ambiguity of the message, inappropriate choice of lexical items)
- v) producing utterances which lacked cohesion.

Moreover, they sometimes made errors when ordering the plot components. The study also showed that these children made more misinterpretations, inaccurate substitutions, and ambiguous references (p.25). Therefore, it can be said that the discourse strategies of their conversation are impaired and this in turn is responsible for their incompetent social functioning. Zentall et al. (1983) did a qualitative study and found that children with ADHD (6 years of age) produced significantly more dysfluencies in conversations. To be more specific, they used more pauses, starters and fillers, revised, rephrased, and repeated what they said and completed fewer statements than the control group children (as cited in Parigger, 2012, p.23).

#### **2.4.1 Characteristics of Discourse Analysis and Pragmatics**

The ADHD children lack the characteristics of pragmatics or discourse analysis which study language's relation to the features of contextual background (Cutting, 2008, p.2).

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## **a) Context and Function**

**Context:** Context is the most important feature of pragmatics and discourse analysis. They study the meaning of a word in a context and how the knowledge of the time and place in which the words are uttered can influence the communication and the meaning of the word. Both the pragmatics and discourse analysis give importance on the meaning of the words in interaction and how the speaker's meaning is dependent on the assumption of knowledge which is shared by both the speaker and listener (Cutting, 2008, p.2). However, children with ADHD have difficulties adapting their communication strategies according to the situational demands. As they cannot comprehend the importance of context-sensitiveness of a conversation, they fail to apply their pragmatic knowledge appropriately in a context (Green et al., 2014, p.23).

**Function:** Function is another feature of pragmatics and discourse analysis that refers to the idea of speaker's short-term purposes in speaking and long terms goals in interacting verbally (Cutting, 2008, p.3). As the children with ADHD have severe impairments in adapting their communication according to the task demands, they lack the functional properties of interlocution which are essential in order to meet the goals (Green et al., 2014, p.23)

## **b) Turn taking and Adjacency Pair**

**Turn taking:** Conversation analysis is closely related to discourse analysis. It mainly deals with the data from real conversations and examines the language of that conversation. Turn taking is an integral part of conversation analysis which is absent in the speech of children with ADHD. Turn taking is important to manage the cooperation during the conversation. Usually, only one person talks at a time and the others talk when their turns come (Cutting, 2008, p.27).

Children with ADHD do not follow the turn taking policy. They often blurt out answers before questions have been completed and they often have difficulty awaiting turn (Camarata & Gibson, 1999, p.208-209).

**Adjacency pair:** In a discourse, the utterance of one speaker makes a certain response of the next speaker. This includes question-answer, offer-accept, blame-deny and so on (Cutting, 2008, p.28-29). However, children suffering from ADHD often do not seem to listen even when they are spoken to directly and as a result, many a time they do not reply to the question, request or greeting. The inattention subtype of ADHD is responsible for such type of behavior (Camarata& Gibson, 1999, p. 209; Redmond, 2004, p.110).

### c) Maxims of the Co-operative Principles

Grice formulated a general principle which participants will be expected to observe in a conversation. Under the assumption of this general “Cooperative Principle”, Grice distinguished four categories: Quantity, Quality, Relation and Manner (Cutting, 2008, p.34-35). Among these maxims, there are obvious evidence of the violation of maxims of quantity, relation, and manner in the speech of the ADHD children. The maxim of quantity violates because of their tendency of excessive talking while answering any question out of their hyperactive nature or in some cases, not responding at all (Green et al., 2014, p.17). Again, sometimes they are not sincere or concerned about what they are talking about and most of the time they cannot keep pace with the running conversation because of being inattentive and they end up commenting on something which is not at all related to the topic. Therefore, it can be said that they even have difficulty in following the maxim of relation (Redmond, 2004, p.109). The maxim of manner is also violated



in the conversation of the children with ADHD as they cannot follow an orderly conversation and their speeches are often ambiguous and unclear (Camarata & Gibson, 1999, p.210).

#### **d) Indirect Speech Act**

People use indirect speech act when they want to convey an intended meaning that can only be drawn from the deep structure of the sentence. Indirect speech act can be used in the form of metaphor, sarcasm, irony, jokes, and so on. Moreover, it can also take place when the form and function of sentences do not match; for example, a declarative sentence can be used for requesting or ordering whereas an interrogative sentence can serve the function of an imperative sentence (Cutting, 2008, p.17). Children with ADHD experience difficulties in understanding sarcasm or figurative expressions. It is because they tend to interpret everything according to the literal meaning without paying any attention to the inner meaning which can only be comprehended by paying attention to the in-depth meaning of a sentence which goes beyond the surface level structure of sentences (Green et al., 2014, p.17).

### **2.5 Social Cognition**

Crisp and Turner (2007) opined in their book that social cognition refers to the ability to understand the mind of others. It is essential for successful social interaction. Social cognition consists of encoding as well as interpretation and representation of social cues (p.39). Moreover, Uekerman et al. (2010) argued that social cognition also includes the perception of emotions from faces and prosody, theory of mind (ToM), executive functions (EF), empathy, and humor processing (p.734). According to Dodge's (1986) social information-processing model, social problem-solving requires 4 processing steps: (a) encoding of situational cues, (b) representation and interpretation of the cues, (c) mental search for possible solutions and (d) selection of a

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response. Again, humans are generally excellent at drawing conclusions from a person's facial expression, prosody or body posture upon the person's emotional state or intentions. The contribution of the Prefrontal Cortex (PFC) to social cognition is very important as studies have shown that social cognition impairments can be traced after the PFC injury or disruption of frontal-striatal connectivity (as cited in Uekerman et al., 2010, p.734-735).

### **2.5.1 Social Cognition, ADHD, and PLI**

Deficient processing at each processing stage of the social information-processing model may occur in ADHD and thus lead to disruption of social cognition. In addition to inattention, impulsivity, and hyperactivity, social cognition deficits may also be considered as independent risk factors for interpersonal problems in children with ADHD. Interpersonal understanding can be considered as one of the principal elements of pragmatic language use. Successful social interaction is critically dependent upon our ability to understand other people's mind and their feelings (Nijmeijer et al., 2008, p.23-24; Uekerman et al., 2010, p735-736). At the same time, pragmatic language use also demands spontaneous decision-making ability from the available cues found in a specific context. For successful recognition of social and contextual inputs, people need to apply their theory of mind (ToM) and exercise the executive functions (EF). However, ADHD children lack both the ToM and EF which results in impaired social cognition. Moreover, impaired social cognition is responsible for their pragmatic language impairments (Farahi et al., 20014, p.7-8). In the next few sections, the author sheds light upon the idea of ToM and EF and how they affect the pragmatic language use of children with ADHD.

### **2.6 Theory of Mind (ToM)**

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One of the most important developments in the childhood is social cognition and theory of mind is closely related to the development of social cognition. It is also essential for communicative and linguistic competence. Miller (2006) explained how the theory of mind helps children get along with other people and understand things from someone else's perspective other than their own. He also added that in typical development, theory of mind is so closely connected with the development of communication and language that we often do not recognize their interdependence. In children with developmental disorders, such as ADHD, deficits in the social use of language and/or theory of mind may draw closer attention to the relationships between them (p.142). Therefore, it can be said that theory of mind refers to the idea of understanding different mental states, such as belief, desire, and knowledge that enable people to explain and predict others' behavior and respond accordingly. That is why, people use theory of mind to explain their own behavior to others, by telling others what they think and want, and how they interpret other people's discourse and behavior by considering their thoughts and wants (Korkmaz, 2011, p.102; Miller, 2006, p.142; S.M.M. Farahi, S.M.M.M. Farahi, Abad & Abadi, 2014, p.7).

One of the most effective tasks to examine children's ToM has been introduced by Baron-Cohen, Leslie and Frith (1985) which is the test of the false-belief task. In this test, two dolls were used named Sally and Anne. Sally first placed a marble into her basket. Then she left the scene, and the marble was transferred by Anne and hidden in her box. When Sally returned, the experimenter asked the critical Belief Question: 'Where will Sally look for her marble?' If the children point to the previous location (basket) of the marble, then they pass the Belief Question by appreciating the doll's now false belief. If however, they point to the marble's

current location (box), then they fail the question by not taking into account the doll's belief (p.43-45).

### **2.6.1 Theory of Mind, ADHD, and PLI**

Theory of Mind has special importance for children in developing and sustaining social relationships as functional relations, and adequate social interactions with peers which are fundamental keys to the pragmatic language development of children. ToM emphasizes the importance of social cognition for the establishment of an efficient social interaction. However, as the ADHD children experience significant impairments in social cognition because of PFC, they have lower social skills, impaired pragmatic language use, and dysfunctional social life (Pennington & Ozonoff, 1996, p.52-55).

Children with ADHD fail in some tests of ToM and display impairments involving emotion, face and prosody perception, and reduced empathy. It is likely that it is their impulsivity which is responsible for their attention and behavioral problems which in turn hinder ToM development in children with ADHD (Perner, Kein & Barchfeld, 2002, p.143-145). Farahi et al. (2014) have used the false-belief task to examine the ToM of the children with ADHD and they found that half of the children with ADHD could not give the expected answer in Sally-Anne False Belief Task and their performance was significantly lower than controls who gave the correct answer and their percentage was 86.60% (p.8-9). Moreover, Dodge (1986) found that children with ADHD have a great deal of difficulty in both adopting the perspective of others and evaluating others' intentions (as cited in McGlamery, Ball, Henley & Besozzi, 2007, p.32-33). Perception of affective prosody is frequently assessed by the presentation of sentences representing the emotional categories 'anger', 'happiness', 'fear', 'sadness', 'neutral' and the

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ADHD children fail to recognize the emotions and act accordingly. As a result, they cannot comprehend others emotions, beliefs, thoughts which are integral parts of the daily conversation. This failure in comprehending others' perceptions and thinking of something from a different point of view other than their own hinder their pragmatic language use because they cannot adapt their messages according to the situational or listeners' needs (Green et al., 2014, p.22-23).

## **2.7 Executive Functions**

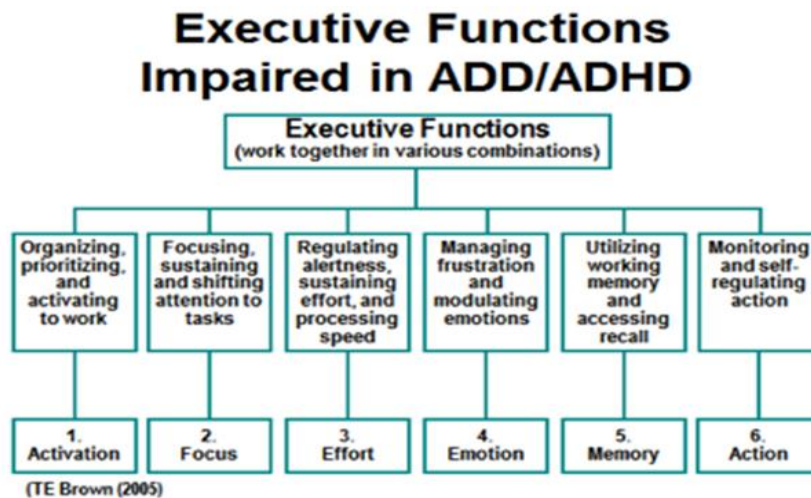
Executive functions refer to high-level cognitive processes which consist of skills, retention, strategic planning, impulse control, predict future, reconstruction, internal language and problem-solving, and cognitive flexibility to conduct everyday activities. Executive functions are needed for many everyday activities, especially non-routinized situations, such as organizing a family activity, meeting a friend downtown, doing the groceries and so on. It plays an important role in tasks that are fluid in nature in the sense those that require novel problem-solving qualities and place minimal demands on previous learning (Farahi et al., 2014, p.8; Parigger, 2012, p.34-35; Purdy, 2014, p.77-78). Executive functions, just like theory of mind, are strongly associated with the pre-frontal cortex of the brain (Pennington & Ozonoff, 1996, p.57-58). Luria (1966) was a prominent neuropsychologist who was intrigued with the brain and its mechanism. He documented the behaviors of individuals who sustained frontal lobe damage while they attempted to solve a problem and noted that they typically lacked a specific plan, did not acknowledge constraints of a problem, and were impulsive- a phenomenon that he described as "impairment in self-regulation" (as cited in Purdy, 2014, p.78). Traditionally, Pennington and Ozonoff (1996) discriminated between five executive functions: inhibition, working memory, planning, cognitive flexibility and non-verbal fluency (p.55).

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Dr. Brown has developed an expanded model to describe the complex cognitive functions impaired in ADHD. This model describes executive functions and the cognitive management system of the human brain that can be recognized in the six clusters of this model of executive functions:



**Figure 3: Brown’s Six Clusters Executive Functions (Source: Brown, 2008, p.13)**

Brown (2008) describes all six clusters according to their contribution in everyday life and how their lack affects the linguistic and behavioral development of the ADHD children. Activation is all about organizing tasks and materials, estimating time, prioritizing tasks, and getting started on work tasks. Patients with ADHD describe chronic difficulty with excessive procrastination. Focus refers to the idea of focusing, sustaining focus, and shifting focus to tasks. They are distracted easily not only by things that are going on around them but also by thoughts in their own minds. Effort covers the notions of regulating alertness, sustaining effort, and processing speed. Many with ADHD report they can perform short-term projects well but have much more difficulty with sustained effort over longer periods of time. Emotion is about managing frustration and modulating emotions. They find it very difficult to get the emotion into perspective, to put it to the back of their mind, and to get on with what they need to do. The

memory includes the capacity of utilizing working memory and accessing recall. They may describe difficulty holding one or several things “on line” while attending to other tasks. In addition, persons with ADHD often complain that they cannot pull out of memory information they have learned when they need it. The action is the capability of monitoring and regulating self-action. Persons with ADHD also report problems in monitoring the context in which they are interacting. They fail to notice when other people are puzzled, or hurt or annoyed by what they have just said or done and thus fail to modify their behavior in response to specific circumstances (p.13-17)

### **2.7.1 Executive Functions, ADHD, and PLI**

Pennington and Ozonoff (1996) reviewed the studies in which EF tasks were administered to children with ADHD, and found that of 60 EF measures used, children with ADHD performed significantly worse on 40 tasks. They concluded that (motor) inhibition is the main executive functioning deficit in ADHD (p.71-75). This inhibition may lead to impulsivity and attention problems (Farahi et al., 2014, p.8). In general, children with higher functioning autism exhibited more profound problems than children with ADHD. However, ADHD children performed worse than typically developing children on measures of inhibition and verbal fluency (Parigger, 2012, p.36-38).

It has been explained by Tannock and Schachar (1996) that the pragmatic language skills are nothing but complex, advanced, and implicate executive functions. These executive functions related to pragmatic language help people plan and deliver their content or utterances in response to others’ queries. As being an integral part of social cognition, EFs require the recognition of the social and informational demands of the situation. These requirements incorporate both the

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formal and functional use of language. Nevertheless, the ADHD children do not have the ability to organize and express their thoughts and ideas through different channels of facial expression, gestures, tone of voice and so on (p.138-145). Moreover, they speak louder, fail to modulate their voice volume, speak for much longer at a stretch with many short pause durations during their talk, but take much longer to respond to the conversational partner. Analysis of children's elicited conversations reveal problems in the use of social communication conventions (e.g., failure to mark topic changes, turn-taking) and in dysfluency (e.g., false starts, hesitations, repetitions) (Tannock, p.49, n.d)

These narrative problems are believed to reflect the well-documented inhibitory control and planning deficits inherent in ADHD (Tannock, p.49, n.d). Executive functions are higher-order cognitive processes which help people make plans and decisions. At the same time, it enables people to self-regulate their behavior. Children with ADHD do not possess these traits and as a result, the absence of working memory deters them from being able to process several pieces of information and pulling out memory streams to keep pace and support their interlocution. Furthermore, as they cannot regulate self-action or self-attention, they end up interrupting conversations and they also cannot pay attention to other meta-linguistic features which are essential components of everyday discourse and conversation (Barkley, 1997, p.73; Brown, 2007, p.15-17).

## **2.8 Social Dysfunctions, ADHD, and PLI**

As children make a transition from home to school and other social settings, the conversation becomes more important for establishing and maintaining social relationships. Leonard et al. (2011) opined in their article that through this transition, children are able to



achieve their pragmatic goals such as asserting, denying, sharing information, bonding with others, and learn forms that help them achieve these goals. Age-appropriate skill in carrying on conversations has been implicated in children's success at making friends and being accepted by peers. Successful communicators are able to share information about themselves and their feelings and opinions, and they also ask questions to elicit information from others (n.p).

Therefore, it can be said that conversations and interactions play a significant role in children's language learning process. Children learn from the environment and peripheral surroundings with the help of the people those who have more advanced knowledge regarding the language than the children. The importance of social interaction has also been emphasized by psychologist Les Vygotsky. He opined that language develops primarily from social interaction. That is why, in a supportive environment where interactions take place easily and frequently, children are able to advance to a higher level of knowledge and performance. He referred to this place as 'Zone of Proximal Development (ZPD)' where children can enhance their linguistic level more than what they can do on their own independently (Lightbown & Spada, 2006, p.20).

This process of learning about the uses and usages of a language also help the children hone their ability to apply their linguistic knowledge according to the needs of the listener and context. By this way, they learn to establish the connection between different components of language and context. The connectionists argue that what children need to learn is essentially available to them in the language they are exposed to in their surroundings. Jeffery Elman and his colleagues explain language acquisition in terms of how children acquire links or 'connections' between words and phrases, and also between words/phrases and the context in which they fit in. They gave emphasis on this idea of Connectionism because it helps the

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children connect the word or phrase and its meaning to a specific event or object (Lightbown & Spada, 2006, p.23-24).

As the ADHD children fail to get engaged in interactions with others, they cannot enjoy the privileges of learning a language and its situational use from others as well as from the surroundings. At the same time, their incompetenc in social interaction and pragmatic language use also hamper their social life as they fail to mingle with their peers, teachers, and relatives. As a result, children with ADHD are more likely to experience disturbed peer relationships, rejection by peers, and failure to attain peer acceptance. Specifically, difficulties in engaging and sustaining attention in tasks or play activities, difficulties in waiting for his or her turn while conversing, and talking and fidgeting excessively may compromise children’s relationships with others. Understanding pragmatic language use difficulties as a function of “at risk” dimensions of ADHD among typically developing children is important in understanding the potential precursors of social skills problems (Hoza, 2007, p.102; Leonard et al., 2011, n.p). Hoza (2007) also said that when interacting with peers, children are able to maintain the topic of conversation, produce more topic continuations, topic invitations, and responses, produce fewer silent pauses, produce adjacency pairs, and become more proficient at controlling the processes of planning, production, and comprehension. These conversational conventions are missing in the interaction of the ADHD children which in turn make them seem significantly less adaptive in their ability to adjust social communication behaviors. Deficiencies in these skills have been documented to result in negative consequences such as being teased, victimized, and rejected by their peers (p. 102-103).

## Chapter 3: Research Methodology

### 3.1 Participants of the Study

**a. Students:** In the research, 12 students from 4 different classes were observed. The researcher observed them during the classes to find out the communication difficulties experienced by them from their conversation with their teachers and peers. The researcher was also allowed in two classes to interact with the children after the classes were over. The age range was from 4 to 10 years old and they were from pre-academic and early intervention classes.

**b. Teachers:** All these teachers were given a basic training on how to deal with the ADHD children or other children with special needs and had basic knowledge of different social and psychological difficulties of these children. The questionnaires were filled up by 30 teachers. The researcher explained the questions to the teachers in Bangla while conducting the survey. There was a separate comment section where teachers could write their comments after filling up the questionnaire.

**c. Clinical psychologists:** 3 clinical psychologists were interviewed. They regularly hold sessions for the ADHD children and they are mainly concerned about the psychological and neurological components of the disorder. They also evaluate students' behavioral development.

**d. Educational psychologist:** 3 educational psychologists were interviewed as well. They usually work in collaboration with the clinical psychologists and teachers/trainers. They measure children's linguistic proficiency and design Individual Education Program (IEP) after consulting with the clinical psychologists and later, hand the IEPs over to the teachers.

### 3.2 Instruments of the Study

**a. Questionnaire for the teachers:** Questionnaires were distributed to 30 teachers. There were 15 questions and they questions have multiple options, such as Always, Sometimes, Never, or Yes, No, and No comment. They had to tick on the answer which they thought appropriate for the question.

**b. Interview of the clinical and educational psychologist:** Interview was conducted for 3 clinical and 3 educational psychologists. There were 2 different sets of the question (with four questions) for them. They had to briefly explain the answers to justify their responses to different questions.

**c. Observation of the children:** In observation, there were 12 students from 4 classes. The children were from early intervention and pre-academic classes. They were taught how to communicate effectively with the help of different techniques, such as shadow teacher and role play.

### 3.3 Method of Analysis

Mixed and triangulation methods were used to find out about the pragmatic language impairments of the children with ADHD. The questionnaire, interview and observation were done for the research. Teachers participated in the questionnaire survey, clinical and educational psychologists took part in the interview, and students were observed in different classes. The responses to the questionnaire were converted into the percentage and the pie charts were made by using Microsoft Excel 2007© to represent the percentage. The questions those were not possible to answer with multiple-choices were incorporated in the interview. The observation was done for the empirical research to find out what are the pragmatic language problems the ADHD children experience in their everyday life.

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### 3.4 Settings of the Study

For the questionnaire survey, the researcher had access to the classrooms and had to do the survey with the questionnaire with multiple teachers at a time. They sat together and the answer. There was no colleague pressure because everyone answered whatever they thought were correct without being influenced by others' response.

Clinical and educational psychologists had their own individual rooms. They gave their interview in their personal office-rooms and they did not have any idea or they even did not want to know what the other psychologists (clinical and educational) had said. Therefore, there was no external influence in the interview as well.

Observations were done in 4 different classes. The researcher was allowed to interact with the students during and after the class. In these classes, there were ADHD children along with other autistic children who also showed the same kind of attention and hyperactive disorders. However, the researcher only observed the students who were only suffering from ADHD.

### 3.5 Limitations of the Study

- There are very few schools for children with special needs.
- The school authorities are not co-operative towards the researchers. They are reluctant to give permissions and needed information for surveys.
- The parents do not want to talk about their children who need special support and care. That is why the researcher could not interview the parents.
- It is difficult to conduct a survey of the teachers because they hardly get any free time to fill a questionnaire or give an interview because they always have to be with the students.

Otherwise, it is very difficult to control them without constant supervision.

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## Chapter 4: Research Findings and Discussion

### 4.1 Interview of the Clinical Psychologists

Three clinical psychologists participated in this interview and there were 4 questions for them (see appendix 1).

#### **1. At which age can children be diagnosed with ADHD? What specific criteria are needed to identify children with ADHD?**

**Clinical psychologist 1:** Children start showing the symptoms of ADHD since the age of 3 or 4 years. Severity is an important factor to consider because during this age almost every child shows some impulsive and inconsistent behavior which are considered temporary as their restlessness gets over with the course of time. However, in the case of ADHD, it is just the opposite as their hyperactive or impulsive behavior worsens as they grow older. Therefore, if parents are careful enough to observe the differences in the behavioral development of their children, it becomes easier to diagnose the children with ADHD at an early stage.

**Clinical psychologist 2:** Usually before the age of 7, symptoms of ADHD start surfacing. Psychologists define a child as an ADHD child only when the symptoms remain in their behavior for at least 6 months. That is why for 6 months children are observed before being clinically termed them as the ADHD children. Though 7 years is a long time to find out the behavioral development of a child, sometimes parents fail to do so. As a result, the child already spends a longer period of time without being treated. Therefore, it becomes really difficult to counsel him or train him to bring the necessary behavioral and social changes when a child comes to the school at the age of 11 or 12.

**Clinical psychologist 3:** At the age of 3 or 4 one can first notice the presence of ADHD in his/her child. The behavior in question must occur more frequently in the child than in other children who belong to the same developmental stage. The symptoms also must be present in multiple settings. The sooner the children can be diagnosed, the better outcome can be expected.

Holland and Higuera (2015) and U.S. Department of Education (2003) also pointed out that prior to age 7 children start showing some symptoms of ADHD. The symptoms must also have been present for at least 6 months prior to the evaluation. Symptoms must be present in multiple settings. Therefore, severity, duration, and impact can be considered as some of the criteria along with symptoms to define the presence of ADHD.

## **2. How do impulsivity and hyperactivity lead to the attention problem of children with ADHD?**

**Clinical psychologist 1:** There is no doubt that most of the children with ADHD suffer from attention problems because of their hyperactive and impulsive behavior. As they are very impatient in nature, they fail to provide required attention needed to complete a task or to get into a conversation. Their hyperactive nature always diverts their mind to different incidents or objects around them and as a result, they cannot respond to the stimulus they are supposed to respond. For example, when a teacher asks a child with ADHD that what he did in the weekend, most of the time either he does not reply at all or he says a few words but never completes the answer because he is busy in seeing what his other classmates are doing.

**Clinical psychologist 2:** Some children suffer from the combined type of ADHD. As a result, their inattention and hyperactivity are somewhat interconnected. Teachers or counselors cannot even make them sit in one place during the class/session because of their restlessness, let

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alone talking to them for a while or giving them a task to complete which will require a certain amount of attention and time span. These children fail to distinguish different inputs they get from the environment and act accordingly. Therefore, they cannot inhibit their urge to respond simultaneously to the sounds or visuals which are present in their surroundings.

**Clinical psychologist 3:** The first thing that anyone can notice while talking to a child with ADHD is that s/he hardly makes any eye contact with the speaker. This very thing proves that these children cannot focus on something or someone for a certain amount of time. It is believed that their mind roams around to different places and they lack the ability to keep the unnecessary thoughts aside and assign their full attention where it is required. Sometimes parents think that their child is not attentive to studies and keeps looking for excuses to play or do something else. However, if the parents will be careful, then they will notice that their child does not show this type of behavior only when he studies but also when he goes out to play in the field or when he watches the TV. Parents fail to find this connection from different contexts because they are watchful only when it comes to their child's study time.

Nijmeijer et al. (2008) and Lange et al. (2010) mentioned different aspects of ADHD in their articles. They talked about the combined type of ADHD which incorporates the features of inattention, hyperactivity, and impulsivity. As the ADHD children are always 'on the go' or 'driven by a motor', their attention gets diverted to other incidents and objects which in turn results in their attention problems.

### **3. What types of maladaptive and inconsistent behavior can be noticed among them?**

**Clinical psychologist 1:** It varies from child to child because everyone does not show same inconsistent behavior. However, it is true that most of them show the inattention problem.

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Therefore, it can be considered as one of the most constant symptoms of ADHD. Along with their inattention, there can be other behavioral problems, such as being too stubborn, restless, showing rigid attitude and so on. In most of the cases, one behavioral problem gives rise to another, for example, if a child is too stubborn, then it becomes very difficult to make him accustomed to school's rules and regulations. Moreover, sometimes they cannot wait for their turn to come during an interaction because restlessness does not allow them to keep quiet and listen to others.

**Clinical psychologist 2:** Undoubtedly, impulsive, hyperactive, and hasty approaches or attitudes are most common among them. One can easily understand that a child with ADHD is different from other children if s/he spends just five to ten minutes with the child. They never make eye contact while talking and most of the time they talk about diverse topics within a single conversation which even does not have any connection between them. They change the subject of conversation very frequently and they cannot even notice the fact that they are not keeping pace with others because they do not pay any attention to them or to the topic. They also abruptly stop a conversation and leave the place. It is impossible for them to sit in one place for a long time and when they are bound to do so in a class or in a social gathering, they start throwing tantrums or keep fidgeting with their hands.

**Clinical psychologist 3:** As the children with ADHD significantly lack adequacy in social functioning, many of their behaviors seem maladaptive according to the social norms. For example, responding before asking a question, failing to follow the formality that varies from context to context etcetera. Inconsistent behavior includes changing topics or repeating and rephrasing the same sentence over and over again. While conversing with a child with ADHD, it

is very rare to get the answer which actually goes with the question. They talk about whatever they want, they do whatever they like and they are never ready to change their behavior according to the situation.

Parigger (2012), and Camarata and Gibson (1999) also mentioned in their articles that these children have trouble in keeping attention and do not give close attention to details. Parigger (2012) has also mentioned that ADHD children's utterances lack cohesion and they make errors while ordering the plot components. Hoffman's characterization of 'Fidgety Phil' also showed the inconsistent and maladaptive behavior of not following instructions, swinging chair backward and forward, fidgeting hands, and throwing tantrums. Moreover, Green et al. (2014) have mentioned in their article that these children fail to adapt their communication or transaction of messages according to the context. This impairment which can be considered as a pragmatic language impairment results from their behavioral inconsistency.

#### **4. Do you think that the absence of theory of mind and the lack of executive functions are responsible for their pragmatic language impairments? If yes, why?**

**Clinical psychologist 1:** Theory of mind is considered one of the most significant components which enable people to acquire the social skills successfully. It is because when people interact in a social setting or anywhere, at home or in an official meeting, theory of mind helps them understand what type of reply is expected in a certain context. Again, executive functions are important to function in our daily life. Both of these components are essential to adapt our behavior according to the necessity of the situation or task. As ADHD children have impaired theory of mind and executive function, it hampers their daily life as well as everyday communication.

**Clinical psychologist 2:** Theory of mind and executive functions are closely related in the sense that first one helps people adapt their message according to the point of views of the speaker whereas the latter one is all about spontaneous decision making. People tailor their content according to the needs of the interlocutors and for this one needs to comprehend others' thoughts, ideas and so on. ADHD children's lacking in theory of mind deters them from finding, comprehending, and conceiving how others' way of thinking is different from them and act accordingly. Furthermore, planning and organizing one's speech need enough attention which is difficult for the ADHD children because of their inattention problem.

**Clinical psychologist 3:** Both the theory of mind and executive functions are responsible for social cognition and social cognition is in control of the pragmatic language use. Working memory is an essential component of executive function. It is a system responsible for information processing and comprehending. As the ADHD children lack executive functions, it hampers their information processing and comprehending ability which retards the social use of language. At the same time, they cannot process others' empathy and perspectives because of the absence of theory of mind.

Farahi et al. (2014) opined in their article that the lack of theory of mind and executive functions are responsible for the ADHD children's impaired social functioning. This is also responsible for their impairments in self-regulation. According to Brown (2008), impaired executive functions can also be blamed for their limited attention span and working memory.

#### **4.2 Interview of the Educational Psychologists**

Three educational psychologists took part in this interview and they answered four questions (see appendix 2).

## **1. What are the different types of pragmatic language difficulties experienced by children with ADHD?**

**Educational psychologist 1:** Children with ADHD do not have difficulties in language acquisition but they have severe impairments in pragmatic language use. It happens due to their impaired social skills and social functioning. They fail to use language appropriately according to the situational needs. The obvious impairment among these children is the difficulty that they face in maintaining the topic while conversing with others. Because of their inattention, they fail to keep track of what they are saying and what the speaker is talking about. Moreover, they never wait for the turn taking to take place and it happens because of their impulsive nature. It is almost impossible for them to wait patiently until their turn comes. As a result, they end up interrupting others' speech.

**Educational psychologist 2:** ADHD children cannot follow the established or standard norms of language use in their daily interactions. The very first problem that teachers and psychologists deal with is that they do not reply when they are asked something. They cannot follow the social greetings, such as giving 'salam' (form of Muslim greeting) to someone or replying/greeting someone back when they are greeted with 'Kemon acho?' (How are you?) or 'hi/hello' It is not that they do not know how to greet someone or give 'salam' to someone but it happens because of their inattention and hyperactivity. That is why when they are given prompts by their teachers or parents to greet someone back, they can do it.

**Educational psychologist 3:** Children with ADHD talk very fast and sometimes it is difficult to understand what they are saying. Sometimes they also add some newly learned words or phrases before everything they say regardless of the situation or questions asked. They keep

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repeating the same thing and some of their verbal expressions do not bear any meaning. They make meaningless sounds during a conversation and keeps interrupting. As they fail to understand speaker's intention, they fail to convey message or information according to the content demands. Moreover, cohesive devices and relevance are also missing in their language use.

These pragmatic impairments of using language were discussed by Belinda Hill and Associates Speech Pathologists (2008) and The Communication Trust (2012). They also opined that these children are often 'off topic' or 'one-sided' during a conversation. Kim and Kaiser's (2000) and Parigger's (2012) studies also showed that ADHD children use pragmatically incorrect utterances and inappropriate choice of lexical items.

## **2. Why do these children face such difficulties with language use in the social sphere?**

**Educational psychologist 1:** Conversing or interacting do not necessarily mean only the use of language but also the use of appropriate expressions, words, and phrases which are suitable in that context. However, ADHD children fail to comprehend the importance of the context-sensitive use of language which is considered as a pre-requisite of pragmatic language impairments. Because of their hyperactive and impulsive behavior, they cannot pay attention to the ongoing interaction and as a result, they speak and comment on something which is not related to the topic. Moreover, people usually infer messages from an interlocution which help them decode pieces of information which have not been told explicitly or directly. It is a very common phenomenon which keeps a conversation going and people need to listen carefully to analyze the untold messages. Children with ADHD also fail to do so and that is why they need to be told everything directly.

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**Educational psychologist 2:** ADHD children have impairments in their pragmatic use of language because they fail to recognize the concept of social cognition. Social cognition is indispensable for social skills or social functioning. ADHD children miss the marks of social cues as well as interpretation and representation of gestures, prosody, and humor processing. All these factors play a significant role in using language in real life situations. Their behavioral and interpersonal problems which result from the hyperactive and impulsive nature also impede their successful pragmatic use of language. Because of the impaired social cognition, and inattentive and hyperactive behavior they cannot follow the communication strategies which are needed to comprehend the message and content of the interlocutors.

**Educational psychologist 3:** Using language in social spheres demand the understanding of metalinguistic cues other than only the language itself. It is not the language that creates problems for the ADHD children but the proper use of language which requires the meaningful interpretation of eye contact, intonation, inference and so on. People presume a lot when it comes to the daily conversation because many a time they share common knowledge or background, and it saves people from explaining every incident, action, and message. However, children with ADHD, as they are inattentive or restless, cannot find the reference or make the connection with their already known facts or pieces of information. Therefore, they need to be explained everything and also they need to be reminded that they know about the incident or information.

Their impairments in prediction, inferencing, and organization of skills have been discussed by Belinda Hill and Associates Speech Pathologists (2008) and The Communication Trust (2012). Green et al.'s (2014) study also showed that ADHD children have difficulties adapting their message or content of conversation according to the situational demands. Camarata and Gibson

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(1999), and Redmond (2004) mentioned in their articles how these children fail to follow an orderly conversation because of their ambiguous and unclear statements and speech. Moreover, Uekermann et al. (2009) in their article also talked about the importance of social cognition and how its absence affects ADHD children's use of language as they fail to understand social cues, gestures, facial expressions etcetera.

### **3. What procedures are usually followed to help them overcome their pragmatic language impairments?**

**Educational psychologist 1:** Procedures which are followed to train to them vary from child to child because it depends on their behavioral or language problems. As their language problems are closely related to their behavior problem, they first go through the process of behavior modification. They are trained to behave according to the situational demands and this training incorporates the use of proper language, replying when questions are asked, greeting people and so on. Therefore, it can be said that through their behavior modification process they also get trained to function successfully in a social setting. These procedures vary for the different level of ADHD children, such as mild, moderate and severe.

**Educational psychologist 2:** The principal difficulties children with ADHD face center around the social skills or social functioning. Therefore, their socializing gets the highest priority during their training and session. Sometimes this training starts from the very basic norm, such as sitting quietly, replying to questions, finishing the lunch/tiffin, keep standing in the same place for five minutes and so on. Along with these types of training, they are also trained for the academic world by attending classes and completing classwork or homework. When there are considerable improvements in their behavior, they are sent to the classes of Academic Readiness.

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To teach them to interact with their peers, teachers, and other people, shadow teachers are assigned. Shadow teachers stand with two students and act as the speaker and listener on behalf of the children. When the speaker teacher asks ‘Kemon acho?’ (How are you?) to the listener teacher, the child with the speaker teacher repeats after her. Then, the listener teacher replies ‘Ami bhalo achi. Tumi kemon acho?’ (I am fine. How are you?) and the child with this teacher also repeats the same after him/her. This is very important to hone their communicative competencies.

**Educational psychologist 3:** There are some in-school types of training to make them accustomed to the social world. However, to make it more authentic and fruitful, teachers take the children out for social skill enhancement program. They go to the markets, shops, food courts and there they have to talk to the salesman to buy a product. They are also taught how to stand in a queue until their turns come to go to the counter or to get into the elevator. There are tasks to test their patience or perseverance which help them become less impulsive and work for an objective to achieve. It can also be considered as positive reinforcement for them as they get a prize if they can wait and successfully complete an activity within that time period.

As children with ADHD face difficulties with the social use of language because of their impaired behavioral development, counselors, teachers, and trainers conduct the comprehensive behavioral evaluation which helps them decide the appropriate techniques and procedures to train the children. Moreover, different procedures of educational evaluation along with behavioral and medical evaluation can bring the necessary changes among these children (U.S. Department of Education, 2003, p.6-7).



#### **4. How can supportive environment help these children to overcome their communicative impairments?**

**Educational psychologist 1:** Reinforcement is the pre-requisite for any desired outcome and in the case of the ADHD children, it is even more crucial. Unlike Autism Spectrum Disorder, most of the time parents fail to distinguish their ADHD children from the mainstream children. As a result, they deny the fact that their children need special care and it affects the children's behavioral and academic development. Even when these children are brought to the schools for special children, their improvements seem to be very poor because they do not get enough guidance and care which are needed when they go back to home. Teachers alone cannot do anything to bring the desired changes. Parents and relatives should also cooperate to support their children and create the environment to ensure children's proper psychological advancement.

**Educational psychologist 2:** There is no doubt that environment has a great impact on children's upbringing and it is even more significant when it comes to the children with special needs. Unfortunately, parents are always scared of being stigmatized by the society because their children do not match the conventional definition of children. As for ADHD, many children remain in the mainstream schools because their parents cannot conceive the notion that there might be some other reasons when their children are inattentive or hyperactive other than being naughty or day-dreamer. Nevertheless, there are also other parents those who are over concerned for their children and do not follow the prescribed routine at home because they do not want to make their children stressed. This creates problems for the trainers/teachers because children spend more time at home than school. For ADHD children it is very important that they get the

required exposure to the social world to communicate with others which sharpen their social skills.

**Educational psychologist 3:** In a supportive environment children with special need and care can move and act without being afraid of being mocked or troubled. This type of environment is very important for their mental growth and behavioral development. In case of the ADHD children, they are already uncomfortable in dealing and interacting with people. Therefore, on the top of it, when they find the environment hostile and inhibiting, they feel even more demotivated to take a step. Parents should not be ashamed if they are blessed with special children. Rather, they should take the initiatives to make this society a better place for those children. Exposure, reinforcement, and opportunities can certainly bring significant changes in their lives.

From their interview, this point has been established that supportive environment is indispensable for the successful behavioral development of ADHD children which in turn contribute to their pragmatic language development. It has been mentioned by Camarata and Gibson (1999), and Hoza (2007) that these children cannot easily mingle with their peers or other people because of their lack in social function. That is why, U.S. Department of Education (2003) mentioned that behavioral techniques should and can be applied in a variety of settings including school, home, and the community.

#### **4.2 Analysis of Questionnaire**

There were 15 questions in the questionnaire (see appendix 3) and 30 teachers filled up the questionnaire.

Q1. Do children with ADHD have difficulties in keeping and sustaining constant attention?

Table 1

Answer Type	No. of Teachers	Percentage (%)
Always	30	100%
Sometimes	0	0
Never	0	0

All the teachers (100%) agreed that ADHD children always have significant impairments in keeping and sustaining attention. This is also one of the components of the triad of symptoms which defines the ADHD children. American Psychiatric Association (1994), Parigger (2012), and Camarata and Gibson (1999) have also mentioned inattention as one of the principal characteristics of the children with ADHD.

Q2. Can significant impairments be noticed in the social functioning/social skills of the children with ADHD?

Table 2

Answer Type	No. of Teachers	Percentage (%)
Always	28	94%
Sometimes	2	6%
Never	0	0

While answering this question, only 2 teachers (6%) said that significant impairments can sometimes be noticed in the social functioning of the ADHD. Remaining 28 teachers (94%) answered that these impairments can always be noticed among children with ADHD.

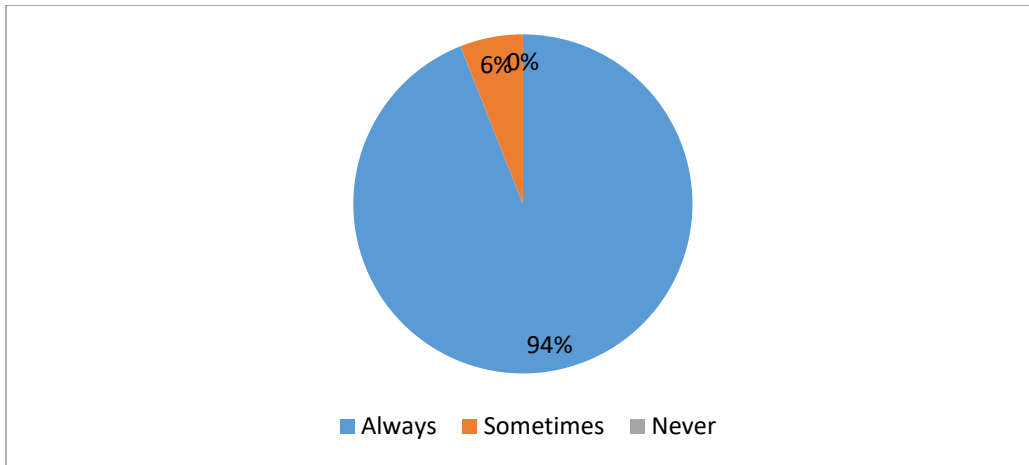


Figure 1: ADHD children’s impairments in social functioning/social skills

Camarta and Gibson (1999), and Redmond (2004) have also agreed on the point that because of the children’s hyperactive and impulsive behavior, they fail to function appropriately or according to the established social norms. This is the reason why they fall short in making friendships or new relationships.

Q3. Do they fail to control their behavior according to the situational needs/demands?

Table 3

Answer Type	No. of Teachers	Percentage (%)
Always	26	87%
Sometimes	4	13%
Never	0	0

The maximum number of teachers picked ‘always’ as their answer. So, 87% teachers believe that children with ADHD always fail to adapt their behavior according to the situational

demands. Only 4 teachers (13%) replied that sometimes they fail to control their behavior. However, not a single teacher opined that they never fail to control their behavior.

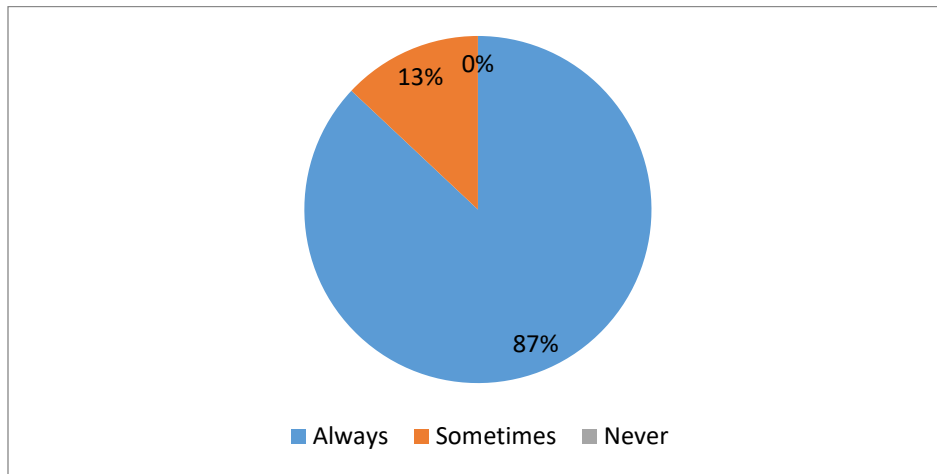


Figure 2: ADHD children's failure in controlling behavior according to the context

Ketelaars (2010) has also opined in his article that these children have difficulties in getting accustomed to new environment or situation because of their lack of situational understanding.

Q4. Are they easily distracted and forgetful in their daily activities?

Table 4

Answer Type	No. of Teachers	Percentage (%)
Always	28	94%
Sometimes	2	6%
Never	0	0

Out of 30 teachers, 28 of them (94%) replied that the children with ADHD are always easily distracted and forgetful while doing their daily activities. Only 2 teachers (6%) replied that it happens sometimes but no one opined that ADHD children are never distracted or forgetful.

This trait has also been mentioned by Parigger (2012) in his article that because of their inattention, they tend to forget important tasks and can easily be distracted by external lights, sounds, and objects.

Q5. Do they suffer from pragmatic deficiencies which result in communicative impairments? (Pragmatics refers to the social language skills we use in our daily interactions)

Table 5

Answer Type	No. of Teachers	Percentage (%)
Always	30	100%
Sometimes	0	0
Never	0	0

All the teachers (100%) agreed on the point that the children with ADHD always experience pragmatic language deficits which result in communication impairments.

Kim and Kaiser (2000) also found in their study that these children use more pragmatically incorrect and inappropriate utterances than other children.

Q6. Do they lack the conversational conventions (e.g. politeness, turn taking, levels of formality)?

Table 6

Answer Type	No. of Teachers	Percentage (%)
Always	27	90%
Sometimes	3	10%

Never	0	0
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Maximum teachers (90%) opined that these ADHD children always lack the conversational conventions of turn taking, having adjacency pair, following maxims in their conversation whereas 3 of them (10%) opined that these children sometimes experience such impairments.

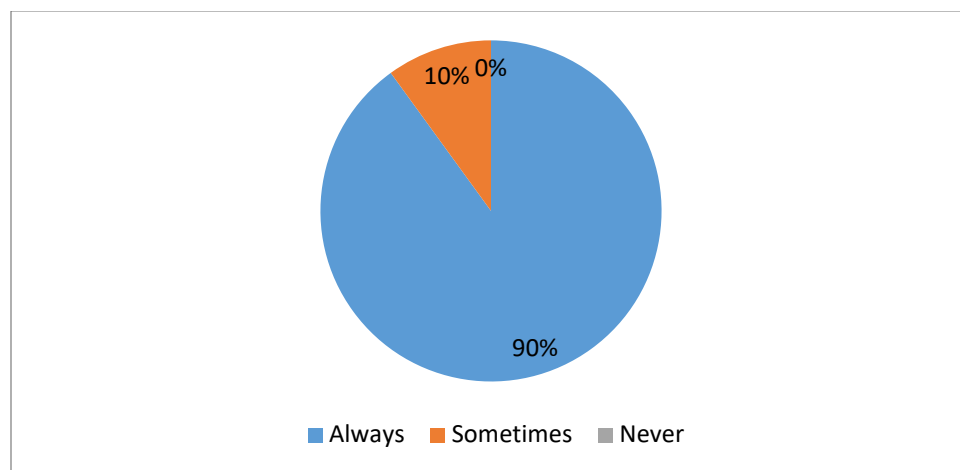


Figure 3: ADHD children's failure in following conversational conventions

Parigger (2012), and Camarata and Gibson (1999) mentioned in their articles about ADHD children's tendency of interrupting others or blurting out the answer before asking the question. Redmond (2004) and Green et al. (2014) talked about the absence of adjacency pair and maxims of quality, relation, and manner in their respective articles.

Q7. Do they frequently revise, rephrase, and repeat what they say?

Table 7

Answer Type	No. of Teachers	Percentage (%)
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Yes	23	77%
No	5	17%
No comment	2	6%

Mixed responses were retrieved from this question as 23 teachers (77%) agreed that these ADHD children frequently revise, rephrase, and repeat what they say. On the other hand, 5 teachers (17%) opined that ADHD children do not do this and other 2 teachers (6%) did not comment at all. In the comment section the teachers who chose ‘no’ as their answer mentioned that either ADHD children respond when they can pay attention or they simply do not respond at all.

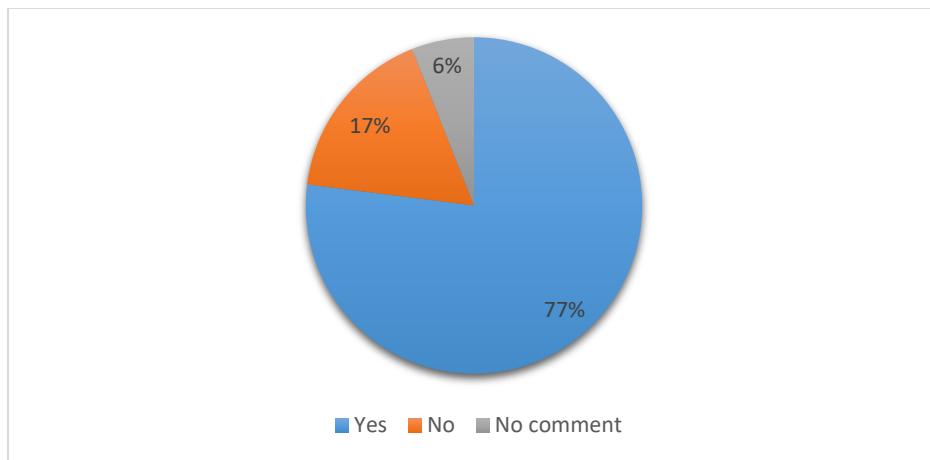


Figure 4: ADHD children's tendency of repeating and rephrasing utterances

Parigger (2012) mentioned Zentall et al.'s (1983) study where they found that ADHD children use more starters and fillers, and repeated and rephrased utterances than other children.

Q8. Can they tailor their content or message according to the informational needs of the listeners?

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Table 8

Answer Type	No. of Teachers	Percentage (%)
Always	0	0
Sometimes	2	6%
Never	28	94%

In total, 28 teachers (94%) thought that ADHD children can never tailor the content or message of their conversation according to the needs of the listener. Only 2 teachers (6%) opined that sometimes they can do it but no one opined that ADHD children can always do that.

As a result, the maxim of quantity is violated in their conversation as it is also put by Redmond (2014) in his article. McGlamery et al. (2007) also argued in their article that as these children lack the theory of mind and fail to recognize others' intentions and perceptions, they cannot modify or revise message according to the listeners' demands.

Q9. Can they be cohesive and relevant in their speech while they converse with others?

Table 9

Answer Type	No. of Teachers	Percentage (%)
Always	0	0
Sometimes	0	0
Never	30	100%

All the teachers (100%) opined that ADHD children can never be cohesive and relevant while conversing with others. Because of their impulsivity and hyperactivity, they cannot be consistent during interlocution.

Redmond (2004) has also argued in his article that these children violate the maxim of relation in the conversation. The Communication Trust (2012) and Belinda Hill and Associates Speech Pathologists (2008) also mentioned that one of the pragmatic language impairments faced by the ADHD children is that they are often ‘off topic’ or ‘one-sided’.

Q10. Do they have problems in understanding the non-literal sequences (e.g. metaphor, sarcasm, irony, mockery)?

Table 10

Answer Type	No. of Teachers	Percentage (%)
Always	24	80%
Sometimes	4	14%
Never	2	6%

This question also yields mixed responses from the teachers. The highest number of teachers (80%) opined that ADHD children always face problems in understanding non-literal sequences. On the contrary, 14% teachers thought that ADHD children sometimes face difficulties in comprehending metaphor, jokes whereas only 6% opined that these children never face any such problem.

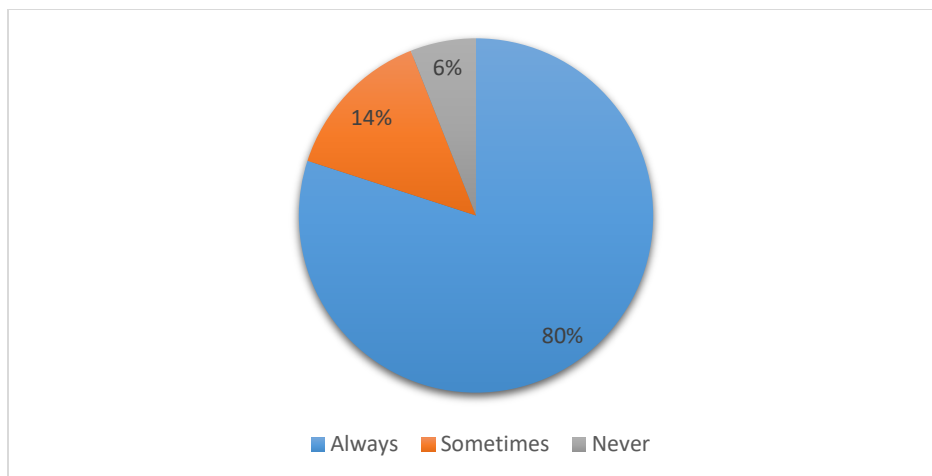


Figure 5: ADHD children's failure in understanding non-literal sequences

Belinda Hill and Associates Speech Pathologists (2008) and Green et al. (2014) have discussed in their articles that one of the components of their pragmatic language impairments is that they cannot comprehend any non-literal sequences or indirect speech act.

Q11. Does every child with ADHD lack 'Theory of Mind'? (It refers to the idea of understanding different mental states such as belief, desire and knowledge that enables us to explain and predict others' behavior)

Table 11

Answer Type	No. of Teachers	Percentage (%)
Yes	26	87%
No	4	13%
No comment	0	0

While answering this question, 26 teachers (87%) picked the option of ‘yes’ and they believe that ADHD children do not have theory of mind. However, 4 teachers (13%) picked ‘no’ as they think that ADHD children do not lack theory of mind.

Nijmeijer et al. (2008) and Farahi et al. (2014) have argued in their article that ADHD children lack theory of mind because of the uneven development of their pre-frontal cortex.

Q12. Do you think that the absence of ‘Theory of Mind’ is responsible for the pragmatic language impairments of children with ADHD?

Table 12

Answer Type	No. of Teachers	Percentage (%)
Always	21	70%
Sometimes	9	30%
Never	0	0

For this question, 21 teachers (70%) opined that absence of theory of mind is always responsible for the pragmatic language impairments whereas 9 teachers (30%) replied that it is sometimes responsible for the impairments. According to the latter group as they mentioned it in the comment section that many a time there are other environmental factors as well which can hinder these children’s pragmatic language development.

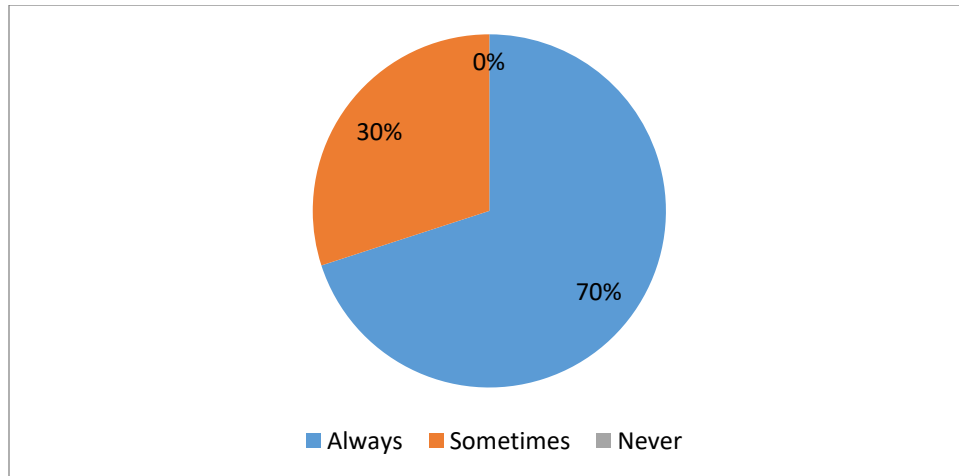


Figure 6: ADHD children's pragmatic language impairments because of the lack of ToM

Uekermann et al. (2010) showed in their articles that how the idea of social cognition and theory of mind are correlated which in turn enable people to function properly within the periphery of a society. This social functioning also includes the use of language which is decided and defined by the context. Thus, because of the absence of theory of mind, ADHD children fail to perceive the notion of language use according to the social understanding.

Q13. Can they come up with a spontaneous solution of any problem?

Table 13

Answer Type	No. of Teachers	Percentage (%)
Always	0	0
Sometimes	0	0
Never	30	100%

All the teachers (100%) agreed upon the point that ADHD children can never come up with a spontaneous solution of any problem.

As Pennington and Ozonoff (1996) pointed out in their article that executive functions help people consider the current situation, comparing different variables, and finally coming up with a solution. This skill is very important in daily life and conversation where people face non-routinized and novel contexts and incidents. However, as the ADHD children lack executive functions, they fail to do so.

Q14. Do they face difficulties in making decisions based on the perception of what might happen in future?

Table 14

Answer Type	No. of Teachers	Percentage (%)
Always	27	90%
Sometimes	3	10%
Never	0	0

While answering the question, 27 teachers (70%) opined that ADHD children always face difficulties in making a decision based on the perceptions that what will happen in future. Only 3 teachers (30%) replied that the ADHD children sometimes face such difficulties.

This is another feature of executive functions where people tend to make some decisions in present after considering what consequences the action might have in future. Brown (2008) also argued that ADHD children cannot do it because of the lack of executive functions which deters them from perceiving the futuristic outcome of any action.

Q15. Can they manage or modulate emotion and get on what they need to do?

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Table 15

Answer Type	No. of Teachers	Percentage (%)
Always	0	0
Sometimes	0	0
Never	30	100%

All the teachers (100%) agreed upon this point that ADHD children can never control their emotion and carry on what they are supposed to do. Their hyperactive and impulsive behavior restrain them from working on their emotion and take logical steps to move forward and complete the task.

Brown (2008) has also argued that managing and modulating emotions is one of the key features of his executive functions framework which is absent among these children.

### 4.3 Analysis of Class Observation

Observed children were from pre-academic and early intervention classes. The checklist (see appendix 4) was followed during the class observation. These classes were mainly for the children those who had significant impairments in language and communication. Different activities were used to teach communicative skills to the students.

#### a) Behavioral Impairments

Children were running around the whole class and sometimes they also left the class to go outside. Teachers were telling them to sit properly but their behavior was showing that they were not listening to their teachers. One of the teachers said later that anyone, teacher or other school staffs, is strictly prohibited from entering the classes as these children easily get distracted by the external stimulus. One of the students started having tiffin in the middle of the class and when his tiffin box was taken from him, he started rolling on the floor and shouting. As the observed children were from the early intervention classes, it was really very difficult to control them. They were dragging the chairs, putting the books on the floor, kicking things and so on.

#### **b) Pragmatic Language Impairments**

As the ADHD children do not have language impairments, the early intervention classes for them were all about teaching them how to communicate in different settings. The researcher was also allowed to interact with the students. One of the common tendencies among them was not making eye contact with the speaker. They always looked at the other direction and talked to the speaker. Two of them kept repeating the same sentences for the whole 40 minutes of the class. One of them was saying ‘Oju koresi to’ (I have performed the wudu/ablution) which did not have any connection with the context. He used this same sentence before his every response/answer. The other student was saying ‘Ammu apel dibe’ (Mother will give apple) which was also another decontextualize use of the expression. The teacher knew the reason behind this expression. She explained that three days before she told the student that if he would listen to her, then his mother would give him an apple (as positive reinforcement because his favorite fruit is apple). Therefore, he was repeating the sentence that he heard a few days back from his teacher.



When they were asked other questions, they replied only to those questions which answers they knew beforehand. Otherwise, they repeated the question exactly in the same manner. For example, when the researcher asked one of the children ‘Tomar t-shirt ta to onek shundor. Ke diyeche aita tomake?’ (Your t-shirt is very nice. Who gave it to you?), he repeated the question ‘Ke diyeche aita tomake?’ (Who gave it to you?) as many times as he was asked the same question. The teacher explained later that when they do not know the answer to any question, they always repeat the question. They cannot come up with answers on their own spontaneously. They reply only when the answer is known to them, for example, what is their name, parent’s name etcetera.

They did not follow any topic while they were practicing conversing with their teachers. For example, teacher asked one of them what he did in the last night and he replied when his father bought him a Spiderman costume. They kept talking without paying any heed to the teacher that what s/he was talking about. Another striking point was that they suddenly said something out of nowhere which was actually the answer of a question or inquiry which was asked previously and they did not reply then. They could not follow instructions while role playing with their peers. The tendency of interrupting was also very common among them and the adjacency pair was absent. When the researcher greeted the students by saying ‘Hello’ and ‘Tumi kemon acho?’ (How are you?), none of them greeted her back. Even when the teachers asked the students to give ‘salam’ to the researcher, only one student said ‘salam’ but not ‘Assalamu Alaikum’ as she failed to comprehend the instruction and she only repeated what her teacher said.

### **c) Classroom Activities**

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Shadow teacher and role play were used to teach the children how to interact and behave according to the needs of the specific context.

**i) Shadow teacher:** Shadow teacher was appointed for the students those who were at the very early stage of ADHD and those who did not know how to reply when someone is greeted or asked a question. Therefore, it can be said that shadow teacher helps them comprehend the idea of interlocution. Two teachers stood behind their students and asked questions and talked to one another. Students repeated after the teachers. They were not only taught the language of conversation but also the gestures, postures, intonation etcetera. Teachers taught them how to smile back to someone or how to greet others with a smile.

**ii) Role-play:** Children took different roles along with their shadow teachers, such as son-mother, niece-aunty, friend-friend, student-teacher, and so on. Initially, the role plays were conducted with the help of teachers and when students learned enough to take care of the given situation, they were allowed to do it on their own. First, they practiced different roles which are common in everyday life and which has its setting at home, in school. Later, the roles were set to an advanced level of outdoor social settings, such as marketplace, shop, food court, dance class, mosque and so on. Role plays were important to teach them how they can successfully function in social settings. They were taught how to stand in a queue, ask for changes, cancelling or changing an order politely. Food stall (table) with different food items were set in one of the classrooms where students went one after another and had to wait patiently to get their desired item of the food.

## Chapter 5: Conclusion and Recommendations

### 5.1 Conclusion

From the above discussion, it can be concluded that children with ADHD experience severe communication difficulties in their everyday life. They have impairments in both receptive and expressive language. Receptive language skill is the ability to understand or comprehend the spoken language. Expressive language skill is the ability to communicate thoughts, needs, or wants. As the ADHD children have deficiencies in these skills, they are not able to communicate at the same level or with the same complexity as their interlocutor (Leonard et al., 2011, n.p). ADHD children's behavioral impairments are also responsible for their communicative impairments. Their inattentive, hyperactive, and impulsive behavior deter them from engaging their attention during a conversation. As a result, they fail to comprehend the linguistic and social cues which can help them in processing and comprehending others' message and managing and expressing their own utterances. These abilities are crucial for pragmatic language use because communication in social interaction is part of the pragmatic aspect of language. Moreover, as the pragmatic aspect of language is connected to the social interaction and social functioning, the notion of social cognition is an indispensable component of the social use of language. Theory of mind and executive functions enable people to recognize the social cues and contextual demands while using language. However, because of their impaired social cognition, theory of mind, and executive functions, they cannot distinguish different variables used in the pragmatic domain of language (Uekerman, 2010, p.734-738). Moreover, Prutting and Kirchner (1987) argued that this domain of language is not restricted to spoken language and the linguistic components of syntax, semantics, morphology and so on. It also incorporates topic

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initiation, topic maintenance, turn taking, use of context, interruptions, the amount of talk, eye contact, facial expression, physical proximity, and gestures (p.111). From the discussions and research, it has been proved that children with ADHD cannot follow the conversation conventions of communication which define the pragmatic or social use of language. Therefore, it can be said that children suffering from ADHD experience pragmatic language deficits in their everyday communication which also results in their social dysfunctioning.

## 5.2 Recommendations

- The inclusive program should be introduced in every school. It will benefit the special children by allowing them to mingle with the mainstream children. There should be provisions for children with special needs in every educational institution so that they are not left behind. They also have the right to enjoy the privileges which are available to the conventional children.
- Teachers and trainers should be trained properly. Teaching the special children is different than teaching the mainstream children. That is why teachers training institutions should also be established where teachers will be trained to teach children with special needs.
- The school and institutional authorities should be cooperative with the researchers. Studies and researches will help find out the necessary steps which are required for the development of this sector.
- There should be more institutions run and funded by the government, and a certain amount of money should be allocated for them in the budget. Most of the schools are run by private organizations. As a result, the tuition fee is really high and in some cases, it is

impossible for the middle class or low-income group people to get their ADHD or special children admitted to these schools.

- The mass people should be made aware of ADHD through the TV ads, seminars, campaign and so on. Unlike autism, many people do not have clear conception regarding ADHD. Even parents sometimes fail to recognize the special needs of their children and as a result, these children end up and get stuck in the conventional schools which hinders their further social, behavioral, linguistic, and academic development.

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## Appendix 1

### Interview Questions: Clinical Psychologists

1. At which age can children be diagnosed with ADHD? What specific criteria are needed to identify children with ADHD?
2. How do impulsivity and hyperactivity lead to the attention problem of the children with ADHD?
3. What types of maladaptive and inconsistent behavior can be noticed among them?
4. Do you think that the absence of theory of mind and the lack of executive functions are responsible for their pragmatic language impairments? If yes, why?

## Appendix 2

### Interview Questions: Educational Psychologists

1. What are the different types of pragmatic language difficulties experienced by children with ADHD?
2. Why do these children face such difficulties with language use in social sphere?
3. What procedures are usually followed to help them overcome their pragmatic language impairments?
4. How can supportive environment help these children to overcome their communicative impairments?

### Appendix 3

**Questionnaire**

**A Study of the Pragmatic Language Impairments of the Children with ADHD**

**Name:**

**Institution's name:**

<b>1.</b>	Do children with ADHD have difficulties in keeping and sustaining constant attention?	Always	Sometimes	Never
<b>2.</b>	Can significant impairments be noticed in the social functioning/social skills of the children with ADHD?	Always	Sometimes	Never
<b>3.</b>	Do they fail to control their behavior according to the situational needs/demands?	Always	Sometimes	Never
<b>4.</b>	Are they easily distracted and forgetful in their daily activities?	Always	Sometimes	Never
<b>5.</b>	Do they suffer from pragmatic deficiencies which results in communicative impairments? (Pragmatics refers to the social language skills we use in our daily interactions)	Always	Sometimes	Never
<b>6.</b>	Do they lack the conversational conventions (e.g. politeness, turn taking, levels of formality)?	Always	Sometimes	Never
<b>7.</b>	Do they revise, rephrase, and repeat what they say?	Yes	No	No comment
<b>8.</b>	Can they tailor their content or message according to the informational needs of the listeners?	Always	Sometimes	Never
<b>9.</b>	Can they be cohesive and relevant in their speech while they converse with others?	Always	Sometimes	Never
<b>10.</b>	Do they face problems in understanding the non-literal sequences (e.g. metaphor, joke, ...)	Always	Sometimes	Never

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	irony, mockery)?			
11.	Does every child with ADHD lack ‘Theory of Mind’? (It refers to the idea of understanding different mental states-such as belief, desire and knowledge-that enables us to explain and predict others’ behavior)	Yes	No	No comment
12.	Do you think that the absence of ‘Theory of Mind’ is responsible for the pragmatic language impairments of the children with ADHD?	Always	Sometimes	Never
13.	Can they come up with spontaneous solution of any problem?	Always	Sometimes	Never
14.	Do they face difficulties in making decisions based on the perception of what might happen in future?	Always	Sometimes	Never
15.	Can they manage or modulate emotion and get on what they need to do?	Always	Sometimes	Never

### Appendix 3

#### Comments Section

**(If you have any further comment regarding the questions of the above questionnaire, please write it down mentioning the question no.)**

## Appendix 4

### Checklist of the Observation

1. What types of behavioral impairments can be noticed among children with ADHD?
2. What are the different types of pragmatic language impairments experienced by them?
3. How do they respond or interact with others and among themselves?
4. What techniques and activities are used in the class to enhance their communicative and interpersonal skills?
5. How are these techniques and activities executed in the class?

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