CHAPTER TWO  REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

This chapter begins with a description of normal communication, which is necessary to understand communication disorders. It moves on to describe autism, a communication disorder and the various theories that explain the presence of communication disorder in children with autism. Then it touches on the communication deficits and the communicative acts of autistic children. The chapter concludes by describing the ABA method which is being used to teach communicational skills to autistic children.

2.2 COMMUNICATION

Comprehension of normal communication is necessary to facilitate the understanding of communication disorders. Although, the terms communication and language are frequently used interchangeably, it would be more appropriate to say that language is a tool used for verbal communication. Since it is more widely used, it takes precedence over the non-verbal communication.

In order to become a competent language user, a child has to learn about the linguistic code for the form of representing language content and learn to recognise different kinds of circumstances that require different kinds of language use. According to Bloom & Lahey (1978) content, form and use are the three main components of language. This three-dimensional view of language is the basis for understanding the development of language and for language disorders.

Content is made up of three primary objectives: object knowledge; relationship between objects and relationship between events. The content of language is its meaning or semantics, the linguistic representation of what people know about the world of
objects, the ways in which objects relate to themselves and to one another can be represented by words or signs and by relationship between words and signs. This linguistic representation depends on a code, which gives language its form.

Form can be described in terms of the units of sound or phonology; the units of meaning that are words or morphology; and the ways in which the units of meaning are combined with one another or syntax. There are different levels of formal description and the forms that are used for representing information by the language can be described in alternative ways. Form in language is the means for connecting sound with meaning. It consists of an inventory of linguistic units and a system of rules for their combination. Form of the utterance is determined by information about the purpose of the utterance and the context of the utterance.

Use consists of a selection of behaviours, which are socially and cognitively determined, depending on the goals of the speaker and the context of the situation. There are two aspects of use. One is concerned with the effect of the message on the relationship between the speaker and the context; whereas, the other aspect is concerned with the rules for deciding which form of the message will serve the function of the message. Thus, the relationship among the speaker, the listener and the context is dynamic.

Language is the necessary intergration of content, form and use. The intergration is necessary for understanding and giving messages. Disruptions which occur within one or among the components of language causes language disorder.

2.3 COMMUNICATION DISORDERS

According to Bloom & Lahey, children with verbal communication disorder,

they may have a problem in formulating ideas or conceptualizing information about the world; they may have difficulty in learning a code for representing what they know about the world; they may
be able to learn a code that does not match the conventional system used in the linguistic community; they may have learned something about the world and something about the conventional code, but are unable to use the code in speaking or understanding in certain contexts for certain purposes or they may develop ideas of the conventional code, and the use of the code, but later than their peers, or with dysfunctions in the interactions among the components".

(Bloom & Lahey, 1978:292)

Verbal communication disorder or language disorder can occur in three instances, firstly in the form, content or use independently; secondly when the interactions of form, content and use are distorted; thirdly when form, content and use exist separately, as clearly shown in the diagrams obtained from Bloom & Lahey (1978) in the following sections.

2.3.1 DISORDERS OF FORM

In this case, ideas about the world of objects and events and abilities to communicate these ideas are more intact than the knowledge of the linguistic system for representing and communicating these ideas.

Figure: 2.3.1 Disruption in the Form of Language
2.3.2 DISORDERS OF CONTENT

Children who do not learn language in the normal manner seem to be weakest in conceptual development that is in the development of ideas of the world that make up the content of language. Sometimes, the development of form and use may be more advanced than the interactions with content. This is clearly depicted in the diagram below.

Figure: 2.3.2 Disruption in the Content of Language

2.3.3 DISORDERS OF USE

Content and form interactions are more intact than use. The difficulty lies in using the system for communication. Tendency to talk about something out of context, ramble repetitively or tangentially associate ideas without regard for the listener is usually present.

Figure: 2.3.3 Disruption in the Use of Language
2.3.4 DISTORTED INTERACTIONS OF CONTEXT, FORM AND USE

The forms used to communicate ideas are inappropriate both to the context and to the meaning that is relevant to the content or context of the situation. There is some developmental within each component but the interactions among the components are distorted.

Figure: 2.3.4 Disruption in the interaction among components

2.3.5 SEPARATION OF CONTENT, FORM AND USE

The components do not interact with one another thus the use of stereotypic speech which has little or no relation to the situations.

Figure: 2.3.5 The separate components without Interaction
2.4 COMMUNICATION DISORDERS AND AUTISM

Impairment in language and communication is evidenced in children with autism. The significance of this impairment is reflected in the current conceptualizations of the autistic syndrome, whereby language and communicative impairments are included as primary diagnostic features.

The communication and language impairment of children with autism range from failure to develop any functional speech to the development of idiosyncratic use of spontaneous speech and language. Approximately 50% of children with autism remain nonverbal. A great deal of research has been conducted on autism but the knowledge base is still small due to two factors. One, autism is not a unitary disorder caused by a single factor and two; autism may coexist with other disorders.

However, the biological theory of autism continues to be supported, year after year. This theory states that in autism there are one or several abnormalities in the brain which are caused by one or several biological factors such as genes, viral infections or complications during pregnancy or birth. When a critical part of the brain is damaged, the three key abnormal behaviours that characterize autism, which are abnormal social relationships and development; failure to develop normal communication and restricted and repetitive interests and activities may be exhibited.

Baron-Cohen & Bolton, 1994 have proposed a 'Final Common Pathway' as shown in figure 2.4.1, to show the existence of unknown causes, which can damage the brain. Exactly which part of the brain is responsible for autism or where it is located is still a scientific project, but evidence that brain abnormalities exist in autism is no longer seriously doubted.
Figure: 2.4.1 The Final Common Pathway

Based on the fact that autism is caused by an abnormality in the brain, researchers have come up with various approaches to explain the language and communicative deficits in children with autism.

2.4.1 THE PSYCHOLOGICAL-COGNITIVE APPROACH

This approach suggests that the various types of deviant language behaviours exhibited by autistic children extend beyond the linguistic area to more generalized cognitive difficulties. This, according to the proponents of this approach explains the different ways in which autistic children process and organise information. Language disorder in autistic children is attributed to the productive result of limited and less flexible processing abilities. Others researchers such as, Ornitz and Ritvo(1968) support the neurological perspective.
2.4.2. THE NEUROLOGICAL PERSPECTIVE

Ornitz and Ritvo (1968) suggest that the underlying cause of the autistic children's unusual behaviour is neurologically based as shown in the flow chart below.

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heightened awareness of sensory stimuli
  ↓
causes
  ↓
defective perceptual apparatus
  ↓
causes
  ↓
distorted perception of reality
  ↓
causes
  ↓
inability to establish appropriate object relations and reality contact
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Figure 2.4.2 Neurological Perspective

According to Dalgleish, in Tiegerman (1993) autistic children exhibited difficulties in integration of sensory functioning and sequencing processes during a research carried out on information processing in the same children. Thus, they attributed difficulties in acquiring communicative and linguistic skills to the child's problem in sensory integration. Lovaas (1977) conducted conditioning experiments to provide information on integration functioning. They conditioned a group of autistic children to respond to complex stimulus involving simultaneous presentation of auditory, tactile and vital elements. The autistic subjects responded to only one of the cues at any one time. They focused all their senses on only one of the components indicating that autistic children have difficulties in learning situations requiring shifts in stimulus control.

Lovaas (1977) referred to this pattern of responding as stimulus overselectivity or overselective attention.

In order to communicate, a person has to respond to a few senses at any one time or choose to pay attention to one particular sense but at the same time be aware of the
presence of other stimulus. However, as autistic children are unable to do this they exhibit problems in communicative skills when they respond to the wrong stimulus and thus communicate out of social context.

Churchil in Tiegerman (1993) hypothesized that psychotic children with a psychiatric diagnosis of autism have a central language disorder.

2.4.3 CENTRAL LANGUAGE DISORDER

The autistic children involved in Churchil's experimental language investigation also indicated preference for one stimulus modality. Some of the autistic children exhibited difficulty in responding to two familiar elements simultaneously whereas, all the children displayed difficulties in generalizing, classifying, cross-referencing, and syntactic/linguistic manipulating. According to Churchil, each autistic child was unique in that each child generated a different profile of linguistic abilities and disabilities.

Baltaxe et al., and Wetherby et al., state in Tiegerman et al., (1993) that a central language disorder may be the cause of autistic behaviour. Their research also discovered that children with autism use bizarre communicative and interactional strategies in the language learning processes. According to Chase in Tiegerman et. al.,(1993), autistic children,

"often learn language without any appreciation of the nonlinguistic environment.sources of learning are frequently impersonal, such as television."

(Tiegermanet.al.,1993:45)

Wetherby and Gaines (1982) state that in the case of autistic children there was no similarity in the level of cognitive and linguistic ability, moreover cognitive abilities exceeded linguistic abilities in several areas. According to them, the relationship between cognition and language is dynamic, not static; the interdependence varies over time with development. Cognitive development may be necessary for intentional communication
but,

"...cognitive development may not be sufficient for more advanced language development"

(Wetherby & Gaines, 1982:65)

2.4.4. PERVERSIVE DEVELOPMENTAL DISORDER

Loveland et al. (1988) categorize autism as a pervasive developmental disorder. According to them, the language and gestures of autistic children are pragmatically deficient but can be communicative despite the unconventional forms used. They also discovered that children with autism have difficulty initiating interaction, introducing a topic and taking turns in an interaction but have less problems responding to another person's directions. The presence of asynchrony in development between content areas (pragmatic and semantic) and structural areas (syntax and phonology) were suggested to be the cause for the autistic children's pragmatic interactional deficits.

2.4.5 THEORY OF MIND

Perne et al. (1989) attribute the communicative disability in autistic children to the absence of "theory of mind." Normally developing children posses two types of representations, primary representation of things and events in the world, and meta representations, people's mental states to those events and objects. Theory of mind states that autistic children lack meta representations, they are incapable of understanding other peoples mental states. This is evidenced in the Sally-Ann and Smarties false belief tasks. Autistic children are also unable to perform tasks such as picture sequencing which involves mental states. They are unable to mind-read (Baron-Cohen & Bolton, 1994).

2.5 LANGUAGE AND COMMUNICATIVE DEFICITS

A child starts to communicate from the time it is born. Even though it is unable to
communicate it relays its communicative intent by way of gaze, vocal, gestures or by combining these behaviours into complex patterns and sequences. But, an autistic child does not exhibit any of these signals. Even at the age of thirty months, its communicative behaviour is not as good as a normally developing six month old. Sometimes, a child exhibits communicative behaviour during the first 9 to 12 months, but due to some neurological deficits, the behaviour deteriorates. What are the deficits and why they occur is still beyond current diagnostic skills.

Children with autism show impairment in all three components of language: form, content and use.

2.5.1 IMPAIRMENT IN FORM

Autistic children show specific impairment in the subsystems of form such as phonetics, vocabulary or morphology, syntax and semantics. An abnormality in phonetics is the odd intonation. Children with autism usually sound monotonous and mechanical. Baron-Cohen and Bolton (1994) concur that odd intonation is a reason why children with autism fail to use language to communicate feelings and interest. Autistic children also experience some delay in acquiring vocabulary and syntax.

2.5.2 IMPAIRMENT IN CONTENT

Children with autism also have problems with the meanings of abstract words and figurative meanings. They can only understand words on a literal level. They find it difficult to accept that two expressions can refer to the same thing or that two different objects can have the same name. This is clearly demonstrated by ‘John’ a case study done by Baron-Cohen and Bolton (1994). John could not understand that ‘door-handle’ and ‘door-knob’ refers to the same thing or that the word
'bank' can have two meanings. Children with autism have problems with the
deixis of speech because of the difficulty in dealing with words that have shifting
meanings such as 'here/there' and 'this/that.

2.5.2 IMPAIRMENT IN USE

Finally children with autism have great difficulty in using language in ways that
are appropriate to the social context. Sometimes they engage in echolalia, repetition of
words, phrases or pieces of conversation they have heard before, out of context. Besides
this, autistic children cannot recognise the intention behind someone's speech. Therefore,
they cannot reciprocate appropriately since they do not realise that the other person was
expecting more or different information.

Blank et.al. (1979) discovered that an autistic child's communication problem
became evident within a social context because the child was unaware of its
communicative responsibilities, even though it's syntactic and semantic development
were structurally and functionally on target. As a listener, he did not respond
appropriately to initiations from a speaker, whereas, as a speaker he could not monitor his
listener to determine whether his message has been understood. He found it difficult to
analyze the affective behaviours of his social partner. Thus, autistic children may be
analyzed as deficient in the pragmatic component of the language system.

This research demonstrates the fact that the development within the components
of the language system in an autistic child can be uneven. According to Curtiss(cited in
Tiegerman et al., 1993), even semantic and syntactic development can progress
independently from one another. Tiegerman et. al., (1993) state that the uneven
developments within and across the components of the language system; and the inability
to interface or exchange developmental information across the language system causes
communication and language disorder in autistic children because language being an
integrated system depends on its components for the development of the whole.

Cognitive theories state that language development depends on the development of the child’s conceptual knowledge. Autistic children are unable to establish conceptual or perceptual relationships, due to, the difficulty in generalizing learned behaviours from one context to another: inability to identify the relevant information within a situation (Koegel & Rincover. 1977). The inability to generalize; to identify the relationships among stimuli; to benefit from past learning experiences indicates a cognitive impairment which limits the autistic child’s ability to learn spontaneously. Therefore, an autistic child benefits from more structured, formalized and repeated learning experiences (Fay & Schuler, 1980).

2.6 COMMUNICATIVE ACTS OF CHILDREN WITH AUTISM

According to Tiegerman,

"Even the most severely impaired child has behaviours that can be identified as communicative if they are analyzed within the context."

(Tiegerman et. al. 1993 : 456)

Several incidents with Adam an autistic child highlights the fact that communication must be analyzed within a context. In the first instance, Adam approaches a clinician, takes her hand and places it on an ice-cream container which he could not open. Interpretation tells us that Adam is requesting the clinician to open the container for him. In the second instance, Adam gets up and moves away when the clinician sits next to him. Adam’s action shows that he does not want to interact with the clinician.

Based on the experiment with Adam, Tiegerman et. al., (1993) state that an autistic child’s attempt at communication must be analyzed within the contextual framework. Furthermore, the autistic child must be treated as an active listener and communicator in order to facilitate communication exchange process. Therefore,
Tiegerman, states that,

"The assumption that children with autism do not have the ability to communicate results in a self-fulfilling prophesy: because it is believed they cannot communicate, they are not treated as communicative and their behaviours are not analyzed to identify communicative instructions."

(Tiegerman et. al., 1993:457)

According to the studies done by Bernard-Opitz (1982) communicative performance is related to specific variables such as communicative partner and idiosyncratic behaviours within the communicative context. The autistic child’s communicative style was different with different people. For instance, the way an autistic child communicated to the mother was different from the way the child communicated to a stranger or his/her clinician. So, according to this study, it is incorrect to say that an autistic child cannot communicate. It should be said that his range of communicative options is limited. Wetherby & Gaines (1986) also state that autistic children should not be stereotyped as noncommunicative and noninteractive. His studies note that autistic children employ various strategies such as echolalia, to interact. Normal communicative development does not occur consecutively from one function to another. Some of the functions occur concurrently.

Linguistic structures developing from the communicative functions and the social context providing the basis for the development of conventional forms. However, the communicative pattern developed by the autistic children is different from the normal sequence. So, Wetherby & Gaines (1986) suggest that educational approaches take the communication learning style of the individual child into consideration when developing lessons. One such style is the use of echolalia.

2.6.1 ECHOLALIA

Echolalia in autistic children was initially defined as meaningless repetition of someone else’s words. But Prizant et al.,(1981) are of the opinion that echolalia is a
form of communication. According to them, echolalia utterances must be analyzed within a natural communicative environment to determine the meaning. This will also provide insight into knowing how autistic children use whatever behaviour they have developed for the purpose of communication. Prizant et al., (1981) have indicated the communicative purposes that echolalia might serve through seven functional categories of echolalia which are: nonfocused echolalia; turn-taking echolalia; declarative echoic utterances; rehearsal utterances; self-regulatory echoes; yes answer category; and request echoes.

Tiegerman et. al., (1993) assert that the above...

"... categories indicate that to determine the communicative intent of the child's message, the researcher and clinician must analyze the communicative context within which the utterances occur."

(Tiegerman et. al., 1993:449)

Therefore eliminating echolalia would decrease the occurrence of communicative behaviour among autistic children. Prizant and Wetherby cite in Tiegerman (1993) that communication is developed through intention and convention. Autistic children, who do not use the conventional form such as pointing or showing but use idiosyncratic behaviours such as echolalia or self-stimulating behaviour to send communicative signals can be said to be communicative.

"The meaning of the child's interaction can be determined only by analyzing the child's behaviour within the context. ... to determine if the unconventional forms actually express communicative intentions."

(Tiegerman et. al., 1993:45)

Prizant and Rydell (1984) regard immediate and delayed echolalia as a continuum of behaviours pertaining to exactness of repetition, degree of comprehension, and underlying communicative intent. When a child with autism uses delayed echolalia, it means that at some associative level he/she had established a relationship between a linguistic form and an event. Furthermore the child is able to substitute, delete, and or
conjoin elements in the delayed response as its linguistics abilities increases. However, they discovered that there was a marked discrepancy between the mean length of utterance for echolalic and spontaneous productions, the echolalic utterances presenting a much more sophisticated linguistic ability; the echolalic utterances which were produced without communicative intent also served a meaningful purpose such as cognitive and/or conversational, or turn-taking functions; and the number of interactive delayed echoes was more than noninteractive ones.

Echolalia among autistic children has been closely associated with communication. It has been described as a,

"...transitional phase of development that signals movement from (a) echolalia without communicative intent. to (b) echolalia with the intent but limited linguistic competence, to (c) echolalia with intent and linguistic ability."

(Tiegerman et. al.1993:469)

Equipped with the fact that autistic children do possess some form of communicative strategies, researches like Lovaas (1977) experimented on using the Applied Behaviour Analysis (ABA) techniques to teach the children with autism a wide range of communicative skills in order to help them become more independent.

2.7 ABA (APPLIED BEHAVIOUR ANALYSIS)

Although the tremendous popularity of ABA in connection with autism is recent, ABA itself is not a new procedure. ABA is based upon more than 55 years of scientific investigation with children affected by a wide range of behavioural and developmental disorders. Extensive research has proven the efficiency of behavioural intervention with autistic children, adolescents and adults. It has shown to be effective in teaching complex skills such as communication, social, play and self-help.

The primary instructional method of teaching in ABA is the Discrete Trial Teaching (DTT) which is used to maximize learning. DTT involves five steps. First,
break a skill into smaller parts; second, teach one sub-skill at a time until it is mastered; third, allow repeated practise in a concentrated period of time; fourth, provide prompting and prompt fading as necessary; and finally use reinforcement procedures.

Although intervention has been shown to successfully increase autistic children’s functioning in communication, the result depends upon factors such as age at onset of treatment, quality of treatment, child’s cognitive capacity and consistency in the home environment. Research has also proven that children who begin treatment before the age of three achieve better results. In order to facilitate early intervention, parents should be aware of the symptoms of autism, (Appendices 1 & 2) and seek help quickly.

2.8 AUTISM-EDUCATION

Applied Behaviour Analysis (ABA) techniques have been proven for improving a wide range of skills in autistic children. Ivar Lovaas and his colleagues at the University of California-Los Angelas (UCLA) have conducted the most thorough studies of behavioural intervention programmes for autistic children. Lovaas and his colleagues state that:

"There is little doubt that early intervention based on the principles and practices of Applied Behaviour Analysis can produce large, comprehensive, lasting and meaningful improvements in many important domains for a large proportion of children with autism. For some, those improvements can amount to achievements of completely normal, intellectual, social, academic, communicative and adaptive functioning."

(Maurice et al., 1993:150)

The discipline of ABA is based on more than 50 years of scientific research and evolves continually as new evidence emerges.

In 1987, Lovaas conducted a research with three groups of autistic children who were at a similar developmental level in terms of language and play skills and rates of stereotypic behaviour at the beginning of the treatment. The treatment lasted two years.
The first group of 19 children received 40 hours a week of one-to-one behavioural treatment, the second group of 19 children received fewer than 10 hours a week of one-to-one behavioural treatment whereas the third group of 21 children were treated using other programmes. All the children were reevaluated after 2 years by examiners who did not know in which group the children had been. Of the 19 children in the first group, 9 completed regular first grade and obtained an average or above average scores on IQ tests (94-120 is average). 8 completed first grade in classes for language delayed children with IQ score that were on the mild range of mental retardation. The also made substantial improvements in communication and adaptive areas. 2 children were placed in classes for mentally retarded children because their IQ scores were in the profoundly mentally retarded range. Only 1 child from the second group completed first grade successfully and achieved IQ scores in the average range. The rest were in classes for language and learning disabilities but all the children from the last group were in classes for autistic/mentally retarded children. Their IQ scores remained unchanged when they were tested two years later.

9 children from the original intensive-treatment group participated in a long-term follow-up study conducted by McEachin et al., in Tiegerman et. al., (1993). They were reevaluated when they were 13 years old by examiners who were not familiar with their history. Results indicated that the effects of the intensive behavioural treatment persisted. 8 out of the 9 continued to succeed in regular classes and were enrolled in junior college at that time of the follow-up study.

Another evaluation of ABA was conducted by behaviour analysis at Murdoch University in Western Australia (Birnbrauer & Leach, 1993). 9 autistic children whose average age was 39 months, received 18.72 hours per week of one-to-one instruction. A control group of 5 similar children did not receive any treatment. At the end of two years, they achieved scores of 80(89-103), language and adaptive behaviour test scores also had
improved besides communication and self-help.

The Maurice children, who were diagnosed with autism at the age of 2, received formal one-to one intensive treatment for 10-35 hours per week. They have completed regular kindergarten and gone on to do well in regular school. Their progress was evaluated at intervals of 6-9 months until behavioral treatment was discontinued because the professionals who were treating them reported that they were fully recovered from autism (Maurice et al., 1996).

Another study was conducted by researchers at the Douglas Developmental Centre, Rutgers University (Harris et al., 1991). The study evaluated changes in intellectual functioning and language development in autistic children over a year. A standardized IQ test was administered to 9 autistic children of 50 months old, on average. Their average score was 67.5. On post-testing after a year, their average IQ score was 86.33. Scores of 7 out of the 9 autistic children improved by at least 10 points.

These experiments and researches prove that autistic children can be taught to communicate. The acquisition of communicative skills can help them achieve success in education and become independent.